



Contactor, 3p+2N/O+2N/C, 250kW/400V/AC3

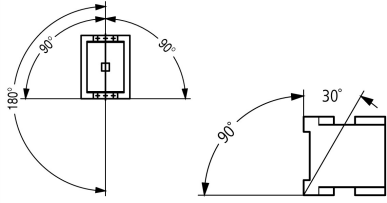
Part no. DILM500/22(RA110)
Article no. 208212
Catalog No. XTCE500M22Y

Delivery program

Product range				Contactors
Application				Contactors for Motors
Subrange				Comfort devices greater than 170 A
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
Connection technique				Screw connection
Rated operational current				
AC-1				
Conventional free air thermal current, 3 pole, 50 - 60 Hz				
Open				
at 40 °C	$I_{th} = I_e$	A		800
enclosed	I_{th}	A		600
Conventional free air thermal current, 1 pole				
open	I_{th}	A		1625
enclosed	I_{th}	A		1500
Max. rating for three-phase motors, 50 - 60 Hz				
AC-3				
220 V 230 V	P	kW		155
380 V 400 V	P	kW		250
660 V 690 V	P	kW		344
1000 V	P	kW		132
AC-4				
220 V 230 V	P	kW		112
380 V 400 V	P	kW		200
660 V 690 V	P	kW		344
1000 V	P	kW		132
Contact sequence				
Can be combined with auxiliary contact				DILM820-XHI...
Actuating voltage				RA 110: 48 - 110 V 40 - 60 Hz/48 - 110 V DC
Voltage AC/DC				AC and DC operation
Contacts				
N/O = Normally open				2 N/O
N/C = Normally closed				2 NC
Auxiliary contacts				
possible variants at auxiliary contact module fitting options				on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA
Side mounting auxiliary contacts				
Instructions				integrated suppressor circuit in actuating electronics 660 V, 690 V or 1000 V: not directly reversing

Technical data

General				
Standards				IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical				
AC operated	Operations	$\times 10^6$		7

DC operated	Operations	x 10 ⁶	7
Operating frequency, mechanical			
AC operated	Operations/h		2000
DC operated	Operations/h		2000
Climatic proofing			
			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-40 - +60
Enclosed		°C	-40 - +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	10
N/C contact		g	8
Degree of Protection			
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof with terminal shroud or terminal block
Weight			
AC operated		kg	8.66
DC operated		kg	8.66
Weight		kg	8.66
Terminal capacity main cable			
Flexible with cable lug		mm ²	50 - 240
Stranded with cable lug		mm ²	70 - 240
Solid or stranded		AWG	2/0 - 500 MCM
Flat conductor	Lamellenzahl x Breite x Dicke	mm	Fixing with flat cable terminal or cable terminal blocks See terminal capacity for cable terminal blocks
Busbar	Breite	mm	30
Main cable connection screw/bolt			
			M10
Tightening torque			
			Nm 24
Terminal capacity control circuit cables			
Solid		mm ²	1 x (0.75 - 2.5) 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	2 x (18 - 12)
Control circuit cable connection screw/bolt			
			M3.5
Tightening torque			
			Nm 1.2
Tool			
Main cable			
Width across flats		mm	16
Control circuit cables			
Pozidriv screwdriver		Size	2
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	1000
Rated operational voltage	U _e	V AC	1000

Safe isolation to EN 61140			
between coil and contacts		V AC	500
between the contacts		V AC	500
Making capacity (p.f. to IEC/EN 60947)		A	5500
Breaking capacity			
220 V 230 V		A	5000
380 V 400 V		A	5000
500 V		A	5000
660 V 690 V		A	5000
1000 V		A	950
Component lifespan			
			AC1: See → Engineering, characteristic curves AC3: See → Engineering, characteristic curves AC4: See → Engineering, characteristic curves
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	500
690 V	gG/gL 690 V	A	500
1000 V	gG/gL 1000 V	A	200
Type "1" coordination			
400 V	gG/gL 500 V	A	630
690 V	gG/gL 690 V	A	630
1000 V	gG/gL 1000 V	A	250

