



**Contactors, 24 V DC, 4 pole, 380 V 400 V, 4 kW, Screw terminals, DC operation**

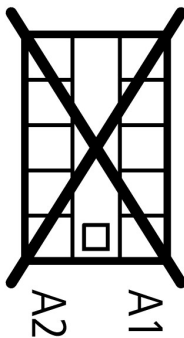
**Part no. DILEM4-G(24VDC)**  
**Catalog No. 012701**  
**Alternate Catalog No. XTMF9A00TD**

### Delivery program

Product range				Contactors
Application				Mini Contactors for Motors and Resistive Loads
Subrange				DILEM contactors
Utilization category				AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running AC-4: Normal AC induction motors: starting, plugging, reversing, inching
Notes				Also suitable for motors with efficiency class IE3. Also tested according to AC-3e.
Connection technique				Screw terminals
Number of poles				4 pole
<b>Rated operational current</b>				
AC-3				
380 V 400 V	$I_e$	A		9
AC-1				
Conventional free air thermal current, 3 pole, 50 - 60 Hz				
Open				
at 40 °C	$I_{th} = I_e$	A		22
<b>Max. rating for three-phase motors, 50 - 60 Hz</b>				
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				
<b>Instructions</b>				Integrated diode-resistor combination
For use with				...DILEM ...DILE
Actuating voltage				24 V DC
Voltage AC/DC				DC operation

### Technical data

<b>General</b>				
Standards				IEC/EN 60947, VDE 0660, CSA, UL
Lifespan, mechanical	Operations	$\times 10^6$		20
Maximum operating frequency				
Mechanical		Ops./h		9000
electrical (Contactors without overload relay)	Operations/h			Page 05/070
Climatic proofing				Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature				
Open		°C		-25 - +50

Enclosed	°C	- 25 - 40
Storage	°C	
Min. ambient temperature, storage	°C	- 40
Ambient temperature, storage max.	°C	+ 80
Mounting position		As required, except vertical with terminals A1/A2 at the bottom
Mounting position		
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
Degree of Protection		IP20
Protection against direct contact when actuated from front (EN 50274)		Finger and back-of-hand proof
Altitude	m	Max. 2000
Weight	kg	0.206
Terminal capacity of auxiliary and main contacts		
Screw terminals		
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
Stripping length	mm	8
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

### Main conducting paths

Rated impulse withstand voltage	$U_{imp}$	V AC	6000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_i$	V AC	690
Rated operational voltage	$U_e$	V AC	690
Safe isolation to EN 61140			
between coil and contacts		V AC	300
between the contacts		V AC	300
Making capacity (cos $\varphi$ to IEC/EN 60947)		A	90
Breaking capacity			
220 V 230 V		A	90
380 V 400 V		A	90
500 V		A	64
660 V 690 V		A	42
Short-circuit protection maximum fuse			
Type "2", 500 V	gL/gG	A	10
Type "1", 500 V	gL/gG	A	20

## AC

AC-1				
Rated operational current				
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				
Rated operational current				
Open, 3-pole: 50 – 60 Hz				
Notes				
At maximum permissible ambient temperature (open.) Also tested according to AC-3e.				
220 V 230 V	$I_e$	A	9	
240 V	$I_e$	A	9	
380 V 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 V 690 V	$I_e$	A	4.8	
Motor rating				
220 V 230 V	P	kWh	2.2	
240V	P	kW	2.5	
380 V 400 V	P	kW	4	
415 V	P	kW	4.3	
440 V	P	kW	4.6	
500 V	P	kW	4	
660 V 690 V	P	kW	4	
AC-4				
Rated operational current				
Open, 3-pole: 50 – 60 Hz				
Notes				
At maximum permissible ambient air temperature.				
220 V 230 V	$I_e$	A	6.6	
240 V	$I_e$	A	6.6	
380 V 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 V 690 V	$I_e$	A	3.4	
Motor rating				
220 V 230 V	P	kWh	1.5	
240 V	P	kW	1.8	
380 V 400 V	P	kW	3	
415 V	P	kW	3.1	
440 V	P	kW	3.3	
500 V	P	kW	3	
660 V 690 V	P	kW	3	

