



## 4-pole contactor, 20A/AC-1, AC operated



Powering Business Worldwide™

Part no.

DILEM4(230V50/60HZ)

Article no.

052506

### Program

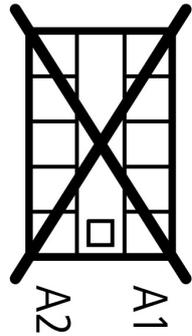
Product range			Contactors
Subrange			DILEM contactors
Application			Mini Contactors for Motors and Resistive Loads
Pole			4 pole
Connection technique			Screw terminals
Rated operational current			
AC-3			
400 V	$I_e$	A	9
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 50 °C	$I_{th} = I_e$	A	20
enclosed	$I_{th}$	A	16
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	2.2
380 V 400 V	P	kW	4
660 V 690 V	P	kW	4
AC-4			
220 V 230 V	P	kW	1.5
380 V 400 V	P	kW	3
660 V 690 V	P	kW	3
Contact sequence			
For use with			...DILEM ...DILE
Actuating voltage			230 V 50/60 Hz
Voltage AC/DC			AC operation

### Approbationen

UL approval	Yes
CSA approval	Yes
Product Standards	IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking
UL File No.	E29096
UL CCN	NLDX
CSA File No.	012528
CSA Class No.	3211-04
NA Certification	UL listed, CSA certified
Specially designed for NA	No

### General

Standards			IEC/EN 60947, VDE 0660, CSA, UL
Lifespan, mechanical; Coil 50/60 Hz	Operations	$x 10^6$	7
Lifespan, mechanical	Operations	$x 10^6$	20
Maximum operating frequency		Ops./h	
Mechanical		Ops./h	9000
Climatic proofing			Damp heat, constant to IEC 60068-2-78 Damp heat, cyclic to IEC 60068-2-30
Ambient temperature		°C	

Open		°C	- 25 - 50
Enclosed		°C	- 25 - 40
Mounting position			As required except vertical with terminals A1/A2 at the bottom
			
Mounting position			As required, except vertical with terminals A1/A2 at the bottom
Mechanical shock resistance (IEC/EN 60068-2-27)			
Half-sinusoidal shock, 10 ms			
Basic unit without auxiliary contact module			
Main contacts, make contacts		g	10
Basic unit with auxiliary contact module			
Main contacts make contact		g	
Make		g	10
Auxiliary contacts Make/break contacts		g	20 / 20
Protection type			IP20
Protection against direct contact when actuated from front (EN 90274)			Finger and back-ofhand proof
Weight		kg	0.2
Terminal capacity of auxiliary and main contacts			
Solid		mm <sup>2</sup>	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 x (0.75 - 1.5) 2 x (0.75 - 1.5)
Solid or stranded		AWG	18 - 14
Terminal screw			M3.5
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 x 5.5 1 x 6
Max. tightening torque		Nm	1.2
Terminal capacity springloaded terminals main and control circuits			
Solid		mm <sup>2</sup>	1 x (1 - 2.5) 2 x (1 - 2.5)
Flexible with ferrule		mm <sup>2</sup>	1 x (1 - 2.5) 2 x (1 - 2.5)
Standard screwdriver		mm	0.6 x 3.5
<b>Main conducting paths</b>			
Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U <sub>i</sub>	V AC	690
Rated operational voltage	U <sub>e</sub>	V AC	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1			
between coil and contacts		V AC	300
between the contacts		V AC	300
Making capacity (cos φ to IEC/EN 60947)		A	110
Breaking capacity			
220/230 V		A	90
380/400 V		A	90
500 V		A	64
660/690 V		A	42

Short-circuit protection maximum fuse			
Type "2" coordination	gL/gG	A	10
Type "1" coordination	gL/gG	A	20

