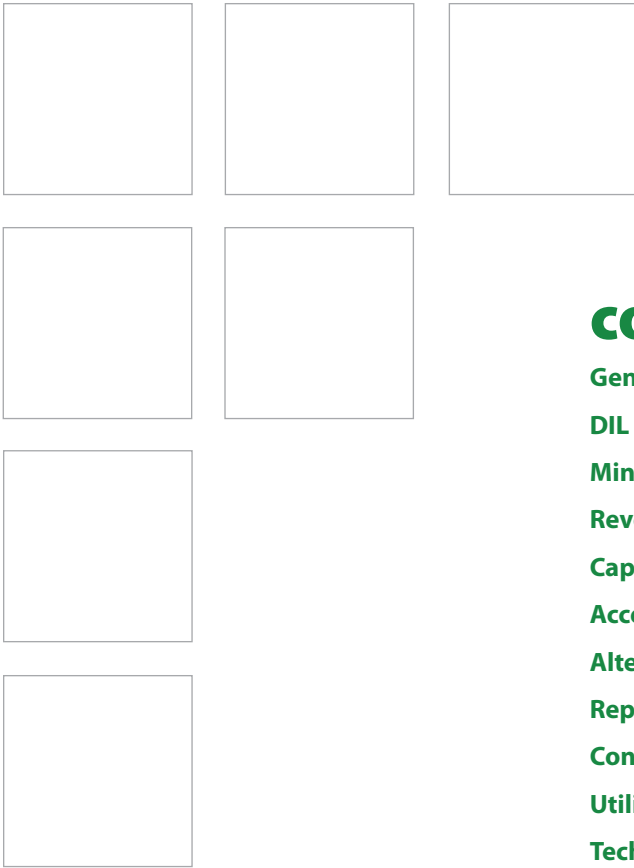


## **contactors motor protection**

Think future. Switch to green.





## contactors

General Information.....	2
DIL M Contactors (7 – 1000 Amps) .....	6
Miniature Contactors .....	10
Reversing Contactor Combinations .....	12
Capacitor Switching Contactors .....	13
Accessories .....	15
Alternate Coil Voltages.....	23
Replacement Coils .....	29
Contact Travel Diagrams .....	32
Utilization Curves .....	34
Technical Data.....	38
Dimensions .....	61

## motor protection

General Information.....	74
Contactor to Overload Protection Guide.....	75
Series Z Thermal Overload Relays .....	76
ZW7 Current Transformer Overload Relays .....	81
ZEV Electronic Motor Protective Relay .....	89
EMT Thermistor Protection Relays .....	97

A numerical and alphabetical index can be found in the pricing guide at the end of this catalog.

# series DIL M contactors

Reliable switching for applications up to 1000A



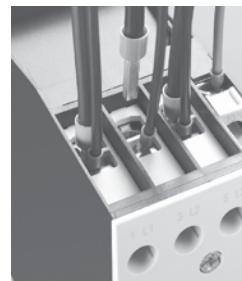
Moeller's DILM contactor line packs all the control you need into a smart, compact design. Our modern IEC contactors can handle up to 1000A in virtually any application worldwide. Their compliance with IEC standards ensures the most accurate match to your motor size – you'll never buy more control than you need.

## For a broad range of applications

Twenty-four contactors in seven frame sizes cover all applications from fractional to 1000HP (@ 575V). This extensive range allows you to select exactly the right size for your application, whether it be resistive AC-1 environments; common starting and stopping AC-3 applications; or even extreme AC-4 situations involving inching and plugging of motors.

## Easy installation by design

The DILM contactor series features dual power terminals on units up to 400A. The



clamping chambers are cleverly designed to apply sufficient holding pressure to cables of varying sizes. Conventional designs are often limited by the size of the largest cable in the chamber.

The line also features ingenious mechanical interlocks (rocker and ball style) that allow fast and easy assembly of contactor combinations without requiring additional space. Many contactors can be inter-

locked both horizontally and vertically.

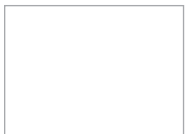
## Accessories extend flexibility

Several ranges within the DILM series share common auxiliary contacts and other components. This lowers inventories even when accommodating a complete range of control solutions. Voltage indicators, reversing kits, and many other optional accessories are also available.

## Safety

All DIL M series contactors provide isolation and protection from direct hand contact. Even the largest contactors accept terminal shields.

- > 24 contactors
- > 7 frame sizes
- > Switches motors up to 1000HP
- > Same compact dimensions for AC and DC units



**NEW** >>

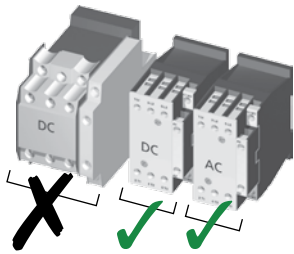


## DIL M Low Range

Moeller's DIL M contactor series includes a completely NEW offering in the lower 7 to 150A range. Consisting of four frame sizes, this range is the newest and most modern of any control manufacturer!

### Compact design for BOTH currents

Conventional contactors designed for DC control applications can be up to 30% larger than their AC counterparts. Not anymore! Unique to Moeller's DIL M contactors, AC and DC units are the same frame size throughout the entire range. The reduced size means smaller DC panels than ever before. This also means you can now design one panel for either AC or DC control, without having to plan for a larger DC contactor.



### Easy to assemble

Coil terminals are located on the front of the new contactors to simplify wiring. Both two and four-pole auxiliary contacts snap on without tools. Units 40A and above accept both side and top mount auxiliaries for increased flexibility. In addition, devices up to 32A include built-in auxiliary contacts for increased economy with no additional space requirement.



### Positively driven contacts for additional safety

Auxiliary contact blocks for new DIL M contactors are available with positively driven contacts for added safety in control circuit schemes. Positively driven auxiliary contacts insure that, throughout the life of the contactor, N.O. & N.C. auxiliary contacts will never be closed simultaneously.

## Special advantages of going DC

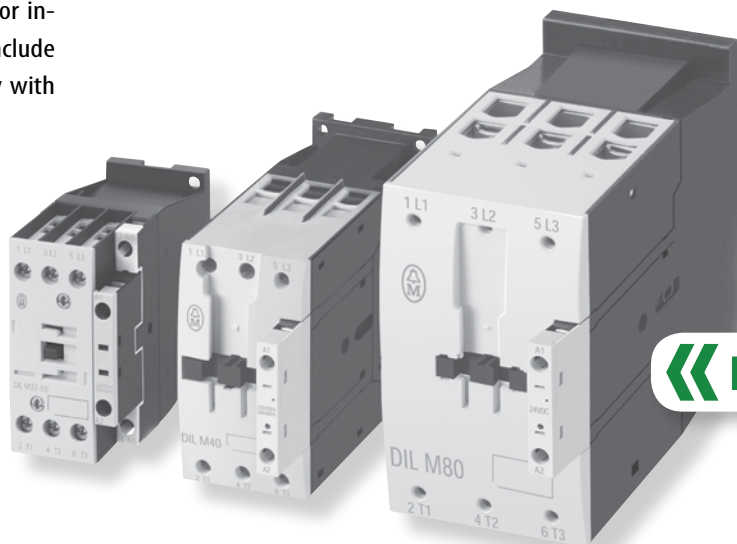
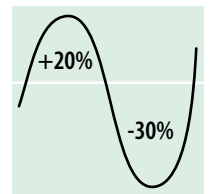
In addition to sharing the same frame size as AC contactors, DC units of 17A and above also feature electronic drives that dramatically reduce pick-up and sealing consumption. These drives produce several benefits:

- less heat is generated, eliminating the need for a fan
- smaller control transformers are required
- contactors up to DIL M32 can be directly actuated from PLCs, eliminating the need for a coupling relay

These benefits lower your cost by consuming less power, eliminating additional components, and permitting higher packing density in the panel.

DC units to 150A also carry a built-in high-speed suppressor circuit, eliminating the need for purchasing and installing a separate external suppressor. Again, lower total cost and smaller panel space result.

For additional safety and convenience, Moeller's DIL M DC contactors feature an expanded voltage tolerance, beyond that specified by IEC/EN 60947. This accommodates a range of -30% to +20% for DIL M contactors 17A and above. It is one of the largest voltage tolerance ranges of any control manufacturer.



<< **NEW**

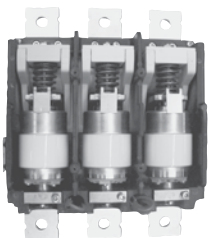


## DIL M High Range

For heavy-duty applications, Moeller's contactor line continues with the DIL M185 to DIL M1000. This range includes 11 contactors in three frame sizes. All applications and worldwide voltages, both AC and DC, can be accommodated with only four coils.

### On-board electronics for efficient operation

All DIL M185 to 1000 contactors utilize electronically-controlled magnet systems. This feature provides flexible actuation, and contributes to lower panel temperature, smaller control transformer requirements and greater control voltage tolerance. Direct actuation from a PLC or other low level source is easily accomplished. In addition, a built-in suppressor circuit for control protection is standard. All of this adds up to fewer external components and smaller panel space.



### Vacuum contactors designed for small size, long life

DIL M580 to DIL M1000 are vacuum contactors. This feature reduces contact damage caused by electrical arcing, leading to longer life of the contactor. It also permits tighter packing density in the panel because there are no open arcs or escaping gases that would typically require additional space for dissipation.



## DIL EM Miniature Contactors








Moeller also offers a miniature contactor, the DIL EM. Designed for small loads, it is available in units up to 20A, and provides reliable performance for motors up to 5HP (@575V). AC and DC units are available.

The DIL EM miniature contactor features a large ambient temperature range, and its low power consumption permits direct actuation from a PLC. The DC version of the DIL EM also includes an integrated suppressor to protect from voltage peaks that may occur when the coil is disconnected. Top-mount auxiliary contacts are available in both 2- and 4-pole configurations.

## Standards and Approvals

Moeller's DIL M and DIL EM contactors carry UL, CSA, IEC/EN 60947 and VDE 0660 approvals. They are manufactured to ISO 9001 quality standards.

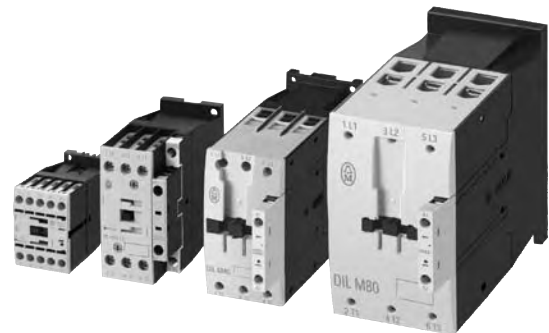
## Moeller Contactor Family and Equivalent NEMA Sizes

Frame Size	Moeller Contactor	Maximum Horsepower (UL/CSA)						
		Single Phase		Three Phase				
		115 Volt	230 Volt	200 Volt	230 Volt	460 Volt	575 Volt	
	DIL M7	¼	1	1½	2	3	5	NEMA Size 00
		1/3	1	1½	1½	2	2	
	DIL M9	½	1½	3	3	5	7½	NEMA Size 0
		1	2	3	3	5	5	
	DIL M17	2	3	5	5	10	15	NEMA Size 1
		2	3	7½	7½	10	10	
	DIL M25	2	5	7½	7½	15	20	NEMA Size 2
	DIL M32	3	5	10	10	20	25	
		3	7½	10	15	25	25	NEMA Size 2
	DIL M40	3	7½	10	15	30	40	
	DIL M50	3	10	15	20	40	50	NEMA Size 3
	DIL M65	5	15	20	25	50	60	
		7½	15	25	30	50	50	NEMA Size 3
	DIL M80 ①	7½	15	25	30	60	75	
	DIL M95 ①	7½	15	25	40	75	100	NEMA Size 4
		–	–	40	50	100	100	
	DIL M115 ①	10	25	40	50	100	125	
DIL M150 ①	15	30	40	60	125	150		
	DIL M185	–	–	50	60	125	150	NEMA Size 5
	DIL M225	–	–	60	75	150	200	
		–	–	75	100	200	200	
	DIL M250	–	–	75	100	200	250	
	DIL M300	–	–	100	125	250	300	NEMA Size 6
	DIL M400	–	–	150	150	300	400	
		–	–	150	200	400	400	
	DIL M500	–	–	150	200	400	500	
	DIL M580	–	–	200	200	400	600	NEMA Size 7
	DIL M650	–	–	200	250	500	600	
		–	–	–	300	600	600	
	DIL M750	–	–	250	300	600	700	
	DIL M820	–	–	290	350	700	860	
		–	–	–	450	900	900	
DIL M1000	–	–	–	400	800	1000	NEMA Size 8	

Compare Moeller's 24 contactor sizes to just 10 equivalent NEMA sizes

① Final ratings in preparation. Contact your Moeller representative.

- > Four compact frame sizes cover applications to 150A
- > Space-saving design reduces panel space and cost
- > Dual box terminals make wiring safer and easier for cables with uneven cross-sections
- > New Kombi (combination) plug-in technology provides toolless connection with other starting components up to DIL M12

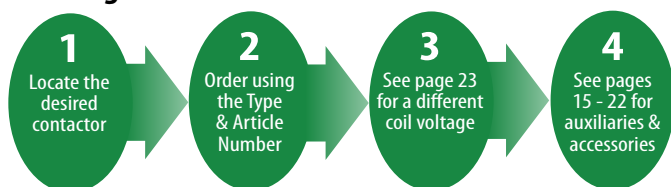


### Three Pole Contactors with 120V AC Coil (to 150 Amps) ①②⑤

I <sub>e</sub> [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400 V	660 V 690 V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
7	20	2.2	3	3.5	1/4	3/4	1	1½	2	3	5	1	0	DILM7-10(120V60HZ) ③	276547	See green pages
												0	1	DILM7-01(120V60HZ) ③	276582	
9	20	2.5	4	4.5	1/2	1	1½	3	3	5	7½	1	0	DILM9-10(120V60HZ) ③	276687	
												0	1	DILM9-01(120V60HZ) ③	276722	
12	20	3.5	5.5	6.5	1	2	2	3	3	10	10	1	0	DILM12-10(120V60HZ) ③	276827	
												0	1	DILM12-01(120V60HZ) ③	276862	
18	35	5	7.5	11	2	2	3	5	5	10	15	1	0	DILM17-10(120V60HZ)	277001	
												0	1	DILM17-01(120V60HZ)	277033	
25	40	7.5	11	14	2	3	5	7½	7½	15	20	1	0	DILM25-10(120V60HZ)	277129	
												0	1	DILM25-01(120V60HZ)	277161	
32	40	10	15	17	3	5	5	10	10	20	25	1	0	DILM32-10(120V60HZ)	277257	
												0	1	DILM32-01(120V60HZ)	277289	
40	50	12.5	18.5	23	3	5	7½	10	15	30	40	0	0	DILM40(120V60HZ) ④	277763	
50	60	12.5	22	30	3	7½	10	15	20	40	50	0	0	DILM50(120V60HZ) ④	277827	
65	72	20	30	35	5	10	15	20	25	50	60	0	0	DILM65(120V60HZ) ④	277891	
80	110	25	37	48	7½	15	15	25	30	60	75	0	0	DILM80(120V60HZ)	239399	
95	110	30	45	57	7½	15	15	25	40	75	100	0	0	DILM95(120V60HZ)	239477	
115	160	37	55	70	10	25	25	40	50	100	125	0	0	DILM115(RAC120)	239547	
150	160	48	75	91	15	25	30	40	60	125	150	0	0	DILM150(RAC120)	239587	

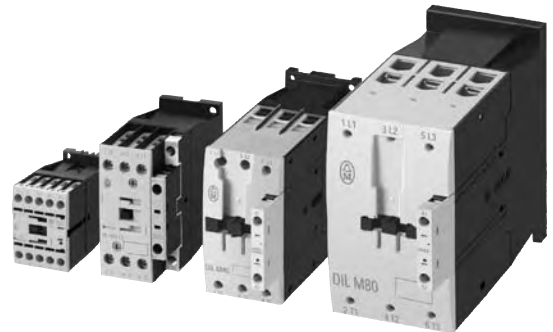
UL/CSA pending for DILM80 – DILM150. Product available in Fall 2005. Contact your Moeller representative.

### Ordering Instructions



- ① Positively-driven contacts with DILM7 to DILM32 between integrated auxiliary contact and auxiliary contact module, as well as within the auxiliary contact modules. Mirror contact with with DILM7-01 to DILM32-01, as well as in combination with auxiliary contact modules.
- ② Contact elements of the contactor to EN 50012.
- ③ Coils not replaceable.
- ④ Positively-driven contacts within the auxiliary contact module. Mirror contact in combination with auxiliary contact module. Combination of side-mounted and front auxiliary contact modules up to six auxiliary contacts possible.
- ⑤ Standard coil is rated for 120V AC - 60Hz and 110V AC - 50Hz. See page 23 for alternative coil voltages.

- > Same compact size as Moeller's AC contactors, saving panel space
- > Electronically controlled magnet system (from DILM17) provides many advantages:
  - Significantly less heat dissipation due to reduced sealing consumption
  - Smaller control transformers because of lower pick-up consumption
  - Direct actuation from the PLC without coupling contactors (to DILM32)
- > Integrated surge suppressor

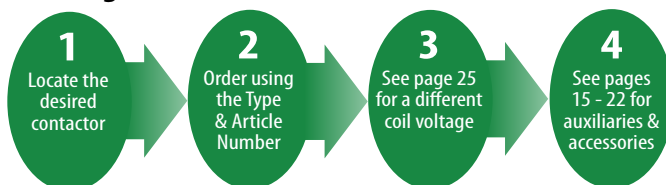


### Three Pole Contactors with 24V DC Coil (to 150 Amps) ①②⑤

I <sub>e</sub> [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400 V	660 V 690 V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
7	20	2.2	3	3.5	1/4	3/4	1	1½	2	3	5	1	0	DILM7-10(24VDC) ③	276565	See green pages
												0	1	DILM7-01(24VDC) ③	276600	
9	20	2.5	4	4.5	1/2	1	1½	3	3	5	7½	1	0	DILM9-10(24VDC) ③	276705	
												0	1	DILM9-01(24VDC) ③	276740	
12	20	3.5	5.5	6.5	1	2	2	3	3	10	10	1	0	DILM12-10(24VDC) ③	276845	
												0	1	DILM12-01(24VDC) ③	276880	
18	35	5	7.5	11	2	2	3	5	5	10	15	1	0	DILM17-10(RDC24)	277018	
												0	1	DILM17-01(RDC24)	277050	
25	40	7.5	11	14	2	3	5	7½	7½	15	20	1	0	DILM25-10(RDC24)	277146	
												0	1	DILM25-01(RDC24)	277178	
32	40	10	15	17	3	5	5	10	10	20	25	1	0	DILM32-10(RDC24)	277274	
												0	1	DILM32-01(RDC24)	277306	
40	50	12.5	18.5	23	3	5	7½	10	15	30	40	0	0	DILM40(RDC24) ④	277780	
50	60	12.5	22	30	3	7½	10	15	20	40	50	0	0	DILM50(RDC24) ④	277844	
65	72	20	30	35	5	10	15	20	25	50	60	0	0	DILM65(RDC24) ④	277908	
80	110	25	37	48	7½	15	15	25	30	60	75	0	0	DILM80(RDC24)	239416	
95	110	30	45	57	7½	15	15	25	40	75	100	0	0	DILM95(RDC24)	239510	
115	160	37	55	70	10	25	25	40	50	100	125	0	0	DILM115(RDC24)	239555	
150	160	48	75	91	15	25	30	40	60	125	150	0	0	DILM150(RDC24)	239591	

UL/CSA pending for DILM80 – DILM150. Product available in Fall 2005. Contact your Moeller representative.

### Ordering Instructions



- ① Positively-driven contacts with DILM7 to DILM32 between integrated auxiliary contact and auxiliary contact module, as well as within the auxiliary contact modules. Mirror contact with with DILM7-01 to DILM32-01, as well as in combination with auxiliary contact modules.
- ② Contact elements of the contactor to EN 50012.
- ③ Coils not replaceable.
- ④ Positively-driven contacts within the auxiliary contact module. Mirror contact in combination with auxiliary contact module. Combination of side-mounted and front auxiliary contact modules up to six auxiliary contacts possible.
- ⑤ DC-operated contactors have an integrated surge suppressor.



- > Heavy duty contactors for demanding applications
- > All contactors in this range feature electronically controlled magnet systems that dramatically reduces pick-up & seal-in, while increasing control voltage tolerance
- > Direct connection to PLCs and low level input devices
- > Large HP devices (from DILM580) are vacuum contactors, which increase electrical lifespan and decrease space requirements
- > Built-in suppressor circuit for control protection



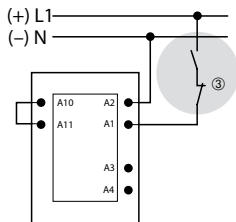
### Three-pole Contactors with 110 to 250V AC or DC Electronic Coil (185 to 1000 Amps) ①

I <sub>e</sub> [A]		Maximum Ratings for Three Phase Motors									Auxiliary Contacts		Type	Article Number	Price
		kW				UL / CSA HP									
		AC-3				Three Phase									
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400 V	660 V 690 V	1000V	200 V	230 V	460 V	575 V	NO	NC				
185	275	55	90	175	108	50	60	125	150	2	2	DILM185/22(RA250)	208193	See green pages	
225	315	70	110	215	108	60	75	150	200	2	2	DILM225/22(RA250)	208197		
250	350	75	132	240	108	75	100	200	250	2	2	DILM250/22(RA250)	208201		
300	400	90	160	286	132	100	125	250	300	2	2	DILM300/22(RA250)	208205		
400	500	125	200	344	132	125	150	300	400	2	2	DILM400/22(RA250)	208209		
500	700	155	250	344	132	150	200	400	500	2	2	DILM500/22(RA250)	208213		
580	800	185	315	560	600	200	200	400	600	2	2	DILM580/22(RA250) ②	208216		
650	850	205	355	630	600	200	250	500	600	2	2	DILM650/22(RA250) ②	208219		
750	900	240	400	720	800	250	300	600	700	2	2	DILM750/22(RA250) ②	208222		
820	1000	260	450	750	800	290	350	700	860	2	2	DILM820/22(RA250) ②	208225		
1000	1000	315	560	1000	1000	–	400	800	1000	2	2	DILM1000/22(RA250) ②	267214		

#### Application Notes

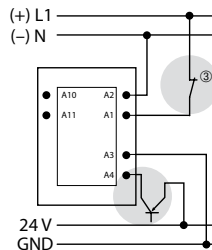
##### Conventional

A1/A2 are applied to voltage in the usual manner.



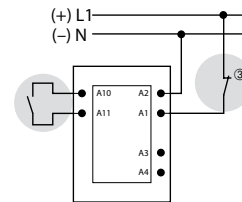
##### Direct from the PLC

A 24 V output from the PLC can be connected directly to connections A3/A4.

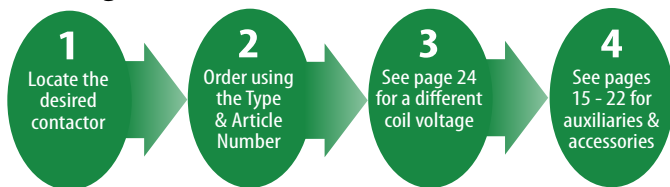


##### From low consumption command devices

Command devices which can only be subject to minimal loads such as circuit board relays, control circuit devices or position switches can be connected directly to A10/A11.

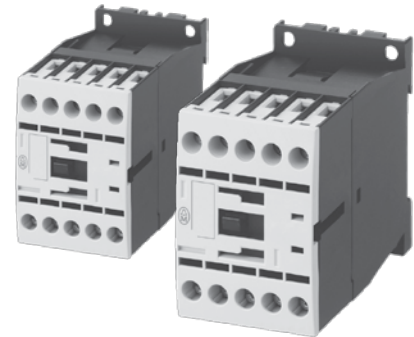


### Ordering Instructions



- ① Wide range coil: 110 – 250 V; 40-60Hz AC / DC. 660V, 690V or 1000V. Do not reverse directly.
- ② When operating with frequency inverters or when performing a high-voltage test, the suppressor on the load side must be removed.
- ③ Standstill in an emergency (Emergency Stop)

- > Space-saving four-pole design reduces panel space and cost
- > Dual box terminals make wiring safer and easier for cables with uneven cross-sections
- > DC operated contactors have an integrated surge suppressor



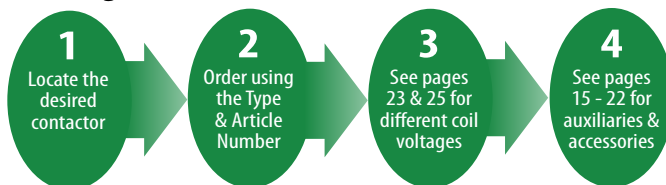
### Four Pole Contactors with 120V AC Coil ①②

$I_e$ [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400V	660V 690V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
12	20	3.5	5.5	6.5	1/2	1	1½	3	3	5	7½	0	0	DILMP20(120V60HZ)	276970	See green pages
UL/CSA pending. Product available in Fall 2005. Contact your Moeller representative.																

### Four Pole Contactors with 24V DC Coil ①

$I_e$ [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400V	660V 690V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
12	20	3.5	5.5	6.5	1/2	1	1½	3	3	5	7½	0	0	DILMP20(24VDC)	276985	See green pages
UL/CSA pending. Product available in Fall 2005. Contact your Moeller representative.																

### Ordering Instructions



- ① Coil not replaceable.
- ② Standard coil is rated for 120V AC - 60Hz and 110V AC - 50Hz. See pages 23 & 25 for alternative coil voltages.

- > Miniature, economical contactors for small motors and loads
- > Approved for worldwide use
- > High degree of climatic approvals and large ambient temperature range
- > AC and DC operated versions available



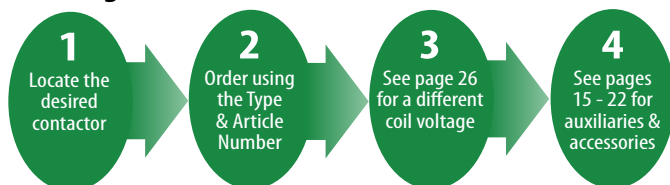
### Miniature Three Pole Contactors with 120V AC Coil ①②

$I_e$ [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400 V	660 V 690 V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
9	20	2.2	4	4	1/2	1	1½	2	3	5	5	1	0	DILEM-10(120V60HZ)	051783	See green pages
9	20	2.2	4	4	1/2	1	1½	2	3	5	5	0	1	DILEM-01(120V60HZ)	051792	

### Miniature Three Pole Contactors with 24V DC Coil ①

$I_e$ [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400 V	660 V 690 V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
9	20	2.2	4	4	1/2	1	1½	2	3	5	5	1	0	DILEM-10-G(24VDC)	010213	See green pages
9	20	2.2	4	4	1/2	1	1½	2	3	5	5	0	1	DILEM-01-G(24VDC)	010343	

### Ordering Instructions



- ① Coil not replaceable.
- ② Standard coil is rated for 120V AC - 60Hz and 110V AC - 50Hz. See page 26 for alternative coil voltages.

- > Miniature, economical four-pole contactors
- > Approved for worldwide use
- > High degree of climatic approvals and large ambient temperature range
- > AC and DC versions available



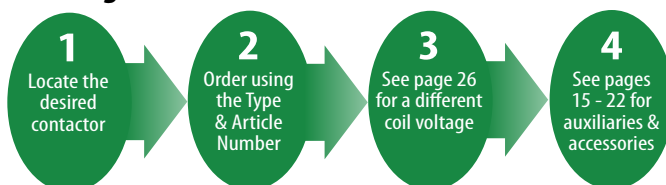
### Miniature Four Pole Contactors with 120V AC Coil ①②

I <sub>e</sub> [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400V	660V 690V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
12	20	2.2	4	4	1/2	1	1½	2	3	5	5	0	0	DILEM4(120V60HZ)	051801	See green pages

### Miniature Four Pole Contactors with 24V DC Coil ①

I <sub>e</sub> [A]		Maximum Ratings for Single and Three Phase Motors										Auxiliary Contacts		Type	Article Number	Price
		kW			UL / CSA HP											
		AC-3			Single Phase			Three Phase								
AC-3 (@400V)	AC-1	220 V 230 V	380 V 400V	660V 690V	115 V	200 V	230 V	200 V	230 V	460 V	575 V	NO	NC			
12	20	2.2	4	4	1/2	1	1½	2	3	5	5	0	0	DILEM4-G(24VDC)	012701	See green pages

### Ordering Instructions



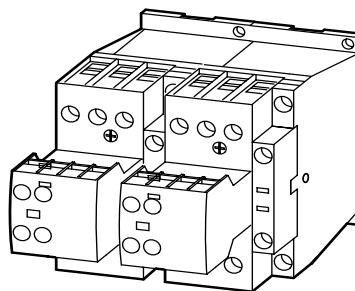
- ① Coil not replaceable.
- ② Standard coil is rated for 120V AC - 60Hz and 110V AC - 50Hz. See page 26 for alternative coil voltages.

# Reversing Contactor Combinations

## DILM Contactors



- > Space-saving design reduces panel space and cost
- > Units are pre-assembled with electrical and mechanical interlocks
- > Ingenious mechanical interlock adds no additional space
- > Dual box terminals make wiring safer and easier for cables with uneven cross-sections

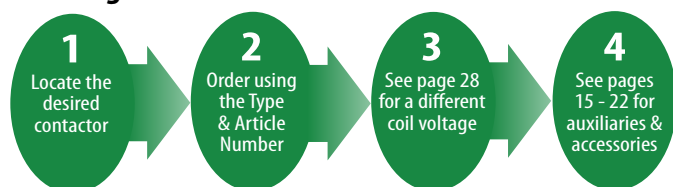


## Reversing Contactor Combinations with 120V AC Coil ①②⑤

$I_e$ [A]	Maximum Ratings for Three Phase Motors							Auxiliary Contacts		Type	Article Number	Price
	kW											
	AC-3			Three Phase								
AC-3 (@400V)	220 V 230 V	380 V 400 V	660 V 690 V	200 V	230 V	460 V	575 V	NO	NC			
7	2.2	3	3.5	1½	2	3	5	2	1	DIULM7/21(120V60HZ) ③	278058	See green pages
9	2.5	4	4.5	3	3	5	7½	2	1	DIULM9/21(120V60HZ) ③	278083	
12	3.5	5.5	6.5	3	3	10	10	2	1	DIULM12/21(120V60HZ) ③	278108	
18	5	7.5	11	5	5	10	15	2	1	DIULM17/21(120V60HZ) ③	278133	
25	7.5	11	14	7½	7½	15	20	2	1	DIULM25/21(120V60HZ)	278158	
32	10	15	17	10	10	20	25	2	1	DIULM32/21(120V60HZ)	278183	
40	12.5	18.5	23	10	15	30	40	1	1	DIULM40/11(120V60HZ) ④	278208	
50	15.5	22	30	15	20	40	50	1	1	DIULM50/11(120V60HZ) ④	278233	
65	20	30	35	20	25	50	60	1	1	DIULM65/11(120V60HZ) ④	278258	

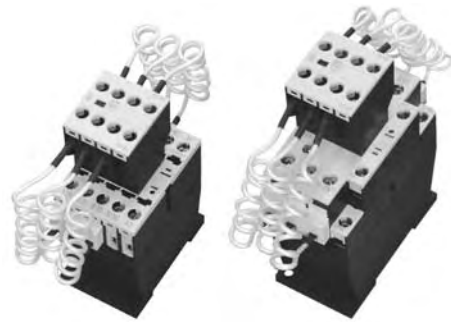
**Note:** Larger sizes available. Contact your Moeller representative.