## DC

Rated operational current open				
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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

### Magnet systems

Voltage tolerance				
DC operated				
Pick-up voltage				0.85 - 1.1
Power consumption				
DC operation				
Power consumption Pick-up = Sealing		VA/W		2.3
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		26
Closing delay max.		ms		35
Opening delay		ms		
Opening delay min.		ms		15
Opening delay max.		ms		25
Closing delay with top mounting auxiliary contact		ms		70
Reversing contactors				
Changeover time at 110 % $U_c$				
Changeover time min.		ms		40
Changeover time max.		ms		50
Arcing time at 690 V AC		ms		12

### Current heat losses (3- or 4-pole)

at $I_{th}$ , 50 °C		W		5.9
Impedance per pole		mΩ		7.86

### Auxiliary contacts

Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact module				Yes
Rated impulse withstand voltage	$U_{imp}$	V AC		6000
Overvoltage category/pollution degree				III/3
Rated insulation voltage	$U_i$	V AC		690
Rated operational voltage	$U_e$	V AC		600
Safe isolation to EN 61140				
between coil and auxiliary contacts		V AC		300
between the auxiliary contacts		V AC		300
Rated operational current				
AC-15				
220 V 240 V	$I_e$	A		6
380 V 415 V	$I_e$	A		3
500 V	$I_e$	A		1.5
DC L/R ≤ 15 ms				
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
Conv. thermal current	$I_{th}$	A		10
Control circuit reliability	Failure rate	$\lambda$		$<10^{-8}$ , < one failure at 100 million operations

		(at $U_e = 24\text{ V DC}$ , $U_{min} = 17\text{ V}$ , $I_{min} = 5.4\text{ mA}$ )	
Component lifespan at $U_e = 240\text{ V}$			
AC-15	Operations	$\times 10^6$	0.2
DC current			
L/R = 50 ms: 2 contacts in series at $I_e = 0.5\text{ A}$	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			
Short-circuit protection maximum fuse			
500 V		A gG/gL	6
500 V		A fast	10
Current heat loss at a load of $I_{th}$ per contact		W	1.1

### Rating data for approved types

Switching capacity			
Maximum motor rating			
Three-phase			
200 V 208 V		HP	2
230 V 240 V		HP	3
460 V 480 V		HP	5
575 V 600 V		HP	5
Single-phase			
115 V 120 V		HP	0.5
230 V 240 V		HP	1.5
General use			
		A	15
Short Circuit Current Rating			
Basic Rating			
SCCR		kA	5
max. Fuse		A	45

### Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	$I_n$	A	22
Heat dissipation per pole, current-dependent	$P_{vid}$	W	1.79
Equipment heat dissipation, current-dependent	$P_{vid}$	W	7.17
Static heat dissipation, non-current-dependent	$P_{vs}$	W	2.3
Heat dissipation capacity	$P_{diss}$	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	50
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			
Meets the product standard's requirements.			
10.2.3.1 Verification of thermal stability of enclosures			
Meets the product standard's requirements.			
10.2.3.2 Verification of resistance of insulating materials to normal heat			
Meets the product standard's requirements.			
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			
Meets the product standard's requirements.			
10.2.4 Resistance to ultra-violet (UV) radiation			
Meets the product standard's requirements.			
10.2.5 Lifting			
Does not apply, since the entire switchgear needs to be evaluated.			
10.2.6 Mechanical impact			
Does not apply, since the entire switchgear needs to be evaluated.			
10.2.7 Inscriptions			
Meets the product standard's requirements.			
10.3 Degree of protection of ASSEMBLIES			
Does not apply, since the entire switchgear needs to be evaluated.			
10.4 Clearances and creepage distances			
Meets the product standard's requirements.			