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	800
at 50 °C	$I_{th} = I_e$	A	715
at 55 °C	$I_{th} = I_e$	A	682
at 60 °C	$I_{th} = I_e$	A	650
enclosed	I_{th}	A	600
Notes			
Conventional free air thermal current, 1 pole			
Note			
at maximum permissible ambient air temperature			
open	I_{th}	A	1625
enclosed	I_{th}	A	1500
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I_e	A	500
240 V	I_e	A	500
415 V	I_e	A	500
440V	I_e	A	500
500 V	I_e	A	500
660 V 690 V	I_e	A	360
1000 V	I_e	A	95
Motor rating			
220 V 230 V	P	kWh	155
240V	P	kWh	170
380 V 400 V	P	kWh	250
415 V	P	kWh	300
440 V	P	kWh	250

500 V	P	kW	360
660 V 690 V	P	kW	344
1000 V	P	kW	132
AC-4			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I_e	A	360
240 V	I_e	A	360
380 V 400 V	I_e	A	360
415 V	I_e	A	360
440 V	I_e	A	360
500 V	I_e	A	360
660 V 690 V	I_e	A	296
1000 V	I_e	A	95
Motor rating			
220 V 230 V	P	kW	112
240 V	P	kW	122
380 V 400 V	P	kW	200
415 V	P	kW	216
440 V	P	kW	229
500 V	P	kW	260
660 V 690 V	P	kW	344
1000 V	P	kW	132

Condensator operation

Individual compensation, rated operational current I_e of three-phase capacitors			
Open			
up to 525 V		A	307
690 V		A	177
Max. inrush current peak		$\times I_e$	30
Component lifespan	Operations	$\times 10^6$	0.1
Max. operating frequency		Ops/h	200

DC

Rated operational current, open			
DC-1			
60 V	I_e	A	400
110 V	I_e	A	400
220 V	I_e	A	400
440 V	I_e	A	11
DC-3			
60 V	I_e	A	400
110 V	I_e	A	400
220 V	I_e	A	400
DC-5			
60 V	I_e	A	400
110 V	I_e	A	400
220 V	I_e	A	400

Current heat loss

3-pole at I_{th}		W	113
Current heat loss at I_e to AC-3/400 V		W	58

Magnet systems

Voltage tolerance			
U_S			48 - 110 V 40-60 Hz 48 - 110 V DC
AC operated	Pick-up	$\times U_S$	$0.7 \times U_{S \min} - 1.15 \times U_{S \max}$
DC operated	Pick-up	$\times U_S$	$0.7 \times U_{S \min} - 1.15 \times U_{S \max}$

AC operated	Drop-out	$x U_S$	$0.2 \times U_{S \max} - 0.6 \times U_{S \min}$
DC operated	Drop-out	$x U_S$	$0.2 \times U_{S \max} - 0.6 \times U_{S \min}$
Power consumption of the coil in a cold state and $1.0 \times U_c$			
Note on power consumption			Control transformer with $u_k \approx 0.6$
Pull-in power	Pick-up	VA	450
Pull-in power	Pick-up	W	350
Sealing power	Sealing	VA	7.5
Sealing power	Sealing	W	6.3
Duty factor		% DF	100
Changeover time at 100 % U_c (recommended value)			
Main contacts			
Closing delay		ms	80
Opening delay		ms	110
Behaviour in marginal and transitional conditions			
Sealing			
Voltage interruptions			
$(0 \dots 0.2 \times U_{c \min}) \approx 10 \text{ ms}$			Time is bridged successfully
$(0 \dots 0.2 \times U_{c \min}) > 10 \text{ ms}$			Drop-out of the contactor
Voltage drops			
$(0.2 \dots 0.6 \times U_{c \min}) \approx 12 \text{ ms}$			Time is bridged successfully
$(0.2 \dots 0.6 \times U_{c \min}) > 12 \text{ ms}$			Drop-out of the contactor
$(0.6 \dots 0.7 \times U_{c \min})$			Contactor remains switched on
Excess voltage			
$(1.15 \dots 1.3 \times U_{c \max})$			Contactor remains switched on
Pick-up phase			
$(0 \dots 0.7 \times U_{c \min})$			Contactor does not switch on
$(0.7 \times U_{c \min} \dots 1.15 \times U_{c \max})$			Contactor switches on with certainty
Admissible transitional contact resistance (of the external control circuit device when actuating A11)		mΩ	≈ 500
PLC signal level (A3 - A4) to IEC/EN 61131-2 (type 2)			
High		V	15
Low		V	5