## AC

AC-1 duty			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th}=I_e$	A	22
at 50 °C	$I_{th}=I_e$	A	20
at 55 °C	$I_{th}=I_e$	A	19
enclosed	$I_{th}$	A	16
Notes			At maximum permissible ambient air temperature.
Conventional free air thermal current, 1 pole			
Notes			At maximum permissible ambient air temperature.
open	$I_{th}$	A	60
enclosed	$I_{th}$	A	50
AC-3 duty			
Rated operational current AC-3 open, 50 - 60 Hz, 3 pole			
Notes	$I_e$		At maximum permissible ambient air temperature.
220/230 V	$I_e$	A	9
240 V	$I_e$	A	9
380/400 V	$I_e$	A	9
415 V	$I_e$	A	9
440V	$I_e$	A	9
500 V	$I_e$	A	6.4
660/690 V	$I_e$	A	4.8
Motor rating	P	kWh	
220/230 V	P	kW	2.2
240V	P	kW	2.5
380/400 V	P	kW	4
415 V	P	kW	4.3
440 V	P	kW	4.6
500 V	P	kW	4
660/690 V	P	kW	4
AC-4 duty			
Rated operational current AC-4 open, 50 - 60 Hz, 3 pole			
Notes	$I_e$		At maximum permissible ambient air temperature.
220/230 V	$I_e$	A	6.6
240 V	$I_e$	A	6.6
380/400 V	$I_e$	A	6.6
415 V	$I_e$	A	6.6
440 V	$I_e$	A	6.6
500 V	$I_e$	A	5
660/690 V	$I_e$	A	3.4
Motor rating	P	kWh	
220/230 V	P	kW	1.5
240 V	P	kW	1.8
380/400 V	P	kW	3
415 V	P	kW	3.1
440 V	P	kW	3.3
500 V	P	kW	3
660/690 V	P	kW	3

## DC

Rated operational current, open	$I_e$		
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DC - -1			
12 V	$I_e$	A	20
24 V	$I_e$	A	20
60 V	$I_e$	A	20
110 V	$I_e$	A	20
220 V	$I_e$	A	20
DC - 3			
12 V	$I_e$	A	8
24 V	$I_e$	A	8
60 V	$I_e$	A	4
110 V	$I_e$	A	3
220 V	$I_e$	A	1
DC - 5			
12 V	$I_e$	A	2.5
24 V	$I_e$	A	2.5
60 V	$I_e$	A	2.5
110 V	$I_e$	A	2.5
220 V	$I_e$	A	1
Current heat losses (3- or 4-pole)			
to $I_{th}$		W	2.7

## Magnet systems

Voltage tolerance		$x U_c$	
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	$x U_c$	0.8 - 1.1
Dual-frequency coil 50/60 Hz	Pick-up	$x U_c$	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
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	W	22
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	VA	4.6
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	W	1.3
Dual-frequency coil 50/60 Hz at 50 Hz	Pick-up	VA	30
Dual-frequency coil 50/60 Hz at 50 Hz	Pick-up	W	26
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	VA	5.4
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	W	1.6
Dual-frequency coil 50/60 Hz at 60 Hz	Pick-up	VA	29
Dual-frequency coil 50/60 Hz at 60 Hz	Pick-up	W	24
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	VA	3.9
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	W	1.1
DC operation			
Notes			Smoothed DC voltage or three-phase bridge rectifier
Duty factor		% DF	100
Switching times at 100 % $U_c$			
Make contact		ms	
Closing delay		ms	
Closing delay min.		ms	14
Closing delay max.		ms	21
Opening delay		ms	
Opening delay min.		ms	8
Opening delay max.		ms	18
Closing delay with top mounting auxiliary contact		ms	max. 45
Reversing contactors			
Changeover time at 110 % $U_c$		ms	
Changeover time min.		ms	16