### Ordering Instructions



- ① Positively-driven contacts with DILM7 to DILM32 between integrated auxiliary contact and auxiliary contact module, as well as within the auxiliary contact modules. Mirror contact with with DILM7-01 to DILM32-01, as well as in combination with auxiliary contact modules.
- ② Contact elements of the contactor to EN 50012.
- ③ Coils not replaceable.
- ④ Positively-driven contacts within the auxiliary contact module. Mirror contact in combination with auxiliary contact module. Combination of side-mounted and front auxiliary contact modules up to six auxiliary contacts possible.
- ⑤ Standard coil is rated for 120V AC - 60Hz and 110V AC - 50Hz. See page 28 for alternative coil voltages.

- > Economical solution for both individual and group power factor correction applications
- > Special weld resistant contact material ensures longer life



#### With Series Resistors

Three-Phase Capacitors			Auxiliary Contacts		Type	Article Number	Price
50 – 60 Hz			NO	NC			
240 V kvar	480 V kvar	600 V kvar					
6	12	15	1	1	DIL00MK-11(120V60HZ)	047020	See green pages
6	12	15	0	2	DIL00MK-02(120V60HZ)	047031	
10	20	25	1	0	DIL0MK-10(120V60HZ)	047042	
15	25	36	1	0	DIL1MK-10(120V60HZ)	047052	
25	45	60	1	0	DIL2MK-10(120V60HZ)	047062	

#### Application Note

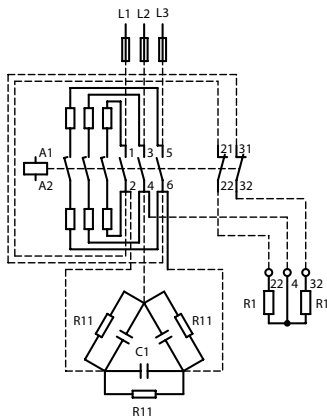
In the case of group compensation, multi-stage capacitor banks are connected to the main supply as required. In the process, transient currents of up to  $180 \times I_e$  can flow between the capacitors.

The capacitors are pre-charged via the early-make auxiliary contacts and the fitted wire resistors, thereby reducing the inrush current. The main contacts then close after a time lag and carry the uninterrupted current.

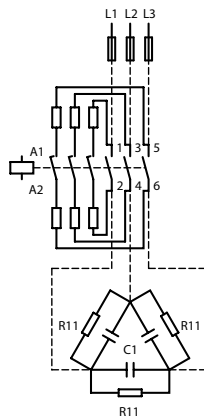
Moeller's Capacitor Switching Contactors are weld-resistant with inrush current peaks up to  $180 \times I_e$  due to their special contact material.

Through the use of quick-discharge resistors, the danger of complete polarity reversal in the event of rapidly recurring closure can be excluded. The resultant discharge times are 0.2 s. The resistor is switched by means of two auxiliary contacts of the contactor.

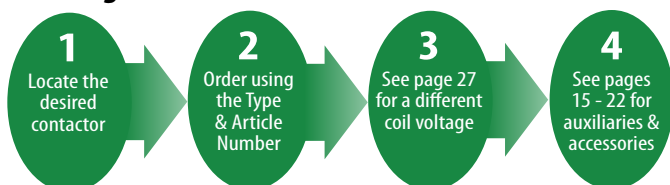
#### Circuit With Quick Discharge Resistor



#### Circuit Without Quick Discharge Resistor



#### Ordering Instructions

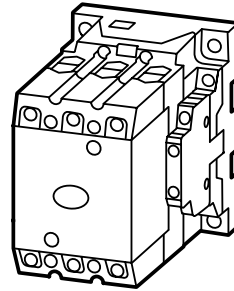


# Special Use Contactors

## Capacitor Switching Contactors



- > Economical solution for both individual and group power factor correction applications
- > Special weld resistant contact material ensures longer life



### Without Series Resistors

Three-Phase Capacitors			Auxiliary Contacts		Type	Article Number	Price
50 – 60 Hz			NO	NC			
240 V kvar	480 V kvar	600 V kvar					
30	60	75	2	2	DIL3MK72/22(120V60HZ)	209974	See green pages

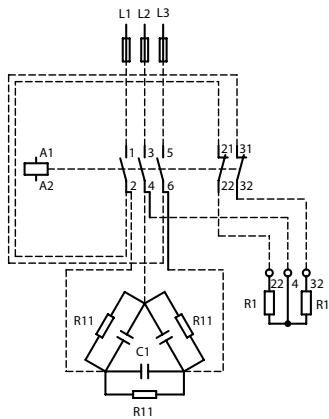
### Application Note

In the case of group compensation multi-stage capacitor banks are connected to the main supply, as required. In the process, transient currents of up to  $180 \times I_e$  can flow between the capacitors.

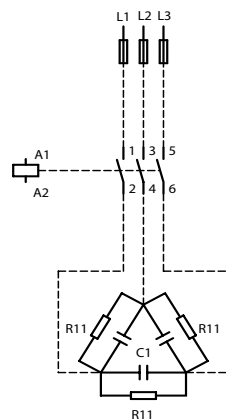
The contactors for capacitor are weld-resistant with inrush current peaks up to  $180 \times I_e$  due to their special contacts.

Through the use of quick-discharge resistors, the danger of complete polarity reversal in the event of rapidly recurring closure can be excluded. The resultant discharge times are 0.2 s. The resistor is switched by means of two auxiliary contacts of the contactor.

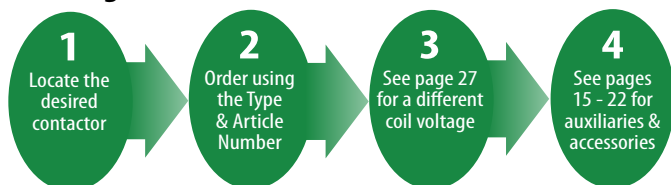
### Circuit With Quick Discharge Resistor




















### Circuit Without Quick Discharge Resistor



### Ordering Instructions



#### Auxiliary Contact Modules (for DILM7 to DILM32 Contactors) ①②

Auxiliary	NO	NC	Contact Sequence	For use with...	Type	Article Number	Price
<b>Top Mount - Standard Terminal Markings</b>							
	1	1		DILM7-10... to DILM32-10... ③	DILM32-XHI11	277376	See green pages
	0	2			DILM32-XHI02	277375	
	2	2			DILM32-XHI22	277377	
<b>Top Mount - Alternative Terminal Markings</b>							
	2	0		DILM7... to DILM32...	DILA-XHI20	276422	See green pages
	1	1			DILA-XHI11	276421	
	0	2			DILA-XHI02	276420	
	1EM ④	1LB ④			DILA-XHIV11	276423	
	4	0			DILA-XHI40	276428	
	3	1			DILA-XHI31	276427	
	2	2			DILA-XHI22	276426	
	1	3			DILA-XHI13	276425	
	0	4			DILA-XHI04	276424	
	1 + 1EM ④	1 + 1LB ④			DILA-XHIV22	276429	

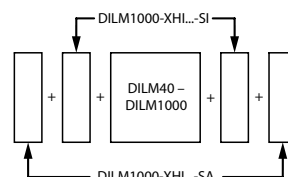
- ① All auxiliary contacts are positively driven except ...XHIV...
- ② DILM-7 to DILM-32 contactors include a built-in one pole auxiliary contact. Additional auxiliaries are top-mount only.
- ③ The 2 and 4 pole DILM32-XHI... auxiliary contact modules cannot be combined with DILM...-01 contactors.
- ④ EM = Early Make  
LB = Late Break



### Auxiliary Contact Modules (for DILM40 to DILM1000 Contactors) ①

Auxiliary	NO	NC	Contact Sequence	For use with...	Type	Article Number	Price
<b>Top Mount - Standard Terminal Markings</b>							
	2	0		DILM40... to DILM150...	DILM150-XHI20	277945	See green pages
	1	1			DILM150-XHIA11	283463	
	1	1			DILM150-XHI11	277946	
	0	2			DILM150-XHI02	277947	
	4	0			DILM150-XHI40	277948	
	3	1			DILM150-XHI31	277949	
	2	2			DILM150-XHI22	277950	
	2	2			DILM150-XHIA22	283464	
	1	3			DILM150-XHI13	277951	
	0	4			DILM150-XHI04	277952	
	1 + 1EM ③	1 + 1LB ③		DILM150-XHIV22	277953		
<b>Side Mount - Standard Terminal Markings</b>							
	1	1		DILM40... to DILM1000...	DILM1000-XHI11-SI ②	278425	See green pages
	1EM ③	1LB ③			DILM1000-XHIV11-SI ②	278426	
<b>Side Mount - Alternative Terminal Markings</b>							
	1	1		DILM80... to DILM1000...	DILM1000-XHI11-SA ②	278427	See green pages

#### Auxiliary contact module fitting options


















① All auxiliary contacts are positively driven except ...XHIV...

② Replaces DILM820-XHI11-...

③ EM = Early Make  
LB = Late Break

#### Auxiliary Contact Modules (for DILEM Miniature Contactors) ①②

Auxiliary	NO	NC	Contact Sequence	For use with...	Type	Article Number	Price
<b>Top Mount - Standard Terminal Markings</b>							
	0	2		DILEM-10(-G)... DILEM-4(-G)...	02DILEM	010064	See green pages
	1	1			11DILEM	010080	
	2	2			22DILEM	010112	
<b>Top Mount - Alternative Terminal Markings</b>							
	0	2		DILEM-10(-G)... DILEM-01(-G)... DILEM-4(-G)...	02DILE	010240	See green pages
	1	1			11DILE	010224	
	2	0			20DILE	010208	
	1EM ③	1LB ③			11DDILE	049824	
	0	4			04DILE	010256	
	1	3			13DILE	002397	
	2	2			22DILE	010288	
	3	1			31DILE	048912	
	4	0			40DILE	010304	
	1 + 1EM ③	1 + 1LB ③			22DDILE	049823	

① DILE Terminal Markings comply with European Standards EN 50005 while DILEM Terminal Markings comply with EN 50005 and EN 50012.

② Auxiliary Contact Modules have interlocked opposing contacts (does not apply to early-make or late-break contacts).


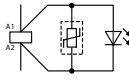

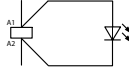
③ EM = Early Make  
LB = Late Break

Suppressors and Voltage Indicator ①




Suppressor / Voltage Indicator	Notes	Voltage	Schematic	For use with...	Type	Article Number	Price
<b>RC Suppressors ①</b>							
	For AC operated contactors (50-60 Hz). Please be aware that RC Suppressors can cause a drop-out delay.	24 – 48		DILEM	RCDILE48	044264	See green pages
		110 – 250			RCDILE250	046320	
	For AC operated contactors (50-60 Hz). DC operated Contactors have an integrated suppressor. Please be aware that Suppressors can cause a drop-out delay.	24 – 48		DILM7 – DILM12 DILMP20	DILM12-XSPR48	281199	
		110 – 240			DILM12-XSPR240	281200	
		240 – 500			DILM12-XSPR500	281201	
		24 – 48		DILM17 – DILM32	DILM32-XSPR48	281202	
		110 – 240			DILM32-XSPR240	281203	
		240 – 500			DILM32-XSPR500	281204	
		24 – 48		DILM40 – DILM95	DILM95-XSPR48	281205	
		110 – 240			DILM95-XSPR240	281206	
		240 – 500			DILM95-XSPR500	281207	
<b>Varistor Suppressors ①</b>							
	For AC operated Contactors (50-60 Hz). DC operated Contactors have an integrated suppressor.	24 – 48		DILEM	VGDILE48	010320	See green pages
		110 – 250			VGDILE250	010336	
		380 – 415			VGDILE415	010463	
	For AC operated Contactors (50-60 Hz). DC operated Contactors have an integrated suppressor.	24 – 48		DILM7 – DILM12 DILMP20	DILM12-XSPV48	281208	
		48 – 130			DILM12-XSPV130	281209	
		130 – 240			DILM12-XSPV240	281210	
		240 – 500			DILM12-XSPV500	281211	
		24 – 48		DILM17 – DILM32	DILM32-XSPV48	281212	
		48 – 130			DILM32-XSPV130	281213	
		130 – 240			DILM32-XSPV240	281214	
		240 – 500			DILM32-XSPV500	281215	
		24 – 48		DILM40 – DILM95	DILM95-XSPV48	281216	
		48 – 130			DILM95-XSPV130	281217	
		130 – 240			DILM95-XSPV240	281218	
		240 – 500			DILM95-XSPV500	281219	

① RC Suppressor and Varistor Suppressor cannot be used at the same time.

**Suppressors and Voltage Indicator (continued) ①**



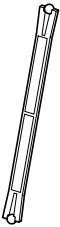

Suppressor / Voltage Indicator	Notes	Voltage	Schematic	For use with...	Type	Article Number	Price
<b>Varistor Suppressor with Integrated LED ①</b>							
	For AC operated Contactors (50-60 Hz). DC operated Contactors have an integrated suppressor.	24 – 48		DILM7 – DILM12 DILMP20	DILM12-XSPVL48	281220	See green pages
		130 – 240			DILM12-XSPVL240	281221	
		24 – 48		DILM17 – DILM32	DILM32-XSPVL48	281222	
		130 – 240			DILM32-XSPVL240	281223	
		24 – 48		DILM40 – DILM95	DILM95-XSPVL48	281224	
		130 – 240			DILM95-XSPVL240	281225	
<b>Voltage Indicator</b>							
	Indicates presence of control voltage. For AC operated Contactors (50-60 Hz).	24 – 48		DILM7 – DILM12 DILMP20	DILM12-XSPI48	285251	See green pages
		48 – 130			DILM12-XSPI130	285252	
		130 – 250			DILM12-XSPI250	285253	
		24 – 48		DILM17 – DILM32	DILM32-XSPI48	285254	
		48 – 130			DILM32-XSPI130	285255	
		130 – 250			DILM32-XSPI250	285256	
		24 – 48		DILM40 – DILM150	DILM150-XSPI48	285257	
		48 – 130			DILM150-XSPI130	285258	
		130 – 250			DILM150-XSPI250	285259	

**Connectors**

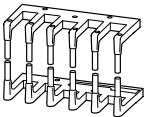

Connector	Notes	For use with...	Type	Article Number	Price
	Provides a mechanical link when coupling two contactors together. Distance between Contactors = 0 mm	DILEM	VODILE	026634	See green pages
		DILM7 – DILM65	DILM32-XVB	281227	
		DILM80 – DILM150	DILM150-XVB	281226	

① RC Suppressor and Varistor Suppressor cannot be used at the same time.


### Mechanical Interlocks

Mechanical Interlocks	Notes	For use with...	Type	Article Number	Price
	For two contactors with AC or DC operated magnet systems. Distance between Contactors = 0 mm. Mechanical Lifespan = 2.5 x 10 <sup>6</sup> operations. Additional auxiliary contact modules can be fitted.	DILEM	MVDILE	010113	See green pages
	For two contactors with AC or DC operated magnet systems. Distance between Contactors = 0 mm. Mechanical Lifespan = 2.5 x 10 <sup>6</sup> operations. Additional auxiliary contact modules can be fitted.	DILM7 – DILM12 DILMP20	DILM12-XMV	281196	
		DILM17 – DILM32	DILM32-XMV	281197	
		DILM40 – DILM65	DILM65-XMV	281198	
		DILM80 – DILM150	DILM150-XMV	240081	
	For two contactors with the same or different magnetic systems. Mechanical lifespan 5 x 10 <sup>6</sup> operations. No auxiliary contact is possible between the mechanical interlock and contactor. Combination with same frame size only. Distance between contactors: 15 mm	DILM185 – DILM500	DILM500-XMV	208289	See green pages
	For two contactors with the same or different magnetic systems. Mechanical lifespan 5 x 10 <sup>6</sup> operations. No auxiliary contact is possible between the mechanical interlock and contactor. DILM820-XMV consists of interlock element and mounting support plate.	DILM580 – DILM1000	DILM820-XMV	208288	


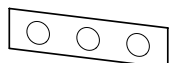



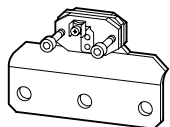
### Reversing Kits

Reversing Kits	Notes	For use with...	Type	Article Number	Price
	Consisting of one 3-pole paralleling link with control bridge and reversing link with A2 bridge.	DILEM (+MVDILEM)	MVS-WB-EM	220209	See green pages
	In addition to the electrical interlock, the following control connections are integrated: • K1M: A1 – K2M: 21 • K1M: 21 – K2M: A1 • K1M: A2 – K2M: A1	DILM7/9/12 mains DILM7/9/12 delta DILM7/9/12 star	DILM12-XRL	283108	See green pages
		DILM17/25/32 mains DILM17/25/32 delta DILM17/25/32 star	DILM32-XRL	283109	



**Star-Delta Wiring Kits**

Star-Delta Wiring Kit	Notes	For use with...	Type	Article Number	Price
	The following control cables are integrated in addition to electrical interlock: <ul style="list-style-type: none"> <li>• K3M: A1 – K5M: 21</li> <li>• K3M: 21 – K5M: A1</li> <li>• K3M: A2 – K5M: A1</li> </ul>	DILM7/9/12 mains DILM7/9/12 delta DILM7/9/12 star	<b>DILM12-XSL</b>	<b>283130</b>	See green pages
		DILM17/25/32 mains DILM17/25/32 delta DILM17/25/32 star	<b>DILM32-XSL</b>	<b>283131</b>	

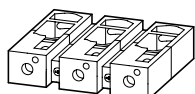

**Bridges**

Bridges	Notes	For use with...	Type	Article Number	Price
<b>Star-Point Bridges</b>					
	Finger-safe (in accordance with IEC 536).	DILEM	<b>S1DILEM</b>	<b>220218</b>	See green pages
		DILM7 – DILM12	<b>DILM12-XS1</b>	<b>281190</b>	
		DILM17 – DILM32	<b>DILM32-XS1</b>	<b>281191</b>	
		DILM40 – DILM65	<b>DILM65-XS1</b>	<b>281192</b>	
	A cover is included for protection against accidental contact.	DILM185 – DILM400	<b>DILM400-XS1</b>	<b>208291</b>	
		DILM500	<b>DILM500-XS1</b>	<b>208290</b>	
<b>Paralleling Bridges (Consisting of two paralleling links)</b>					
	4th pole can be broken off. AC-1 current carrying capacity of the open contactor increases by a factor of 2.5. Protected against accidental contact (in accordance with IEC 536).	DILEM	<b>P1DILEM</b>	<b>019095</b>	See green pages
	4th pole can be broken off. AC-1 current carrying capacity of the open contactor increases by a factor of 2.5. Protected against accidental contact (in accordance with IEC 536). <i>Terminal capacity can be found in the Technical Data section.</i>	DILM7 – DILM12	<b>DILM12-XP1</b>	<b>281193</b>	
		DILM17 – DILM32	<b>DILM32-XP1</b>	<b>281194</b>	
		DILM40 – DILM65	<b>DILM65-XP1</b>	<b>281195</b>	
	3-pole AC-1 current carrying capacity of the open Contactor increases by a factor of 2.5. A cover is included for protection against accidental contact.	DILM185	<b>DILM185-XP1</b>	<b>208292</b>	



### Connection Tabs

For Fast-On Connectors	Notes	For use with...	Type	Article Number	Price
	1 x 6.3 x 0.8 or 2 x 2.8 x 0.8 mm For auxiliary contact and coil connections. Use connectors with insulated sleeves.	DILEM DILM185 – DILM1000	BT483	059904	See green pages
	Standard quantity: 100 Must be ordered in standard quantity.	DILM185 – DILM1000	BT2571	062276	

### Terminal Blocks and Kits

Terminal Blocks & Kits	Notes	For use with...	Type	Article Number	Price
<b>Cable Terminal Blocks</b>					
	For cable connection. Single or double cables may be connected. See Technical Data for terminal capacity.	DILM185 DILM225	DILM225-XKU-S	208294	See green pages
		DILM250 – DILM400	DILM400-XKU-S	208293	
	Consists of three individual terminals (Cu, Al), with integrated control circuit terminal. Terminal cover included. Terminal capacity: 2 X (AWG4 to MCM500)	DILM500/22	DILM500-XK-CNA	232192	
	Consists of three individual terminals (Cu, Al), with integrated control circuit terminal. Terminal cover included. Terminal capacity: 2 X (AWG2 to MCM500)	DILM580/22 DILM650/22	DILM650-XK-CNA	232193	
	Consists of three individual terminals (Cu, Al). Terminal capacity: 4 X (AWG2 to MCM500)	DILM750/22 DILM820/22	DILM820-XK-CNA	232194	
<b>Flat Strip Conductor Terminal Kit (with Control Circuit Terminal consisting of 3 Flat Strip Conductor Terminals)</b>					
	For bus and flexibus connection. See Technical Data for terminal capacity.	DILM500 – DILM650	DILM650-XKB-S	208296	See green pages
		DILM750 DILM820	DILM820-XKB-S	208295	

### Covers

Covers	Notes	For use with...	Type	Article Number	Price
<b>Sealable Shrouds</b>					
	Cover snap-mounts onto the device and can be sealed to prevent tampering.	DILEM	HDILE	010482	See green pages
<b>Terminal Cover</b>					
	Protection against shock hazards and accidental contact.	DILM185 – DILM400	DILM400-XHB	208287	See green pages
		DILM500	DILM500-XHB	208286	
		DILM580 – DILM650	DILM650-XHB	208285	
		DILM750 – DILM1000	DILM820-XHB	208284	

**DILM7 – DILM150 Contactors**

Type	Standard AC Coil Voltages							Special Order Voltages	Price
	24V 60HZ	42V 50HZ 48V 60HZ	110V 50HZ 120V 60HZ	208V 60HZ	230V 50HZ 240V 60HZ	415V 50HZ 480V 60HZ	600V 60HZ	12 – 600V 50 - 60 Hz	
	Complete the Type Number by adding the following voltage suffix								
	...(24V 60HZ)	...(48V 60HZ)	...(120V 60HZ)	...(208V 60HZ)	...(240V 60HZ)	...(480V 60HZ)	...(600V 60HZ)		
DILM7-01...	276576	276581	276582	276579	276585	276588	276580	Any coil voltage between 12 and 600V available by special order. Contact your Moeller representative for information.	See green pages
DILM7-10...	276541	276546	276547	276544	276550	276553	276545		
DILM9-01...	276716	276721	276722	276719	276725	276728	276720		
DILM9-10...	276681	276686	276687	276684	276690	276693	276685		
DILM12-01...	276856	276861	276862	276859	276865	276868	276860		
DILM12-10...	276821	276826	276827	276824	276830	276833	276825		
DILMP20...	276961	276966	276967	276964	276970	276973	276965		
DILM17-01...	277027	277032	277033	277030	277036	277039	277031		
DILM17-10..	276995	277000	277001	276998	277004	277007	276999		
DILM25-01...	277155	277160	277161	277158	277164	277167	277159		
DILM25-10...	277123	277128	277129	277126	277132	277135	277127		
DILM32-01...	277283	277288	277289	277286	277292	277295	277287		
DILM32-10...	277251	277256	277257	277254	277260	277263	277255		
DILM40...	277757	277762	277763	277760	277766	277769	277761		
DILM50...	277821	277826	277827	277824	277830	277833	277825		
DILM65...	277885	277890	277891	277888	277894	277897	277889		
DILM80...	239377	239394	239399	239384	239402	239405	239389		
DILM95...	239471	239476	239477	239474	239480	239483	239475		

Type	Standard AC Voltages						Price
	24V 50/60HZ	42 – 48V 50 – 60HZ	110 – 120V 50 – 60HZ	190 – 240V 50 – 60HZ	380 – 440V 50 – 60HZ	480 – 500V 50 – 60HZ	
	Complete the Type Number by adding the following voltage suffix						
	...(RAC 24)	...(RAC 48)	...(RAC 120)	...(RAC 240)	...(RAC 440)	...(RAC 500)	
DILM115...	239545	239546	239547	239548	239549	239550	See green pages
DILM150...	239585	239586	239587	239588	239589	239590	

**Note:** Other standard coil voltages available. Contact your Moeller representative.

**Ordering Instructions**

All Moeller AC contactors are cataloged with a standard 120V, 60Hz coil. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from pages 6 & 9.
- ★ Return to this page and locate the contactor in the tables above. Example: DILM7-01...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DILM7-01(24V 60Hz).
- ★ Note the Article Number for the completed contactor: DILM7-01(24V 60Hz) = 276576
- ★ Order using both the Type Number and the Article Number.



### DILM185 – DILM1000 Contactors

Type	Standard Coil Voltages				Price
	24 - 48V DC	48 - 110V AC; 40-60Hz 48 - 110V DC	110 - 250V AC; 40-60Hz 110 - 250V DC	250 - 500V AC; 40-60Hz	
	Complete the Type Number by adding the following voltage suffix				
	...(RDC48)	...(RA110)	...(RA250)	...(RAC500)	
DILM185/22...	208191	208192	208193	208194	See green pages
DILM225/22...	208195	208196	208197	208198	
DILM250/22...	208199	208200	208201	208202	
DILM300/22...	208203	208204	208205	208206	
DILM400/22...	208207	208208	208209	208210	
DILM500/22...	208211	208212	208213	208214	
DILM580/22...	–	208215	208216	208217	
DILM650/22...	–	208218	208219	208220	
DILM750/22...	–	208221	208222	208223	
DILM820/22...	–	208224	208225	208226	
DILM1000/22...	–	267213	267214	271990	

### Ordering Instructions

All large horsepower contactors are cataloged with a standard wide range electronic coil, good for both AC and DC applications. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from page 8.
- ★ Return to this page and locate the contactor in the tables above.  
Example: DILM185/22...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DILM185/22(RDC 48).
- ★ Note the Article Number for the completed contactor:  
DILM185/22(RDC48) = 208191
- ★ Order using both the Type Number and the Article Number.

## DILM7 – DILM150 Contactors

Type	Standard DC Coil Voltages						Special Order Voltages	Price
	24V DC	48V DC	24 - 27V DC	48 - 60V DC	110 - 130V DC	200 - 240V DC	12 – 250V DC	
	Complete the Type Number by adding the following voltage suffix							
	...(24VDC)	...(48VDC)	...(RDC24)	...(RDC60)	...(RDC130)	...(RDC240)		
DILM7-01...	276600	276601	–	–	–	–	Any coil voltage between 12 and 250V available by special order. Contact your Moeller representative for information.	See green pages
DILM7-10...	276565	276566	–	–	–	–		
DILM9-01...	276740	276741	–	–	–	–		
DILM9-10...	276705	276706	–	–	–	–		
DILM12-01...	276880	276881	–	–	–	–		
DILM12-10...	276845	276846	–	–	–	–		
DILMP20...	276985	276986	–	–	–	–		
DILM17-01...	–	–	277050	277051	277052	277053	–	
DILM17-10..	–	–	277018	277019	277020	277021	–	
DILM25-01...	–	–	277178	277179	277180	277181	–	
DILM25-10...	–	–	277146	277147	277148	277149	–	
DILM32-01...	–	–	277306	277307	277308	277309	–	
DILM32-10...	–	–	277274	277275	277276	277277	–	
DILM40...	–	–	277780	277781	277782	277783	–	
DILM50...	–	–	277844	277845	277846	277847	–	
DILM65...	–	–	277908	277909	277910	277911	–	
DILM80...	–	–	239416	239417	239418	239419	–	
DILM95...	–	–	239510	239511	239512	239513	–	
DILM115...	–	–	239555	239560	239567	239572	–	
DILM150...	–	–	239591	239592	239593	239594	–	

**Note:** Other standard coil voltages available. Contact your Moeller representative.

### Ordering Instructions

All Moeller DC contactors are cataloged with a standard 24V coil. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from pages 7 & 9.
- ★ Return to this page and locate the contactor in the tables above.  
Example: DILM7-01...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DILM7-01(48V DC).
- ★ Note the Article Number for the completed contactor:  
DILM7-01(24V 60Hz) = 276600
- ★ Order using both the Type Number and the Article Number.

### DILEM Miniature Contactors

Type	Standard AC Coil Voltages							Price
	24V 60HZ	42V 50HZ 48V 60HZ	110V 50HZ 120V 60HZ	208V 60HZ	230V 50HZ 240V 60HZ	415V 50HZ 480V 60HZ	600V 60HZ	
	Complete the Type Number by adding the following voltage suffix.							
	...(24V 60HZ)	...(48V 60HZ)	...(120V 60HZ)	...(208V 60HZ)	...(240V 60HZ)	...(480V 60HZ)	...(600V 60HZ)	
DILEM-10...	010006	051782	051783	210256	051786	051789	010197	See green pages
DILEM-01...	010134	051791	051792	227914	051795	051798	010327	
DILEM4...	014776	051800	051801	–	051804	051807	–	

**Note:** Other standard coil voltages available. Contact your Moeller representative.

Type	Standard DC Coil Voltages						Price
	12V DC	24V DC	48V DC	60V DC	110V DC	220V DC	
	Complete the Type Number by adding the following voltage suffix						
	...(12VDC)	...(24VDC)	...(48VDC)	...(60VDC)	...(110VDC)	...(220VDC)	
DILEM-10-G...	079594	010213	010245	010293	010309	010325	See green pages
DILEM-01-G...	079642	010343	010496	010040	010136	010168	
DILEM4-G...	079680	012701	012811	012844	013166	013194	

**Note:** Other standard coil voltages available. Contact your Moeller representative.

### Ordering Instructions

All Moeller AC contactors are cataloged with a standard 120V 60Hz coil. All DC contactors are cataloged with a standard 24V coil. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from page 10.
- ★ Return to this page and locate the contactor in the tables above.  
Example: DILEM-10...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DILEM-10(24V 60Hz).
- ★ Note the Article Number for the completed contactor:  
DILEM-10(24V 60Hz) = 010006
- ★ Order using both the Type Number and the Article Number.