Electromagnetic compatibility (EMC)

Electromagnetic compatibility			This product is designed for operation in industrial environments (environment 2). The use in residential environments (environment 1) could cause electrical interference so that addition suppression must be planned.
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Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	500
Heat dissipation per pole, current-dependent	P_{vid}	W	19.33
Equipment heat dissipation, current-dependent	P_{vid}	W	0
Static heat dissipation, non-current-dependent	P_{vs}	W	6.3
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-40
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.

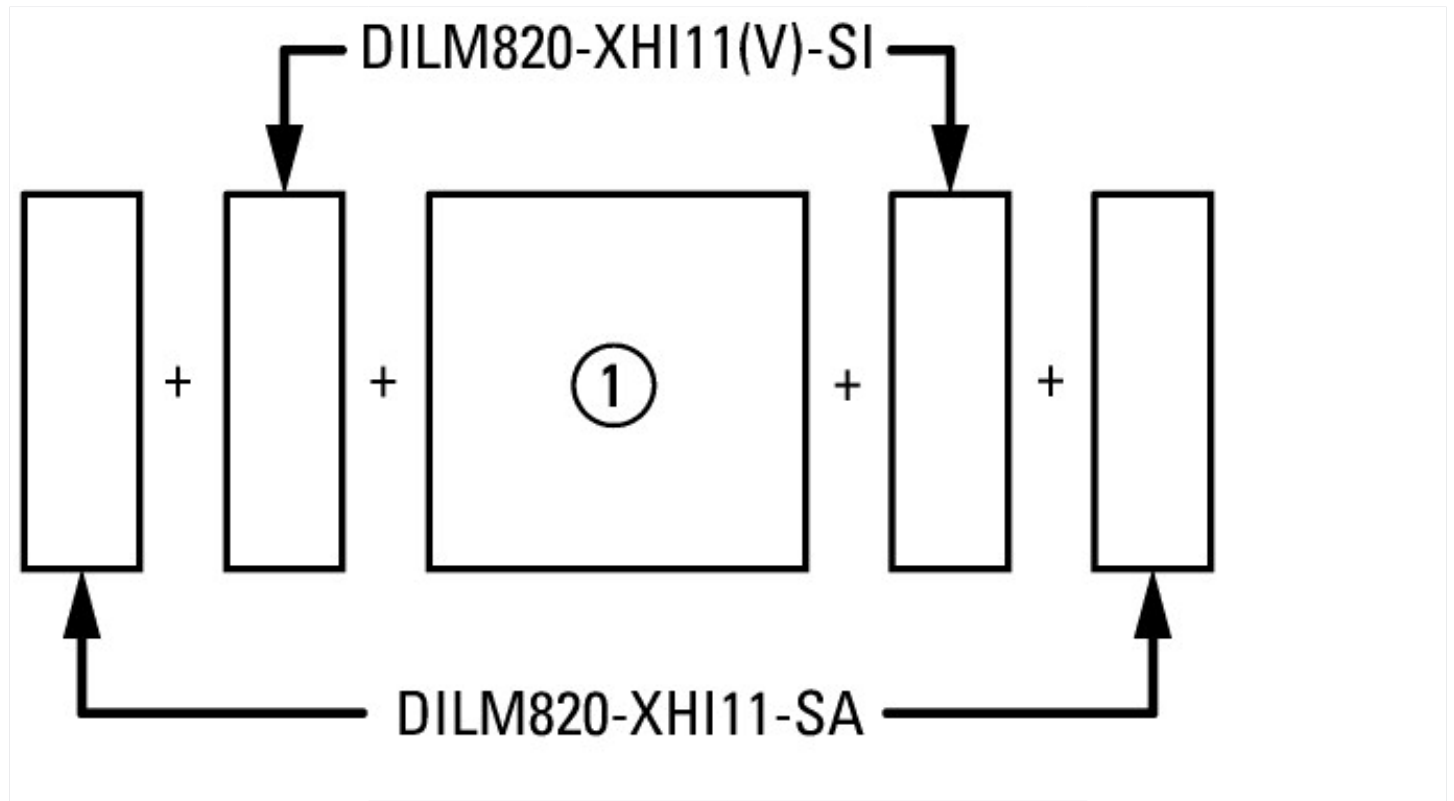
10.2.5 Lifting		Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact		Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions		Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES		Does not apply, since 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 6.0