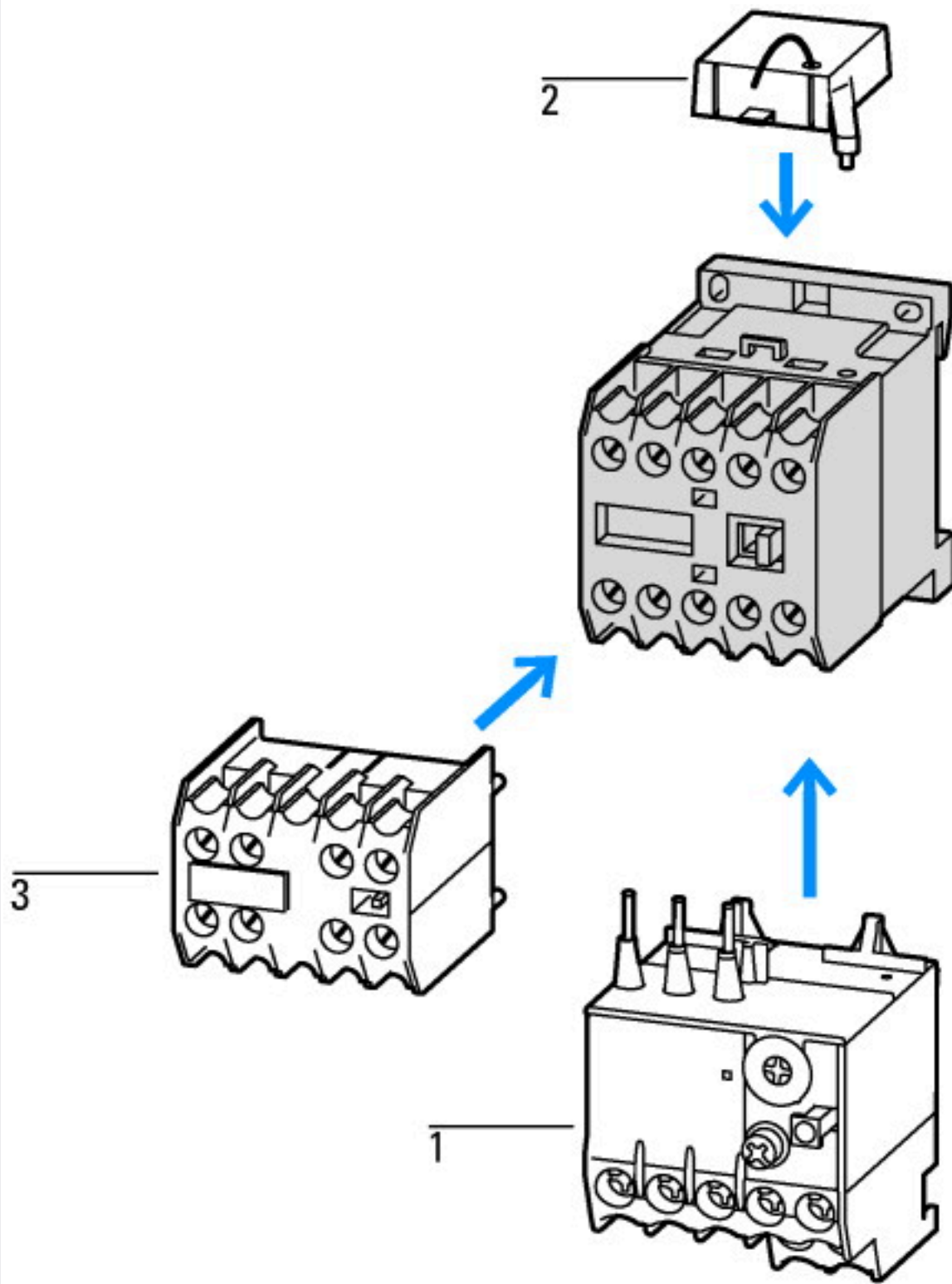
10.5 Protection against electric shock		Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components		Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections		Is the panel builder's responsibility.
10.8 Connections for external conductors		Is the panel builder's responsibility.
10.9 Insulation properties		
10.9.2 Power-frequency electric strength		Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage		Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material		Is the panel builder's responsibility.
10.10 Temperature rise		The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.12 Electromagnetic compatibility		Is the panel builder's responsibility. The specifications for the switchgear must be observed.
10.13 Mechanical function		The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

