DATASHEET - DILM72(RDC130)

Contactor, 3 pole, 380 V 400 V 37 kW, RDC 130: 110 - 130 V DC, DC operation, Screw terminals

Powering Business Worldwide™

Part no.	**DILM72(RDC130)**
Catalog No.	**109208**
Alternate Catalog No.	**XTCE072D00AD**

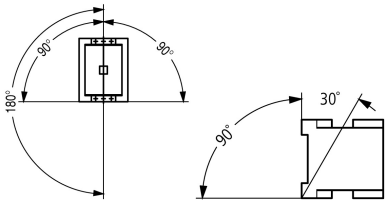
Delivery program

Product range			Contactors
Application			Contactors for Motors
Subrange			Contactors up to 170 A, 3 pole
Utilization category			AC-1: Non-inductive or slightly inductive loads, resistance furnaces NAC-3: Normal AC induction motors: starting, switch off during running AC-4: Normal AC induction motors: starting, plugging, reversing, inching
Notes			Not suitable for motors with efficiency class IE3.
Connection technique			Screw terminals
Number of poles			3 pole
Rated operational current			
AC-3			
Notes			At maximum permissible ambient temperature (open.)
380 V 400 V	I_e	A	72
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	98
enclosed	I_{th}	A	72
Conventional free air thermal current, 1 pole			
open	I_{th}	A	200
enclosed	I_{th}	A	180
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	22
380 V 400 V	P	kW	37
660 V 690 V	P	kW	35
AC-4			
220 V 230 V	P	kW	7
380 V 400 V	P	kW	12
660 V 690 V	P	kW	17
Contact sequence			
Instructions			Contacts to EN 50 012. integrated suppressor circuit in actuating electronics Observe electrical lifespan.
Can be combined with auxiliary contact			DILM150-XHI(V)… DILM1000-XHI(V)…
Actuating voltage			RDC 130: 110 - 130 V DC
Voltage AC/DC			DC operation
Connection to SmartWire-DT			no
Frame size			3

Technical data

General

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
DC operated	Operations	x 10^6	10
Operating frequency, mechanical			

DC operated	Operations/h		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
Enclosed		°C	- 25 - 40
Storage		°C	- 40 - 80
Mounting position			
Mechanical shock resistance (IEC/EN 60068-2-27)			
Half-sinusoidal shock, 10 ms			
Main contacts			
N/O contact		g	10
Auxiliary contacts			
N/O contact		g	7
N/C contact		g	5
Mechanical shock resistance (IEC/EN 60068-2-27) when tabletop-mounted			
Half-sinusoidal shock, 10 ms			
Main contacts			
N/O contact		g	10
Auxiliary contacts			
N/O contact		g	7
N/C contact		g	5
Degree of Protection			IP00
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Altitude		m	Max. 2000
Weight			
DC operated		kg	1.05
Screw connector terminals			
Terminal capacity main cable			
Solid		mm^2	1 x (0.75 - 16) 2 x (0.75 - 16)
Flexible with ferrule		mm^2	1 x (0.75 - 35) 2 x (0.75 - 25)
Solid or stranded		AWG	single 14 - 1, double 14 - 2
Flat conductor	Lamellenzahl x Breite x Dicke	mm	2 x (6 x 9 x 0.8)
Stripping length		mm	14
Terminal screw			M6
Tightening torque		Nm	3.3
Tool			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 x 5.5 1 x 6
Terminal capacity control circuit cables			
Solid		mm^2	1 x (0.75 - 4) 2 x (0.75 - 2.5)
Flexible with ferrule		mm^2	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Solid or stranded		AWG	18 - 14
Stripping length		mm	10
Terminal screw			M3.5
Tightening torque		Nm	1.2
Tool			

Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 x 5.5 1 x 6

Main conducting paths

Rated impulse withstand voltage	U_{imp}	V AC	8000
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	440
between the contacts		V AC	440
Making capacity (p.f. to IEC/EN 60947)			
	Up to 690 V	A	910
Breaking capacity			
220 V 230 V		A	650
380 V 400 V		A	650
500 V		A	650
660 V 690 V		A	370
Short-circuit rating			
Short-circuit protection maximum fuse			
Type “2” coordination			
400 V	gG/gL 500 V	A	125
690 V	gG/gL 690 V	A	80
Type “1” coordination			
400 V	gG/gL 500 V	A	250
690 V	gG/gL 690 V	A	100

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	98
at 50 °C	$I_{th} = I_e$	A	88
at 55 °C	$I_{th} = I_e$	A	83
at 60 °C	$I_{th} = I_e$	A	80
enclosed	I_{th}	A	72
Conventional free air thermal current, 1 pole			
open	I_{th}	A	200
enclosed	I_{th}	A	180
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
Notes			At maximum permissible ambient temperature (open.)
220 V 230 V	I_e	A	72
240 V	I_e	A	72
380 V 400 V	I_e	A	72
415 V	I_e	A	72
440V	I_e	A	72
500 V	I_e	A	72
660 V 690 V	I_e	A	37
Motor rating	P	kWh	
220 V 230 V	P	kW	22
240V	P	kW	25
380 V 400 V	P	kW	37
415 V	P	kW	41

440 V	P	kW	44
500 V	P	kW	50
660 V 690 V	P	kW	35
AC-4			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I_e	A	25
240 V	I_e	A	25
380 V 400 V	I_e	A	25
415 V	I_e	A	25
440 V	I_e	A	25
500 V	I_e	A	25
660 V 690 V	I_e	A	20
Motor rating	P	kWh	
220 V 230 V	P	kW	7
240 V	P	kW	7.5
380 V 400 V	P	kW	12
415 V	P	kW	13
440 V	P	kW	14
500 V	P	kW	16
660 V 690 V	P	kW	17

DC

Rated operational current, open			
DC-1			
60 V	I_e	A	72
110 V	I_e	A	72
220 V	I_e	A	65

Current heat loss

3 pole, at I_{th} (60°)		W	25.9
Current heat loss at I_e to AC-3/400 V		W	21
Impedance per pole		mΩ	1.9

Magnet systems

Voltage tolerance			
DC operated	Pick-up	x U_c	0.7 - 1.2
Notes			RDC 130 (U_{min} 110 V DC/U_{max} 130 V DC) Example: U_S = 0.7 x U_{min} - 1.2 x U_{max} / U_S = 0.7 x 110V - 1.2 x 130V DC
DC operated	Drop-out	x U_c	0.15 - 0.6
Notes			at least smoothed two-phase bridge rectifier or three-phase rectifier
Power consumption of the coil in a cold state and 1.0 x U_S			
DC operated	Pick-up	W	24
DC operated	Sealing	W	1
Duty factor		% DF	100
Changeover time at 100 % U_S (recommended value)			
Main contacts			
DC operated		ms	
Closing delay		ms	
Closing delay		ms	54
Opening delay		ms	
Opening delay		ms	24
Arcing time		ms	10

Electromagnetic compatibility (EMC)

Emitted interference			according to EN 60947-1
Interference immunity			according to EN 60947-1