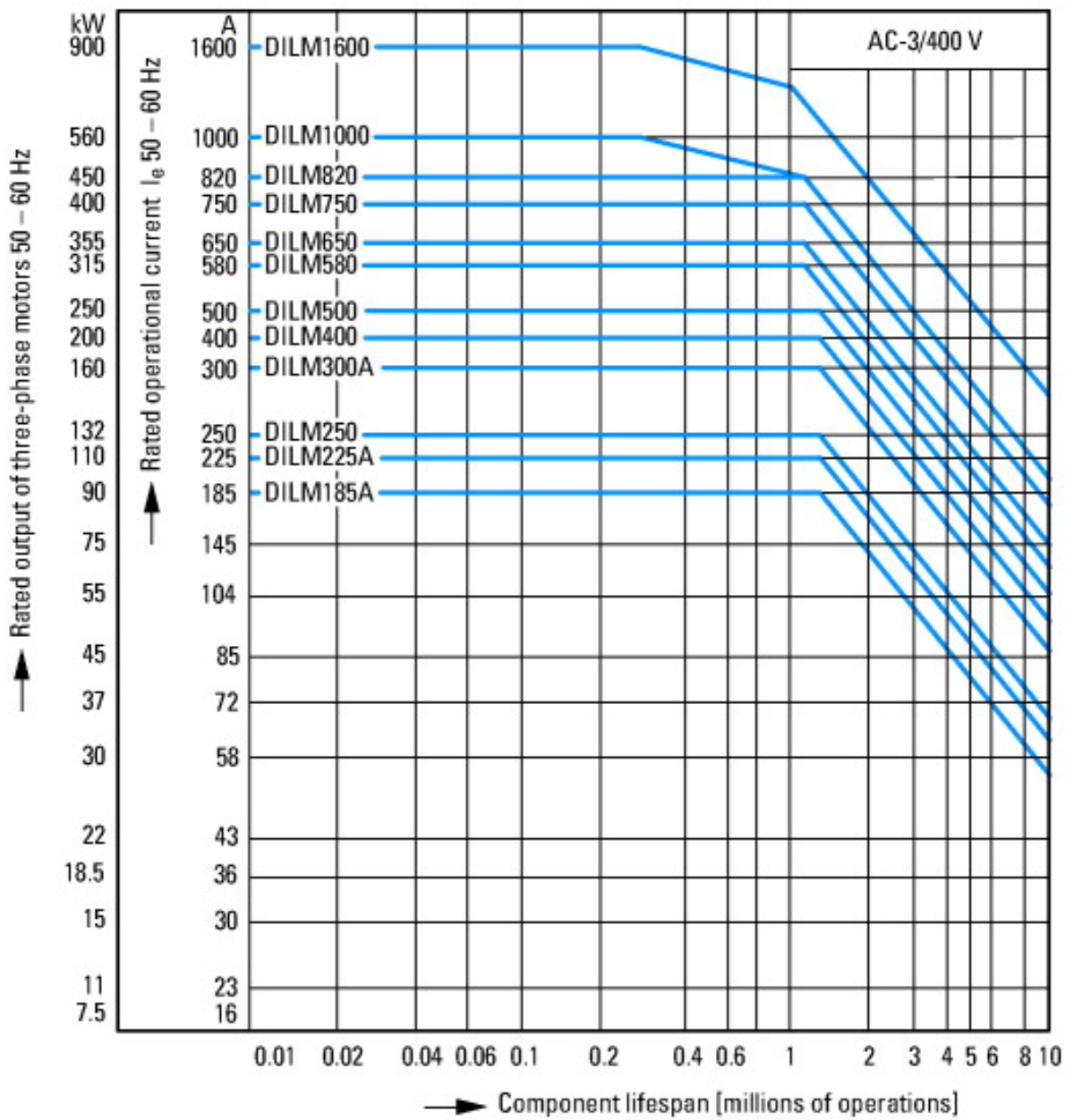
Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss8.1-27-37-10-03 [AAB718012])		
Rated control supply voltage Us at AC 50HZ	V	48 - 110
Rated control supply voltage Us at AC 60HZ	V	48 - 110
Rated control supply voltage Us at DC	V	48 - 110
Voltage type for actuating		AC/DC
Rated operation current Ie at AC-1, 400 V	A	800
Rated operation current Ie at AC-3, 400 V	A	500
Rated operation power at AC-3, 400 V	kW	250
Rated operation current Ie at AC-4, 400 V	A	360
Rated operation power Ie at AC-4, 400 V	kW	200
Modular version		No
Number of auxiliary contacts as normally open contact		2
Number of auxiliary contacts as normally closed contact		2
Type of electrical connection of main circuit		Rail connection
Number of normally closed contacts as main contact		0
Number of main contacts as normally open contact		3