## Technical data ETIM 8.0

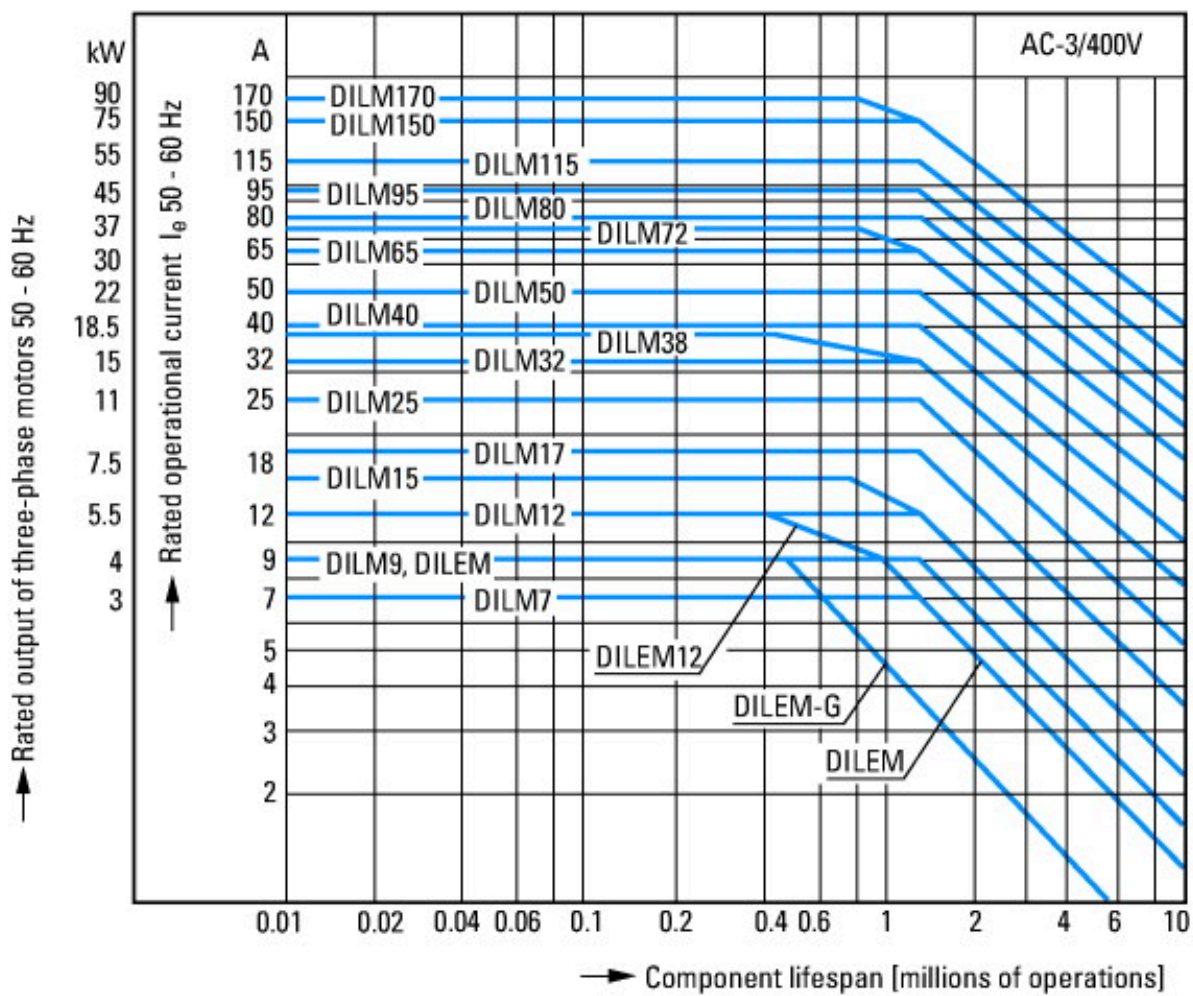
Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])		
Rated control supply voltage Us at AC 50HZ	V	0 - 0
Rated control supply voltage Us at AC 60HZ	V	0 - 0
Rated control supply voltage Us at DC	V	24 - 24
Voltage type for actuating		DC
Rated operation current Ie at AC-1, 400 V	A	22
Rated operation current Ie at AC-3, 400 V	A	9
Rated operation power at AC-3, 400 V	kW	4
Rated operation current Ie at AC-4, 400 V	A	6.6
Rated operation power at AC-4, 400 V	kW	3
Rated operation power NEMA	kW	3.7
Modular version		No
Number of auxiliary contacts as normally open contact		0
Number of auxiliary contacts as normally closed contact		0
Type of electrical connection of main circuit		Screw connection
Number of normally closed contacts as main contact		0
Number of normally open contacts as main contact		4