**Contactors for Three-Phase Capacitors**

Type	Standard AC Coil Voltages					Price
	24V 60HZ	42V 50HZ 48V 60HZ	110V 50HZ 120V 60HZ	230V 50HZ 240V 60HZ	415V 50HZ 480V 60HZ	
	Complete the Type Number by adding the following voltage suffix					
	...(24V 60HZ)	...(48V 60HZ)	...(120V 60HZ)	...(240V 60HZ)	...(480V 60HZ)	
DIL00MK-11...	059794	047019	047020	047023	047026	See green pages
DIL00MK-02...	076733	047030	047031	047034	047037	
DIL0MK-10...	017083	047041	047042	047045	047048	
DIL1MK-10...	081154	047051	047052	047055	047058	
DIL2MK-10...	040814	047061	047062	047065	047068	
DIL3MK72/22...	209971	209973	209974	209977	209980	

Note: Other standard coil voltages available. Contact your Moeller representative.

**Ordering Instructions**

All Moeller AC contactors are cataloged with a standard 120V 60Hz coil. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from pages 13 & 14.
- ★ Return to this page and locate the contactor in the tables above.  
Example: DIL00MK-11...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DIL00MK-11(24V 60Hz).
- ★ Note the Article Number for the completed contactor:  
DIL00MK-11(24V 60Hz) = 059794
- ★ Order using both the Type Number and the Article Number.

## Reversing Contactor Combinations

Type	Standard AC Coil Voltages						Special Order Voltages	Price
	24V 60HZ	42V 50HZ 48V 60HZ	110V 50HZ 120V 60HZ	208V 60HZ	230V 50HZ 240V 60HZ	415V 50HZ 480V 60HZ	12 – 600V 50 - 60 Hz	
	Complete the Type Number by adding the following voltage suffix							
	...(24V 60HZ)	...(48V 60HZ)	...(120V 60HZ)	...(208V 60HZ)	...(240V 60HZ)	...(480V 60HZ)		
DIULM7/21...	278054	278057	278058	283351	278061	278064	Any coil voltage between 12 and 600V available by special order. Contact your Moeller representative for information.	See green pages
DIULM9/21...	278079	278082	278083	283353	278086	278089		
DIULM12/21...	278104	278107	278108	283355	278111	278114		
DIULM17/21...	278129	278132	278133	283357	278136	278139		
DIULM25/21...	278154	278157	278158	283359	278161	278164		
DIULM32/21...	278179	278182	278183	283361	278186	278189		
DIULM40/11...	278204	278207	278208	283362	278211	278214		
DIULM50/11...	278229	278232	278233	283363	278236	278239		
DIULM65/11...	278254	278257	278258	283364	278261	278264		

**Note:** Other standard coil voltages available. Contact your Moeller representative.

## Ordering Instructions

All Moeller AC contactors are cataloged with a standard 120V 60Hz coil. To order a contactor with an alternative coil voltage:

- ★ Select a properly sized contactor from page 12.
- ★ Return to this page and locate the contactor in the tables above.  
Example: DIULM7/21...
- ★ Select the desired alternative coil voltage along the top of the chart and complete the "Type" Number. Example: DIULM7/21(24V 60Hz).
- ★ Note the Article Number for the completed contactor:  
DIULM7/21(24V 60Hz) = 278054
- ★ Order using both the Type Number and the Article Number.

**DILM Individual Coils**

AC Coil Voltage Suffix <small>(Numbers in bold indicate standard coil voltages)</small>	For Use With Contactor...			
	DILEM...	–	–	–
	DILM7 – 12	DILM17 – 32	DILM40 – 65	DILM80 – 150
	DIULM7 – 12	DIULM17 – 32	DIULM40 – 65	–
	DILMP20	–	–	–
Complete the Type Number below by adding the voltage suffix				
	–	DILM32-XSP...	DILM65-XSP...	DILM150-XSP...
...(24V 50HZ)	Cannot replace coil	281130	281160	Product available Fall 2005.  Contact your Moeller representative.
...(48V 50HZ)		281131	281161	
...(240V 50HZ)		281132	281162	
...(500V 50HZ)		281133	281163	
...(24V 60HZ)		281134	281164	
...(110V 60HZ)		281135	281165	
...(115V 60HZ)		281136	281166	
...(208V 60HZ)		283377	283379	
...(600V 60HZ)		283378	283380	
...(42V 50HZ, 48V 60HZ)		281137	281167	
...(110V 50HZ, 120V 60HZ)		281138	281168	
...(190V 50HZ, 220V 60HZ)		281139	281169	
...(220V 50HZ, 240V 60HZ)		281140	281170	
...(230V 50HZ, 240V 60HZ)		281141	281171	
...(380V 50HZ, 440V 60HZ)		281142	281172	
...(400V 50HZ, 440V 60HZ)		281143	281173	
...(415V 50HZ, 480V 60HZ)		281144	281174	
...(24V 50/60HZ)		281145	281175	
...(42V 50/60HZ)		281146	281176	
...(110V 50/60HZ)		281147	281177	
...(220V 50/60HZ)	281148	281178		
...(230V 50/60HZ)	281149	281179		
...(380V 50/60HZ)	281150	281180		
<b>Price</b>	See green pages			

**DILM185 to 1000 Contactors (Electronic Modules including coil)**

AC & DC Coil Voltages	Voltage Suffix	For Use With Contactor...			
		DILM185 – 250	DILM300 – 500	DILM580 – 820	DILM1000
		Complete the Type Number below by adding the voltage suffix			
		DILM250-XSP/E...	DILM500-XSP/E...	DILM820-XSP/E...	DILM1000-XSP/E...
24V – 48V DC	...RDC 48	208250	208254	–	–
48 – 110V AC; 40-60HZ 48 – 110V DC	...RA 110	208251	208255	208258	289146
110 – 250V AC; 40-60HZ 110 – 250V DC	...RA 250	208252	208256	208259	289145
250 – 500V AC; 40-60HZ	...RAC 500	208253	208257	208260	289147
<b>Price</b>		See green pages			

## DILM Individual Coils

DC Coil Voltages	Voltage Suffix	For Use With Contactor...			
		DILEM...-G	-	-	-
		DILM7 – 12	DILM17 – 32	DILM40 – 65	DILM80 – 150
		DILMP20	-	-	-
		Complete the Type Number below by adding the voltage suffix			
		-	DILM32-XSP...	DILM65-XSP...	DILM150-XSP...
24 – 27V DC	...(RDC24)	Cannot replace coil	281155	281185	Product available Fall 2005. Contact your Moeller representative.
48 – 60V DC	...(RDC60)		281156	281186	
110 – 130V DC	...(RDC130)		281157	281187	
200 – 240V DC	...(RDC240)		281158	281188	
<b>Price</b>		See green pages			

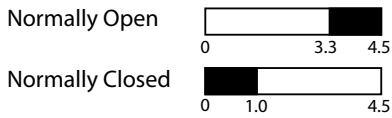




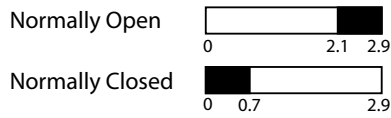
### Travel Diagrams for Contactors

The diagrams show the closing and opening of the auxiliary contacts of contactors and modules at no-load. Tolerances are not taken into consideration.

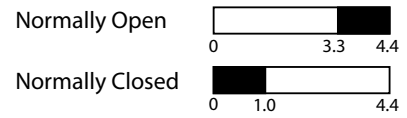
#### DILM7/9/12...AC



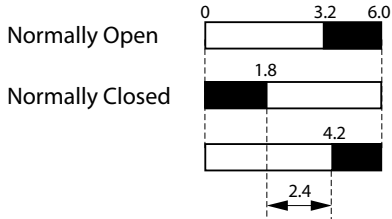
#### DILM7/9...DC



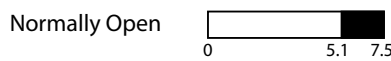
#### DILM(P)(20)12...DC



#### DILM17/25/32



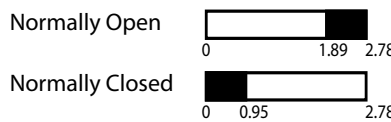
#### DILM40/50/65



#### DILEM...DC



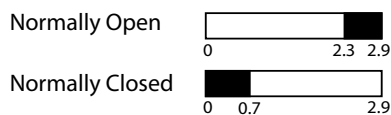
#### DILEM...AC



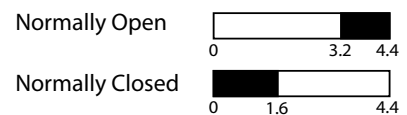
#### DILM32-XHI...



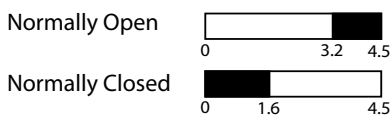
#### DILA-XHI... with DILM7.../DILM9...DC



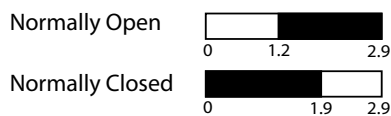
#### DILA-XHI... with DILMP20.../



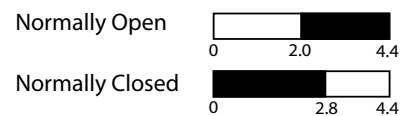
#### DILA-XHI... with DILM7/9/12...AC



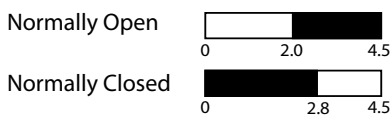
#### DILA-XHIV... with DILM7.../DILM9...DC



#### DILA-XHIV... with DILMP20.../DILM12...DC



#### DILA-XHIV... with DILM7/9/12...AC



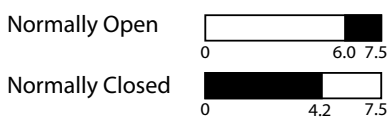
#### DILA-XHI... with DILM17...to DILM32...AC/DC



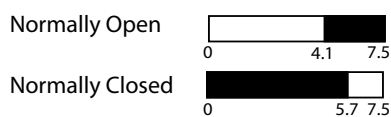
#### DILA-XHIV... with DILM17 to DILM32...AC/DC



#### DILM150-XHI...

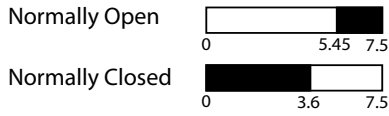


#### DILM150-XHIV...

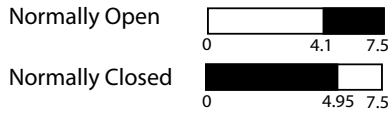


**Travel Diagrams for Contactors (continued)**

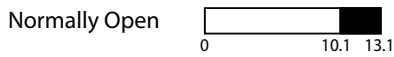
**DILM1000-XHI...**



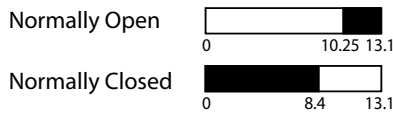
**DILM1000-XHIV...**



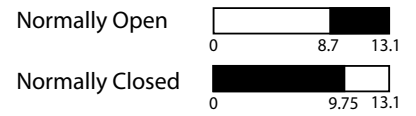
**DILM185/225/250**



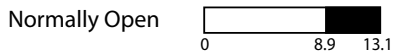
**DILM185/225/250 + DILM1000-XHI11**



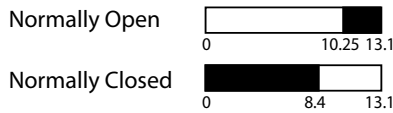
**DILM185/225/250 + DILM1000-XHI11V-SI**



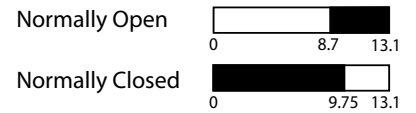
**DILM300/400/500**



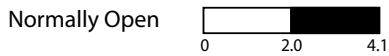
**DILM300/400/500 + DILM1000-XHI11**



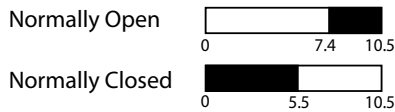
**DILM300/400/500 + DILM1000-XHI11V-SI**



**DILM580/650**



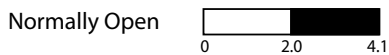
**DILM580/650 + DILM1000-XHI11**



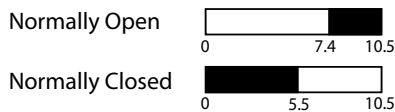
**DILM580/650 + DILM1000-XHI11V-SI**



**DILM750/820/1000**



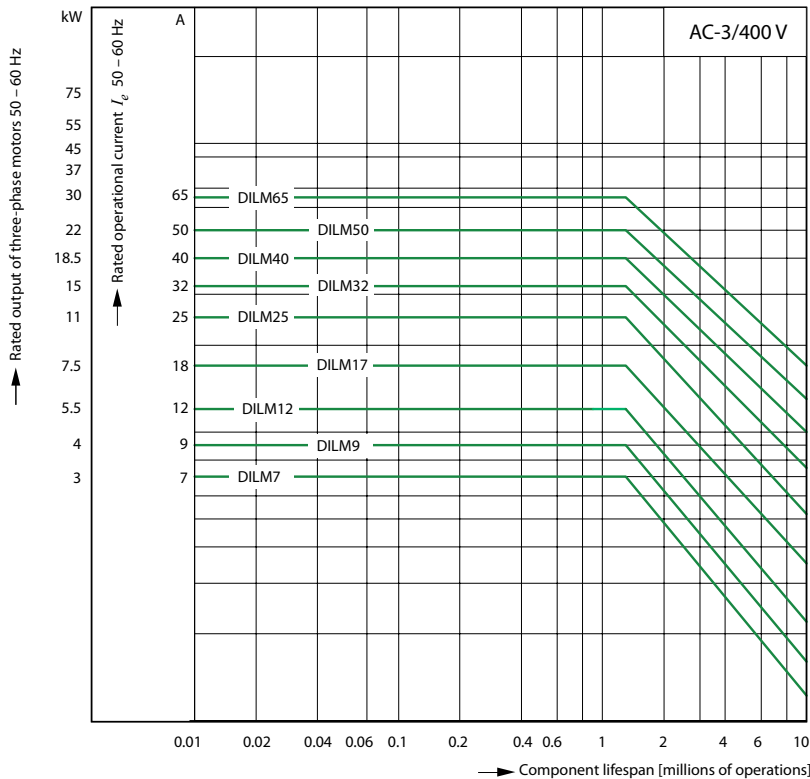
**DILM750/820/1000 + DILM1000-XHI11**



**DILM750/820/1000 + DILM1000-XHI11V-SI**



### AC-3 Normal Switching Duty (DILM7 to DILM65)



### Squirrel-Cage Motors

Operating Characteristics:  
 Starting: from rest  
 Stopping: after attaining full running speed

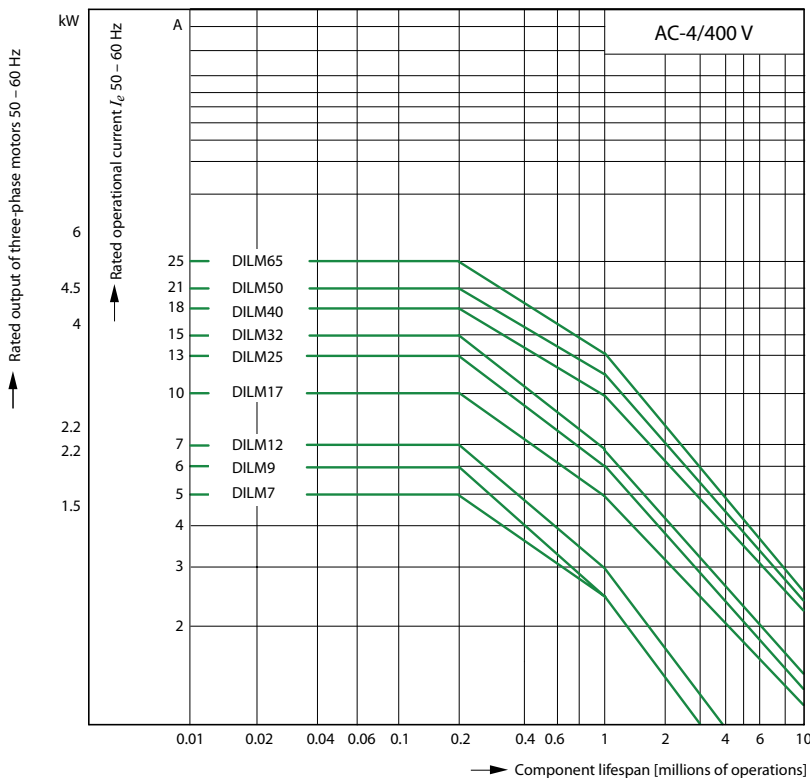
Electrical Characteristics:  
 Make: up to 6 x rated motor current  
 Break: up to 1 x rated motor current

Utilization Category:  
 100% AC-3

Typical Applications:  
 Compressors      Elevators  
 Pumps              Escalators  
 Fans                Conveyor Belts  
 Hinged Flaps/Valves      Bucket-elevators  
 Mixers              Agitators  
 Centrifuges        Air-conditioning Systems

General drives in manufacturing and processing machines

### AC-4 Extreme Switching Duty (DILM7 to DILM65)



### Squirrel-Cage Motors

Operating Characteristics:  
 Jogging, plugging, reversing

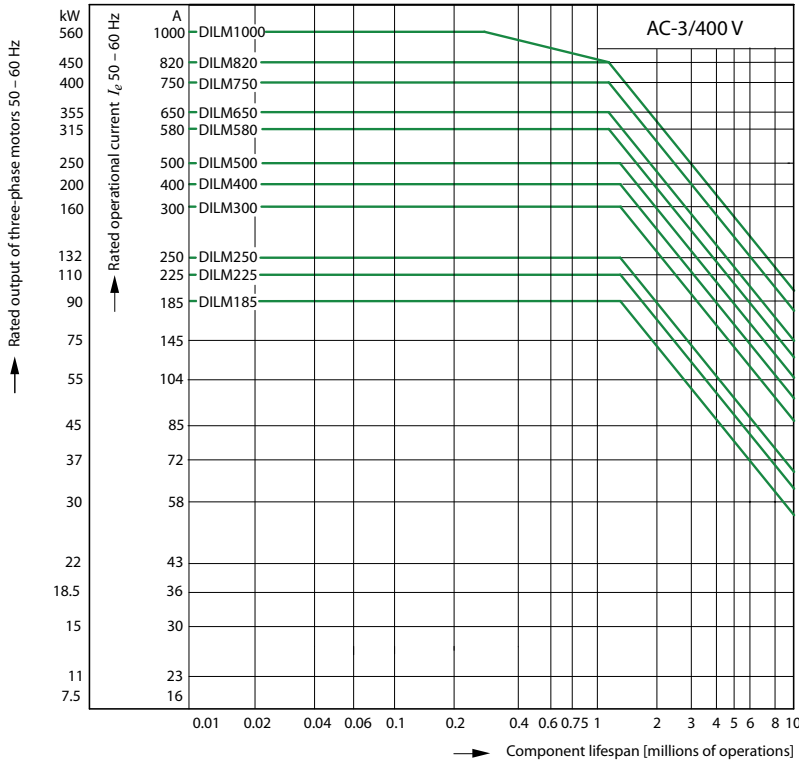
Electrical Characteristics:  
 Make: up to 6 x rated motor current  
 Break: up to 6 x rated motor current

Utilization Category:  
 100% AC-4

Typical Applications:  
 Printing Presses  
 Wire Drawing Machines  
 Centrifuges  
 Special drives for manufacturing and processing machines

**NOTE:** Data for DILM80-DILM150 is pending. Contact your Moeller representative for details.

**AC-3 Normal Switching Duty (DILM185 to DILM1000)**



**Squirrel-Cage Motors**

Operating Characteristics:  
 Starting: from rest  
 Stopping: after attaining full running speed

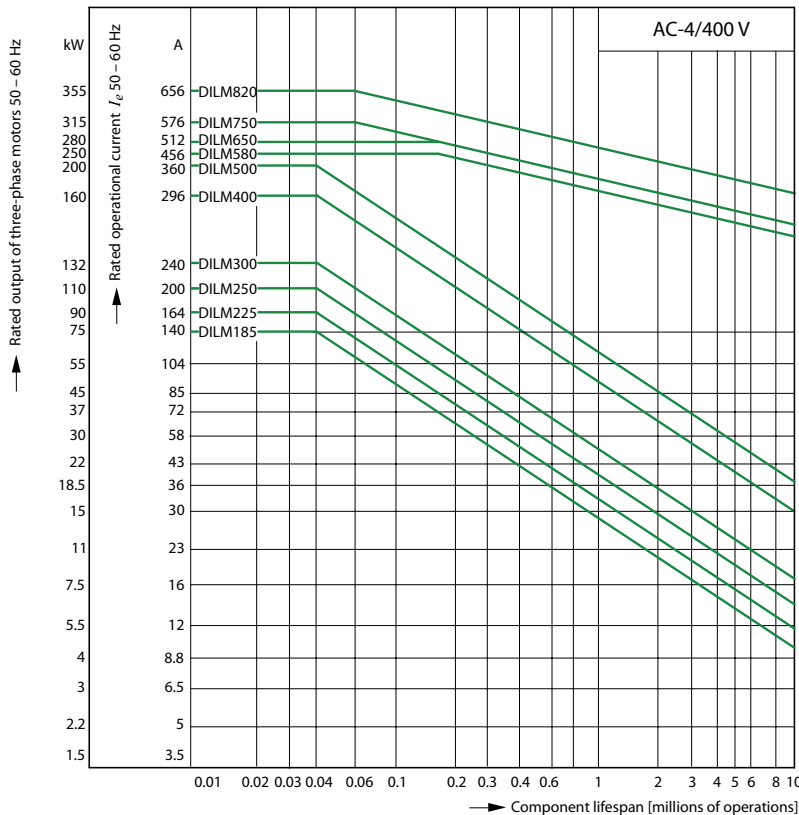
Electrical Characteristics:  
 Make: up to 6 x rated motor current  
 Break: up to 1 x rated motor current

Utilization Category:  
 100% AC-3

Typical Applications:  
 Compressors                      Elevators  
 Pumps                                Escalators  
 Fans                                    Conveyor Belts  
 Hinged Flaps                      Bucket Elevators  
 Air-conditioning S ystems       Mixers  
 Agitators                              Centrifuges

General drives in manufacturing and processing machines

**AC-4 Extreme Switching Duty (DILM185 to DILM820)**



**Squirrel-Cage Motors**

Operating Characteristics:  
 Jogging, plugging, reversing

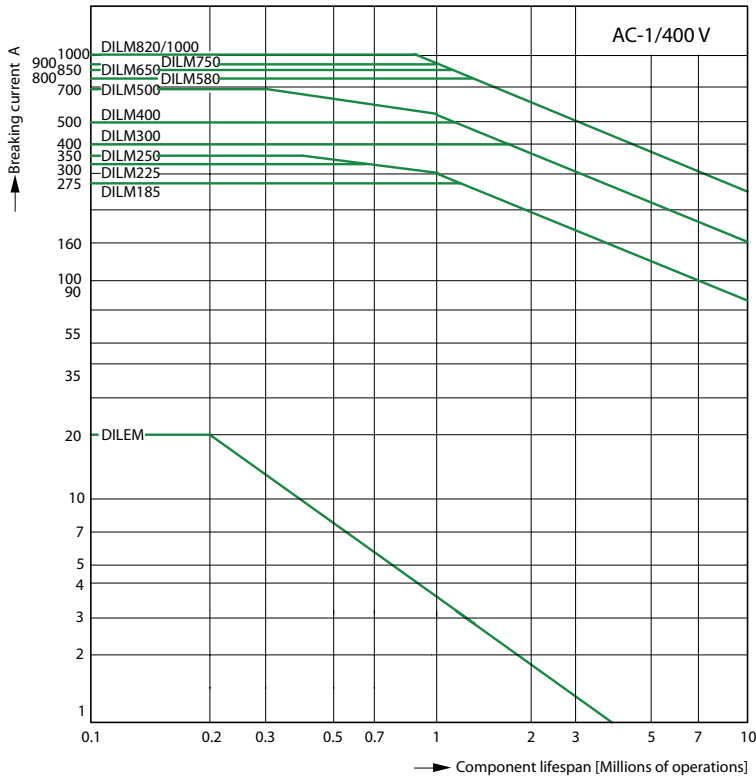
Electrical Characteristics:  
 Make: up to 6 x rated motor current  
 Break: up to 6 x rated motor current

Utilization Category:  
 100% AC-4

Typical Applications:  
 Printing Presses                      Wire Drawing  
 Centrifuges

Special drives for manufacturing and processing machines

### AC-1 Switching Duty for Non-Motor Loads (DILEM to DILM1000)



### 3-pole, 4-pole

Operating Characteristics:  
Non-inductive or slightly inductive loads

Electrical Characteristics:

Make: 1 x rated current

Break: 1 x rated current

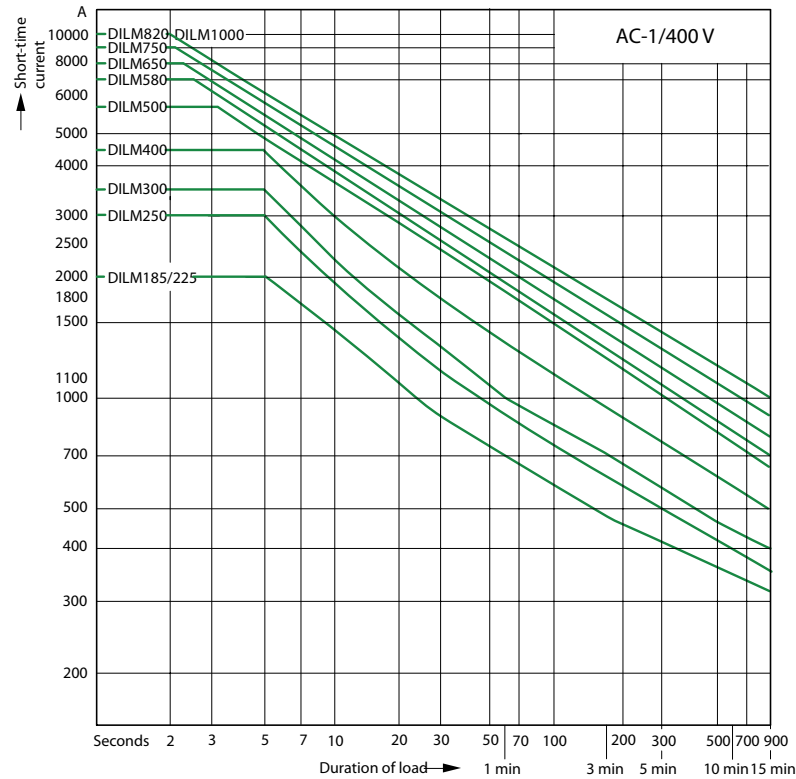
Utilization Category:

100% AC-1

Typical Applications:

Electrical heaters

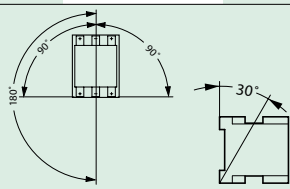
**Short-Time Loading (DILM185 to DILM1000)**



**3-pole**

Time interval between two loading cycles: 15 minutes

			DILM7	DILM9	DILM12	DILM17	DILM25	DILM32
<b>General</b>								
Standards								
UL, CSA, IEC/EN 60947, VDE 0660								
Lifespan, mechanical								
AC operated	Ops	[x 10 <sup>6</sup> ]	10	10	10	10	10	10
DC operated	Ops	[x 10 <sup>6</sup> ]	10	10	10	10	10	10
Operating frequency, mechanical								
AC operated	Ops/h		9000	9000	9000	5000	5000	5000
DC operated	Ops/h		9000	9000	9000	5000	5000	5000
Climatic proofing								
Damp heat, constant, to IEC 60068-2-78								
Damp heat, cyclic, to IEC 60068-2-30								
Ambient temperature								
Open	[°C]		-25/60° C	-25/60° C	-25/60° C	-25/60° C	-25/60° C	-25/60° C
	[°F]		-13/140° F	-13/140° F	-13/140° F	-13/140° F	-13/140° F	-13/140° F
Enclosed	[°C]		-25/40° C	-25/40° C	-25/40° C	-25/40° C	-25/40° C	-25/40° C
	[°F]		-13/104° F	-13/104° F	-13/104° F	-13/104° F	-13/104° F	-13/104° F
Storage	[°C]		-40/80° C	-40/80° C	-40/80° C	-40/80° C	-40/80° C	-40/80° C
	[°F]		-40/176° F	-40/176° F	-40/176° F	-40/176° F	-40/176° F	-40/176° F
Mounting position AC and DC								
Mechanical shock resistance (IEC/EN 60068-2-27)								
Half-sinusoidal shock 10 ms								
Main	Make	[g]	10	10	10	10	10	10
Auxiliary	Make	[g]	7	7	7	7	7	7
	Break	[g]	5	5	5	5	5	5
Degree of protection			IP20	IP20	IP20	IP00	IP00	IP00
Protection against direct contact when actuated from front (IEC 536)								
Finger- and back-of-hand proof								
Weight								
AC		[kg]	0.23	0.23	0.23	0.42	0.42	0.42
DC		[kg]	0.28	0.28	0.28	0.48	0.48	0.48
Screw connector terminals								
1 or 2 conductors can be connected								
Main cable cross-section								
Solid	[mm <sup>2</sup> ]		1 x (0.75–4.0)	1 x (0.75–4.0)	1 x (0.75–4.0)	1 x (0.75–16)	1 x (0.75–16)	1 x (0.75–16)
			2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–10)	2 x (0.75–10)	2 x (0.75–10)
Flexible with ferrule	[mm <sup>2</sup> ]		1 x (0.75–2.5)	1 x (0.75–2.5)	1 x (0.75–2.5)	1 x (0.75–16)	1 x (0.75–16)	1 x (0.75–16)
			2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–10)	2 x (0.75–10)	2 x (0.75–10)
Stranded	[mm <sup>2</sup> ]		–	–	–	1 x 16	1 x 16	1 x 16
			–	–	–	–	–	–
Solid or stranded	[AWG]		18 – 14	18 – 14	18 – 14	18 – 6	18 – 6	18 – 6
Flat conductor	[mm]		–	–	–	–	–	–
Number of segments x width x thickness			–	–	–	–	–	–