Approvals

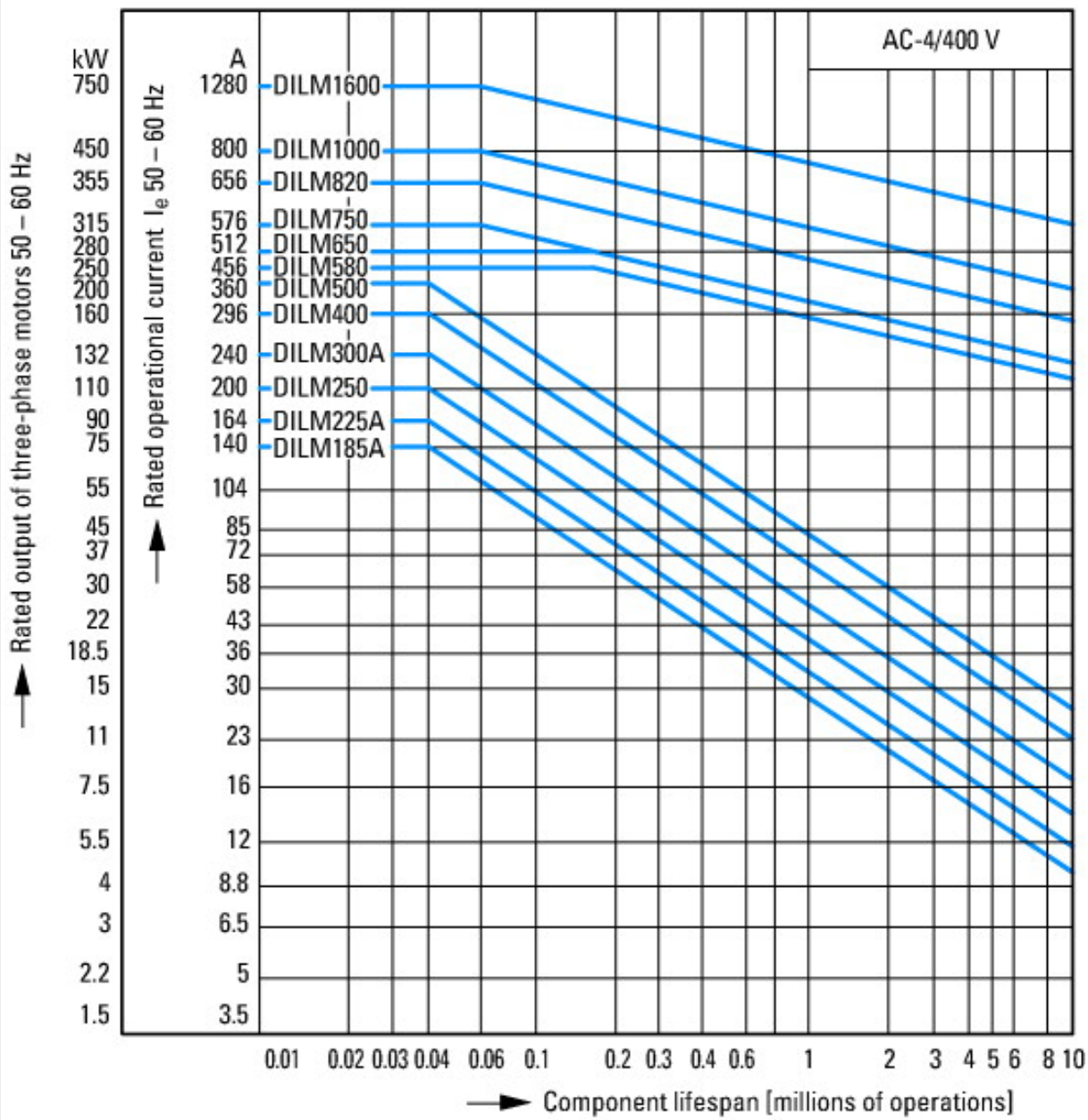
Product Standards		IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking
UL File No.		E29096
UL Category Control No.		NLDX
CSA File No.		012528
CSA Class No.		3211-04
North America Certification		UL listed, CSA certified
Specially designed for North America		No