## Approvals

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

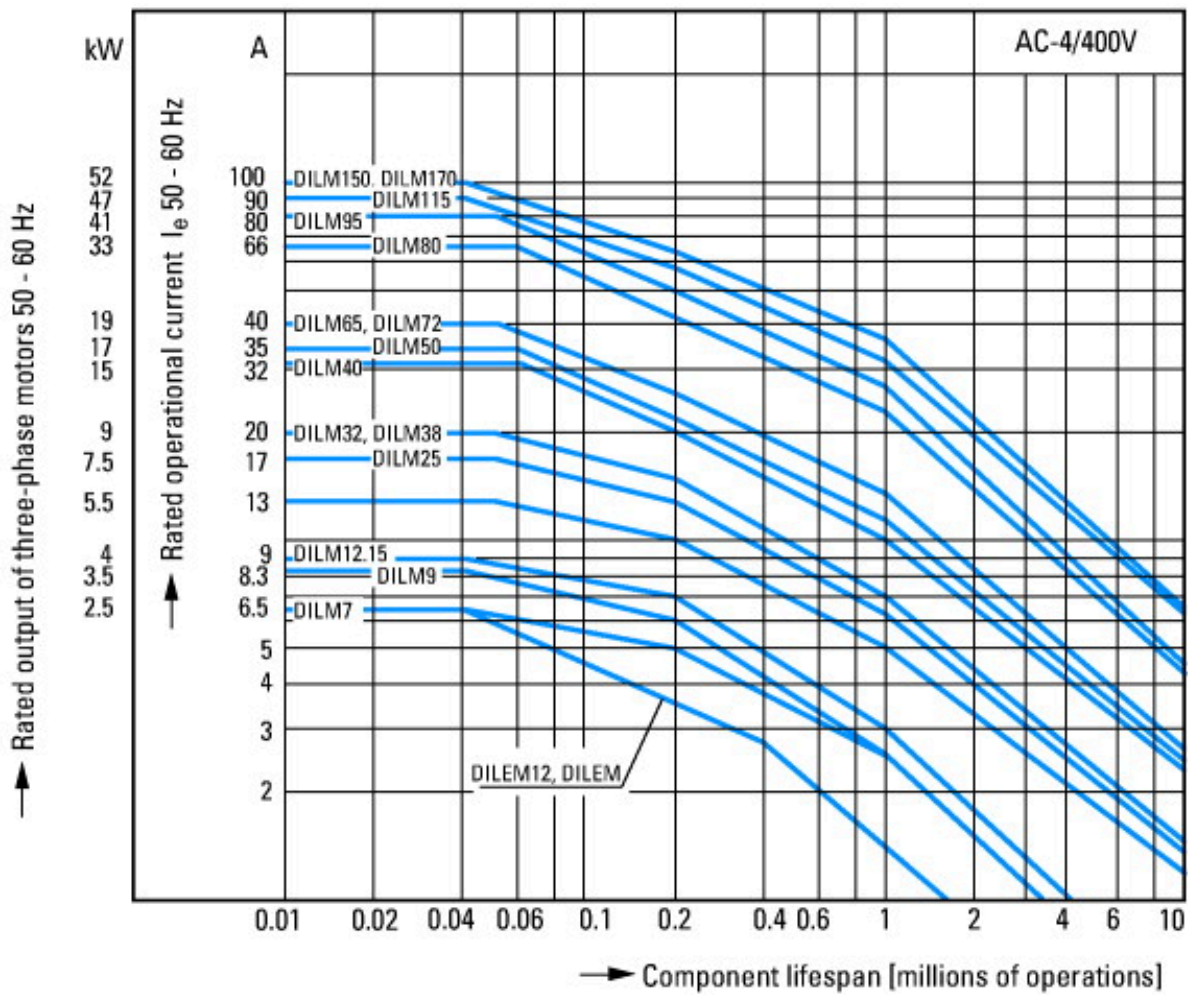


- 1: Overload relay
  - 2: Suppressor
  - 3: Auxiliary contact modules
- Enclosure totally insulated