Rating data for approved types

Switching capacity			
Maximum motor rating			

Three-phase			
200 V 208 V		HP	20
230 V 240 V		HP	25
460 V 480 V		HP	50
575 V 600 V		HP	60
Single-phase			
115 V 120 V		HP	5
230 V 240 V		HP	15
General use		A	88
Short Circuit Current Rating		SCCR	
Basic Rating			
SCCR		kA	10
max. Fuse		A	250
max. CB		A	250
480 V High Fault			
SCCR (fuse)		kA	30/100
max. Fuse		A	250/150 Class J
SCCR (CB)		kA	65
max. CB		A	100
600 V High Fault			
SCCR (fuse)		kA	30/100
max. Fuse		A	250/150 Class J
SCCR (CB)		kA	30
max. CB		A	250
Special Purpose Ratings			
Electrical Discharge Lamps (Ballast)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	88
600V 60Hz 3phase, 347V 60Hz 1phase		A	88
Incandescent Lamps (Tungsten)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	88
600V 60Hz 3phase, 347V 60Hz 1phase		A	88
Resistance Air Heating			
480V 60Hz 3phase, 277V 60Hz 1phase		A	88
600V 60Hz 3phase, 347V 60Hz 1phase		A	88
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)			
LRA 480V 60Hz 3phase		A	432
FLA 480V 60Hz 3phase		A	72
Elevator Control			
200V 60Hz 3phase		HP	10
200V 60Hz 3phase		A	32.2
240V 60Hz 3phase		HP	15
240V 60Hz 3phase		A	42
480V 60Hz 3phase		HP	30
480V 60Hz 3phase		A	40
600V 60Hz 3phase		HP	40
600V 60Hz 3phase		A	41

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	72
Heat dissipation per pole, current-dependent	P_{vid}	W	7

Equipment heat dissipation, current-dependent	P_{vid}	W	21
Static heat dissipation, non-current-dependent	P_{vs}	W	1
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60
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 7.0

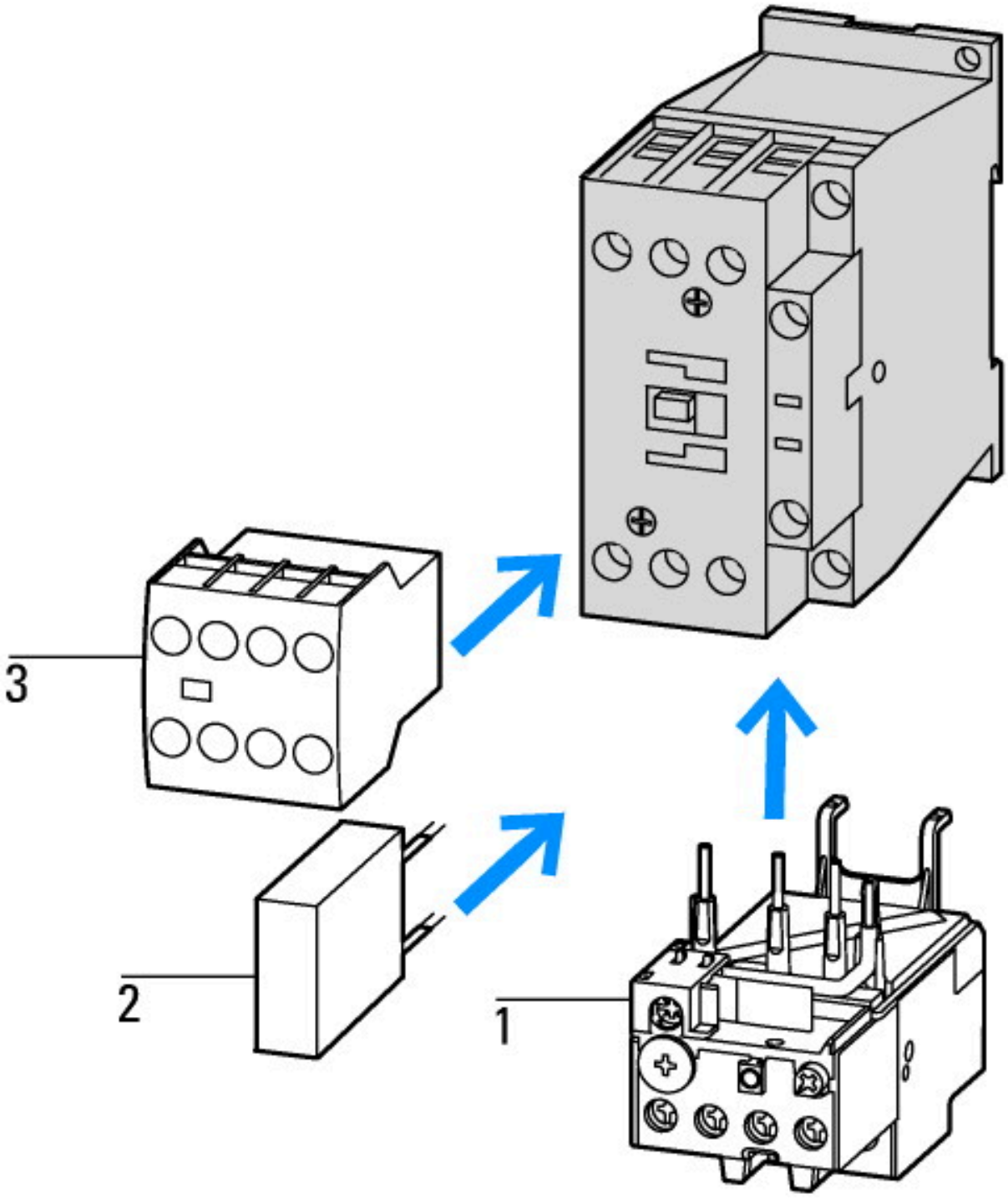
Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])			
Rated control supply voltage 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	0 - 130
Voltage type for actuating			DC
Rated operation current Ie at AC-1, 400 V		A	98
Rated operation current Ie at AC-3, 400 V		A	72
Rated operation power at AC-3, 400 V		kW	37
Rated operation current Ie at AC-4, 400 V		A	25
Rated operation power at AC-4, 400 V		kW	12
Rated operation power NEMA		kW	37
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 main contacts as normally open contact			3