on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA



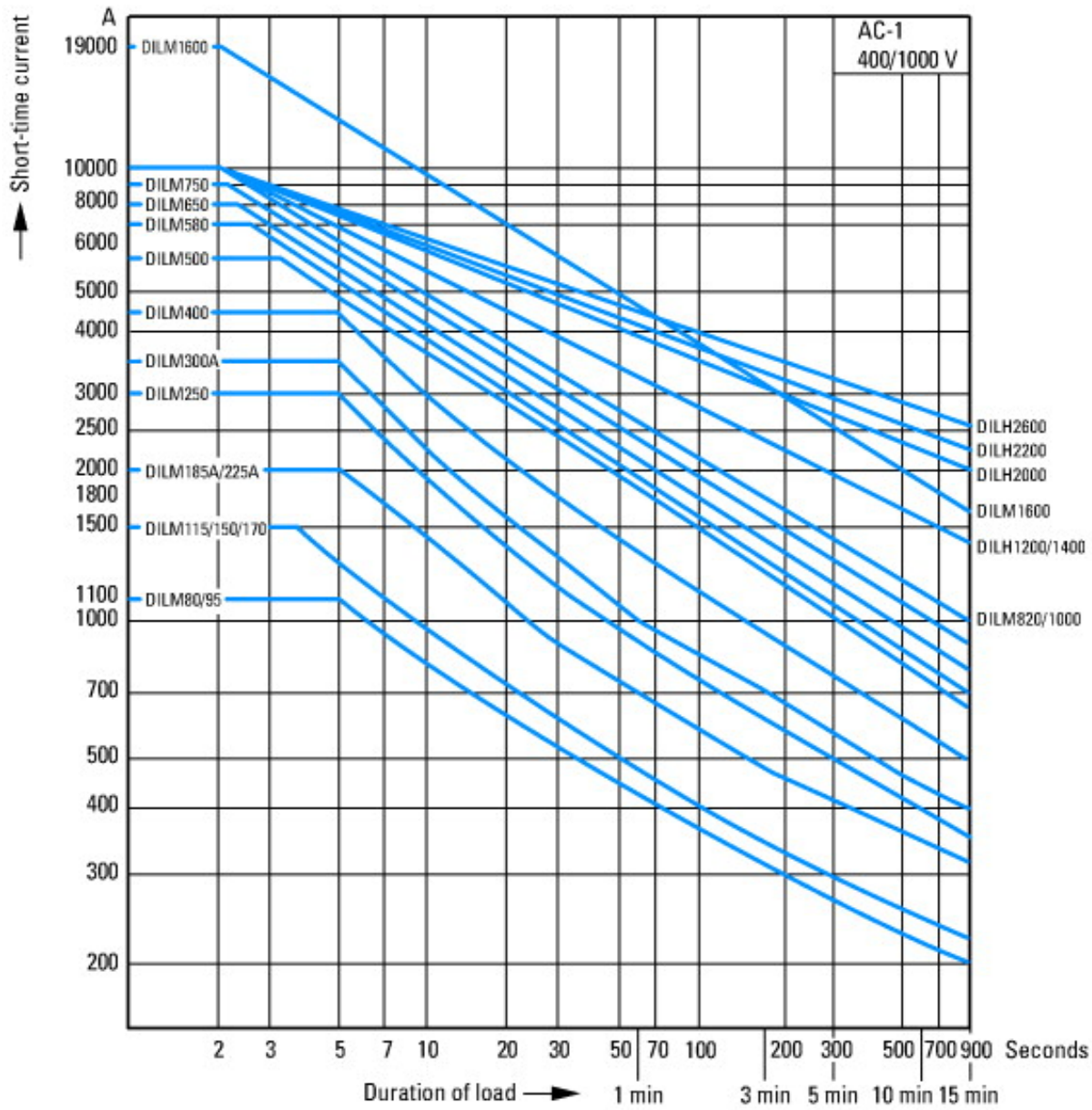
- Normal switching duty
- Normal AC induction motor
- Operating characteristics
- Switch on: from stop
- Switch off: during run
- Electrical characteristics:
- Switch on: up to 6 x Rated motor current
- Switch off: up to 1 x Rated motor current
- Utility category
- 100 % AC-3
- Typical Applications
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- fan
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevator
- Air-conditioning systems
- General drives for 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