DILM40	DILM50	DILM65	DILM80	DILM95	DILM115	DILM150
10 10	10 10	10 10				
5000 5000	5000 5000	5000 5000				
-25/60° C -13/140° F -25/40° C -13/104° F -40/80° C -40/176° F	-25/60° C -13/140° F -25/40° C -13/104° F -40/80° C -40/176° F	-25/60° C -13/140° F -25/40° C -13/104° F -40/80° C -40/176° F				
			<p>UL/CSA pending for DILM80 – DILM150. Product available in Fall 2005. Contact your Moeller representative.</p>			
10 7 5	10 7 5	10 7 5				
IPO0	IPO0	IPO0				
0.9 1.1	0.9 1.1	0.9 1.1				
1 x (2.5–16) 2 x (2.5–16) 1 x (2.5–35) 2 x (2.5–25) 1 x (16–50) 2 x (16–35) 12–2 12 x (6 x 9 x 0.8)	1 x (2.5–16) 2 x (2.5–16) 1 x (2.5–35) 2 x (2.5–25) 1 x (16–50) 2 x (16–35) 12–2 12 x (6 x 9 x 0.8)	1 x (2.5–16) 2 x (2.5–16) 1 x (2.5–35) 2 x (2.5–25) 1 x (16–50) 2 x (16–35) 12–2 12 x (6 x 9 x 0.8)				



		DILM7	DILM9	DILM12	DILM17	DILM25	DILM32	
<b>General</b>								
Main cable connection screw/bolt		M3.5	M3.5	M3.5	M5	M5	M5	
Tightening torque [Nm]		1.2	1.2	1.2	3	3	3	
Control circuit cable cross-sections								
Solid [mm <sup>2</sup> ]		1 x (0.75–4.0) 2 x (0.75–2.5)	1 x (0.75–4.0) 2 x (0.75–2.5)	1 x (0.75–4.0) 2 x (0.75–2.5)	1 x (0.75–4) 1 x (0.75–4)	1 x (0.75–4) 1 x (0.75–4)	1 x (0.75–4) 1 x (0.75–4)	
Flexible with ferrule [mm <sup>2</sup> ]		1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	
Solid or stranded [AWG]		18–14	18–14	18–14	18–14	18–14	18–14	
Control circuit cable connection screw/bolt		M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	
Tightening torque [Nm]		1.2	1.2	1.2	1.2	1.2	1.2	
Tools								
Main cable	Pozidriv screwdriver	[Size]	2	2	2	2	2	
	Standard screwdriver	[mm]	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	
Control circuit cable	Pozidriv screwdriver	[Size]	2	2	2	2	2	
	Standard screwdriver	[mm]	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	0.8 x 5.5 1 x 6	
Springloaded terminal connection (1 or 2 conductors can be connected)								
Main cable cross-section								
Solid [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	–	–	–	
Flexible [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	–	–	–	
Flexible with ferrule [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	–	–	–	
Solid or stranded [AWG]		18–14	18–14	18–14	–	–	–	
Control circuit cable cross-sections								
Solid [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	
Flexible [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	
Flexible with ferrule [mm <sup>2</sup> ]		0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	0.75–2.5	
Solid or stranded [AWG]		18–14	18–14	18–14	18–14	18–14	18–14	
Tools								
Wire strip length [mm]		10	10	10	10	10	10	
Screwdriver blade width [mm]		3.5	3.5	3.5	3.5	3.5	3.5	
<b>Main Contacts</b>								
Rated impulse withstand $U_{imp}$ [V AC]		8000	8000	8000	8000	8000	8000	
Overvoltage category/pollution degree		III/3	III/3	III/3	III/3	III/3	III/3	
Rated insulation $U_i$ [V AC]		690	690	690	690	690	690	
Rated operational $U_e$ [V AC]		690	690	690	690	690	690	
Safe isolation to VDE 0106 Part 101 and Part 101/A1								
between coil and contacts [V AC]		400	400	400	440	440	440	
between the contacts [V AC]		400	400	400	440	440	440	
Making capacity $\cos \varphi$ to IEC/EN 60947 up to 609 V [A]		112	112	144	238	350	384	
Breaking capacity								
220/230 V [A]		70	90	120	170	250	320	
380/400 V [A]		70	90	120	170	250	320	
500 V [A]		50	70	100	170	250	320	
660/690 V [A]		40	50	70	120	150	180	
1000 V [A]		–	–	–	–	–	–	
Component Lifespan AC-1; 400 V $I_e$ [x 10 <sup>6</sup> ]		1	1	1	1	1	1	
Maximum operating frequency AC-1; 400 V $I_e$ [Ops/h]		800	800	800	800	800	800	
AC-3; 400 V $I_e$ [Ops/h]		1000	1000	1000	800	800	800	
AC-4; 400 V $I_e$ [Ops/h]		300	300	300	300	300	300	
Short-circuit rating								
Short-circuit protection max. fuse	Type "2"	400 V 500 V [A]	20	20	20	25	35	63
		690 V 690 V [A]	16	16	20	25	35	35
		1000 V 1000 V [A]	–	–	–	–	–	–
Type "1"	400 V 500 V [A]	35	35	35	63	100	125	
	690 V 690 V [A]	20	20	25	50	50	63	
	1000 V 1000 V [A]	–	–	–	–	–	–	



DILM40	DILM50	DILM65	DILM80	DILM95	DILM115	DILM150
M6 3	M6 3	M6 3				
1 x (0.75 – 4) 1 x (0.75 – 4) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 18 – 14	1 x (0.75 – 4) 1 x (0.75 – 4) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 18 – 14	1 x (0.75 – 4) 1 x (0.75 – 4) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 18 – 14				
M3.5 1.2	M3.5 1.2	M3.5 1.2				
2 0.8 x 5.5 1 x 6	2 0.8 x 5.5 1 x 6	2 0.8 x 5.5 1 x 6				
2 0.8 x 5.5 1 x 6	2 0.8 x 5.5 1 x 6	2 0.8 x 5.5 1 x 6				
–	–	–				
–	–	–				
–	–	–				
–	–	–				
0.75 – 2.5 0.75 – 2.5 0.75 – 2.5 18 – 14	0.75 – 2.5 0.75 – 2.5 0.75 – 2.5 18 – 14	0.75 – 2.5 0.75 – 2.5 0.75 – 2.5 18 – 14	UL/CSA pending for DILM80 – DILM150. Product available in Fall 2005. Contact your Moeller representative.			
10 3.5	10 3.5	10 3.5				
8000 III/3 690 690	8000 III/3 690 690	8000 III/3 690 690				
440 440 560	440 440 700	440 440 910				
400 400 400 250	500 500 500 320	650 650 650 370				
–	–	–				
1	1	1				
800 800 300	800 800 300	800 800 300				
63 50 – 125 80 –	80 63 – 160 80 –	125 80 – 250 100 –				

				DILM7	DILM9	DILM12	DILM17	DILM25	DILM32	
<b>AC</b>										
AC-1 operation										
Conventional free air thermal current, 3-pole, 50 – 60 Hz	Open	40° C 104° F	$I_{th}$ [A]	22	22	22	40	45	45	
		50° C 122° F	$I_{th}$ [A]	21	21	21	38	43	43	
	Enclosed	55° C 131° F	$I_{th}$ [A]	21	21	21	37	42	42	
		60° C 140° F	$I_{th}$ [A]	20	20	20	35	40	40	
Conventional free air thermal current, 1-pole	Open		$I_{th}$ [A]	50	50	50	85	85	85	
	Enclosed		$I_{th}$ [A]	45	45	45	80	80	80	
AC-3 operation										
Rated operational current open, 50 – 60 Hz	220/230 V	$I_e$ [A]	7	9	12	18	25	32		
	240 V	$I_e$ [A]	7	9	12	18	25	32		
	380/400 V	$I_e$ [A]	7	9	12	18	25	32		
	415 V	$I_e$ [A]	7	9	12	18	25	32		
	440 V	$I_e$ [A]	7	9	12	18	25	32		
	500 V	$I_e$ [A]	5	7	10	18	25	32		
	660/690 V	$I_e$ [A]	4	5	7	12	15	18		
	1000 V	$I_e$ [A]	–	–	–	–	–	–		
Rated power	220/230 V	$P_n$ [kW]	2.2	2.5	3.5	5	7.5	10		
	240 V	$P_n$ [kW]	2.2	3	4	5.5	8.5	11		
	380/400 V	$P_n$ [kW]	3	4	5.5	7.5	11	15		
	415 V	$P_n$ [kW]	4	5.5	7	10	14.5	19		
	440 V	$P_n$ [kW]	4.5	5.5	7.5	10.5	15.5	20		
	500 V	$P_n$ [kW]	3.5	4.5	7	12	17.5	23		
	660/690 V	$P_n$ [kW]	3.5	4.5	6.5	11	14	17		
	1000 V	$P_n$ [kW]	–	–	–	–	–	–		
AC-4 operation										
Rated operational current open, 50 – 60 Hz	220/230 V	$I_e$ [A]	5	6	7	10	13	15		
	240 V	$I_e$ [A]	5	6	7	10	13	15		
	380/400 V	$I_e$ [A]	5	6	7	10	13	15		
	415 V	$I_e$ [A]	5	6	7	10	13	15		
	440 V	$I_e$ [A]	5	6	7	10	13	15		
	500 V	$I_e$ [A]	4.5	5	6	10	13	15		
	660/690 V	$I_e$ [A]	4	4.5	5	8	10	12		
	1000 V	$I_e$ [A]	–	–	–	–	–	–		
Rated power	220/230 V	$P_n$ [kW]	1	1.5	2	2.5	3.5	4		
	240 V	$P_n$ [kW]	1.5	1.6	2.2	3	4	4.5		
	380/400 V	$P_n$ [kW]	2.2	2.5	3	4.5	6	7		
	415 V	$P_n$ [kW]	2.3	2.8	3.4	5	6.5	7.5		
	440 V	$P_n$ [kW]	2.4	3	3.6	5.5	7	8		
	500 V	$P_n$ [kW]	2.5	2.8	3.5	6	8	9		
	660/690 V	$P_n$ [kW]	2.9	3.6	4.4	6.5	8.5	10		
	1000 V	$P_n$ [kW]	–	–	–	–	–	–		
<b>DC</b>										
Rated operational current, open										
DC-1 operation	60 V	$I_e$ [A]	20	20	20	35	40	40		
	110 V	$I_e$ [A]	20	20	20	35	40	40		
	220 V	$I_e$ [A]	15	15	15	35	40	40		
	440 V	$I_e$ [A]	1	1.3	1.3	2.9	2.9	2.9		
DC-3 operation	60 V	$I_e$ [A]	20	20	20	35	35	40		
	110 V	$I_e$ [A]	20	20	20	35	35	40		
	220 V	$I_e$ [A]	1.5	1.5	1.5	10	10	25		
	440 V	$I_e$ [A]	0.2	0.2	0.2	0.6	0.6	0.6		
DC-5 operation	60 V	$I_e$ [A]	20	20	20	35	35	40		
	110 V	$I_e$ [A]	20	20	20	35	35	40		
	220 V	$I_e$ [A]	1.5	1.5	1.5	10	10	25		
	440 V	$I_e$ [A]	0.2	0.2	0.2	0.6	0.6	0.6		



DILM40	DILM50	DILM65	DILM80	DILM95	DILM115	DILM150
60	70	85				
57	65	80				
55	63	75				
50	60	72				
45	54	65				
125	150	180				
112	135	162				
40	50	65				
40	50	65				
40	50	65				
40	50	65				
40	50	65				
25	32	37				
–	–	–				
12.5	15.5	20				
13.5	17	22				
18.5	22	30				
24	30	39				
25	32	41				
28	36	47				
23	30	35				
–	–	–				
18	21	25				
18	21	25				
18	21	25				
18	21	25				
18	21	25				
14	17	20				
–	–	–				
5	6	7				
5.5	6.5	7.5				
9	10	12				
9.5	11	13				
10	12	14				
11	13	16				
12	14	17				
–	–	–				
50	60	72				
50	50	72				
45	45	65				
2.9	2.9	2.9				
50	60	72				
50	50	72				
25	25	35				
0.6	0.6	0.6				
50	60	72				
50	50	72				
25	25	35				
0.6	0.6	0.6				

UL/CSA pending for DILM80 – DILM150.  
 Product available in Fall 2005. Contact your Moeller representative.

			DILM7	DILM9	DILM12	DILM17	DILM25	DILM32	
<b>Current Heat Loss (3-Pole)</b>									
Current heat loss at $I_{th}$	[W]		4.7	4.7	4.7	7.3	9.6	12.1	
Current heat loss at $I_e$ to AC-3 / 400 V	[W]		0.37	0.6	1.1	1.7	3.8	6.1	
Impedance per pole	[mΩ]		2.5	2.5	2.5	2	2	2	
<b>Magnet Systems</b>									
Pick-up and drop-out values									
AC	Pick-up	$[x U_c]$	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	0.8 – 1.1	
	Drop-out	$[x U_c]$	0.3 – 0.6	0.2 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	0.3 – 0.6	
DC	Pick-up	$[x U_c]$	0.8 – 1.1 <sup>①</sup>	0.8 – 1.1 <sup>①</sup>	0.8 – 1.1 <sup>①</sup>	0.7 – 1.2 <sup>②</sup>	0.7 – 1.2 <sup>②</sup>	0.7 – 1.2 <sup>②</sup>	
	Drop-out	$[x U_c]$	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	0.15 – 0.6	
Power consumption of the coil at cold state and $1.0 \times U_c$									
AC	Pick-up	[VA]	24	24	24	50	50	50	
		[W]	19	19	19	40	40	40	
Single-voltage coil 50 Hz	Sealing	[VA]	4	4	4	8	8	8	
		[W]	1.2	1.2	1.2	2.4	2.4	2.4	
60 Hz	Pick-up	[VA]	29	29	29	62	62	62	
		[W]	23	23	23	50	50	50	
60 Hz	Sealing	[VA]	4.4	4.4	4.4	9.1	9.1	9.1	
		[W]	1.3	1.3	1.3	2.7	2.7	2.7	
50/60 Hz	Pick-up	[VA]	28	28	28	60	60	60	
		[W]	26	26	26	54	54	54	
	Sealing	[VA]	22	22	22	48	48	48	
		[W]	21	21	21	43	43	43	
50/60 Hz	Pick-up	[VA]	4.6	4.6	4.6	9.5	9.5	9.5	
		[W]	3.9	3.9	3.9	7.9	7.9	7.9	
	Sealing	[VA]	1.4	1.4	1.4	2.8	2.8	2.8	
		[W]	1.2	1.2	1.2	2.4	2.4	2.4	
DC operated	Pick-up	[W]	3	3	4.5	12 at 24 V	12 at 24 V	12 at 24 V	
	Sealing	[W]	3	3	4.5	0.5 at 24 V	0.5 at 24 V	0.5 at 24 V	
Duty factor	[% DF]		100	100	100	100	100	100	
Switching times at 100 % $U_c$ (approximate values)									
Main contacts	AC	Closing delay	[ms]	< 20	< 20	< 20	< 25	< 25	< 25
		Opening delay	[ms]	< 15	< 15	< 15	< 20	< 20	< 20
	DC	Closing delay	[ms]	< 35	< 35	< 35	< 55	< 55	< 55
		Opening delay	[ms]	< 15	< 15	< 15	< 15	< 15	< 15
Arcing time	[ms]		10	10	10	10	10	10	
<b>Electromagnetic Compatibility (EMC)</b>									
Emitted interference						to EN 60947-1			
Noise immunity						to EN 60947-1			

① At 24 V: 0.7 – 1.3 without additional auxiliary contact modules and ambient temperature + 40° C.

② RDC 24 ( $U_{min}$  24 V DC/ $U_{max}$  27 V DC)  
 RDC 60 ( $U_{min}$  48 V DC/ $U_{max}$  60 V DC)  
 RDC 130 ( $U_{min}$  110 V DC/ $U_{max}$  130 V DC)  
 RDC 240 ( $U_{min}$  200 V DC/ $U_{max}$  240 V DC)

Example:

$U_c = 0.7 \times U_{min} - 1.2 \times U_{max}$   
 $U_c = 0.7 \times 24 V - 1.2 \times 27 V DC$

DILM40	DILM50	DILM65	DILM80	DILM95	DILM115	DILM150
11.3 7.2 1.5	16.2 11.3 1.5	15.6 12.7 1.5				
0.8 – 1.1 0.3 – 0.6	0.8 – 1.1 0.3 – 0.6	0.8 – 1.1 0.3 – 0.6				
0.7 – 1.2 ② 0.15 – 0.6	0.7 – 1.2 ② 0.15 – 0.6	0.7 – 1.2 ② 0.15 – 0.6				
130 80 14 4	130 80 14 4	130 80 14 4				
62 50 9.1 2.7	62 50 9.1 2.7	62 50 9.1 2.7	UL/CSA pending for DILM80 – DILM150. Product available in Fall 2005. Contact your Moeller representative.			
60 54 48 43	60 54 48 43	60 54 48 43				
9.5 7.9 2.8 2.4	9.5 7.9 2.8 2.4	9.5 7.9 2.8 2.4				
12 at 24 V 0.5 at 24 V 100	12 at 24 V 0.5 at 24 V 100	12 at 24 V 0.5 at 24 V 100				
< 25 < 25 < 60 < 20 10	< 25 < 25 < 60 < 20 10	< 25 < 25 < 60 < 20 10				
	to EN 60947-1 to EN 60947-1					

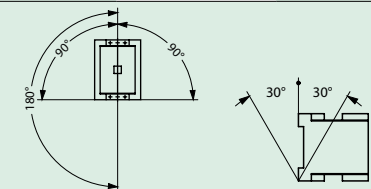
① At 24 V: 0.7 – 1.3 without additional auxiliary contact modules and ambient temperature + 40° C.

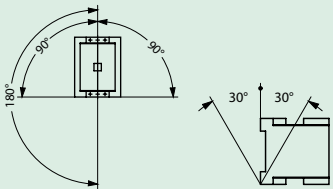
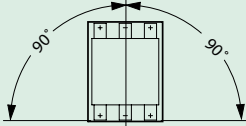
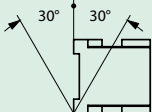
② RDC 24 (U<sub>min</sub> 24 V DC/U<sub>max</sub> 27 V DC)  
RDC 60 (U<sub>min</sub> 48 V DC/U<sub>max</sub> 60 V DC)  
RDC 130 (U<sub>min</sub> 110 V DC/U<sub>max</sub> 130 V DC)  
RDC 240 (U<sub>min</sub> 200 V DC/U<sub>max</sub> 240 V DC)

Example:

$$U_c = 0.7 \times U_{\min} - 1.2 \times U_{\max}$$

$$U_c = 0.7 \times 24 \text{ V} - 1.2 \times 27 \text{ V DC}$$

				DILM185	DILM225	DILM250
<b>General</b>						
Standards UL, CSA, IEC/EN 60947, VDE 0660						
Lifespan, mechanical						
AC		Ops	[x 10 <sup>6</sup> ]	10	10	10
DC		Ops	[x 10 <sup>6</sup> ]	10	10	10
Operating frequency, mechanical						
AC		Ops/h		3000	3000	3000
DC		Ops/h		3000	3000	3000
Climatic proofing Damp heat, constant, to IEC 60068-2-78 – Damp heat, cyclic, to IEC 60068-2-30						
Ambient temperature						
Open			[°C / °F]	-25/60°C / -13/140°F	-25/60°C / -13/140°F	-25/60°C / -13/140°F
Enclosed			[°C / °F]	-25/40°C / -13/104°F	-25/40°C / -13/104°F	-25/40°C / -13/104°F
Storage			[°C / °F]	-40/80°C / -40/176°F	-40/80°C / -40/176°F	-40/80°C / -40/176°F
Mounting position						
Mechanical shock resistance (IEC/EN 60068-2-27)						
Half-sinusoidal shock 10 ms	Main	Make contact	[g]	10	10	10
	Auxiliary	Make contact	[g]	10	10	10
		Break contact	[g]	8	8	8
Degree of protection				IP00	IP00	IP00
Protection against direct contact when actuated from front (IEC 536) Finger- and back-of-hand proof with terminal shroud or terminal block						
Weight			[kg]	6.5	6.5	6.5
Main cable cross-section	Flexible with cable lug		[mm <sup>2</sup> ]	35 – 95	50 – 240	50 – 240
	Stranded with cable lug		[mm <sup>2</sup> ]	50 – 120	70 – 240	70 – 240
	Solid or stranded		[AWG]	1 / 0 – 250 MCM	2 / 0 – 500 MCM	2 / 0 – MCM
Flat conductor Fixing with flat cable terminal or cable terminal blocks. See terminal capacity for cable terminal blocks.			[mm]			
Busbar		Width	[mm]	20	20	25
Main cable connection screw/bolt				M10	M10	M10
Tightening torque			[Nm]	24	24	24
Control circuit cable cross-sections		Solid	[mm <sup>2</sup> ]	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)
		Flexible with Ferrule	[mm <sup>2</sup> ]	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5)
		Solid or stranded	[AWG]	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)
Control circuit cable connection screw/bolt				M3.5	M3.5	M3.5
Tightening torque			[Nm]	1.2	1.2	1.2
Tools	Main cable	Wrench	[mm]	16	16	16
	Control circuit cable	Pozidriv screwdriver	[Size]	2	2	2

DILM300	DILM400	DILM500	DILM580	DILM650	DILM750	DILM820	DILM1000	
7 7	7 7	7 7	5 5	5 5	5 5	5 5	5 5	
2000 2000	2000 2000	2000 2000	1000 1000	1000 1000	1000 1000	1000 1000	1000 1000	
-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	-25/60°C / -13/140°F -25/40°C / -13/104°F -40/80°C / -40/176°F	
								
10 10 8	10 10 8	10 10 8	10 10 8	10 10 8	10 10 8	10 10 8	10 10 8	
IP00	IP00	IP00	IP00	IP00	IP00	IP00	IP00	
8	8	8	15	15	15	15	15	
50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	50 – 240 70 – 240 2/0 – 500 MCM	
25 M10 24	25 M10 24	30 M10 24	50 M10 24	50 M10 24	60 M12 35	60 M12 35	60 M12 35	
1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 1 x (0.75 – 2.5) 2 x (0.75 – 2.5) 2 x (18 – 12)	
M3.5 1.2 16 2	M3.5 1.2 16 2	M3.5 1.2 16 2	M3.5 1.2 16 2	M3.5 1.2 16 2	M3.5 1.2 18 2	M3.5 1.2 18 2	M3.5 1.2 18 2	



				DILM185	DILM225	DILM250	
<b>Main Contacts</b>							
Rated impulse withstand voltage		$U_{imp}$	[V AC]	8000	8000	8000	
Overvoltage category/pollution degree				III/3	III/3	III/3	
Rated insulation voltage		$U_i$	[V AC]	1000	1000	1000	
Rated operational voltage		$U_e$	[V AC]	1000	1000	1000	
Safe isolation to VDE 0106 Part 101 and Part 101/A1							
	between coil and contacts		[V AC]	500	500	500	
	between the contacts		[V AC]	500	500	500	
Making capacity cos $\varphi$ to IEC/EN 60947 up to 690 V			[A]	3000	3000	3000	
Breaking capacity	220/230 V		[A]	2500	2500	2500	
	380/400 V		[A]	2500	2500	2500	
	500 V		[A]	2500	2500	2500	
	660/690 V		[A]	2500	2500	2500	
	1000 V		[A]	760	760	760	
Component lifespan	AC-3/AC-4; 400 V			see page 35			
Short-circuit rating							
Short-circuit protection rating max. fuse	Type "2"	400 V	gG/gL 500 V	[A]	315	315	315
		690 V	gG/gL 690 V	[A]	315	315	315
		1000 V	gG/gL 1000 V	[A]	160	160	160
	Type "1"	400 V	gG/gL 500 V	[A]	400	400	400
		690 V	gG/gL 690 V	[A]	400	400	400
		1000 V	gG/gL 1000 V	[A]	200	200	200



DILM300	DILM400	DILM500	DILM580	DILM650	DILM750	DILM820	DILM1000
8000	8000	8000	8000	8000	8000	8000	8000
III/3	III/3	III/3	III/3	III/3	III/3	III/3	III/3
1000	1000	1000	1000	1000	1000	1000	1000
1000	1000	1000	1000	1000	1000	1000	1000
500	500	500	500	500	500	500	500
500	500	500	500	500	500	500	500
5500	5500	5500	7800	7800	9840	9840	9840
5000	5000	5000	6500	6500	8200	8200	8200
5000	5000	5000	6500	6500	8200	8200	8200
5000	5000	5000	6500	6500	8200	8200	8200
5000	5000	5000	6500	6500	8200	8200	8200
950	950	950	4350	4350	5800	5800	5800
see page 35							
500	500	500	630	630	630	630	630
500	500	500	630	630	630	630	630
200	200	200	500	500	630	630	630
630	630	630	1000	1000	1200	1200	1200
630	630	630	1000	1000	1200	1200	1200
250	250	250	630	630	800	800	800

					DILM185	DILM225	DILM250
<b>AC</b>							
<b>AC-1</b>							
Conventional free air thermal current, 3-pole, 50 – 60 Hz	Open	40° C / 104° F	$I_e$	[A]	337	386	429
		50° C / 122° F	$I_e$	[A]	301	345	383
		55° C / 131° F	$I_e$	[A]	287	329	366
		60° C / 140° F	$I_e$	[A]	275	315	350
			$I_e$	[A]	250	275	300
Conventional free air thermal current, 1-pole	Open ①		$I_e$	[A]	685	785	875
	Enclosed ①		$I_e$	[A]	625	685	750
<b>AC-3</b>							
Rated operational current open, 50 – 60 Hz ①		220/230 V	$I_e$	[A]	185	225	250
		240 V	$I_e$	[A]	185	225	250
		380/400 V	$I_e$	[A]	185	225	250
		415 V	$I_e$	[A]	185	225	250
		440 V	$I_e$	[A]	185	225	250
		500 V	$I_e$	[A]	185	225	250
		660/690 V	$I_e$	[A]	185	225	250
		1000 V	$I_e$	[A]	76	76	76
Rated power		220/230 V	$P$	[kW]	55	70	75
		240 V	$P$	[kW]	62	75	85
		380/400 V	$P$	[kW]	90	110	132
		415 V	$P$	[kW]	110	132	148
		440 V	$P$	[kW]	115	142	157
		500 V	$P$	[kW]	132	160	180
		660/690 V	$P$	[kW]	175	215	240
		1000 V	$P$	[kW]	108	108	108
<b>AC-4</b>							
Rated operational current open, 50 – 60 Hz		220/230 V	$I_e$	[A]	136	164	200
		240 V	$I_e$	[A]	136	164	200
		380/400 V	$I_e$	[A]	136	164	200
		415 V	$I_e$	[A]	136	164	200
		440 V	$I_e$	[A]	136	164	200
		500 V	$I_e$	[A]	136	164	200
		660/690 V	$I_e$	[A]	136	164	200
		1000 V	$I_e$	[A]	76	76	76
Rated power		220/230 V	$P$	[kW]	41	51	62
		240 V	$P$	[kW]	45	54	68
		380/400 V	$P$	[kW]	75	90	110
		415 V	$P$	[kW]	80	96	117
		440 V	$P$	[kW]	85	102	125
		500 V	$P$	[kW]	96	116	143
		660/690 V	$P$	[kW]	127	155	189
		1000 V	$P$	[kW]	108	108	108
<b>Capacitor Duty</b>							
Individual compensation rated operational current $I_e$ of three-phase capacitors	Open	up to 525 V	$I_e$	[A]	220	220	220
		690 V	$I_e$	[A]	133	133	133
Max. inrush current peak				$[x I_e]$	30	30	30
Component lifespan			Ops	$[x 10^6]$	0.1	0.1	0.1
Max. operating frequency			Ops/h		200	200	200

① At maximum permissible ambient temperature.

DILM300	DILM400	DILM500	DILM580	DILM650	DILM750	DILM820	DILM1000
490	612	857	980	1041	1102	1225	1225
438	548	767	876	931	986	1095	1095
418	522	731	836	888	940	1044	1044
400	500	700	800	850	900	1000	1000
350	450	650	–	–	–	–	–
1000	1250	1750	2000	2125	2250	2500	2500
875	1125	1600	–	–	–	–	–
300	400	500	580	650	750	820	1000
300	400	500	580	650	750	820	1000
300	400	500	580	650	750	820	1000
300	400	500	580	650	750	820	1000
300	400	500	580	650	750	820	1000
300	400	500	580	650	750	820	1000
300	360	360	580	650	750	820	1000
95	95	95	435	435	580	580	700
90	125	155	185	205	240	260	315
100	132	170	200	225	260	285	340
160	200	250	315	355	400	450	560
180	240	300	348	390	455	500	610
190	255	345	370	420	480	525	650
215	290	360	420	470	550	600	730
286	344	344	560	630	720	750	1000
132	132	132	600	600	800	800	1000
240	296	360	456	512	576	656	800
240	296	360	456	512	576	656	800
240	296	360	456	512	576	656	800
240	296	360	456	512	576	656	800
240	296	360	456	512	576	656	800
240	296	296	456	512	576	656	800
95	95	95	348	348	464	464	700
75	92	112	143	161	181	209	260
82	101	122	156	176	200	228	280
132	160	200	250	280	315	355	450
142	176	216	274	307	346	394	490
151	186	229	290	326	367	418	520
172	214	260	330	370	417	474	590
229	283	344	440	494	556	633	780
132	132	132	509	509	678	678	1000
307	307	307	463	463	463	463	463
177	177	177	265	265	265	265	265
30	30	30	30	30	30	30	30
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
200	200	200	200	200	200	200	200

					DILM185	DILM225	DILM250
<b>DC</b>							
Rated operational current, open	DC-1	60 V	$I_e$	[A]	300	300	300
		110 V	$I_e$	[A]	300	300	300
		220 V	$I_e$	[A]	300	300	300
		440 V	$I_e$	[A]	11	11	11
	DC-3	60 V	$I_e$	[A]	300	300	300
		110 V	$I_e$	[A]	300	300	300
		220 V	$I_e$	[A]	300	300	300
	DC-5	60 V	$I_e$	[A]	300	300	300
		110 V	$I_e$	[A]	300	300	300
		220 V	$I_e$	[A]	300	300	300
<b>Current Heat Loss (3-pole)</b>							
Current heat loss at $I_{th}$				[W]	79	108	95
Current heat loss at $I_e$ to AC-3 / 400 V				[W]	36	55	48
<b>Magnet Systems</b>							
Voltage tolerance ①	DILM... comfort series		Pick-up	[x $U_C$ ]	0.7 x $U_{C \min}$ – 1.15 x $U_{C \max}$ 0.2 x $U_{C \min}$ – 0.6 x $U_{C \max}$		
	DILM... comfort series		Drop-out	[x $U_C$ ]			
Power consumption of the coil at cold state and 1.0 x $U_C$	DILM... comfort series		Pick-up	[VA]	250 ②	250 ②	250 ②
				[W]	200	200	200
			Sealing	[VA]	4.3	4.3	4.3
				[W]	3.3	3.3	3.3
Duty factor				[% DF]	100	100	100
Switching times at 100 % $U_C$ (approximate values)							
Main contacts	DILM... comfort series	Closing delay		[ms]	< 100	< 100	< 100
		Opening delay		[ms]	< 80	< 80	< 80
Reaction in marginal and transition range (Comfort series)	Voltage interruptions	(0 – 0.2 x $U_{C \min}$ ) ≤ 10 ms (0 – 0.2 x $U_{C \min}$ ) ≥ 10 ms			Time is bridged successfully Drop-out of the contactor		
	Voltage dips	(0.2 – 0.6 x $U_{C \min}$ ) ≤ 12 ms (0.2 – 0.6 x $U_{C \min}$ ) > 12 ms (0.6 – 0.7 x $U_{C \min}$ )			Time is bridged successfully Drop-out of the contactor Contactor remains switched on		
	Excess voltage	(1.15 – 1.3 x $U_{C \max}$ ) (> 1.3 x $U_{C \max}$ ) ≤ 3 s (> 1.3 x $U_{C \max}$ ) ≤ 3 s			Contactor remains switched on Contactor remains switched on Drop-out of the contactor		
	Pick-up phase	(0 – 0.7 x $U_{C \min}$ ) (0.7 x $U_{C \min}$ – 1.15 x $U_{C \max}$ ) (1.15 x $U_{C \max}$ )			Contactor does not switch on Contactor switches on with certainty Contactor switches on with certainty		
Permissible contact resistance (of the external command device with actuation of A11)				[mΩ]	≤500	≤500	≤500
Permissible residual current (with actuation of A11 by the electronics with 0 signal)				[mA]	≤1	≤1	≤1
SPS signal level (A3 – A4) to IEC/EN 61131-2 (Type 2)		High		[V]	15	15	15
		Low		[V]	5	5	5
<b>Electromagnetic Compatibility (EMC)</b>					This product is designed for operation in industrial environments (Environment 2). Usage in domestic areas (Environment 1) can cause radio frequency interference (RFI) so that additional interference to noise suppression measures must be provided.		