Approvals

Product Standards			IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking

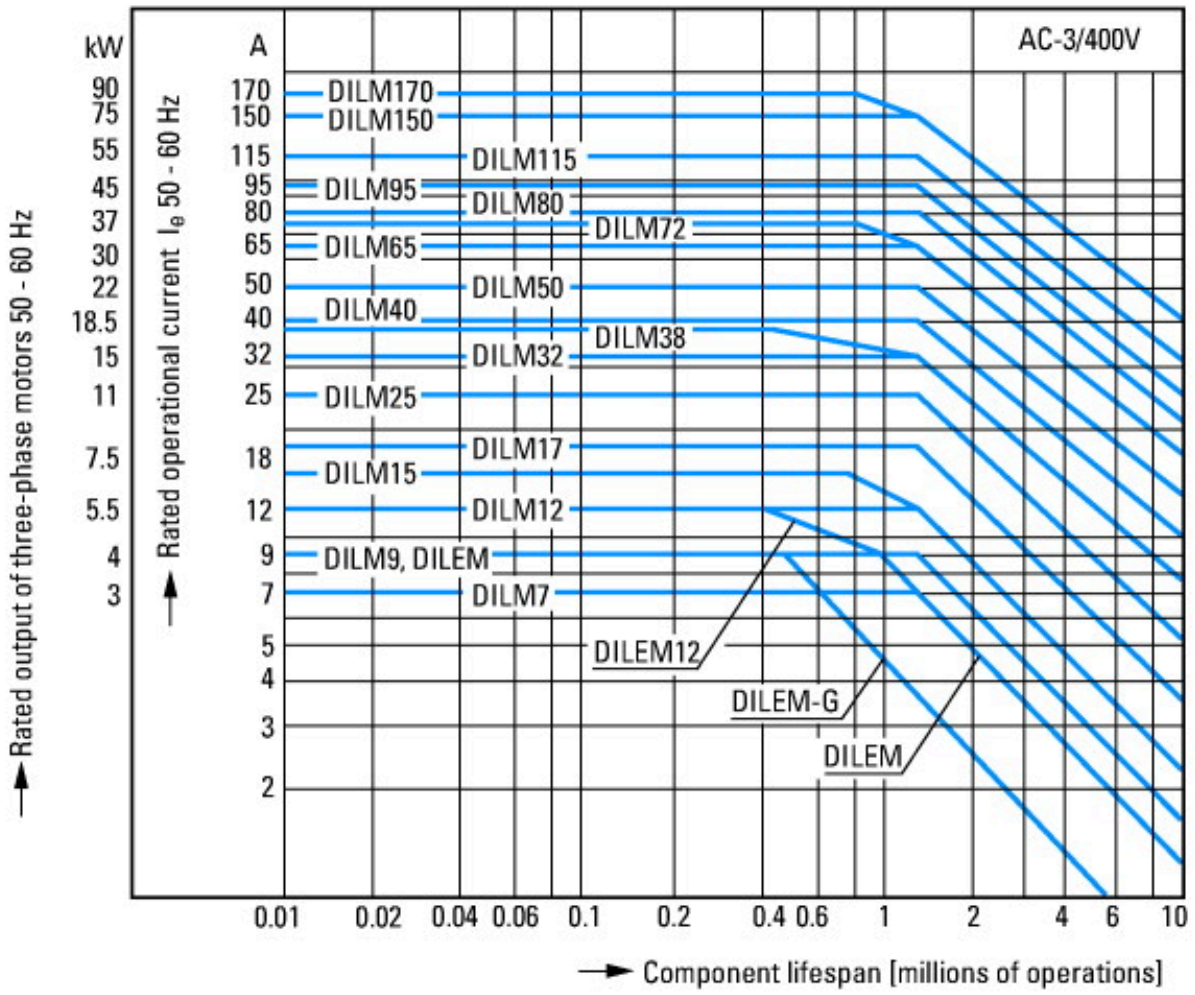
UL File No.	E29096
UL Category Control No.	NLDX
CSA File No.	012528
CSA Class No.	2411-03, 3211-04
North America Certification	UL listed, CSA certified
Specially designed for North America	No