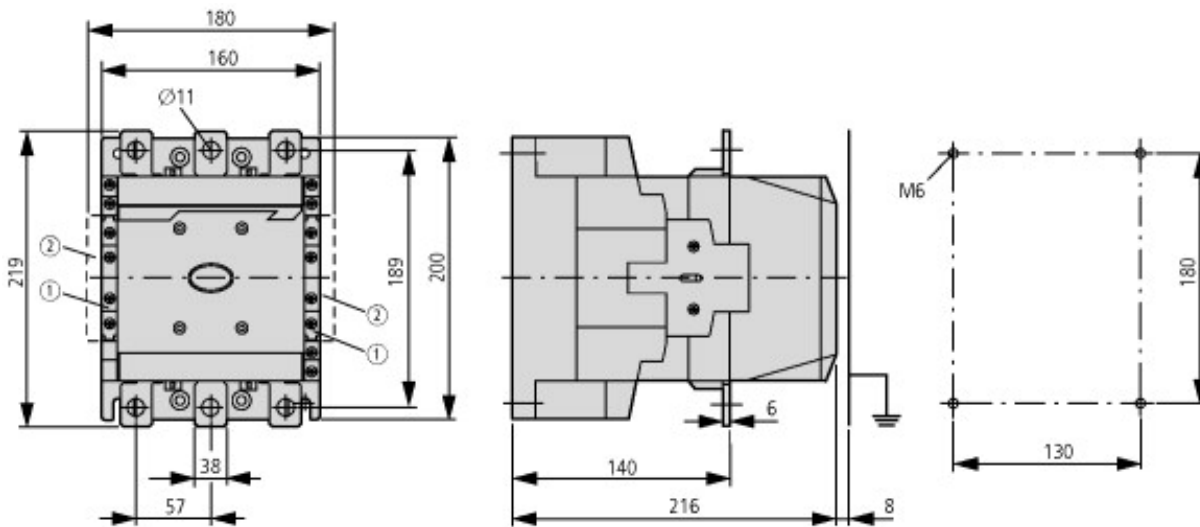


Switching conditions for 3 pole, non-motor loads
 Operating characteristics
 Non inductive and slightly inductive loads
 Electrical characteristics
 Switch on: 1 x rated operational current
 Switch off: 1 x rated operational current
 Utilization category
 100 % AC-1
 Typical examples of application
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



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

Dimensions



① DILM820-XHI11(V)-SI

② DILM820-XHI11-SA

Additional product information (links)

IL03406002Z (AWA2100-1639) Contactors >170 A	
IL03406002Z (AWA2100-1639) Contactors >170 A	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03406002Z2012_09.pdf
IL03406005Z (AWA2100-2212) Contactors >170 A	
IL03406005Z (AWA2100-2212) Contactors >170 A	ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03406005Z2010_07.pdf
UL/CSA: Approved rating data	http://de.ecat.moeller.net/flip-cat/?edition=HPLTE&startpage=5.84
UL/CSA: UL/CSA: Short Circuit Current Rating (SCCR)	http://de.ecat.moeller.net/flip-cat/?edition=HPLTE&startpage=5.86
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
Motor starters and "Special Purpose Ratings" for the North American market	http://www.moeller.net/binary/ver_techpapers/ver953en.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