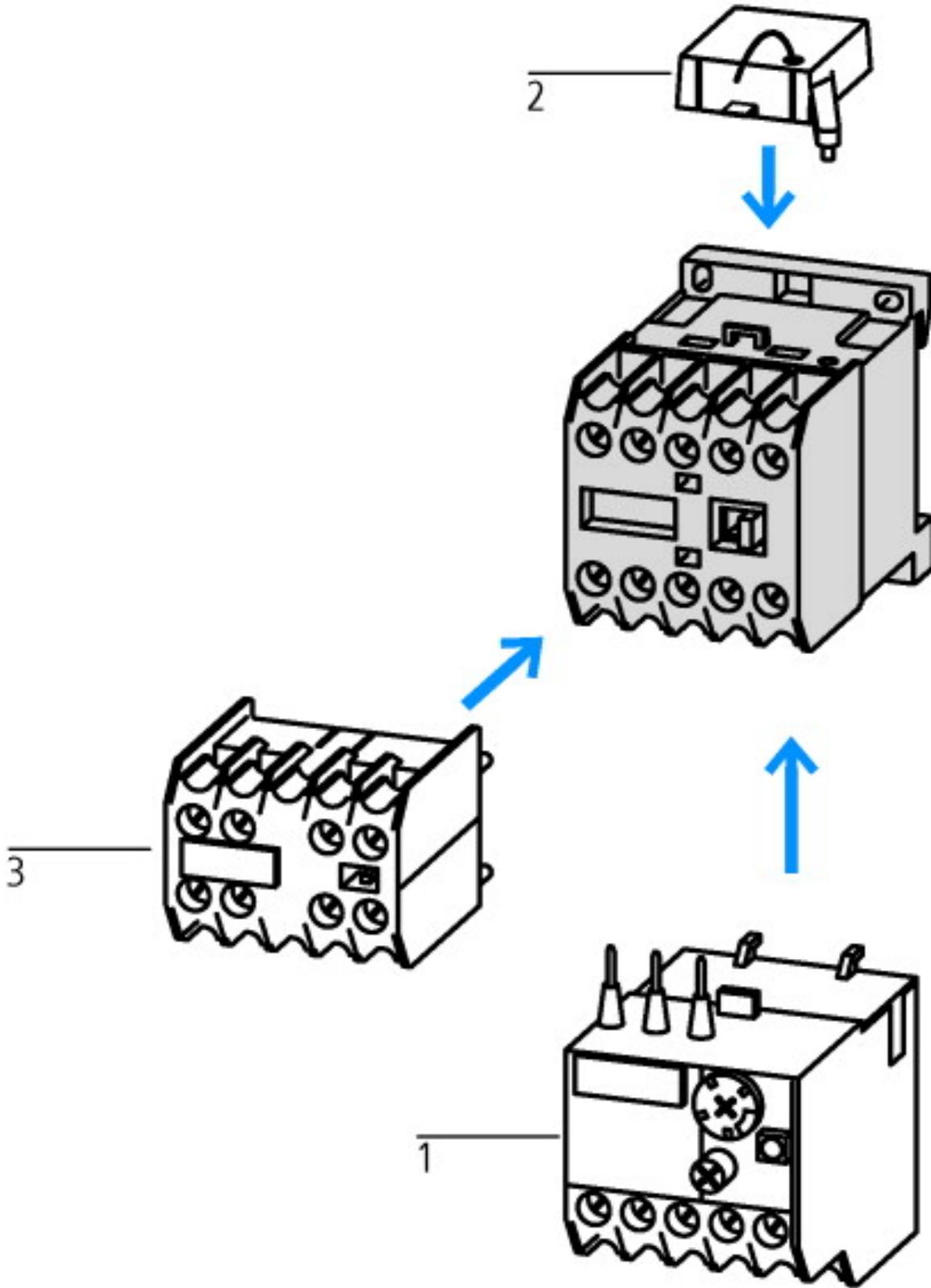
Changeover time max.		ms	21
Arcing time at 690 V AC		ms	max. 12
<b>Auxiliary contacts</b>			
Positive operating contacts to ZH 1/457, including auxiliary contact module			Yes
Rated impulse withstand voltage	$U_{imp}$	V AC	6000
Rated insulation voltage	$U_i$	V AC	690
Rated operational voltage	$U_e$	V	
Rated operational voltage	$U_e$	V AC	600
Safe isolation to VDE 0106 Part 101 and Part 101/A1			
between coil and auxiliary contacts		V AC	300
between the auxiliary contacts		V AC	300
Rated operational current	$I_e$	A	
AC-15			
220/240 V	$I_e$	A	6
380/415 V	$I_e$	A	3
500 V	$I_e$	A	1.5
DC-13			
Contacts in series:		A	
1	24 V	A	2.5
2	60 V	A	2.5
3	100 V	A	1.5
3	220 V	A	0.5
Control circuit reliability (at $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA)	Failure rate	$\lambda$	$<10^{-8}$ , < one failure at 100 million operations
Component lifespan at $U_e = 240$ V			
AC-15	Operations	$\times 10^6$	0.2
DC-13			
L/R = 50 ms: 2 contacts in series at $I_e = 0.5$ A	Operations	$\times 10^6$	0.15
Notes			Switch-on and switch-off conditions based on DC-13, time constant as specified
Short-circuit rating without welding			
Maximum overcurrent protective device			
Short-circuit protection only			PKZM0-4
Short-circuit protection maximum fuse			
500 V		A gG/gL	6
500 V		A fast	10
Current heat loss at $I_{th}$			
Per contact		W	0.2