①  $U_{C \min}$ ,  $U_{C \max}$  – please see page 29

② Control transformer with  $U_k \leq 6\%$

DILM300	DILM400	DILM500	DILM580	DILM650	DILM750	DILM820	DILM1000
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
11	11	11	–	–	–	–	–
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
400	400	400	–	–	–	–	–
123	188	236	227	257	288	355	355
69	120	120	120	150	200	239	355
$0.7 \times U_{C \min} - 1.15 \times U_{C \max}$ $0.2 \times U_{C \min} - 0.6 \times U_{C \max}$							
450 ②	450 ②	450 ②	800 ③	800 ③	800 ③	800 ③	800 ③
350	350	350	700	700	700	700	700
4.3	4.3	4.3	7.5	7.5	7.5	7.5	7.5
3.3	3.3	3.3	6.5	6.5	6.5	6.5	6.5
100	100	100	100	100	100	100	100
< 80	< 80	< 80	<70	<70	<70	<70	<70
< 80	< 80	< 80	<70	<70	<70	<70	<70
Time is bridged successfully Drop-out of the contactor							
Time is bridged successfully Drop-out of the contactor							
Contactor remains switched on							
Contactor remains switched on							
Contactor remains switched on							
Drop-out of the contactor							
Contactor does not switch on							
Contactor switches on with certainty							
Contactor switches on with certainty							
≤500	≤500	≤500	≤500	≤500	≤500	≤500	≤500
≤1	≤1	≤1	≤1	≤1	≤1	≤1	≤1
15	15	15	15	15	15	15	15
5	5	5	5	5	5	5	5
This product is designed for operation in industrial environments (Environment 2). Usage in domestic areas (Environment 1) can cause radio frequency interference (RFI) so that additional interference to noise suppression measures must be provided.							


② Control transformer with  $U_k \leq 6\%$   
 ③ Control transformer with  $U_k \leq 7\%$

				DILM7-... – DILM32-...	DILA-XHI...	DILM32-XHI...	DILM150-XHI...	DILM1000-XHI...	
<b>Auxiliary Contacts</b>									
Interlocked opposing contacts within an auxiliary contact module (to IEC 60947-5-1 Annex L)				–	Yes	Yes	Yes	Yes	
Break contact (not late-break contact) suitable as a mirror contact (to IEC/EC 60947-4-1 Annex F)				DILM7 – DILM32	DILM7 – DILM32	DILM7 – DILM32	DILM40 – DILM65	DILM40 – DILM65 DILM185 – DILM1000	
Rated impulse withstand voltage	$U_{imp}$	[V AC]		6000	6000	6000	6000	6000	
Overvoltage category/pollution degree				III/3	III/3	III/3	III/3	III/3	
Rated insulation voltage -AC	$U_i$	[V AC]		690	690	690	690	690	
Rated operational voltage	$U_e$	[V AC]		500	500	500	500	500	
Safe isolation to VDE 0106 Part 101 and Part 101/A1									
		[V AC]		400	400	400	440	440	
		[V AC]		400	400	400	440	440	
Rated operational current									
AC-15	230 V	$I_e$	[A]	6	6	6	6	6	
	380/415 V	$I_e$	[A]	4	4	4	4	4	
	500 V	$I_e$	[A]	1.5	–	1.5	1.5	1.5	
DC-13 L/R ≤ 15 ms ❶	24 V	$I_e$	[A]	10	10	10	10	10	
	60 V	$I_e$	[A]	6	6	6	6	6	
	110 V	$I_e$	[A]	3	3	3	3	3	
	220 V	$I_e$	[A]	1	1	1	1	1	
Conventional thermal current				$I_{th}$	[A]	10	10	10	10
Control circuit reliability ❷				Failure Rate	[λ]	<10 <sup>-6</sup> , <1 one failure at 100 million operations			
Component lifespan at $U_e = 230$ V, AC-15, 3A				Ops	[x 10 <sup>6</sup> ]	1.3	1.3	1.3	1.3
Short-circuit rating without welding max. fuse ❸					[A gG/gL]	10	10	16	16

❶ Making and breaking conditions to DC-13, time L/R constant as stated

❷ At  $U_e = 24$  V DC,  $U_{min} = 17$  V,  $I_{min} = 5.4$  mA

❸ See "Fuses" overlay for time/current characteristic (on request)

		DILEM	DILEM-G	DILEM4	DILEM4-G
<b>General</b>					
Standards		UL, CSA, IEC/EN 60 947, VDE 0660			
Mechanical Lifespan	Operations x 10 <sup>6</sup>	10	20	20	–
Maximum Operating Frequency					
Mechanical	[Ops/h]	9000	9000	9000	9000
Electrical (Contactor without Overload Relay)		See characteristic curve			
Climatic Proofing					
Damp heat, constant, to IEC 60 068-2-78					
Damp heat, cyclic, to IEC 60 068-2-30					
Ambient Temperature					
Open	[°C / °F]	-25/50°C / -13/122°F	-25/50°C / -13/122°F	-25/50°C / -13/122°F	-25/50°C / -13/122°F
Enclosed	[°C / °F]	-25/40°C / -13/104°F	-25/40°C / -13/104°F	-25/40°C / -13/104°F	-25/40°C / -13/104°F
Mounting Position					
As required except vertical with terminals A1/A2 at the bottom 					
Mechanical Shock Resistance					
Half-Sinusoidal Shock 10 ms					
Basic unit without auxiliary contact module					
Main contacts make contact	[g]	10	10	10	10
Main contacts make/break contact	[g]	10/8	10/8	–	–
Basic unit with auxiliary contact module					
Main contacts make contact	[g]	10	10	10	10
Main contacts make/break contact	[g]	20/20	20/20	20/20	20/20
Degree of protection					
Protection against direct contact when actuated from front					
Finger- and back-of-hand proof					
Weight	[kg]	0.2	0.17	0.2	0.17
Terminal capacity of main and auxiliary contacts					
Solid					
	[mm <sup>2</sup> ]	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)	1 x (0.75 – 2.5)
		2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)
Flexible with ferrule					
	[mm <sup>2</sup> ]	1 x (0.75 – 1.5)	1 x (0.75 – 1.5)	1 x (0.75 – 1.5)	1 x (0.75 – 1.5)
		2 x (0.75 – 1.5)	2 x (0.75 – 1.5)	2 x (0.75 – 1.5)	2 x (0.75 – 1.5)
Solid or stranded	[AWG]	18 – 14	18 – 14	18 – 14	18 – 14
Terminal screw					
M3.5					
Poizidriv screwdriver					
2					
Standard screwdriver					
	[mm]	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5
		1 x 6	1 x 6	1 x 6	1 x 6
Max. tightening torque	[Nm]	1.2	1.2	1.2	1.2
Terminal capacity of of springloaded main terminals					
Solid					
	[mm <sup>2</sup> ]	1 x (1 – 2.5)	1 x (1 – 2.5)	1 x (1 – 2.5)	1 x (1 – 2.5)
		2 x (1 – 2.5)	2 x (1 – 2.5)	2 x (1 – 2.5)	2 x (1 – 2.5)
Flexible with ferrule					
	[mm <sup>2</sup> ]	1 x (1 – 2.5)	1 x (1 – 2.5)	1 x (1 – 2.5)	1 x (1 – 2.5)
		2 x (1 – 2.5)	2 x (1 – 2.5)	2 x (1 – 2.5)	2 x (1 – 2.5)
Standard screwdriver	[mm]	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5	0.6 x 3.5



				DILEM	DILEM-G	DILEM4	DILEM4-G
<b>Main Contacts</b>							
Rated impulse withstand voltage		$U_{imp}$	[V AC]	6000	6000	6000	6000
Overvoltage category/pollution degree				III/3	III/3	III/3	III/3
Rated insulation voltage		$U_i$	[V AC]	690	690	690	690
Rated operational voltage		$U_e$	[V AC]	690	690	690	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1							
between coil and contacts			[V AC]	300	300	300	300
between the contacts			[V AC]	300	300	300	300
Making capacity (cos $\phi$ to IEC/EN 60947)			[A]	110	110	110	110
Breaking capacity	220/230 V		[A]	90	90	90	90
	380/400 V		[A]	90	90	90	90
	500 V		[A]	64	64	64	64
	660/690 V		[A]	54	54	54	54
Component lifespan	AC-1			see page 36			
Short-circuit protection rating maximum fuse							
Type "2"		gL/gG	[A]	10	10	10	10
Type "1"		gL/gG	[A]	20	20	20	20
<b>AC</b>							
AC-1 Operation							
Conventional free air thermal current, 3-pole, 50 – 60 Hz							
Open	at 40° C	$I_{th}$	[A]	22	22	22	22
	at 50° C	$I_{th}$	[A]	20	20	20	20
	at 55° C	$I_{th}$	[A]	19	19	19	19
Enclosed ①		$I_{th}$	[A]	16	16	16	16
Conventional free air thermal current, 1-pole							
Open ①		$I_{th}$	[A]	50	50	60	60
Enclosed ①		$I_{th}$	[A]	40	40	50	50
AC-3 Operation							
Rated operational current, open, 50 – 60 Hz ①	220/230 V	$I_e$	[A]	9.0	9.0	9.0	9.0
	240 V	$I_e$	[A]	9.0	9.0	9.0	9.0
	380/400 V	$I_e$	[A]	9.0	9.0	9.0	9.0
	415 V	$I_e$	[A]	9.0	9.0	9.0	9.0
	440 V	$I_e$	[A]	9.0	9.0	9.0	9.0
	550 V	$I_e$	[A]	6.4	6.4	6.4	6.4
660/690 V	$I_e$	[A]	4.8	4.8	4.8	4.8	
Rated power	220/230 V	$P$	[kW]	2.2	2.2	2.2	2.2
	240 V	$P$	[kW]	2.5	2.5	2.5	2.5
	380/400 V	$P$	[kW]	4	4	4	4
	415 V	$P$	[kW]	4.3	4.3	4.3	4.3
	440 V	$P$	[kW]	4.6	4.6	4.6	4.6
	500 V	$P$	[kW]	4	4	4	4
	660/690 V	$P$	[kW]	4	4	4	4
AC-4 operation							
Rated operational current, open, 50 – 60 Hz ①	220/230 V	$I_e$	[A]	6.6	6.6	6.6	6.6
	240 V	$I_e$	[A]	6.6	6.6	6.6	6.6
	380/400 V	$I_e$	[A]	6.6	6.6	6.6	6.6
	415 V	$I_e$	[A]	6.6	6.6	6.6	6.6
	440 V	$I_e$	[A]	6.6	6.6	6.6	6.6
	500 V	$I_e$	[A]	5	5	5	5
660/690 V	$I_e$	[A]	3.4	3.4	3.4	3.4	
Rated power	220/230 V	$P$	[kW]	1.5	1.5	1.5	1.5
	240 V	$P$	[kW]	1.8	1.8	1.8	1.8
	380/400 V	$P$	[kW]	3	3	3	3
	415 V	$P$	[kW]	3.1	3.1	3.1	3.1
	440 V	$P$	[kW]	3.3	3.3	3.3	3.3
	500 V	$P$	[kW]	3	3	3	3
	660/690 V	$P$	[kW]	3	3	3	3

① At maximum permissible ambient temperature.

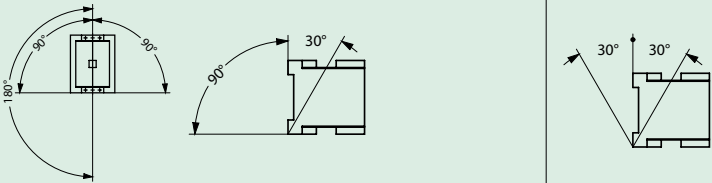
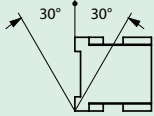
				DILEM	DILEM-G	DILEM4	DILEM4-G
<b>DC</b>							
Rated operational current, open ①							
DC-1	12V	$I_e$	[A]	20	20	–	–
	24V	$I_e$	[A]	20	20	–	–
	60V	$I_e$	[A]	20	20	–	–
	110V	$I_e$	[A]	20	20	–	–
	220V	$I_e$	[A]	20	20	–	–
DC-3	12V	$I_e$	[A]	8	8	–	–
	24V	$I_e$	[A]	8	8	–	–
	60V	$I_e$	[A]	4	4	–	–
	110V	$I_e$	[A]	3	3	–	–
	220V	$I_e$	[A]	–	–	1	1
DC-5	12V	$I_e$	[A]	2.5	2.5	–	–
	24V	$I_e$	[A]	2.5	2.5	–	–
	60V	$I_e$	[A]	2.5	2.5	–	–
	110V	$I_e$	[A]	1.5	1.5	2.5	2.5
	220V	$I_e$	[A]	0.3	0.3	1	1
Current heat loss (3 or 4 pole)							
at $I_{th}$			[W]	2	3.5	2.7	4.7
at $I_e$ to AC-3 / 400V			[W]	0.5	0.7	–	–
<b>Magnet Systems</b>							
Voltage tolerance							
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz		Pick-up	$[x U_c]$	0.8 – 1.1	–	0.8 – 1.1	–
Dual-frequency coil 50/60 Hz		Pick-up	$[x U_c]$	0.85 – 1.1	–	0.85 – 1.1	–
DC operated ②		Pick-up	$[x U_c]$	–	0.8 – 1.1	–	0.85 – 1.1
Power consumption							
AC operation							
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz		Pick-up	[VA]	25	–	25	–
		Pick-up	[W]	22	–	22	–
		Sealing	[VA]	4.6	–	4.6	–
		Sealing	[W]	1.3	–	1.3	–
Dual-frequency coil 50/60 Hz at 50 Hz		Pick-up	[VA]	30	–	30	–
		Pick-up	[W]	26	–	26	–
		Sealing	[VA]	5.4	–	5.4	–
		Sealing	[W]	1.6	–	1.6	–
Dual-frequency coil 50/60 Hz at 60 Hz		Pick-up	[VA]	29	–	29	–
		Pick-up	[W]	24	–	24	–
		Sealing	[VA]	3.9	–	3.9	–
		Sealing	[W]	1.1	–	1.1	–
DC operation ②							
Power consumption pick-up = sealing			[VA / W]	–	2.6	–	2.6
Duty factor			[% DF]	100	100	100	100
Switching time @ 100 % $U_c$							
Make contact							
Closing delay	Min.		[ms]	14	26	14	26
	Max.		[ms]	21	35	21	35
Opening delay	Min.		[ms]	8	15	8	15
	Max.		[ms]	18	25	18	25
Closing delay with top mounting auxiliary contact			[ms]	max. 45	max. 70	max. 45	max. 70
Reversing contactors							
Changeover time @ 110 % $U_c$	Min.		[ms]	16	40	16	40
	Max.		[ms]	21	50	21	50
Arcing time at 690 V AC			[ms]	max. 12	max. 12	max. 12	max. 12

① At maximum permissible ambient temperature.

② Smoothed DC or three-phase bridge rectifier.

				DILEM	...DILEM		
<b>Auxiliary Contacts</b>							
Interlocked opposing contacts to ZH 1 / 457, including auxiliary contact module				Yes	Yes		
Rated impulse withstand voltage		$U_{imp}$	[V AC]	6000	6000		
Overvoltage category/pollution degree				III/3	III/3		
Rated insulation voltage		$U_i$	[V AC]	690	690		
Rated operational voltage		$U_e$	[V AC]	600	600		
Safe isolation to VDE 0106 Part 101 and Part 101/A1							
between coil and auxiliary contacts			[V AC]	300	300		
between the auxiliary contacts			[V AC]	300	300		
Rated operational current							
AC-15	220/240 V	$I_e$	[A]	6	4		
	380/415 V	$I_e$	[A]	3	2		
	500 V	$I_e$	[A]	1.5	1.5		
DC-13	1	24 V	[A]	2.5	2.5		
L/R ≤ 15 ms	2	60 V	[A]	2.5	2.5		
Contacts in series:	3	100 V	[A]	1.5	1.5		
	3	220 V	[A]	0.5	0.5		
Conventional thermal current				$I_{th}$	[A]	10	10
Control circuit reliability (@ $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA)				Failure Rate	[ops.]	<10 <sup>8</sup> , <one failure @ 100 million	
Component lifespan @ $U_e = 240$ V							
AC-15		Operations	[x 10 <sup>6</sup> ]	0.2	0.2		
DC-13 ① L/R = 50ms: 2 contacts in series at $I_e = 0.5$ A		Operations	[x 10 <sup>6</sup> ]	0.15	0.15		
Short-circuit rating without welding							
Maximum overcurrent protective device				PKZM0-4	PKZM0-4		
Short-circuit protection rating maximum fuse	500 V		[A gG/gL]	6	6		
	500 V		[A fast]	10	10		
Current heat loss at conventional free air thermal current $I_{th}$							
Per contact			[W]	0.2	0.2		

① Making and breaking conditions to DC-13, time L/R constant as stated.

			DIL00MK	DIL0MK	DIL1MK	DIL2MK	DIL3MK72
<b>General</b>							
Standards			UL, CSA, IEC/EN 60947, VDE 0660				
Ambient temperature							
Open	[°C]		-25/50° C	-25/50° C	-25/50° C	-25/50° C	-25/55° C
	[°F]		-13/122° F	-13/122° F	-13/122° F	-13/122° F	-13/131° F
Enclosed ❶	[°C]		-25/40° C	-25/40° C	-25/40° C	-25/40° C	-25/40° C
	[°F]		-13/104° F	-13/104° F	-13/104° F	-13/104° F	-13/104° F
Mounting position							
Degree of protection			IP20	IP00	IP00	IP00	IP00
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)			Finger- and back-of-hand proof				
Weight							
AC	[kg]		0.32	0.42	0.71	0.95	2
DC	[kg]		0.50	0.77	1.25	1.85	2
Terminal capacity (screw terminals; 1 or 2 conductors can be connected)							
Main cable ❷							
Solid	[mm <sup>2</sup> ]		1 x (0.75–4) 2 x (0.75–4)	1 x (1–6) 2 x (1–6)	1 x (2.5–10) 2 x (2.5–10)	1 x (2.5–16) 2 x (2.5–16)	1 x (6–16) 2 x (6–16)
Flexible with ferrule	[mm <sup>2</sup> ]		1 x (0.75–4) 2 x (0.75–4)	1 x (1–6) 2 x (1–6)	1 x (2.5–16) 2 x (2.5–10)	1 x (2.5–25) 2 x (2.5–10)	1 x (4–50) 2 x (4–50)
Stranded	[mm <sup>2</sup> ]		–	–	1 x (10–25) 2 x 10	1 x (10–35) 2 x 10	16 50
Solid or stranded	[AWG]		18 10	16 10	12 4	12 2	10 2
<b>Group Compensation</b>							
Rated operational current $I_e$ of three-phase capacitors							
Open ❶	230 V	[A]	18	23	40	53	77
	400 V	[A]	19	26	38	51	72
	525 V	[A]	15	23	39	51	66
	690 V	[A]	15	20	30	40	63
Enclosed ❶	230 V	[A]	13	22	32	46	71
	400 V	[A]	15	22	32	46	68
	525 V	[A]	12	22	32	44	66
	690 V	[A]	12	17	25	37	63
Making capacity (i-peak value) without damping			180 x $I_e$	180 x $I_e$	180 x $I_e$	180 x $I_e$	180 x $I_e$
Component lifespan	Ops	[x 10 <sup>6</sup> ]	0.2	0.1	0.1	0.1	0.1
Maximum operating frequency		[Ops/h]	200	200	200	200	100

❶ At maximum admissible ambient temperature.

❷ Maximum of one size difference admissible when using 2 conductors.

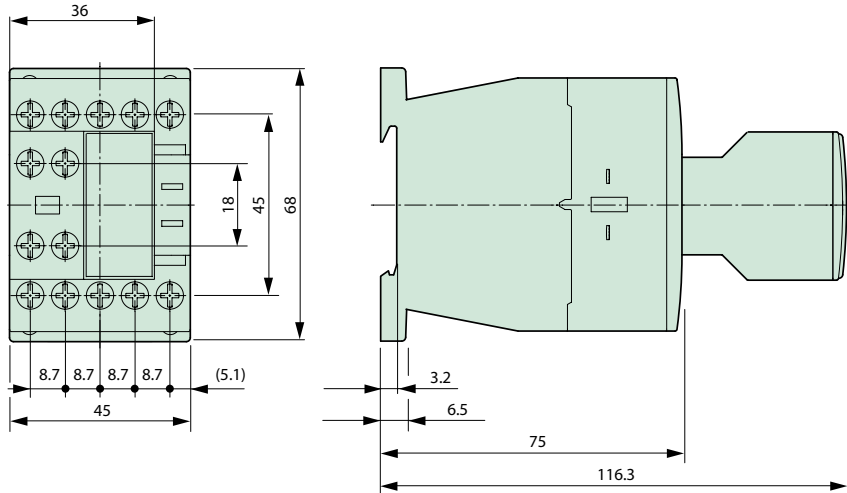
				...SDILM
<b>Auxiliary Contacts</b>				
Rated impulse withstand voltage		$U_{imp}$	[V]	6000
Overvoltage category / pollution degree				III/3
Rated insulation voltage		$U_i$	[V AC]	690
Rated operational voltage		$U_e$	[V AC]	500
Safe isolation to IEC 536				
between coil and auxiliary contacts			[V AC]	440
between the auxiliary contacts			[V AC]	440
Rated operational current				
AC-15	220/240 V	$I_e$	[A]	6
	380/415 V	$I_e$	[A]	4
	500 V	$I_e$	[A]	1.5
DC-13 ① L/R ≤ 15 ms		24 V	[A]	10
L/R ≤ 15 ms		60 V	[A]	6
		100 V	[A]	3
		220 V	[A]	1
Conventional thermal current		$I_{th}$	[A]	16
Control circuit reliability (@ $U_e = 24\text{ V DC}$ , $U_{min} = 17\text{ V}$ , $I_{min} = 5.4\text{ mA}$ )				
Fault probability $H_f$				< 10 <sup>-8</sup> , < 1 fault in 100 million operations
Short-circuit rating without welding				
Maximum fuse ②			[A gG/gL]	16
Max. overcurrent protective device	220/230 V			–
Pilot duty rating (UL/CSA)			[AC/DC]	A600/P300

① Making and breaking contacts to DC-13, time constant as stated.

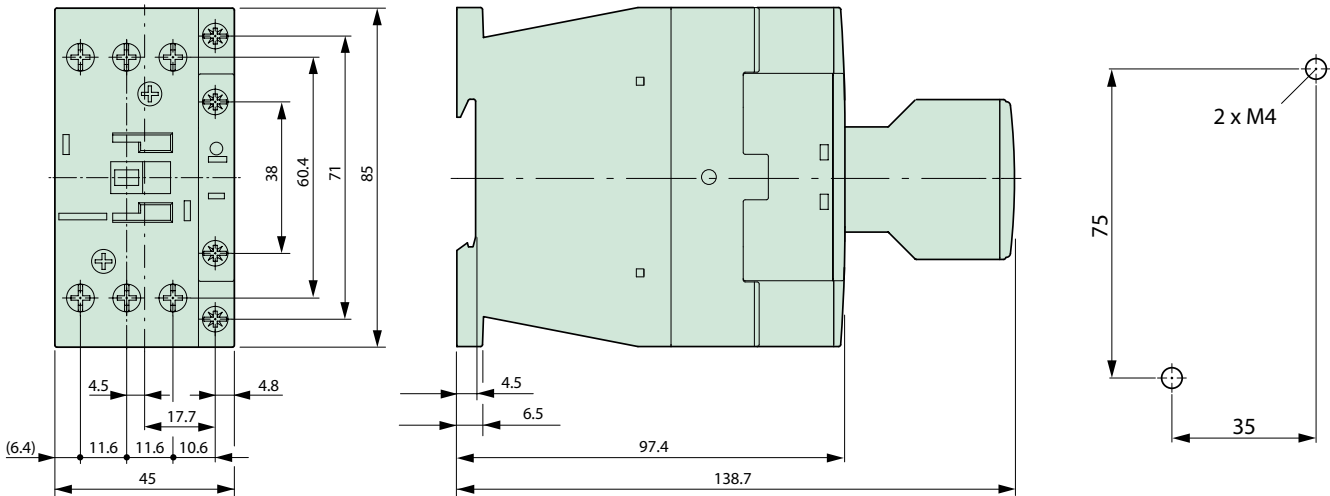
② See transparent overlay "Fuses" for time/current characteristics.

**Contactors**

DILM7  
DILM9  
DILM12



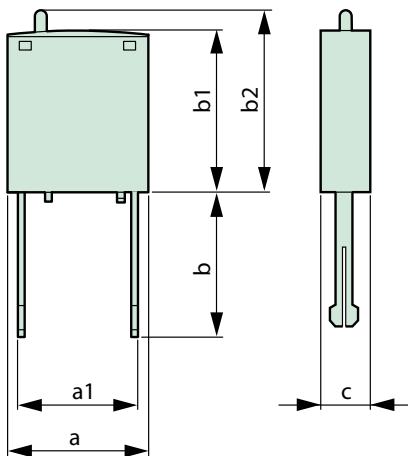
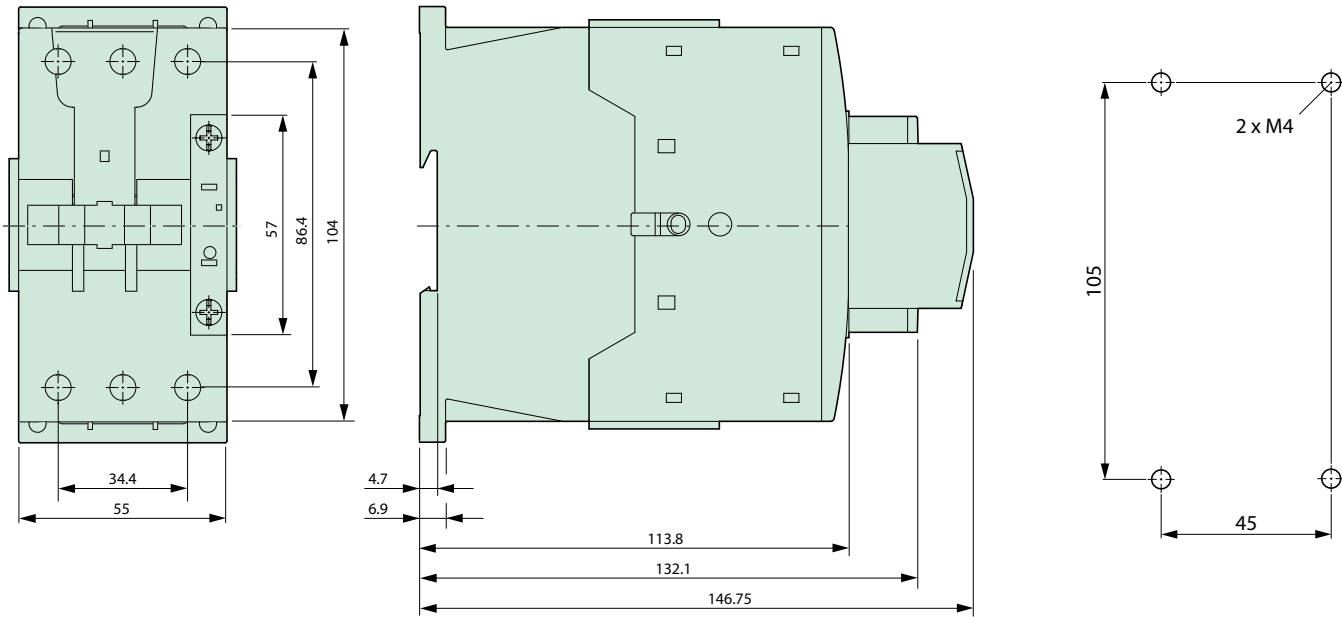
DILM17  
DILM25  
DILM32



★ Dimensions are in millimeters.