Characteristics

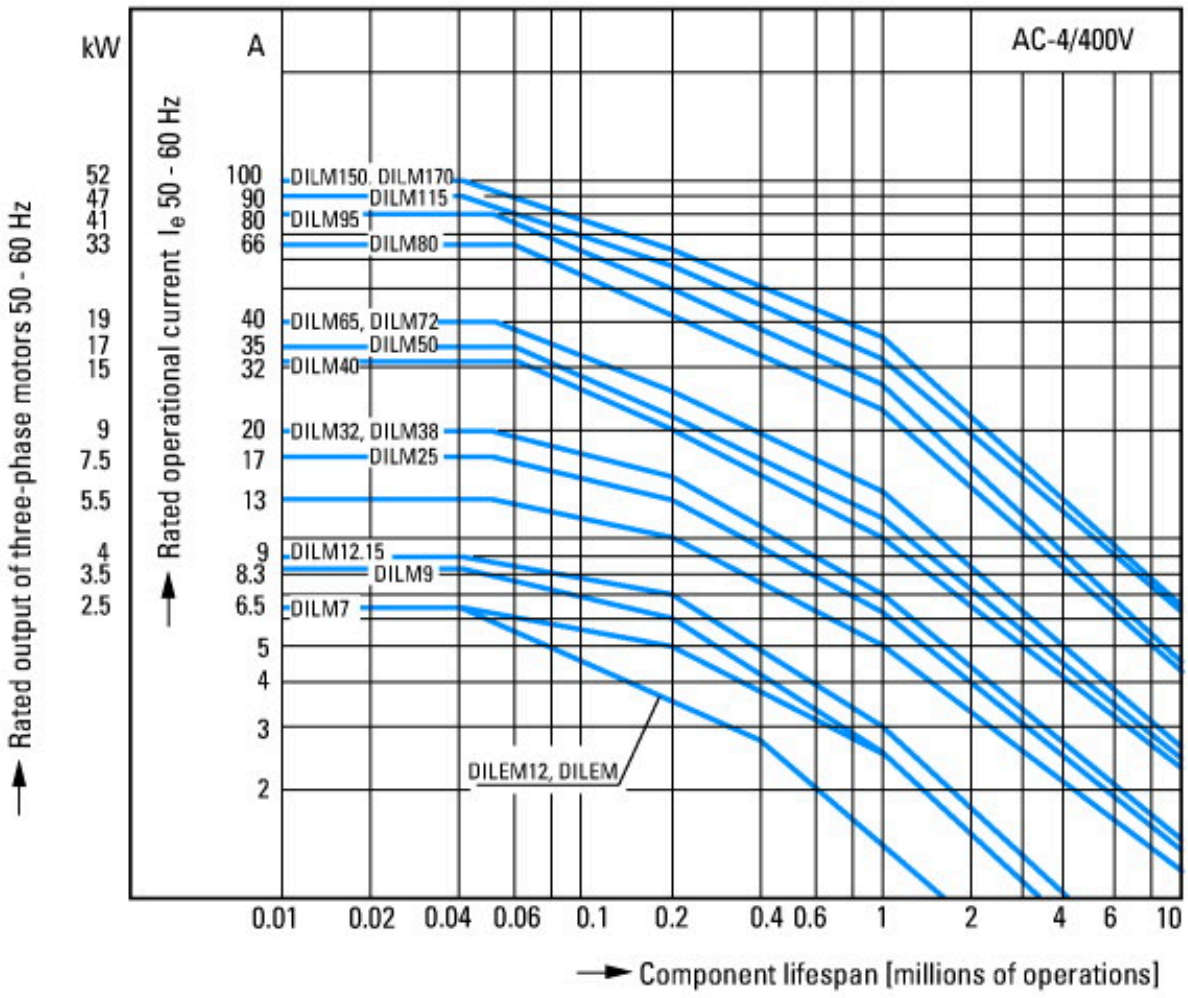


1: Overload relay
2: Suppressor
3: Auxiliary contact modules

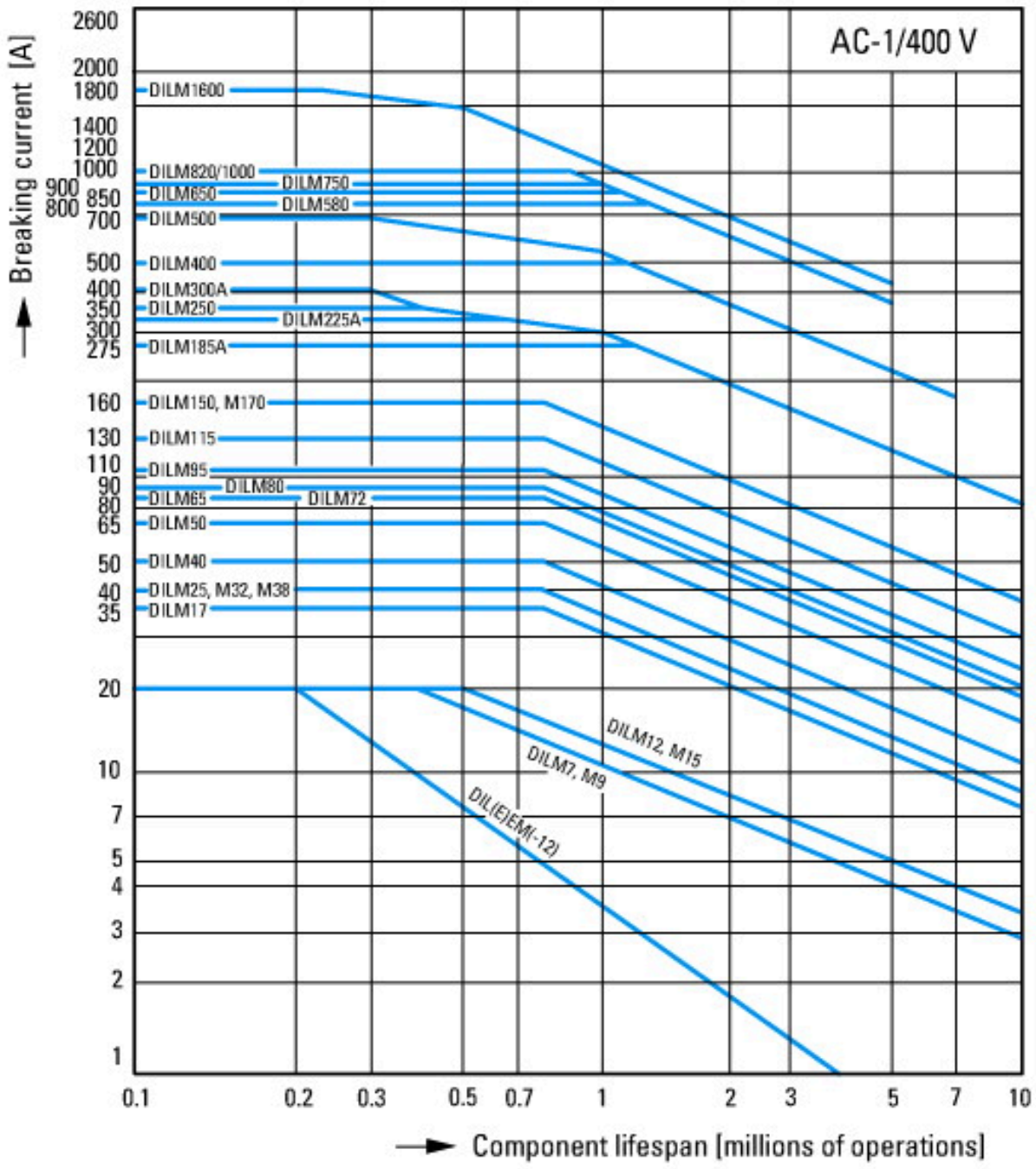
on the side: 2 x DILM1000-XHI(V)11-SI; surface mounting: 1 x DILM150-XHIA11
on the side: 2 x DILM1000-XHI(V)11-SA; surface mounting: 1 x DILM150-XHI (2 pole)
on the side: 1 x DILM1000-XHI(V)11-SI; surface mounting: 1 x DILM150-XHIA22
on the side: 1 x DILM1000-XHI(V)11-SA; surface mounting: 1 x DILM150-XHI (4 pole)