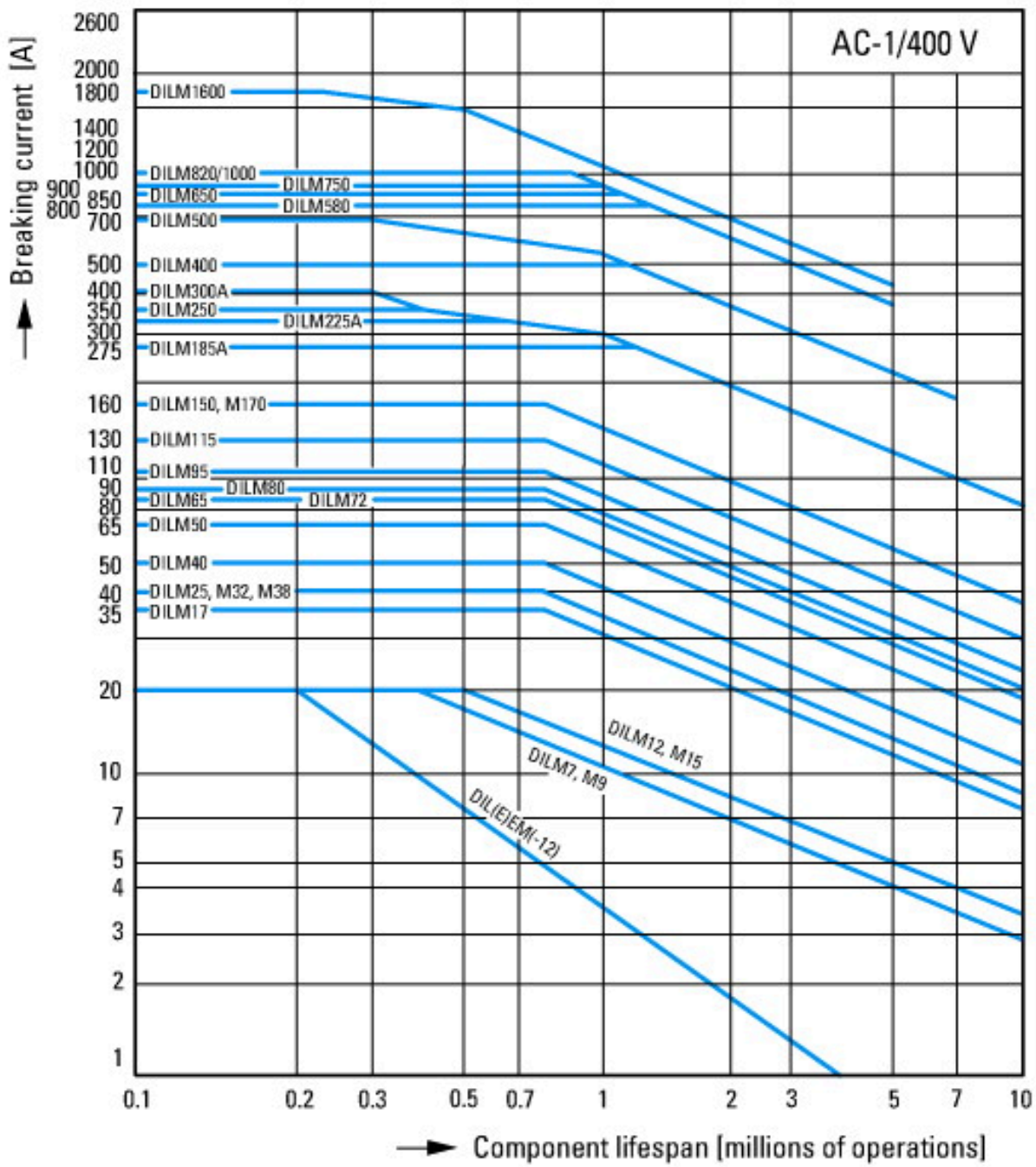


- Squirrel-cage motor
- Operating characteristics
- Starting: from rest
- Stopping: after attaining full running speed
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 1 x rated motor current
- Utilization category
- 100 % AC-3
- Typical applications
- Compressors
- Lifts
- 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