### Technical data according to ETIM 4.0

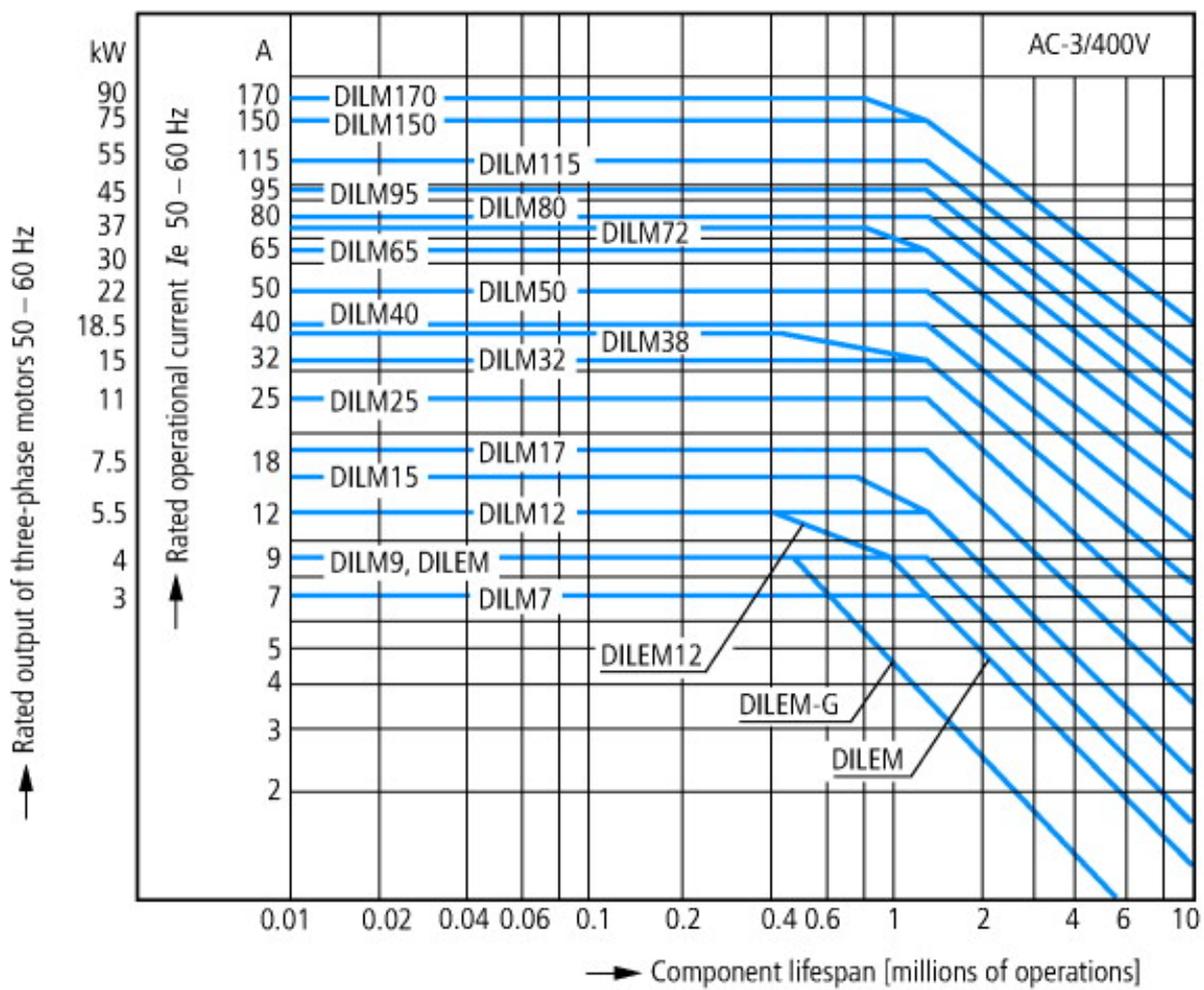
Number of main contacts as N/Os			4
Rated operation current $I_e$ at AC-1, 400 V			22
Connection type main circuit			Screw connection
Rated control voltage $U_s$ at AC 60HZ		V	230
Number of auxiliary contacts as N/Os			0
Rated control voltage $U_s$ at AC 50HZ		V	230
Number of auxiliary contacts as N/Cs			0
Suitable for rail-mounting			No
Rated control voltage $U_s$ at DC		V	0