Normal AC induction motor
Operating characteristics
Switch on: from stop
Switch off: during run
Electrical characteristics:
Switch on: up to 6 x Rated motor current
Switch off: up to 1 x Rated motor current
Utility category



Extreme switching duty
Normal AC induction motor
Operating characteristics
Inching, plugging, reversing
Electrical characteristics:
Switch on: up to 6 x Rated motor current
Switch off:up to 6 x Rated motor current
Utilization



Switching conditions for non-motor consumers, 3 pole, 4 pole	
Operating characteristics	
Non inductive and slightly inductive loads	
Electrical characteristics	
Switch on: 1 x rated operational current	
Switch off: 1 x rated operational current	
Utilization category	
100 % AC-1	
Typical examples of application	
Electric heat	

Dimensions

Contactor with auxiliary contact module	
side clearance to earthed parts: 6 mm	

Additional product information (links)

Motor starters and "Special Purpose Ratings" for the North American market	http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf
Switchgear of Power Factor Correction Systems	http://www.moeller.net/binary/ver_techpapers/ver934en.pdf
X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely	http://www.moeller.net/binary/ver_techpapers/ver938en.pdf

Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions	http://www.moeller.net/binary/ver_techpapers/ver944en.pdf
Effect of the Cabel Capacitance of Long Control Cables on the Actuation of Contactors	http://www.moeller.net/binary/ver_techpapers/ver949en.pdf
Switchgear for Luminaires	http://www.moeller.net/binary/ver_techpapers/ver955en.pdf
Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts	http://www.moeller.net/binary/ver_techpapers/ver956en.pdf
The Interaction of Contactors with PLCs	http://www.moeller.net/binary/ver_techpapers/ver957en.pdf
Busbar Component Adapters for modern Industrial control panels	http://www.moeller.net/binary/ver_techpapers/ver960en.pdf