### Contactors

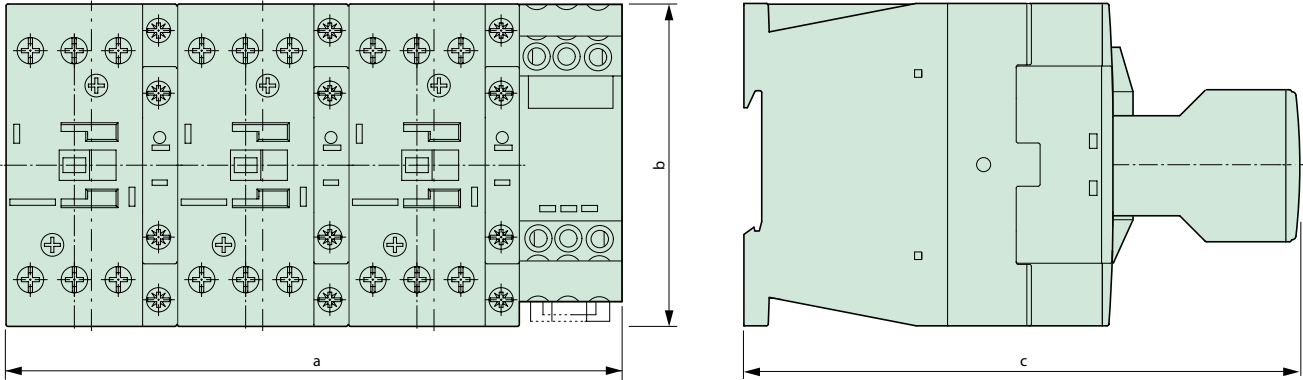
DILM40  
DILM50  
DILM65



dimension	DILM12-XSPR... DILM12-XSPV...	DILM32-XSPR... DILM32-XSPV...	DILM95-XSPR... DILM95-XSPV...
a	25	25	25
a1	9.2	9.2	20
b	25.9	16	18.5
b1	28	28	28
b2	≈32	≈32	≈32
c	9	9	9

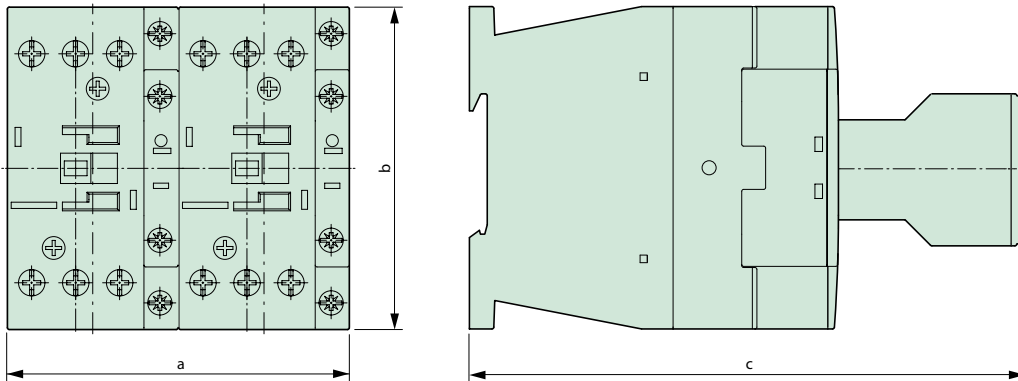
★ Dimensions are in millimeters.

**Star-Delta Combination**



dimension	SDAINLM12 – SDAINLM22	SDAINLM30 – SDAINLM55
a	158	158
b	68	85
c	125.2	147.3

**Reversing Combination**



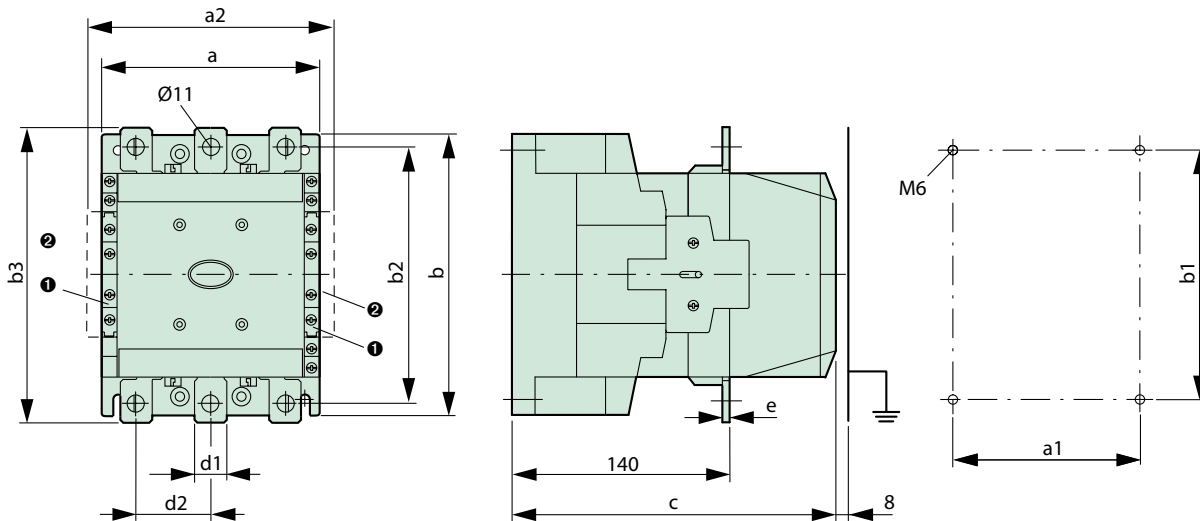
dimension	DIULM7/21 – DIULM12/21	DIULM17/21 – DIULM32/21	DIULM40/11 – DIULM50/11
a	90	90	110
b	68	85	115
c	125.2	147.3	146.75

★ Dimensions are in millimeters.



### Contactors

**DILM185**            **DILM300**  
**DILM225**            **DILM400**  
**DILM250**            **DILM500**



dimension	DILM185	DILM225	DILM250	DILM300	DILM400	DILM500
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	38
d2	48	48	48	48	48	57
e	5	5	5	6	6	6
c	208	208	208	216	216	216

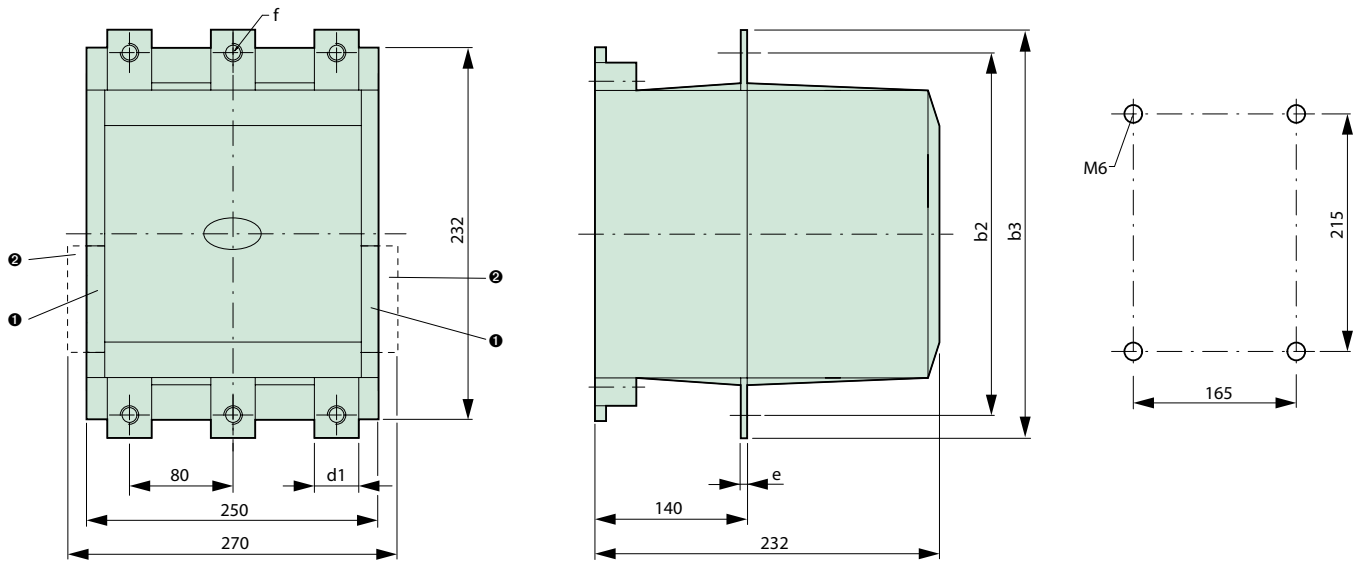
★ Dimensions are in millimeters.

- ① DILM1000-XHI...-SI
- ② DILM1000-XHI11-SA

#### Contactors

DILM580  
DILM650  
DILM750

DILM820  
DILM1000



dimension	DILM580	DILM650	DILM750	DILM820	DILM1000
b2	256	256	256	256	256
b3	286	286	296	296	296
d1	35	35	45	45	45
e	6	6	6	6	10
f	11	11	13.5	13.5	13.5

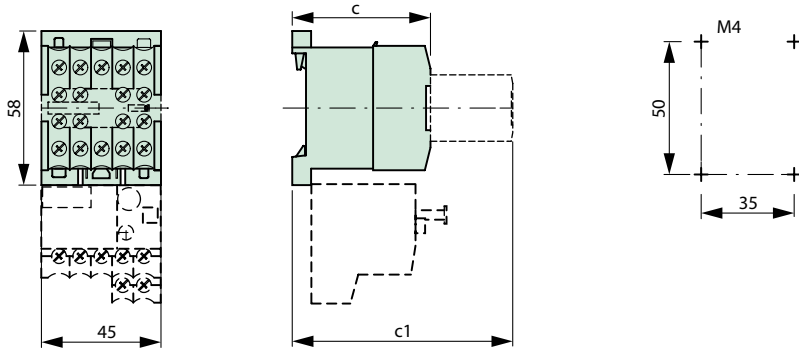
★ Dimensions are in millimeters.

① DILM1000-XHI...-SI  
② DILM1000-XHI11-SA

### Mini Contactor Relay

DILEM

DILEM-G

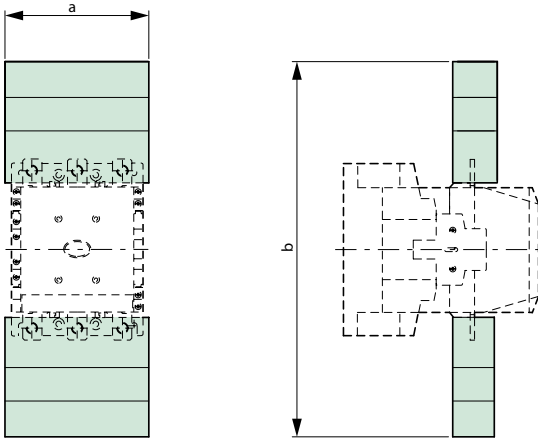


dimension	DILEM(-G)
c	52
c1	83

★ Dimensions are in millimeters.

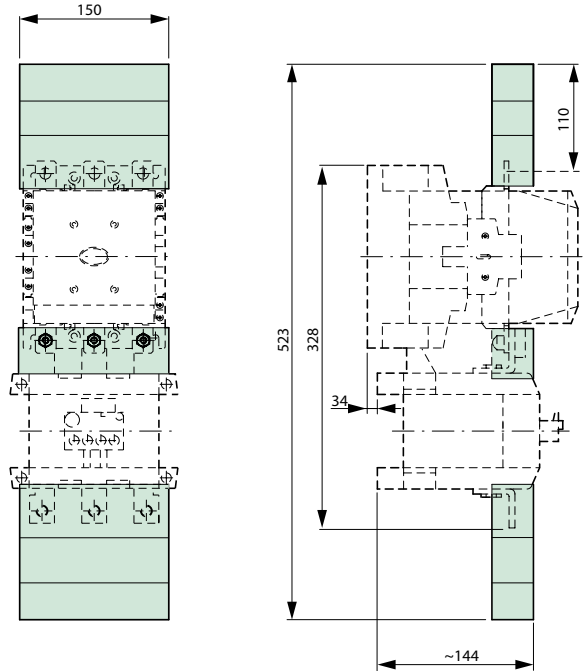
**Contactor with Terminal Shroud**

DILM185 to DILM1000 with DILM...-XHB



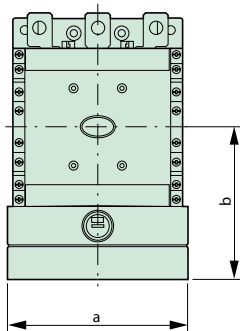
dimension	DILM185 DILM225 DILM250 DILM185-XP1	DILM300 DILM400	DILM500	DILM580 DILM650 DILM750 DILM820 DILM1000
a	150	150	174	236
b	384	404	426	506

DILM185 to DILM250 with Z5-.../FF250



**Contactor with Start-Point Bridge + Terminal Shroud**

DILM...-XS1



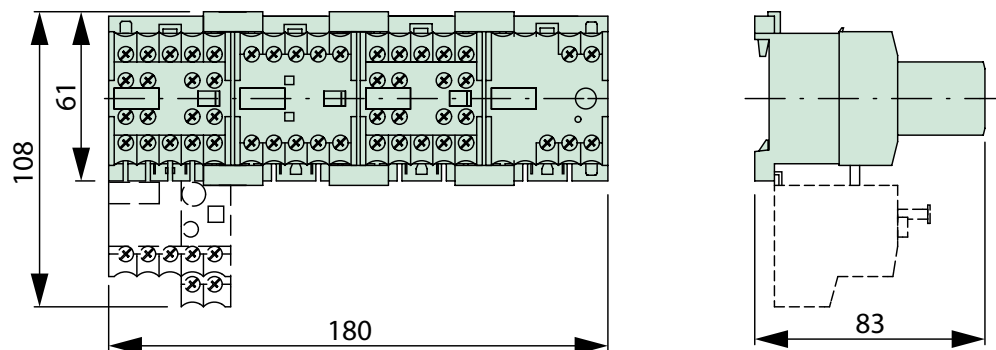
dimension	DILM185 – DILM250	DILM300 - DILM400	DILM500
a	150	150	176
b	127	137	146

★ Dimensions are in millimeters.



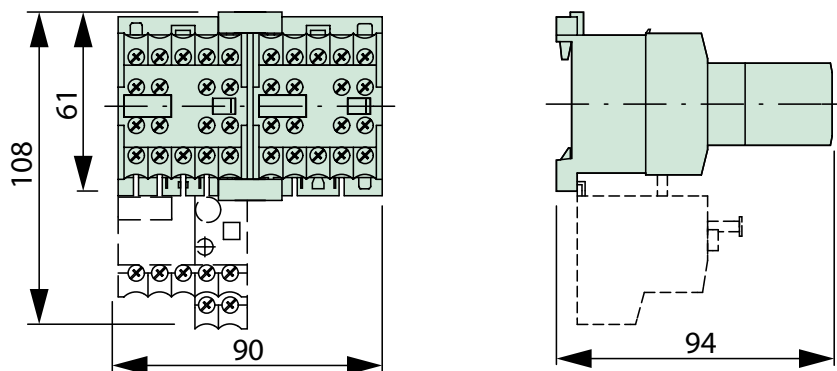
### Star-Delta Starter Combinations

SDAINLEM



### Reversing Combination

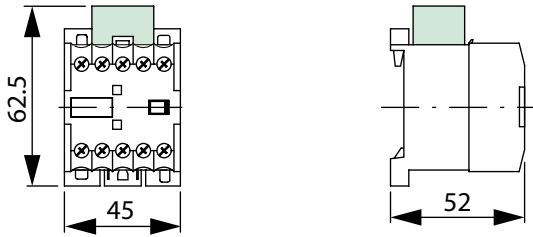
DIULEM



★ Dimensions are in millimeters.

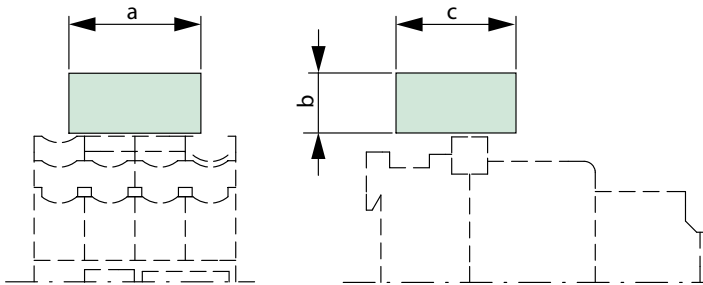
### Suppressor

RCDILE  
VGDILE



RCBDIL...  
RCSLIL...  
FDBDIL...

VGBDIL...  
VGLDIL

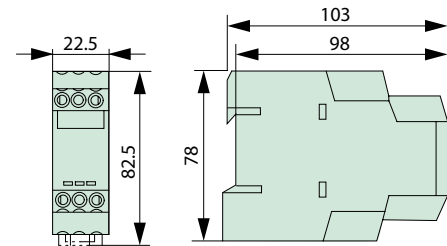
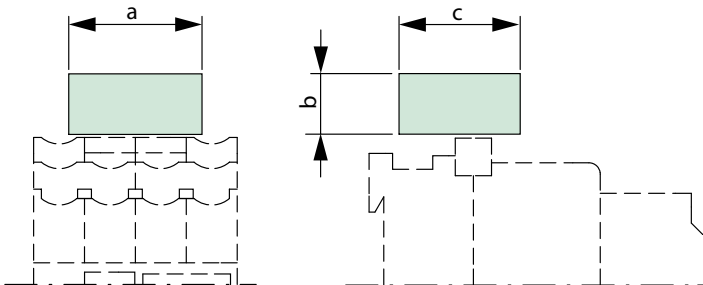


dimension	RCBDIL	RCSLIL	FDBDIL	VGBDIL	VGLDIL
a	33	33	33	33	38
b	15	15	15	15	8
c	30	30	30	30	33

### Amplifier Modules

VS1DIL  
VS2DIL

ETS4-VS3



dimension	VS1DIL, VS2DIL
a	45
b	26
c	55

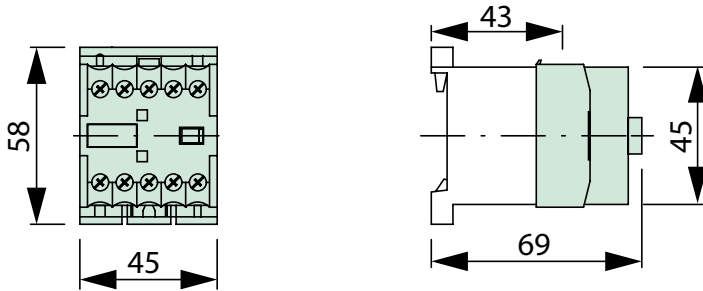
★ Dimensions are in millimeters.

# Dimensions

Accessories

## Sealable Shroud

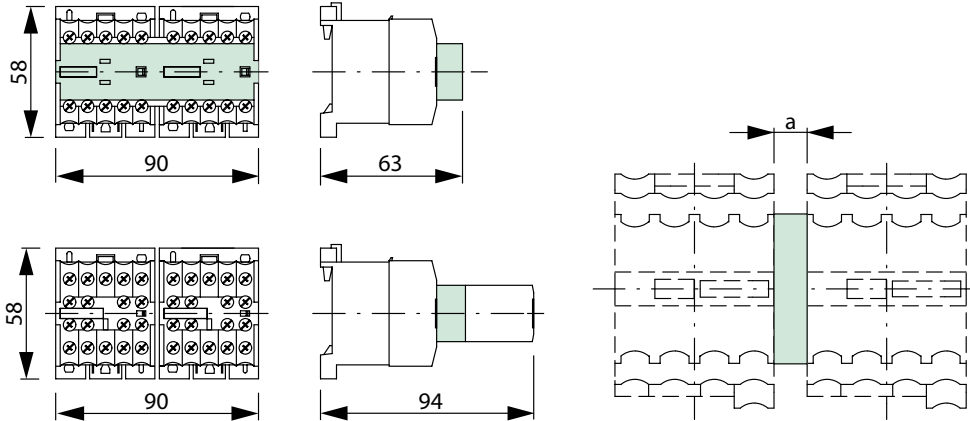
HDILE



## Mechanical Interlock

MVDILE

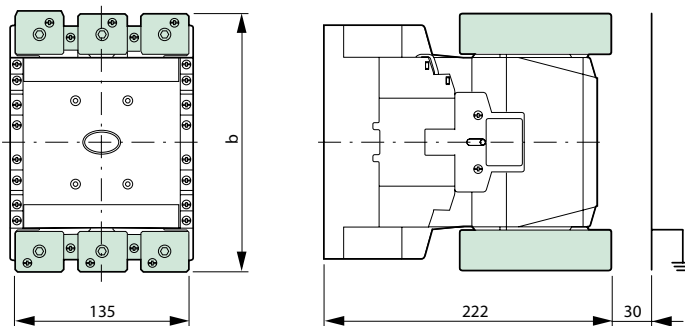
MVDILM  
DILM500-XMV



dimension	DILM185 – DILM500
a	15

## Cable Terminal Block

DILM...-XKU-S

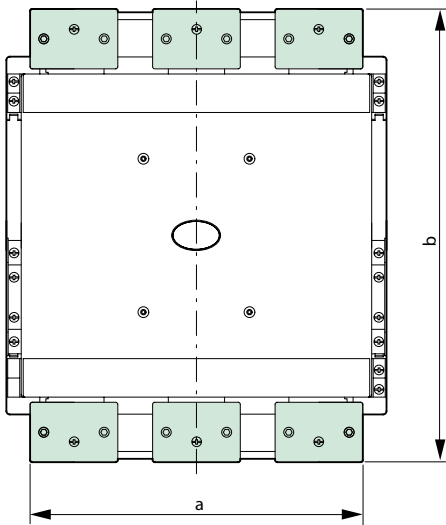


dimension	DILM185 – DILM225	DILM250	DILM300 – DILM400
b	198	198	218

★ Dimensions are in millimeters.

**Flat Strip Conductor Terminals**

DILM...-XKB-S



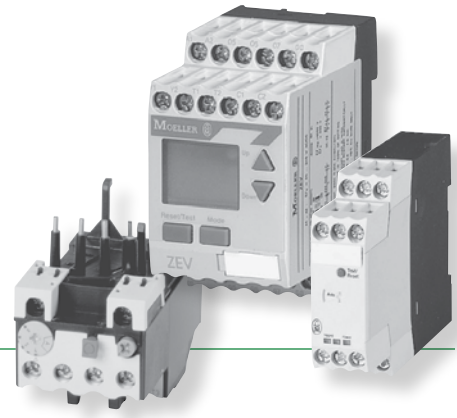
dimension	DILM500	DILM580-650	DILM750-820
a	171	218	231
b	295	295	310

★ Dimensions are in millimeters.



# Motor protection from Moeller

Protection solutions to 820A



- > Superior IEC designs
- > Class 10 protection for modern motors
- > Ambient temperature compensation
- > Test / OFF button
- > Automatic & manual reset
- > Trip indication & trip-free release
- > Integrated NO & NC contact

Moeller offers an array of motor protection solutions, from the modest “ZE” bi-metallic thermal overload relay, to our advanced ZEV electronic motor protector. We also offer relays specifically built for motors with PTC thermistors.

## Better protection

Modern motors are built with less metal, which means they dissipate less heat. This calls for the modern protection offered by IEC-style Class 10 overload relays... they trip in 10 seconds under locked rotor conditions. Most motor manufacturers today recommend this type of “close” protection. If your application calls for longer run-up times, our ZW7 current transformer relay or ZEV programmable relay are an ideal choice.

## Many standard features

All Moeller overload relays come with a host of standard features including phase-failure sensitivity, temperature compensation, test / reset buttons and a trip-free release. This safety feature prevents the relay from being held closed during an actual overload.

## Worldwide approvals

With the benefit of all major approvals, motor protection from Moeller can be used in virtually every country on the planet.

Feature	ZE	ZB12 ZB32 ZB65	Z5	ZW7	ZEV	EMT (with PTCs)
Phase-failure sensitivity	✓	✓	✓		✓	✓
Temperature compensation	✓	✓	✓	✓	✓	N / A
Auxiliary switch 1 NO + 1 NC	✓	✓	✓	✓	✓	✓
Test / OFF button	✓	✓	✓	✓	✓	✓
Reset button manual / auto	✓	✓	✓	✓	✓	✓
Separate mounting		✓	✓	✓	✓	N / A
Protection for heavy starting duty				✓	✓	✓
Trip-free release	✓	✓	✓	✓	✓	N / A
LCD Display					✓	
LED Display						✓
Selectable trip time					✓	

✓ = standard features

# Overload Protection Guide

## Contactors

Locate contactor first, then scan down to determine appropriate overload relay



DILEM



DILM7  
DILM9  
DILM12



DILM17  
DILM25  
DILM32



DILM40  
DILM50  
DILM65



DILM80  
DILM95  
DILM150



M185  
M225  
M250



M300 M650  
M400 M750  
M500 M820  
M580 M1000

## Thermal Overload Relays

<b>ZE - Direct Mount</b> 0.1 – 12A setting range  See page 77							
<b>ZB12 - Direct Mount</b> 0.1 – 16A setting range  See page 78							
<b>ZB32 - Direct Mount</b> 0.1 – 32A setting range  See page 78							
<b>ZB65 - Direct Mount</b> 6 – 65A setting range  See page 79							
<b>ZB150 - Direct Mount</b> 25 – 142A setting range  See page 79					Product available Fall 2005. Contact your Moeller representative.		
<b>Z5-.../FF250 - Direct or Separate Mount</b> 50 – 250A setting range  See page 80							

## Current Transformer-operated Overload Relay

<b>ZW7-... ①</b> 42 – 540A setting range  See page 81	
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## Electronic Motor-protective Relay

<b>ZEV ②</b> 1 – 820A setting range  See page 90	
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## Thermistor Protection Relays

<b>EMT6(DB)K</b>  See page 98	
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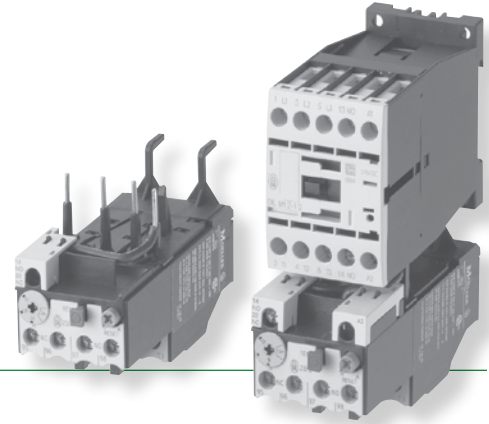
① Can only be used up to DIL M580.

② Can only be used up to DIL M820.

NEW >>

# thermal overload relays

Reliable, consistent motor protection



Thermal overload motor protection has come a long way from the eutectic alloy solder-pots and replaceable “heaters” of yesterday. Today’s IEC-style relays from Moeller feature bimetal technology that is very consistent, reliable and economical.

## A great combination

Most of our thermal relays are specifically designed to be close-coupled to a matching contactor. All ZE, ZB and Z5-series overloads, which cover the range from fractional to 250A, are direct mount designs. The resulting motor starters fit in an extremely compact footprint as narrow as 45mm. Protection for larger amp sizes is accomplished with Moeller’s ZW7 overload relay with integrated current transformers.

## Many standard features

Z-series overloads are the ideal choice in most industrial starting applications. Below 250A, all relays are Class 10, which means they trip within 10 seconds of a locked rotor condition. Many motor manufacturers agree that Class 10 devices offer superior protection against overloads, and also extend motor life by protecting winding insulation.

All of Moeller’s thermal overload relays have ambient temperature compensation, automatic or manual reset and a test button. In addition, trip indication and a trip-free release are important safety features. Trip-free releases prevent the device from being held closed, even in the event of an overload.

## Easy installation and operation




Once the overload is installed, a convenient dial adjustment is used to set the motor full load amps. Moeller’s factory calibration assures that your motor investment is protected accurately.

- > Superior IEC designs
- > Class 10 protection for modern motors
- > Ambient temperature compensation
- > Test / OFF button
- > Automatic & manual reset
- > Trip indication & trip-free release
- > Integrated NO & NC contact

- > Class 10A overload; trip response from 2 to 10 seconds
- > Ambient compensated, bi-metallic overload tripping mechanism
- > Phase failure sensitive to IEC/EN 60947
- > Manual / Automatic reset button
- > Built-in NO and NC auxiliary contact

**Direct Mount ZE Thermal Overload Relays for DILEM Miniature Contactors ①**

Overload Relay	Adjustable Setting Range	Auxiliary Contacts		For use with...	Short-Circuit Protection (Max 600V AC) ②		Type	Article Number	Price
		NO	NC		Fuses (A)	Circuit Breaker (A) ③			
	0.1 – 0.16	1	1	DILEM DIULEM	1	15	ZE-0,16	014263	See green pages
	0.16 – 0.24	1	1		1	15	ZE-0,24	014285	
	0.24 – 0.4	1	1		1	15	ZE-0,4	014300	
	0.4 – 0.6	1	1		1	15	ZE-0,6	014333	
	0.6 – 1	1	1		3	15	ZE-1,0	014376	
	1 – 1.6	1	1		6	15	ZE-1,6	014432	
	1.6 – 2.4	1	1		6	15	ZE-2,4	014479	
	2.4 – 4	1	1		15	15	ZE-4	014518	
	4 – 6	1	1		20	15	ZE-6	014565	
	6 – 9	1	1		35	15	ZE-9	014708	
	9 – 12	1	1		45	–	ZE-12 ④	014752	

① When using DILEM and ZE, a distance of at least 5mm should be maintained between overload relays mounted side-by-side.



② Observe the maximum permissible fuse of the contactor with direct device mounting.

③ Max. 480V AC.

④ UL/CSA only.