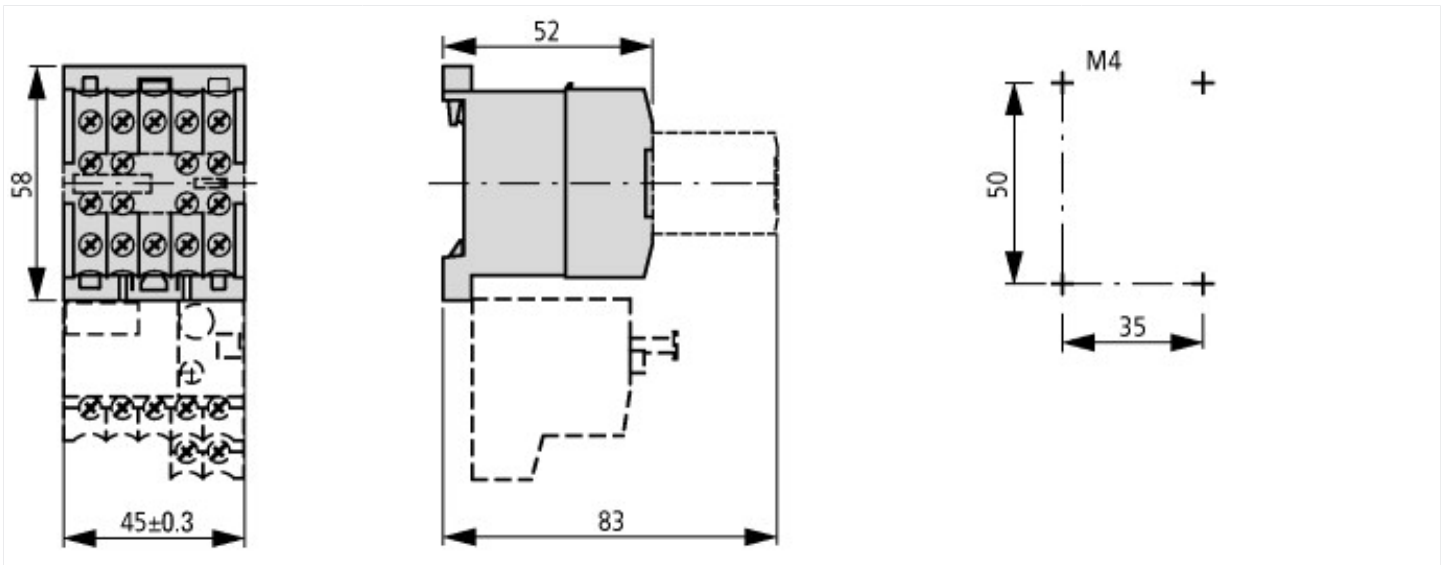


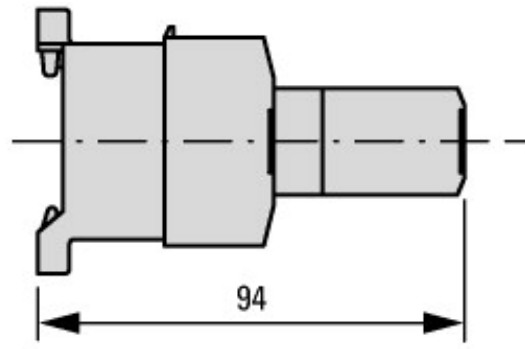
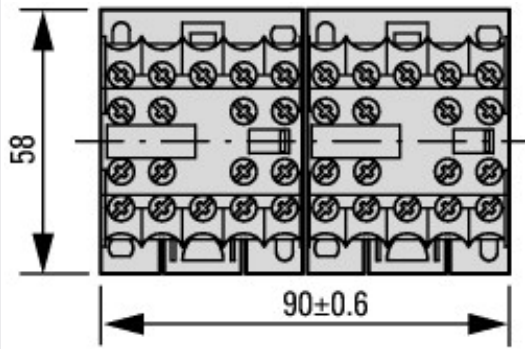
Switching duty for non-motor loads, 3-pole, 4-pole  
 Operating characteristics  
 Non-inductive or slightly inductive loads  
 Electrical characteristics  
 Make: 1 x rated current  
 Break: 1 x rated current  