Voltage type for actuation		AC
Rated operation current I <sub>e</sub> at AC-3, 400 V	A	9
Number of N/Cs as main contact		0
Motor rating at AC-3, 400 V	kWh	4

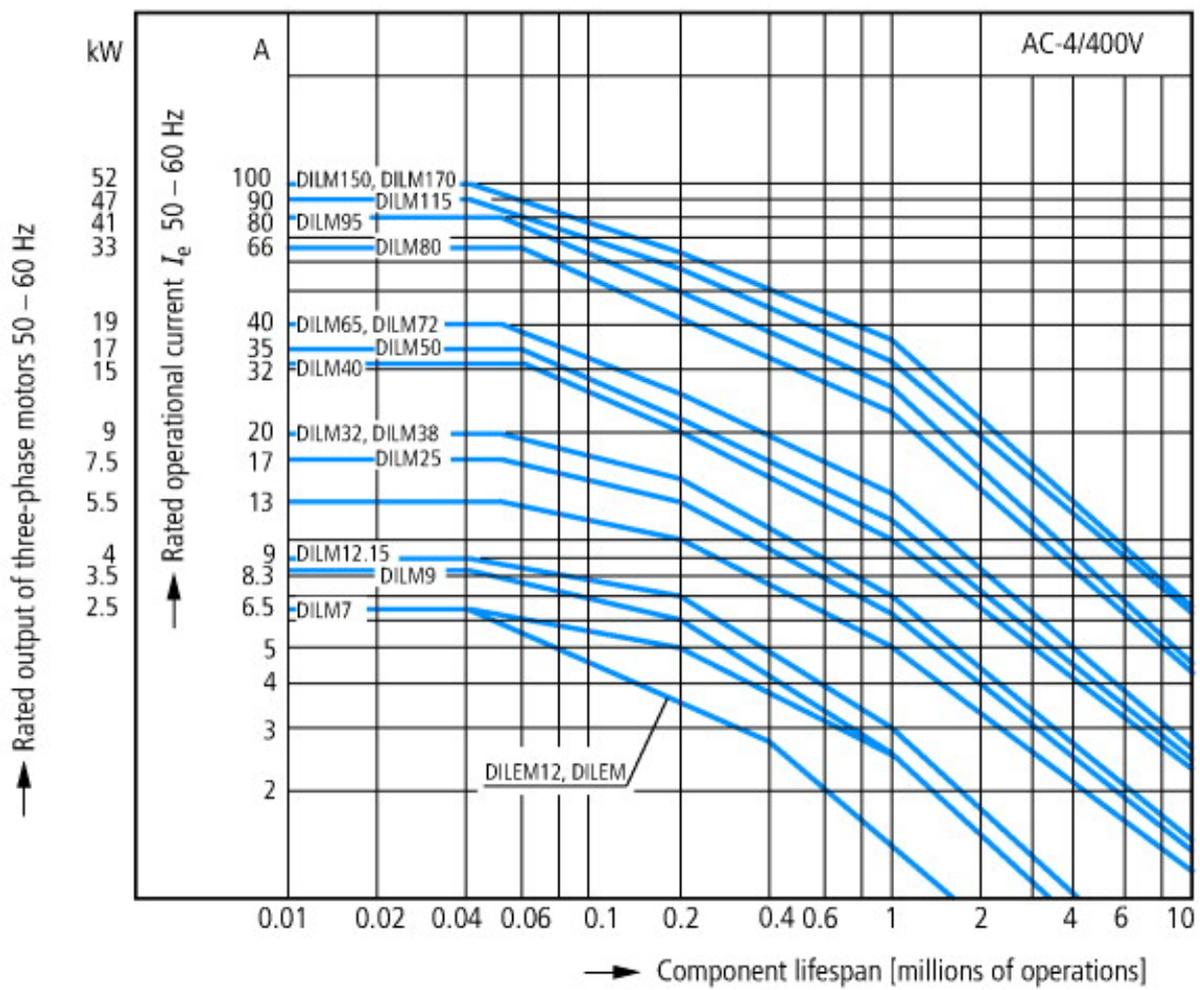