- > Class 10A overload; trip response from 2 to 10 seconds
- > Ambient compensated, bi-metallic overload tripping mechanism
- > Phase failure sensitive to IEC/EN 60947
- > Manual / Automatic reset button
- > Built-in NO and NC auxiliary contact


### Direct Mount ZB Thermal Overload Relays for DILM7 – DILM32 Contactors

Overload Relay	Adjustable Setting Range	Auxiliary Contacts		For use with...	Short-Circuit Protection (Max 600V AC) ①		Type	Article Number	Price
		NO	NC		Fuses (A)	Circuit Breaker (A)			
	0.1 – 0.16	1	1	DILM7 – DILM12 DIULM7 – DIULM12	1	25	ZB12-0,16	278431	See green pages
	0.16 – 0.24	1	1		1	25	ZB12-0,24	278432	
	0.24 – 0.4	1	1		1	25	ZB12-0,4	278433	
	0.4 – 0.6	1	1		1	25	ZB12-0,6	278434	
	0.6 – 1	1	1		3	25	ZB12-1	278435	
	1 – 1.6	1	1		6	25	ZB12-1,6	278436	
	1.6 – 2.4	1	1		6	25	ZB12-2,4	278437	
	2.4 – 4	1	1		15	25	ZB12-4	278438	
	4 – 6	1	1		20	25	ZB12-6	278439	
	6 – 10	1	1		40	25	ZB12-10	278440	
	9 – 12	1	1		60	30	ZB12-12	278441	
	12 – 16	1	1		60	30	ZB12-16	290168	
	0.1 – 0.16	1	1	DILM17 – DILM32 DIULM17 – DIULM32	1	25	ZB32-0,16	278442	See green pages
	0.16 – 0.24	1	1		1	25	ZB32-0,24	278443	
	0.24 – 0.4	1	1		1	25	ZB32-0,4	278444	
	0.4 – 0.6	1	1		1	25	ZB32-0,6	278445	
	0.6 – 1	1	1		3	25	ZB32-1	278446	
	1 – 1.6	1	1		6	25	ZB32-1,6	278447	
	1.6 – 2.4	1	1		6	25	ZB32-2,4	278448	
	2.4 – 4	1	1		15	25	ZB32-4	278449	
	4 – 6	1	1		20	25	ZB32-6	278450	
	6 – 10	1	1		40	25	ZB32-10	278451	
	10 – 16	1	1		60	30	ZB32-16	278452	
	16 – 24	1	1		90	30	ZB32-24	278453	
	24 – 32	1	1		125	40	ZB32-32	278454	

① Observe the maximum permissible fuse of the contactor with direct device mounting.

- > Class 10A overload; trip response from 2 to 10 seconds
- > Ambient compensated, bi-metallic overload tripping mechanism
- > Phase failure sensitive to IEC/EN 60947
- > Manual / Automatic reset button
- > Built-in NO and NC auxiliary contact

**Direct Mount ZB Thermal Overload Relays for DILM40 – DILM150 Contactors**


Overload Relay	Adjustable Setting Range	Auxiliary Contacts		For use with...	Short-Circuit Protection (Max 600V AC) <sup>1</sup>		Type	Article Number	Price
		NO	NC		Fuses (A)	Circuit Breaker (A)			
	6 – 10	1	1	DILM40 to DILM65 DIULM40 to DIULM65	40	40	ZB65-10	278455	See green pages
	10 – 16	1	1		60	60	ZB65-16	278456	
	16 – 24	1	1		90	90	ZB65-24	278457	
	24 – 40	1	1		125	125	ZB65-40	278458	
	40 – 57	1	1		200	150	ZB65-57	278459	
	50 – 65	1	1		200	150	ZB65-65	278460	
	25 – 35	1	1		DILM80 to DILM150 DIULM80 to DIULM150	125	125	ZB150-35	
35 – 50	1	1	225	200		ZB150-50	278462		
50 – 70	1	1	250	250		ZB150-70	278463		
70 – 100	1	1	600 Class J	400		ZB150-100	278464		
95 – 125	1	1	500 Class J	500		ZB150-125	278465		
120 – 142	1	1	400 Class J	600		ZB150-150	278466		

<sup>1</sup> Observe the maximum permissible fuse of the contactor with direct device mounting.

## Z5 Thermal Overload Relays

- > Class 10A overload; trip response from 2 to 10 seconds
- > Ambient compensated, bi-metallic overload tripping mechanism
- > Phase failure sensitive to IEC/EN 60947
- > Manual / Automatic reset button
- > Built-in NO and NC auxiliary contact


### Direct or Separate Mount Z5 Thermal Overload Relays for DILM185 – DILM250 Contactors

Overload Relay	Adjustable Setting Range	Auxiliary Contacts		For use with...	Short-Circuit Protection (Max 600V AC) ❶		Type	Article Number	Price
		NO	NC		Fuses (A)	Circuit Breaker (A)			
	50 – 70	1	1	DILM185 to DILM250 DIULM185 to DIULM250	250	250	Z5-70/FF250	210070	See green pages
	70 – 100	1	1		400 class J	400	Z5-100/FF250	210071	
	95 – 125	1	1		500 class J	500	Z5-125/FF250	210072	
	120 – 160	1	1		600 class J	600	Z5-160/FF250	210073	
	160 – 220	1	1		800 class L	800	Z5-220/FF250	210074	
	200 – 250	1	1		700 class L	600	Z5-250/FF250	210075	

❶ Observe the maximum permissible fuse of the contactor with direct device mounting.






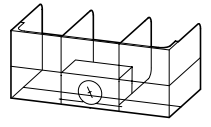
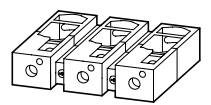
- > Designed for heavy-duty starting applications having long accelerating times
- > Tripping time in 20 to 30 seconds under locked rotor conditions
- > Ambient compensated, bi-metallic overload tripping mechanism
- > Manual / Automatic reset button
- > Built-in NO and NC auxiliary contact

**Separate Mount ZW7 Current Transformer-Operated Thermal Overload Relays ①**

Overload Relay	Adjustable Setting Range	Auxiliary Contacts		For use with...	Short-Circuit Protection		Type	Article Number	Price
		NO	NC		Fuses (A)	Circuit Breaker (A)			
	42 – 63	1	1	DILM50 to DILM580 DIULM50 to DIULM580	As required by associated contactor. Overload relay is self-protecting.		ZW7-63	000245	See green pages
	60 – 90	1	1				ZW7-90	002618	
	85 – 125	1	1				ZW7-125	004991	
	110 – 160	1	1				ZW7-160	007364	
	160 – 240	1	1				ZW7-240	009737	
	190 – 290	1	1				ZW7-290	052448	
	270 – 400	1	1				ZW7-400	045329	
	360 – 540	1	1				ZW7-540	047702	

① The specified primary rated current applies to one cable loop. For lower rated motor current, loop cable several times (e.g., ZW7-63 for 21 ... 31.5 A rated motor current: loop cable twice).



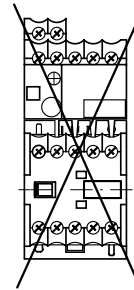
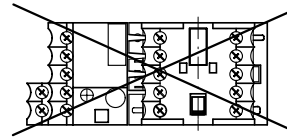
Accessories	Notes	For use with...	Type	Article Number	Price	
<b>Bases (for separate mounting)</b>						
	For snap mounting on EN 50 022 DIN-rail or screw mounting.	ZB32	ZB32-XEZ	278473	See green pages	
		ZB65	ZB65-XEZ	278474		
<b>Pushbuttons (for enclosed overload relays – mounting diameter: 22.5mm)</b>						
	External Reset Button with Rod – 4X; IP65 Blue button plate with "R" inscription	ZE...; Z5...; ZW7... ZB12 – ZB150...	M22-DZ-B-X6	271640	See green pages	
	External Reset Button with Rod – 4X; IP65 Blue button plate with "RESET" inscription		M22-DZ-B-GB14	254834		
	External Reset Button with Rod – 4X; IP65 Without button plate; add button plate from selection below		M22-DZ-X	254835		
	Red button plate; blank	M22-DZ-X	M22-XD-R	216423	See green pages	
	Red button plate with white circle inscription		M22-XD-R-X0	218153		
	Red button plate with "STOP" inscription		M22-XD-R-GB0	218194		
<b>Terminal Covers</b>						
	Overload relays for separate mounting	Z5/FF250 -XHB Z5-.../FF250 Z5/FF250 -XHB	Z5-.../FF250	Z5/FF250-XHB	215217	See green pages
	Overload relay fitted directly to contactor	DIL M400 -XHB DIL M185/ 225/250 Z5/FF250 -XHB-Z Z5-.../FF250 Z5/FF250 -XHB-Z	Direct mounting of Z5-.../FF250 to DILM185, DILM225, DILM250	Z5/FF250-XHB-Z	215218	
<b>Set of box terminals</b>						
	One set of three terminals. Wire size: #6 AWG - 350 MCM UL Recognized/CSA Approved.	Z5-...FF250	Z5-FF250-XK-CNA	229314	See green pages	

**EC prototype test certification number:**

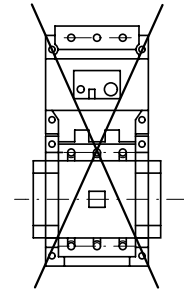
ZE	PTB 01 ATEX 3331
Z5	PTB 02 ATEX 3165

**Mounting position:**

ZE

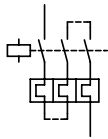


ZB12, ZB32, ZB65, Z5

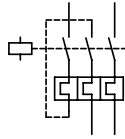


**Protection of single-phase and DC current motors:**

1-pole

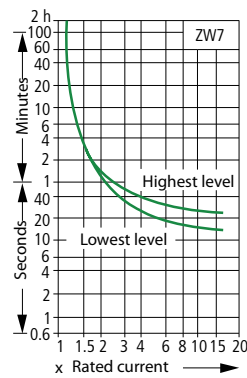
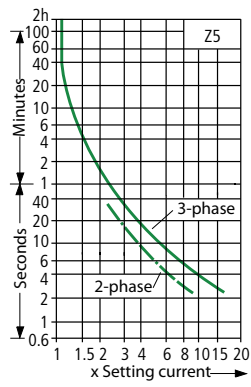
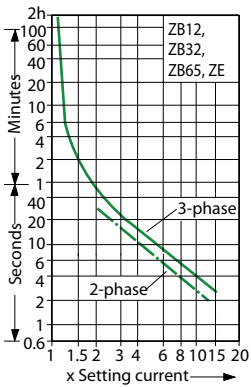


2-pole



**Tripping characteristics:**

These tripping characteristics are mean values of the spread at 20°C ambient temperature in a cold state. Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approximately 25% of the read off value.



		OVERLOAD RELAYS					
		ZB12, ZB32	ZB65	ZE	Z5-.../.IFF250	ZW7	
<b>General</b>							
Standards		IEC/EN 60947, VDE 0660, UL, CSA					
Climatic proofing		Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30					
Ambient temperature							
Open ❶	[°C]	-25/50 °C	-25/50 °C	-25/50 °C	-25/50 °C	-25/50 °C	
	[°F]	-13/122 °F	-13/122 °F	-13/122 °F	-13/122 °F	-13/122 °F	
Enclosed ❶	[°C]	-25/40 °C	-25/40 °C	-25/40 °C	-25/40 °C	-25/40 °C	
	[°F]	-13/104 °F	-13/104 °F	-13/104 °F	-13/104 °F	-13/104 °F	
Temperature compensation		Continuous					
Mounting position		See page 83					
Weight	[kg]	0.15	0.25	0.09	1.8	0.95	
Mechanical shock resistance half-sinusoidal shock 10ms	[g]	10	10	10	10	10	
Degree of protection		IP00	IP00	IP20	IP00	IP00	
Protection against direct contact when actuated from front		Finger- and back-of-hand proof			With terminal cover	Finger- and back-of-hand proof	
<b>Main Contacts</b>							
Rated impulse withstand voltage	$U_{imp}$	[V AC]	6000	6000	6000	8000	6000
Overvoltage category / pollution degree			III/3	III/3	III/3	III/3	III/3
Rated insulation voltage	$U_i$	[V AC]	690	690	690	1000	690
Rated operational voltage	$U_e$	[V AC]	690	690	690	1000	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1							
Between auxiliary contacts and main contacts		[V AC]	440	440	300	440	440
Between the main contacts		[V AC]	440	440	300	440	440
Overload relay setting range		[A]	0.1 – 32	6 – 75	0.1 – 9	50 – 250	40 – 540
Temperature compensation residual error > 20 °C		[% / K]	≤ 0.25	≤ 0.25	≤ 0.25	≤ 0.25	–
Short-circuit protection rating maximum fuse			See page 78	See page 79	See page 77	See page 80	❸
Current heat loss (3 conductors)							
Lower value of setting range		[W]	2.5	3	2.5	16	3
Upper value of setting range		[W]	6	7.5	6	28	10
Terminal capacity							
Solid		[mm²]	2 x (1 – 6)	2 x (1 – 6)	2 x (0.75 – 2.5)	–	–
Flexible without ferrules		[mm²]	–	–	–	–	–
Flexible with ferrule		[mm²]	2 x (1 – 4) 2 x (1 – 6) ❹	1 x 25 2 x (1 – 10) ❷	2 x (0.5 – 1.5)	–	–
Stranded		[mm²]	–	–	–	–	–
Flexible with cable lug		[mm²]	–	–	–	95	–
Stranded with cable lug		[mm²]	–	–	–	120	–
Solid or stranded		[AWG]	14 – 8	14 – 2	18 – 14	250 MCM	–
Flat conductor		Number of segments x width x thickness	–	–	–	6 x 15 x 0.8 ❺	–
Busbar		Width	–	–	–	20 x 3	–
Push-through opening		∅	–	–	–	–	27
Terminal screw			M4	M6	M3.5	M8 x 25	–
Tightening torque		[Nm]	1.8	3.5	1.2	24	–
Tools							
Pozidriv screwdriver		[Size]	2	2	2	–	–
Standard screwdriver		[mm]	1 x 6	1 x 6	0.8 x 5.5	–	–
Hexagon socket-head screw		SW	–	–	–	13	–

❶ Ambient temperature: operating range to IEC/EN 60947, PTB: -5 °C to +50 °C (23 °F to 122 °F)

❷ Main contacts terminal capacity solid and stranded conductors with ferrules: When using 2 conductors, use identical cross-section.

❸ With overload relay in conjunction with a transformer as required for the contactor

❹ 6 mm² flexible with ferrules to DIN 46228

❺ Fixing with box terminals

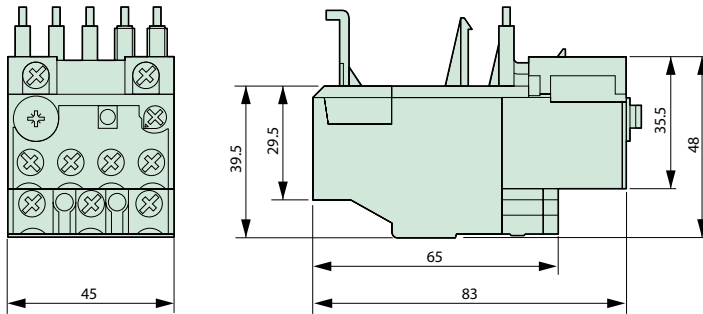
					OVERLOAD RELAYS						
					ZB12, ZB32	ZB65	ZE	Z5-.../.IFF250	ZW7		
<b>Auxiliary and control circuit connections</b>											
Rated impulse withstand voltage		$U_{imp}$	[V]		6000	6000	6000	6000	6000		
Overvoltage category / pollution degree					III/3	III/3	III/3	III/3	III/3		
Terminal capacity											
Solid			[mm <sup>2</sup> ]		2 x (0.75 – 4)	2 x (0.75 – 4)	2 x (0.75 – 2.5)	2 x (0.75 – 4)	2 x (0.75 – 4)		
Flexible with ferrule			[mm <sup>2</sup> ]		2 x (0.75 – 2.5)	2 x (0.75 – 2.5)	2 x (0.5 – 1.5)	2 x (0.75 – 2.5)	2 x (0.75 – 2.5)		
Solid or stranded			[AWG]		2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)	2 x (18 – 12)		
Terminal screw					M3.5	M3.5	M3.5	M3.5	M3.5		
Tightening torque			[Nm]		0.8 – 1.2	0.8 – 1.2	0.8 – 1.2	0.8 – 1.2	0.8 – 1.2		
Tools											
Pozidriv screwdriver			[Size]		2	2	2	2	2		
Standard screwdriver			[mm]		1 x 6	1 x 6	0.8 x 5.5	1 x 6	1 x 6		
Auxiliary circuit rated insulation voltage		$U_i$	[V AC]		500	500	690	500	500		
Rated operational voltage		$U_e$	[V AC]		500	500	500	500	500		
Safe isolation to VDE 0106 Part 101 and Part 101/A1											
Between the auxiliary contacts			[V AC]		240	240	300	240	240		
Conventional thermal current		$I_{th}$	[A]		6	6	6	6	6		
Rated operational current											
AC-15											
Make contact		120 V	$I_e$	[A]	1.5	1.5	1.5	1.5	1.5		
		240 V	$I_e$	[A]	1.5	1.5	1.5	1.5	1.5		
		415 V	$I_e$	[A]	0.5	0.5	0.5	0.5	0.5		
		500 V	$I_e$	[A]	0.5	0.5	0.3	0.5	0.5		
Break contact		120 V	$I_e$	[A]	1.5	1.5	1.5	1.5	1.5		
		240 V	$I_e$	[A]	1.5	1.5	1.5	1.5	1.5		
		415 V	$I_e$	[A]	0.9	0.9	0.7	0.9	0.9		
		500 V	$I_e$	[A]	0.8	0.8	0.5	0.8	0.8		
DC-13 L/R ≤ 15 ms <sup>①</sup>											
		24 V	$I_e$	[A]	0.9	0.9	0.9	0.9	0.9		
		60 V	$I_e$	[A]	0.75	0.75	0.75	0.75	0.75		
		110 V	$I_e$	[A]	0.4	0.4	0.4	0.4	0.4		
		220 V	$I_e$	[A]	0.2	0.2	0.2	0.2	0.2		
Short-circuit rating without welding											
Max. fuse			[A gG/gL]		6	6	4	6	6		
<b>UL / CSA Data</b>											
Rated voltage			[V AC / DC]		600 / 300	600 / 300	300 / 300	600 / 300	600 / 300		
Pilot duty rating			[AC]		B600 - same polarity; B300 - opp. polarity	B600 - same polarity; B300 - opp. polarity	D300 <sup>②</sup>	B600 - same polarity; B300 - opp. polarity	B600 - same polarity; B300 - opp. polarity		
			[DC]		R300	R300	R300	R300	R300		

<sup>①</sup> Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.

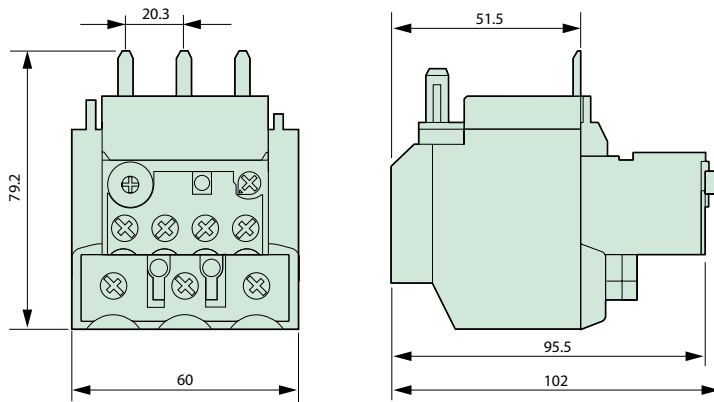
<sup>②</sup> Additional rating of .6A at 600V AC and 1.5A at 240V AC.

### Overload Relays

#### ZB12/ZB32

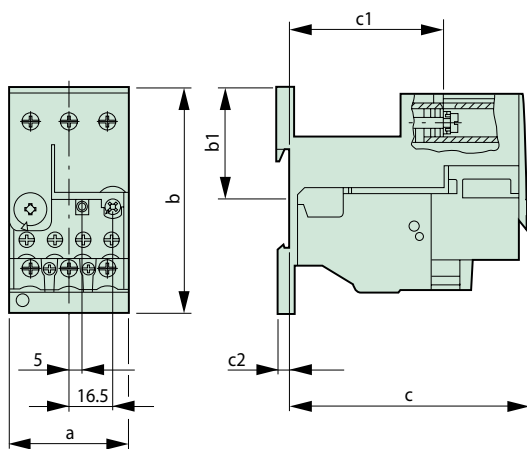


#### ZB65



#### ZB32-XEZ

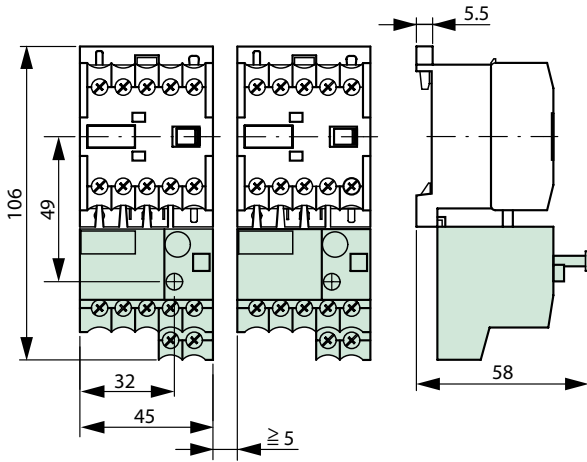
#### ZB65-XEZ



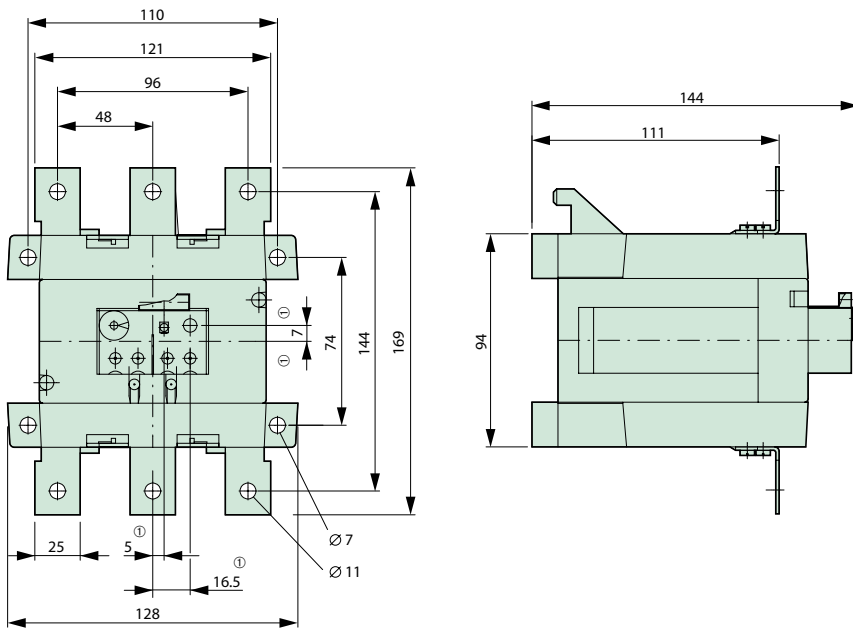
	ZB32	ZB65
a	45	60
b	85	86
b1	42.5	42.5
c	90.5	112
c1	58.3	80.5
c2	3.8	4.7

**Overload Relays**

**ZE**



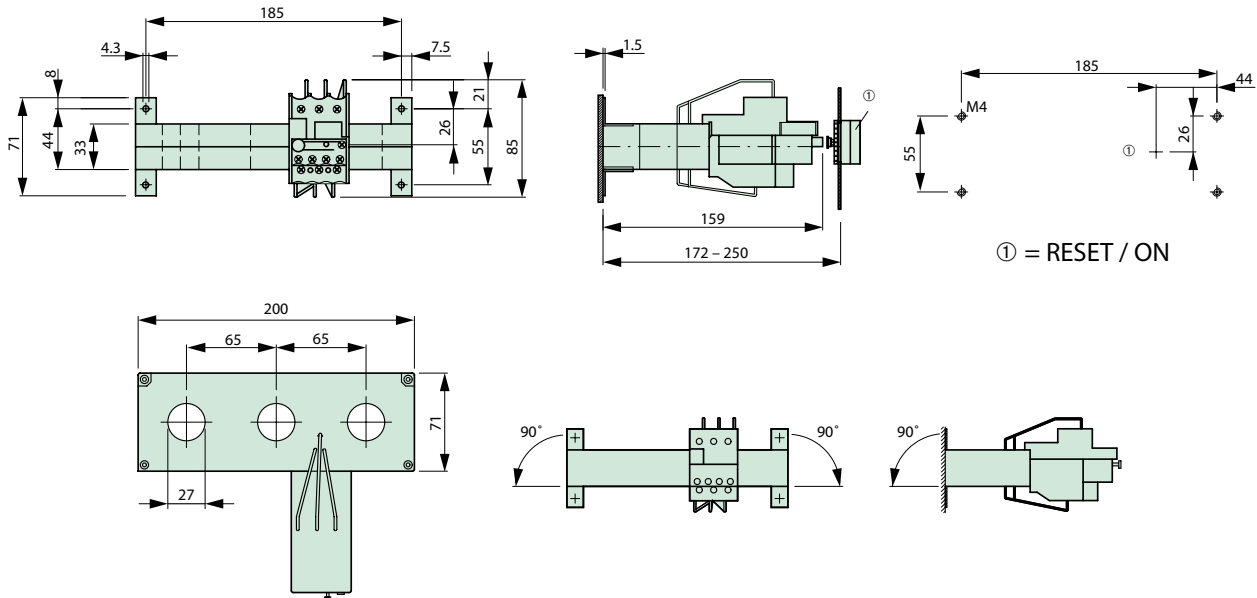
**Z5-.../FF250**



① = OFF  
② = RESET / ON

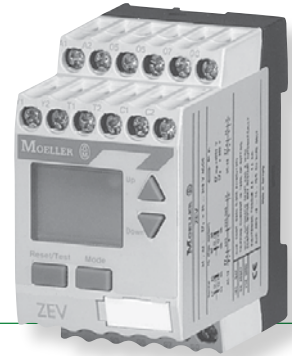


### Current Transformer-operated Overload Relay ZW7-...



# ZEV electronic overload relay

The ultimate motor protection for applications to 820A



Moeller's ZEV electronic overload relay offers the ultimate motor protection at an economical price. The base unit protects against overloads, phase failure and phase imbalance in motors from 1 to 820A. Thermistor connections and optional ground-fault protection make the ZEV a great choice for virtually all applications where sophisticated, yet economical motor protection is required.

## The new standard in protection

Newly-developed sensor systems and tripping units make the ZEV electronic overload relay the "top-of-the-range" in motor protection. Enhanced tripping classes provide reliable protection for motors with run-up times as long as 40 seconds. Trip classes are selectable from 5 to 40 seconds, allowing precise protection for a range of applications.

## Additional features and options

Optional core-balance transformers detect ground faults quickly, while an integrated thermistor connection makes it easy to upgrade to a full motor-protection system. Check out other great features of the ZEV relay listed on the left.

## Easy to operate

A built-in LCD guides you through set-up and operation. In the event of a fault, the display indicates the origin – speeding the process of troubleshooting and repair. Configurable auxiliary contacts may be added for communication of ground faults, thermistor trips, internal faults or early warning of an overload.

## Flexibility for multiple environments

The multi-voltage module automatically adapts to different voltages from 24-240V AC/ DC, providing a fast and flexible connection to all conventional control.

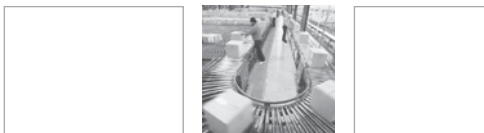
## Compact design

Ring-type current sensors make the ZEV a great choice for protection of even small motors. There's no need for main current wiring or back pan drilling. The sensor is installed quickly and easily with Velcro fasteners. Compared to conventional transformers, this design is up to 58 times smaller, saving valuable space in the control panel.

## Safety and approvals

The ZEV electronic overload relay is touch safe to IP20 specifications. It meets approval standards of UL, CSA, IEC/EN 60 947 and VDE 0660.



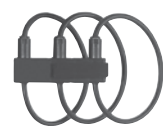


- > Early warning of an overload
- > Internal fault detection
- > Ambient temperature compensation
- > Test / OFF button
- > Automatic & manual reset
- > Trip indication & trip-free release
- > Integrated NO & NC contact





- > Electronic device protects against overloads, phase failure, phase imbalance, internal fault, thermistor tripping and optional ground-fault
- > Eight tripping classes from Class 5 to Class 40 protection
- > LCD display guides set-up and ensures straightforward operation during a fault condition
- > DIN-rail or optional screw mounting

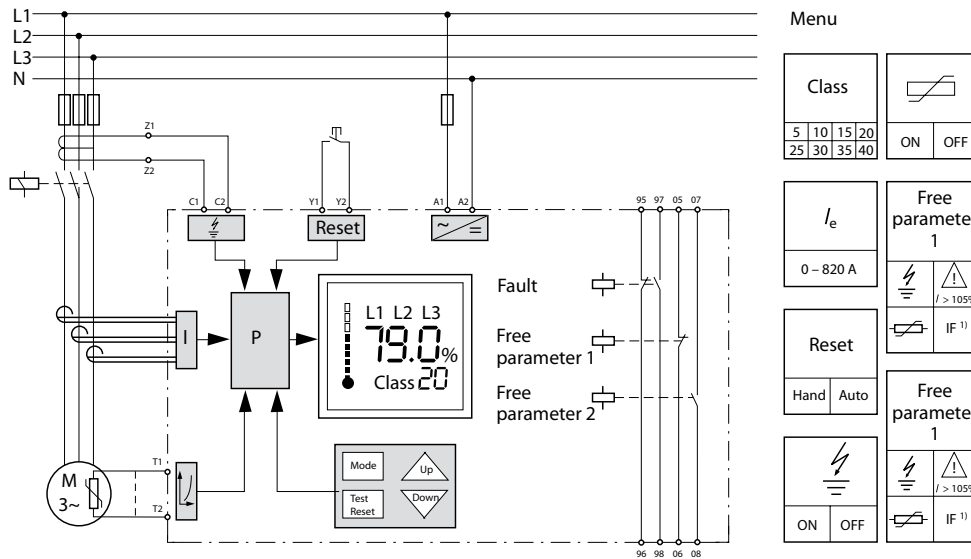
### ZEV Electronic Motor-Protective Relays

Overload Relay	Adjustable Setting Range	Length mm	Diameter mm	For use with...	Fault Current	Type	Article Number	Price
<b>ZEV Electronic Motor-Protective Relay</b>								
	1 – 820	–	–	DILEM – DILM820	–	ZEV	209634	See green pages
<b>Current Sensors</b>								
	1 – 25	–	6	DILEM; DILM7 – DILM25	–	ZEV-XSW-25	209635	See green pages
	3 – 65	–	13	DILM32 – DILM50	–	ZEV-XSW-65	209636	
	10 – 145	–	21	DILM65 – DILM115	–	ZEV-XSW-145	209637	
	40 – 820	–	110	DILM185 – DILM820	–	ZEV-XSW-820	209641	
<b>Connecting Cables</b>								
–	–	200	–	ZEV-XSW-25	–	ZEV-XVK-20	209643	See green pages
	–	400	–	ZEV-XSW-65	–	ZEV-XVK-40	209644	
	–	800	–	ZEV-XSW-145	–	ZEV-XVK-80	209645	
<b>SSW Core-Balance Transformers (for ground-leakage monitoring)</b>								
	–	–	40	–	0.3	SSW40-0,3	028286	See green pages
	–	–	40	–	0.5	SSW40-0,5	028305	
	–	–	40	–	1	SSW40-1	028306	
	–	–	65	–	0.5	SSW65-0,5	028307	
	–	–	65	–	1	SSW65-1	028316	
	–	–	120	–	0.5	SSW120-0,5	028319	
	–	–	120	–	1	SSW120-1	028321	
<b>Mounting Adapter</b>								
	Enables screw mounting of ZEV and Current Sensors to back pan			ZEV ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145	–	ZB4-101-GF1	061360	See green pages

### Ordering Instructions

- ★ A complete ZEV Electronic Motor Protective Relay consists of:
  - One ZEV base unit
  - One Current Sensor
  - One Connecting Cable

- ★ For optional ground leakage protection select one Core Balance Transformer



<sup>1)</sup> IF: internal fault

Inputs		Outputs	
A 1 / A 2	Rated control voltage	95 / 96	NC contact for overload / thermistor
T 1 / T 2	Thermistor sensor	97 / 98	NO contact for overload / thermistor
C 1 / C 2	SSW core-balance transformers	05 / 06	NC contact freely assignable
Y 1 / Y 2	Remote reset	07 / 08	NO contact freely assignable

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

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

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

### Relays with integrated sensor

With the ZEV-XSW-25 to ZEV-XSW-145 push-through sensors, the motor supply leads for each phase are pushed through the respective push-through openings. On motor currents which are less than 1 A, the motor supply leads with the ZEV-XSW-25 are inserted in loops. The number of loops depends on the rated motor current involved.