 Utilization category  
 100 % AC-1  
 Typical applications  
 Electric heat



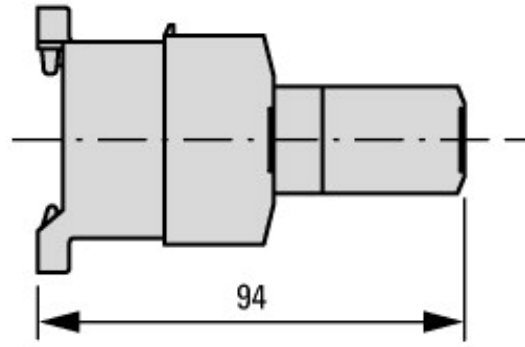
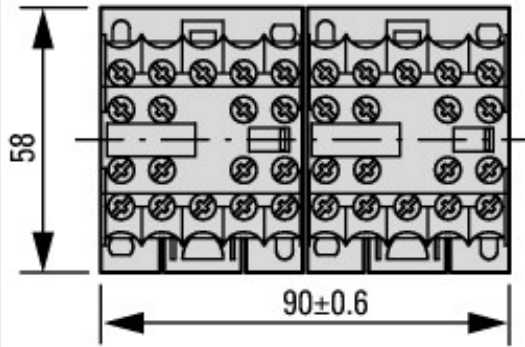
Short-time loading, 3-pole  
 Time interval between two loading cycles: 15 minutes

### Dimensions

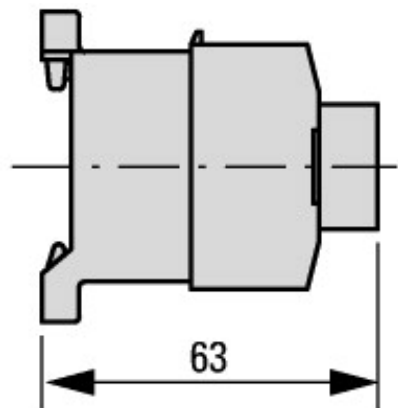




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