### Characteristics



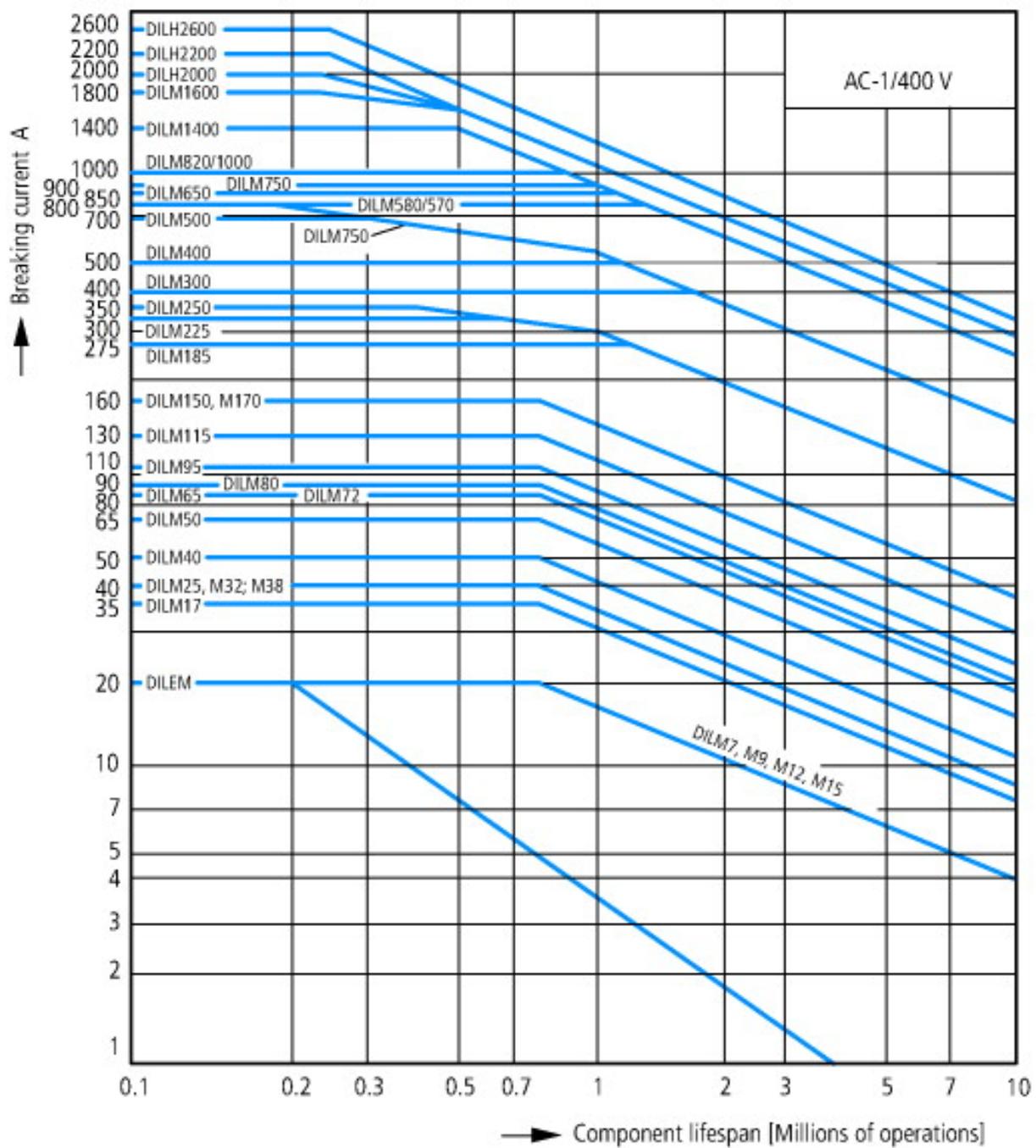
- 1: Overload relay
  - 2: Suppressor
  - 3: Auxiliary contact modules
- Enclosure totally insulated