Number of loops n		4	3	2
Rated motor current $I_N$	A	0.31 - 0.4	0.41 - 0.62	0.63 - 1.24
Current settings on relay $I_E$ between lowest and highest value	A	1.24 - 1.6	1.23 - 1.86	1.26 - 2.48

The current setting  $I_E$  of the device is calculated as:  $I_E = n \times I_N$

### Tripping times for ZEV electronic motor-protective relay

Tripping class, can be selected	Class	5	10	15	20	25	30	35	40	
Tripping time in s ( $\pm 20\%$ )		With 3-pole symmetric loading from cold state								
Setting current $I_E$	x 3	11.3	22.6	34	45.3	56.6	67.9	79.2	90.5	
	x 4	8	15.9	23.9	31.8	39.8	47.7	55.7	63.6	
	x 5	6.1	12.3	18.4	24.6	30.7	36.8	43	49.1	
	x 6	5	10	15	20	25	30	35	40	
	x 7.2	4.1	8.2	12.3	16.4	20.5	24.5	28.6	32.7	
	x 8	3.6	7.3	10.9	14.6	18.2	21.9	25.5	29.2	
	x 10	2.9	5.7	8.6	11.5	14.4	17.2	20.1	23	

### Recovery time after overload trip

Overview of the recovery time in minutes	Class	5	10	15	20	25	30	35	40
	$t_{\text{recovery}}$ (min)		5	6	7	8	9	10	11

With unbalance > 50% and with phase failure, the trip occurs in 2.5s.

#### Thermistor tripping

Rated trip resistance  $R = 3200 \Omega \pm 15\%$

Recovery resistance  $R = 1500 \Omega + 10\%$

Total PTC thermistor resistance  $\sum R_K \leq 1500 \Omega$

at  $R_K \leq 250 \Omega$  per sensor: 6 sensors

at  $R_K \leq 100 \Omega$  per sensor: 9 sensors

Ready to respond after trip at 5 K under response temperature

Test button tripping time: 5s

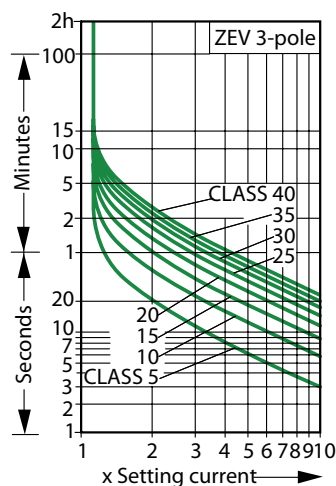
EC prototype test certification number: PTB 01 ATEX 3233

For protection of motors in EEx e area, also order AWB2300-1433G

"ZEV motor-protective system, Overload monitoring of motors in EEX e areas".

#### Tripping characteristics:

These tripping characteristics are mean values of the spread at 20°C ambient temperature in a cold state. Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approximately 25% of the read off value.



With a phase failure or unbalance > 50%, the ZEV will trip within 2.5 seconds.

		ELECTRONIC ZEV	
<b>General</b>			
Standards		IEC/EN 60947, VDE 0660, UL, CSA	
Climatic proofing		Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30	
Ambient temperature			
Open <sup>①</sup>	[°C] [°F]	-25/60 °C -13/140 °F	
Enclosed <sup>①</sup>	[°C] [°F]	-25/40 °C -13/104 °F	
Storage	[°C] [°F]	40 – 80 °C 104 – 176 °F	
Temperature compensation		Continuous	
Mounting position		As required	
Weight	[kg]	See page 0.20	
Mechanical shock resistance half-sinusoidal shock 10ms	[g]	15	
Degree of protection		IP20	
Protection against direct contact when actuated from front		Finger- and back-of-hand proof	
<b>Main Contacts</b>			
Overload relay setting range	[A]	1 – 820 <sup>⑦</sup>	
Short-circuit protection rating maximum fuse		With overload relay in conjunction with a transformer as required for the contactor	
Terminal screw		M3.5	
Tightening torque	[Nm]	0.8	
Tools			
Pozidriv screwdriver	[Size]	1	
Standard screwdriver	[mm]	0.8 x 5.5	
<b>Auxiliary and control circuit connections</b>			
Rated impulse withstand voltage	$U_{imp}$ [V]	4000	
Overvoltage category / pollution degree		III/3	
Terminal capacity			
Solid	[mm <sup>2</sup> ]	1 x (0.5 – 2.5) 2 x (0.5 – 1.5) <sup>④</sup>	
Flexible with ferrule	[mm <sup>2</sup> ]	1 x (0.5 – 2.5) 2 x (0.5 – 1.5) <sup>④</sup>	
Solid or stranded	[AWG]	1 x (18 – 14)	
Terminal screw		M3.5	
Tightening torque	[Nm]	0.8	
Tools			
Pozidriv screwdriver	[Size]	1	
Standard screwdriver	[mm]	0.8 x 5.5	

- <sup>①</sup> Ambient temperature: operating range to IEC/EN 60947, PTB: -5 °C to +50 °C (23 °F to 122 °F)
- <sup>②</sup> Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.
- <sup>③</sup> See overlay "Fuses" for short-circuit rating time/current characteristic
- <sup>④</sup> Terminal capacities, auxiliary and control circuits, solid, flexible with ferrules: With connection of conductors only the following combinations are permissible: 0.5 and 0.75mm<sup>2</sup>, 0.75 and 1 mm<sup>2</sup>, 1 and 1.5 mm<sup>2</sup>

		ELECTRONIC ZEV	
<b>Auxiliary and control circuit connections (continued)</b>			
Auxiliary circuit rated insulation voltage	$U_i$ [V AC]	250	
Rated operational voltage	$U_e$ [V AC]	240	
Safe isolation to VDE 0106 Part 101 and Part 101/A1			
Between the auxiliary contacts	[V AC]	240 <sup>⑤</sup>	
Conventional thermal current	$I_{th}$ [A]	6	
Rated operational current AC-15			
Make contact	120 V	$I_e$ [A]	3 <sup>⑥</sup>
	240 V	$I_e$ [A]	3 <sup>⑥</sup>
	415 V	$I_e$ [A]	–
	500 V	$I_e$ [A]	–
Break contact	120 V	$I_e$ [A]	3
	240 V	$I_e$ [A]	3
	415 V	$I_e$ [A]	–
	500 V	$I_e$ [A]	–
DC-13 L/R ≤ 15 ms <sup>②</sup>			
	24 V	$I_e$ [A]	1
	60 V	$I_e$ [A]	–
	110 V	$I_e$ [A]	–
	220 V	$I_e$ [A]	–
Power consumption	$P_{max.}$ [W]	2.5	
Short-circuit rating without welding			
Max. fuse <sup>③</sup>	[A gG/gL]	6	
Pick-up and drop-out values			
AC operated	[x $U_c$ ]	0.85 – 1.1	
DC operated	[x $U_c$ ]	0.85 – 1.1	
<b>UL / CSA</b>			
Rated Voltage	[V AC/DC]	600 / 300	
Pilot Duty			
	[AC]	B600 Same polarity B300 Opposite polarity	
	[DC]	R300	
<b>Thermistor Protection</b>			
Total resistance (cold)	[Ω]	1500	
Response value	[Ω]	2720 – 3680	
Reset range	[Ω]	1500 – 1650	
Recovery time			
Overload		See page 92	
Thermistor tripping		5 K under response temperature	
Ground-fault protection		Immediate	

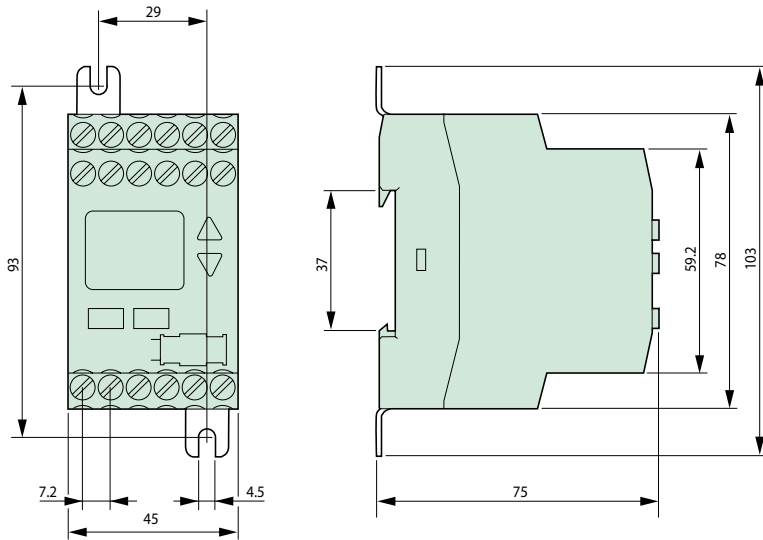
- <sup>⑤</sup> Safe isolation: Up to 240 V depending on contact assignment between mains and outputs no potential isolation to thermistor and summation current transformer input and current sensor (neighboring contacts:  $U_s = 127$  V)
- <sup>⑥</sup> Rated operational current AC-15: contacts 95/96 and 97/98 3 A (contactor control), contacts 05/06 and 07/08 1.5 A (auxiliary contacts)
- <sup>⑦</sup> Overload relay main contact setting range: setting range dependant on current sensor
- <sup>⑧</sup> Ambient temperature open and enclosed: limited readability of the LDC display at < -15 °C (5 °F)

			CURRENT SENSORS			
			ZEV-XSW-25	ZEV-XSW-65	ZEV-XSW-145	ZEV-XSW-820
<b>General</b>						
Standards			IEC/EN 60947, VDE 0660, UL, CSA			
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature						
Open	[°C]		-25 / 60 °C	-25 / 60 °C	-25 / 60 °C	-25 / 60 °C
	[°F]		-13 / 140 °F	-13 / 140 °F	-13 / 140 °F	-13 / 140 °F
Enclosed	[°C]		-25 / 40 °C	-25 / 40 °C	-25 / 40 °C	-25 / 40 °C
	[°F]		-13 / 104 °F	-13 / 104 °F	-13 / 104 °F	-13 / 104 °F
Storage ❶	[°C]		-40 / 80 °C	-40 / 80 °C	-40 / 80 °C	-40 / 80 °C
	[°F]		-40 / 176 °F	-40 / 176 °F	-40 / 176 °F	-40 / 176 °F
Temperature compensation			Continuous			
Mounting position			As required			
Weight	[kg]		0.21	0.37	0.45	0.30
Mechanical shock resistance half-sinusoidal shock 10ms	[g]		15	15	15	15
Degree of protection			IP20	IP20	IP20	IP20
Protection against direct contact when actuated from front			Finger- and back-of-hand proof			
<b>Main Contacts</b>						
Rated impulse withstand voltage	$U_{imp}$	[V AC]	②	②	②	8000
Overvoltage category / pollution degree			②	②	②	III/3
Rated insulation voltage	$U_i$	[V AC]	②	②	②	1000
Rated operational voltage	$U_e$	[V AC]	②	②	②	1000
Safe isolation to VDE 0106 Part 101 and Part 101/A1						
Between busbar and sensor		[V AC]	–	–	–	500
Overload relay setting range		[A]	1 – 25	3 – 65	10 – 145	40 – 820
Short-circuit protection rating maximum fuse						
Push-through opening		∅ [mm]	6	13	21	110

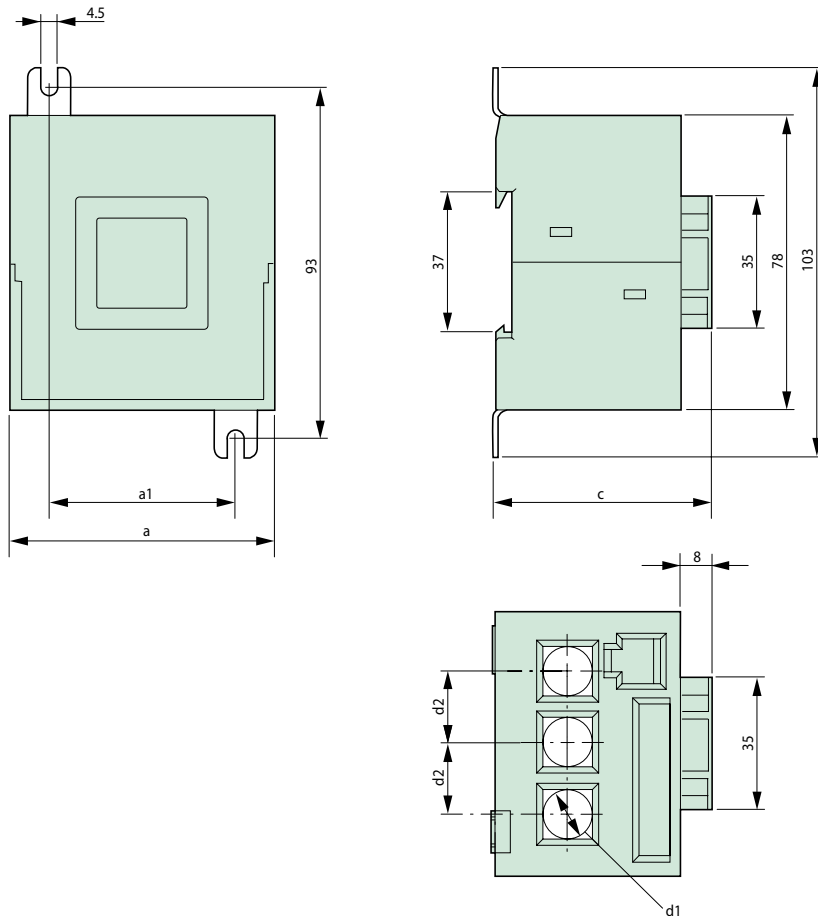
❶ Ambient temperature: operating range to IEC/EN 60947, PTB: -5 °C to +50 °C (23 °F to 122 °F)

❷ The main current parameters are defined by the main current wiring which is used.

**Overload Relays  
ZEV**



**Current Sensors  
ZEV-XSW-...**

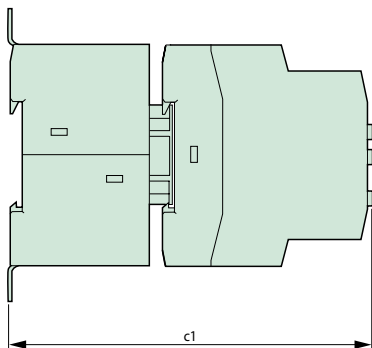


ZEV-XSW-...	25	65	145
a	45	70	90
a1	24	49	68
c	50	58	65
d1	6	13	21
d2	11.2	19	26

## Dimensions

### Overload Relays

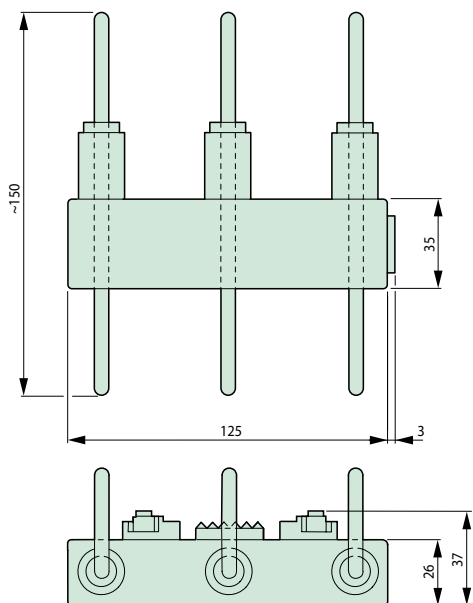
ZEV + ZEV-XSW-...



ZEV + ZEV-XSW-...	25	65	145
c1	120	128	134

### Current Sensor

ZEV-XSW-820

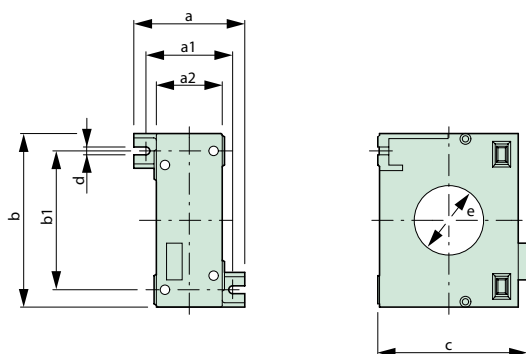


### Core-balance Transformer

SSW40-...

SSW65-...

SSW120-...



SSW...	40-...	65-...	120-...
a	64	75	86.5
a1	50	60	70
a2	38	43	54.5
b	100	124	200
b1	80	100	170
c	86	112	205
d	4.5	4.5	4.5
e	40	65	120

# EMT thermistor protection relays

For motors with imbedded P.T.C. thermistors



Moeller's EMT Thermistor Protection Relays are specifically designed to monitor positive temperature coefficient (PTC) thermistors embedded in the motor windings. Typically used in "mission critical" applications, PTC thermistors, coupled with EMT Thermistor Protection Relays provide extremely precise thermal feedback and increased motor protection.

## Three designs to choose

All EMT relays feature automatic reset with Power-ON and fault-indicating LED. Depending on the model chosen, the following additional features are also available:

- Selectable manual or automatic reset
- Remote reset
- Short circuit recognition in the sensor circuit
- Reliable fault signaling even under supply voltage failure (zero voltage safety)
- Short circuit recognition and zero-voltage safety can be switched off
- Test button

## Universal input voltage

Moeller EMT Thermistor Protection relays accept voltage inputs of 24 – 240V AC 50-60Hz; and 24 – 240V DC making them ideal for the majority of normal control circuit applications.

## Zero-voltage safety

The EMT6-DBK includes fault signaling even with a loss of supply voltage. This important safety feature stores the condition of the relay prior to the loss of power. When power is restored, the relay's output and LED fault indication retain state and act accordingly.

> Extremely accurate overload protection

> Universal supply voltage

> Choose from basic to advanced protection




Feature Comparison	EMT-6	EMT6-DB	EMT6-DBK
LED power-ON and fault indication	✓	✓	✓
Thermal overload protection (from PTC sensors)	✓	✓	✓
Automatic reset	✓	✓	✓
Universal control voltage	✓	✓	✓
Short circuit recognition in the sensor circuit	✓ (option)	✓ (option)	✓
Manual or automatic reset		✓	✓
Remote or local reset		✓	✓
Test button		✓	✓
Fault signaling with loss of supply voltage (zero-voltage safety)			✓
Short circuit recognition and zero voltage safety can be turned off			✓



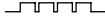





- > For protection of motors with P.T.C. thermistors embedded in their windings
- > LED display of operational status
- > Manual / Automatic reset or remote reset available

### Thermistor Protection Relays

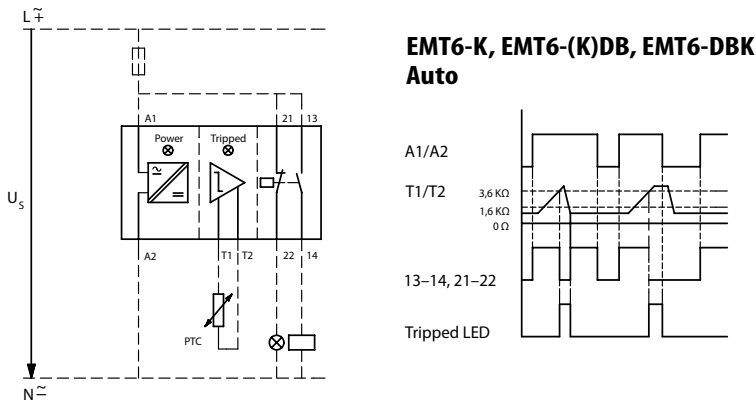
Protection Relay	Description	IEC Rated Operating Current		UL/CSA Pilot Duty Rating	Rated Operational Voltage Range	Type	Article Number	Price
		AC-15 220–240 V	AC-14 380–400 V					
<b>Automatic Reset</b>								
	<ul style="list-style-type: none"> <li>• Automatic RESET</li> <li>• Power ON and fault indicating LED display</li> </ul>	3	3	B 300	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6	066166	See green pages
	<ul style="list-style-type: none"> <li>• Automatic RESET</li> <li>• Power ON and fault indicating LED display</li> <li>• Short-circuit recognition in the sensor circuit</li> </ul>	3	3	B 300	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6-K	269470	
	<ul style="list-style-type: none"> <li>• Automatic RESET</li> <li>• Power ON and fault indicating LED display</li> </ul>	3	3	B 300	230 V 50/60 Hz	EMT6(230V)	066400	
<b>Manual + Automatic Reset</b>								
	<ul style="list-style-type: none"> <li>• Manual or automatic RESET</li> <li>• For manual or remote resetting</li> <li>• Test button</li> <li>• Power ON and fault indicating LED display</li> </ul>	3	3	B 300	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6-DB	066167	See green pages
	<ul style="list-style-type: none"> <li>• Manual or automatic RESET</li> <li>• For manual or remote resetting</li> <li>• Test button</li> <li>• Power ON and fault indicating LED display</li> <li>• Short-circuit recognition in the sensor circuit</li> </ul>	3	3	B 300	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6-KDB	269471	
	<ul style="list-style-type: none"> <li>• Manual or automatic RESET</li> <li>• For manual or remote resetting</li> <li>• Test button</li> <li>• Power ON and fault indicating LED display</li> </ul>	3	3	B 300	230 V 50/60 Hz	EMT6-DB(230V)	066401	
<b>Manual + Automatic Reset / Multi-function Device</b>								
	<ul style="list-style-type: none"> <li>• Manual or automatic reset / Multi-functon device</li> <li>• Short-circuit recognition in the sensor circuit</li> <li>• Reliable fault signalling even under supply voltage failure (zero-voltage safety)</li> <li>• For manual or remote resetting</li> <li>• Test button</li> <li>• Short-circuit recognition and zero-voltage safety can be switched off</li> <li>• Power ON and fault indicating LED display</li> </ul>	3	3	B 300	24 – 240 V 50/60 Hz, 24 – 240 V DC	EMT6-DBK	066168	See green pages

LED display	Flow diagrams	Notes
green		Supply voltage is applied
red		Device has tripped
red		Device has tripped/short circuit in the sensor circuit

### Accessories

Accessories	Notes	For use with...	Type	Article Number	Price
<b>Screw Adapter</b>					
	Without the adaptor the EMT 6 is suitable for 35mm DIN-rail mounting only. The adapter enables the relay to become a panel mounted device using conventional screws.	EMT6	CS-TE	095853	See green pages

### Application Notes



With the EMT6, EMT6(230V), EMT6-DB and EMT6-DB(230V) an additional short-circuit protection in the sensor circuit with current monitor is to be provided.

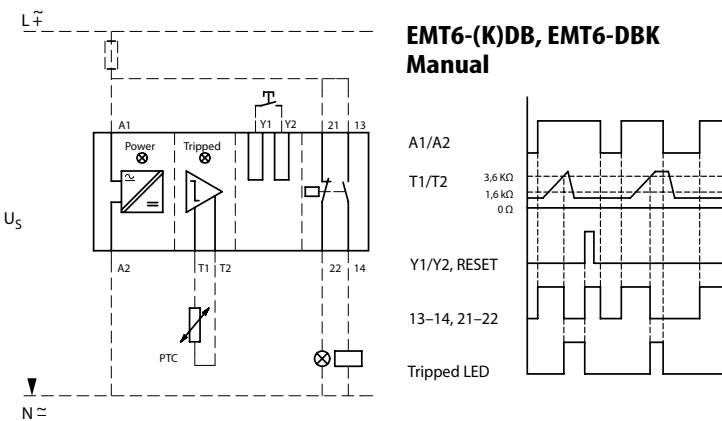
Can be snap-mounted on an EN 50 022 35mm DIN rail.

At  $R_k \leq 250 \Omega$  per sensor: 6 sensors,

At  $R_k \leq 100 \Omega$  per sensor: 9 sensors in the winding (provided by user)

Maximum length of thermistor cable 250 m (un-screened);

Total PTC thermistor resistance  $\sum R_k \leq 1500 \Omega$

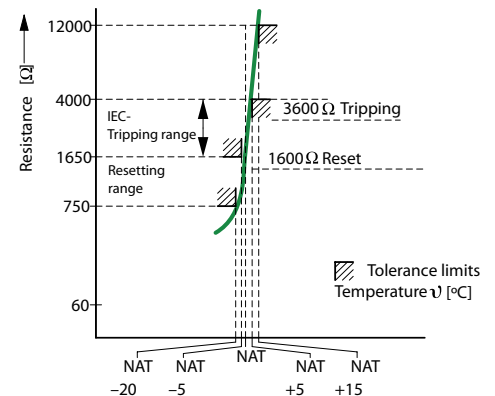
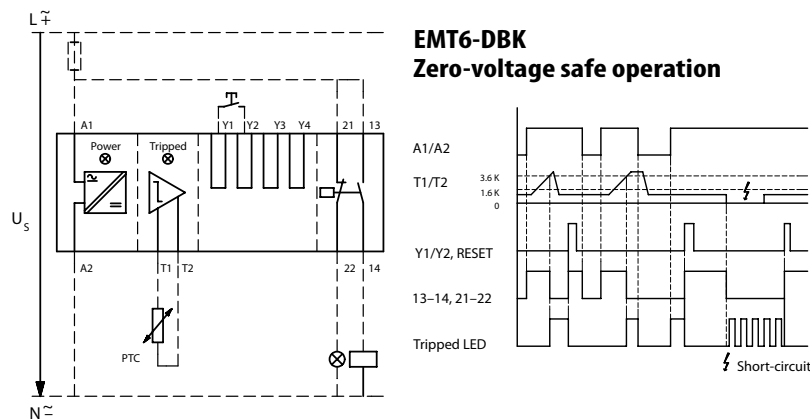


Sensor characteristic values at  $U_s$  and  $+20^\circ\text{C}$

EMT6...		
T1, T2 short-circuited	–	1.9
4 k $\Omega$	3	0.8
T1-T2 open	5.1	–

Functions that can be disconnected on EMT6-DBK:

Function	Disconnection via jumper
Short-circuit recognition	$Y_1 - Y_3$
Zero-voltage safety	$Y_1 - Y_4$



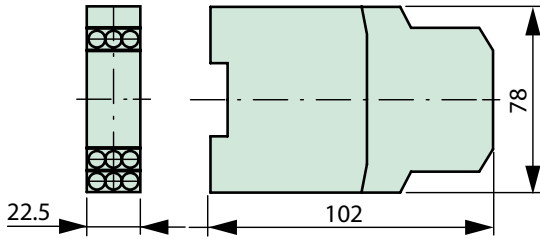
THERMISTOR OVERLOAD RELAY EMT6				
<b>General</b>				
Standards		IEC/EN 60947, VDE 0660, UL, CSA		
EC Prototype test certification number		PTB 02 ATEX 3162		
Climatic proofing		Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30		
Ambient temperature				
Open		[°C / °F]	-25/60 °C / -13/140 °F	
Enclosed		[°C / °F]	-25/45 °C / -13/113 °F	
Storage		[°C / °F]	-45/60 °C / -49/140 °F	
Mounting position		As required		
Weight		[kg]	0.13	
Mechanical shock resistance half-sinusoidal shock 10ms		[g]	10	
Degree of protection		IP20		
Protection against direct contact when actuated from front		Finger- and back-of-hand proof		
Safe isolation to VDE 0106 Part 101 and Part 101/A1				
Between the contacts		[V AC]	250	
Between contacts and supply voltage		[V AC]	250	
<b>Auxiliary and Control Circuit Connections</b>				
Rated impulse withstand voltage		$U_{imp}$	[V AC]	6000
Overvoltage category / pollution degree		III/3		
Auxiliary and control circuit terminal capacity				
Solid		[mm <sup>2</sup> ]	1 x 2.5; 2 x (0.5 – 1.5)	
Flexible with ferrule		[mm <sup>2</sup> ]	1 x 2.5; 2 x (0.5 – 1.5)	
Solid or stranded		[AWG]	20 – 14	
Terminal screw		M3.5		
Tightening torque		[Nm]	1.2	
Tools				
Pozidriv screwdriver		[Size]	2	
Standard screwdriver		[mm]	1 x 6	
<b>Auxiliary Circuit</b>				
Rated insulation voltage		$U_i$	[V]	400
Rated operational current				
AC-14	Make contact	415 V	$I_e$	[A] 3
	Break contact	415 V	$I_e$	[A] 3
AC-15	Make contact	240 V	$I_e$	[A] 3
		415 V	$I_e$	[A] 1
	Break contact	240 V	$I_e$	[A] 3
		415 V	$I_e$	[A] 1
Max. short-circuit protective device				
Fuse		gG/gL	[A]	6
<b>Control Circuit</b>				
Rated insulation voltage		$U_i$	[V]	240
Rated operational voltage		$U_e$	[V]	240 ①
Pick-up and drop-out values			[x $U_e$ ]	0.85 – 1.1
Power consumption				
AC			[VA]	3.5
DC			[W]	2
Trip at approx.			[Ω]	≥ 3600
Recovery at approx.			[Ω]	≥ 1600

① EMT6(-DB)230 V;  $U_e = 230$  V

**Thermistor Protection Relays**

**EMT6-(-DB)**

**EMT6-DBK**





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