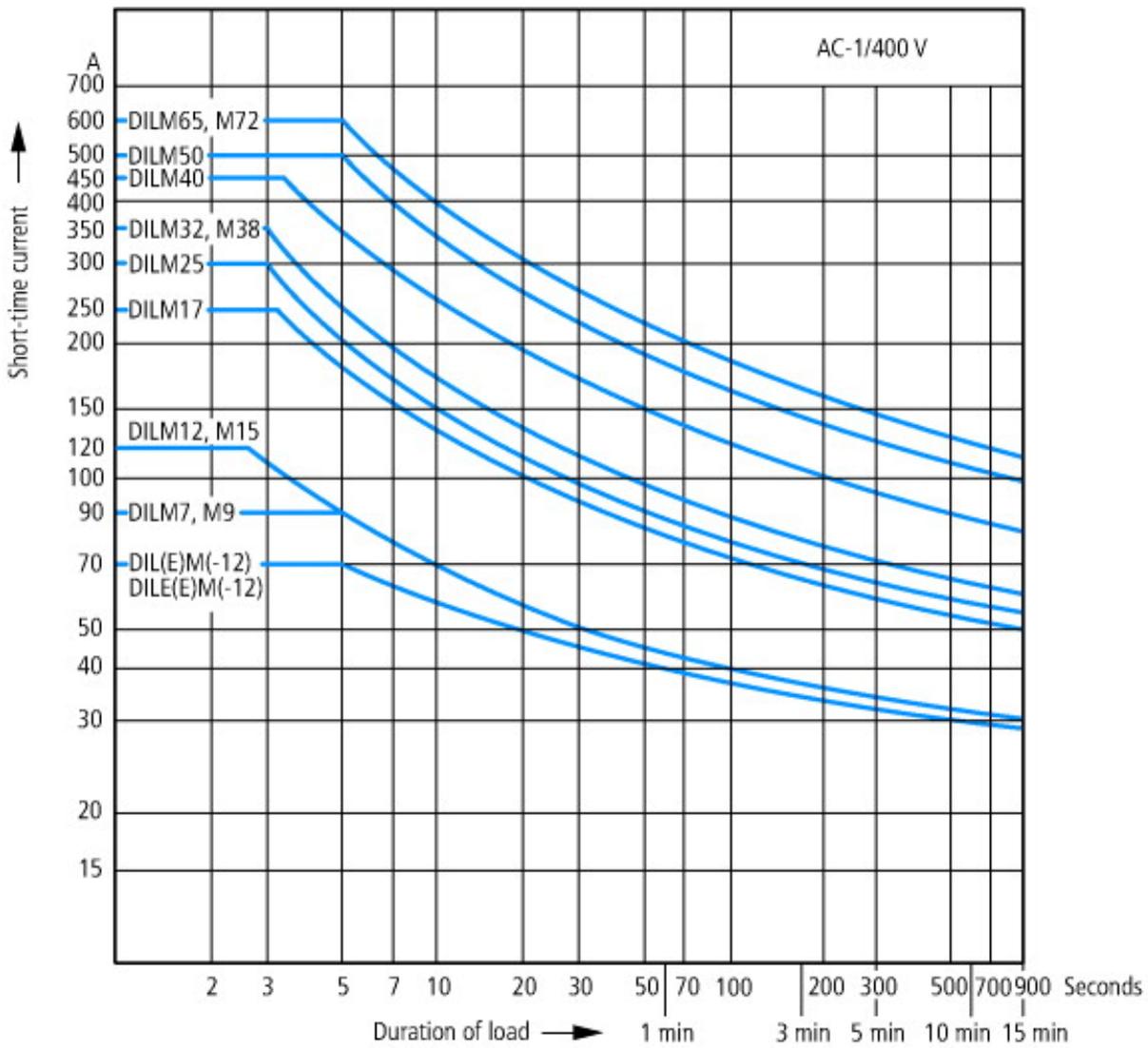
- Squirrel-cage motor
- Operating characteristics
- Starting: from rest
- Stopping: after attaining full running speed
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 1 x rated motor current
- Utilization category
- 100 % AC-3
- Typical applications
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- Fans
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevators
- Air conditioning system
- General drives in manufacturing and processing machines



- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, 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



Switching duty for non-motor loads, 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  
 Electric heat



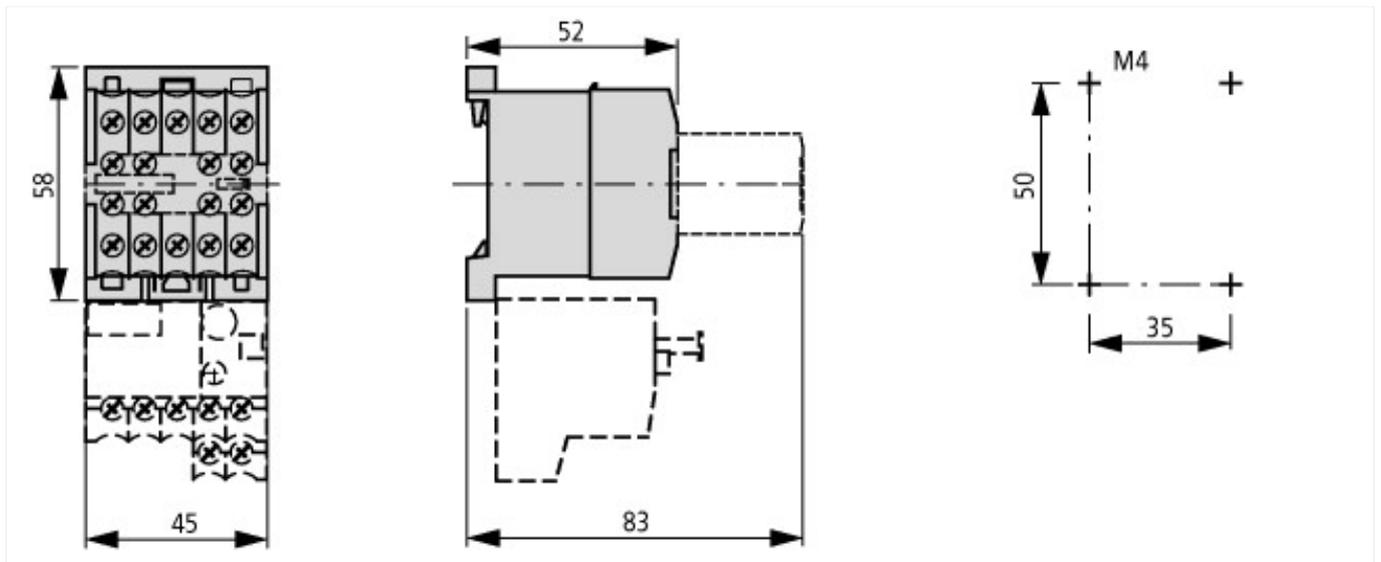
Short-time loading, 3-pole  
Time interval between two loading cycles: 15 minutes

### CAD-Data

Product standards CAD data:

<http://eaton-moeller.partcommunity.com>

### Dimensions



### Additional product information (links)

IL03407009Z (IL03407009Z) Mini contactor relay

[ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03407009Z2010\\_10.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407009Z2010_10.pdf)

