



CONTACTOR 90kW/400V/AC-3

Part no.

DILM185/22(RDC48)

Article no.

208191

Delivery programme

Product range			Contactors
Application			Contactors for Motors
Subrange			Comfort devices greater than 150 A
Utilization category			AC-1: Non-inductive or slightly inductive loads, resistance furnaces AC-3: Squirrel-cage motors: starting, switching off during running AC-4: Squirrel-cage motors: starting, plugging, reversing, inching
Connection technique			Screw terminals
Rated operational current			
AC-3			
380 V 400 V	I_e	A	185
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	337
enclosed	I_{th}	A	250
Conventional free air thermal current, 1 pole			
open	I_{th}	A	685
enclosed	I_{th}	A	625
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V			
220 V 230 V	P	kW	55
380 V 400 V			
380 V 400 V	P	kW	90
660 V 690 V			
660 V 690 V	P	kW	175
1000 V	P	kW	108
AC-4			
220 V 230 V			
230 V	P	kW	41
380 V 400 V			
400 V	P	kW	75
660 V 690 V			
690 V	P	kW	127
1000 V	P	kW	108
Contact sequence			
Actuating voltage			RDC 48: 24 - 48 V DC
Voltage AC/DC			DC operation
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

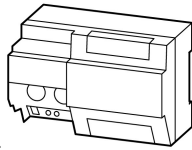
Note concerning the product

Classical

A1/A2 are attached to power supply as normal

Direct from the PLC

A 3 V output from the PLC can be directly connected to

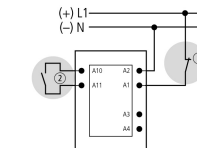
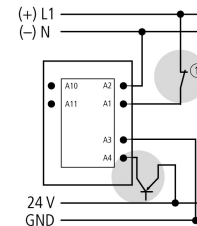
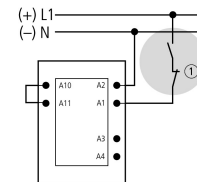


the connections A4/A24.

From a low-power actuating device

Low-power actuating devices such as PCB relays, actuating devices or position switches can be directly connected to A10/A11.

DILM250 to DILM1600, DILH1400



① Stopping in the event of an emergency (emergency switching off)

② Max. capacity 6 nF

Notes

When operating contactors DILM580 to DILM1600 with frequency inverter, the suppressor circuit on the load side must be removed.

During a high voltage test for the contactors DILM580 to DILH2600 the suppressor circuit on the load side must be removed.

Control voltages

RA250  110 V - 250 V AC/DC

RAW250  230 V - 250 V AC/DC

Approvals

Product Standards

UL File No.

UL CCN

CSA File No.

CSA Class No.

NA Certification

Specially designed for NA

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

E29096

NLDX

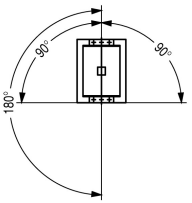
1017510

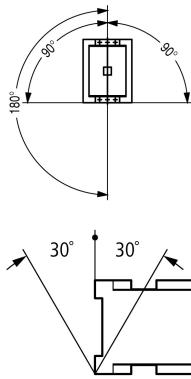
3211-04

UL listed, CSA certified

No

General

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
AC operated	Operations	x 10 ⁶	10
DC operated	Operations	x 10 ⁶	10
Operating frequency, mechanical			
AC operated	Operations/ h		3000
DC operated	Operations/ h		3000
Climatic proofing			Damp heat, constant to IEC 60068-2-78 Damp heat, cyclic to IEC 60068-2-30
Ambient temperature		°C	
Open		°C	- 25 - 60
Enclosed		°C	- 25 - 40
Storage		°C	- 40 - 80
Mounting position			

Mounting position, AC- and DC operated				
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	
Protection type				IP00
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	6.5	
DC operated		kg	6.5	
Weight		kg	6.5	
Terminal capacity main cable				
Flexible with cable lug		mm ²	35 - 95	
Stranded with cable lug		mm ²	50 - 120	
Solid or stranded		AWG	1/0 - 250 MCM	
Flat conductor	Number of segments x width x thickness	mm	Fixing with flat cable terminal or cable terminal blocks See terminal capacity for cable terminal blocks	
Busbar	Width	mm	20	
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				
Open-end spanner		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				
AC	U _i	V AC	1000	
Rated operational voltage	U _e	V AC	1000	
Safe isolation to VDE 0106 Part 101 and Part 101/A1				

between coil and contacts		V AC	500
between the contacts		V AC	500
Making capacity (p.f. to IEC/EN 60947)		A	3000
Breaking capacity			
220 V 230 V		A	2500
380 V 400 V AC		A	2500
500 V		A	2500
660 690 V AC		A	2500
1000 V		A	760
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	315
690 V	gG/gL 690 V	A	315
1000 V	gG/gL 1000 V	A	160
Type "1" coordination			
400 V	gG/gL 500 V	A	400
690 V	gG/gL 690 V	A	400
1000 V	gG/gL 1000 V	A	200

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	337
at 50 °C	$I_{th} = I_e$	A	301
at 55 °C	$I_{th} = I_e$	A	287
at 60 °C	$I_{th} = I_e$	A	275
enclosed	I_{th}	A	250
Conventional free air thermal current, 1 pole			
open	I_{th}	A	685
enclosed	I_{th}	A	625
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I_e	A	185
240 V	I_e	A	185
380 V 400 V	I_e	A	185
415 V	I_e	A	185
440V	I_e	A	185
500 V	I_e	A	185
660 V 690 V	I_e	A	185
1000 V	I_e	A	76
Motor rating	P	kWh	
220 V 230 V	P	kW	55
240V	P	kW	62
380 V 400 V	P	kW	90
415 V	P	kW	110
440 V	P	kW	90

500 V	P	kW	132
660 V 690 V	P	kW	175
1000 V	P	kW	108
AC-4			
Open, 3-pole: 50 – 60 Hz			
230 V	I _e	A	136
240 V	I _e	A	136
400 V	I _e	A	136
415 V	I _e	A	136
440 V	I _e	A	136
500 V	I _e	A	136
690 V	I _e	A	136
1000 V	I _e	A	76
Motor rating	P	kWh	
230 V	P	kW	41
240 V	P	kW	45
400 V	P	kW	75
415 V	P	kW	80
440 V	P	kW	85
500 V	P	kW	96
690 V	P	kW	127
1000 V	P	kW	108

Condensor operation

Individual compensation, rated operational current I _e of three-phase capacitors			
open			
up to 525 V		A	220
690 V		A	133
Max. inrush current peak		x I _e	30
Component lifespan	Operations	x 10 ⁶	0.1
Max. operating frequency		Ops/h	200

DC

Rated operational current, open			
DC-1			
60 V	I _e	A	300
110 V	I _e	A	300
220 V	I _e	A	300
440 V	I _e	A	11
DC-3			
60 V	I _e	A	300
110 V	I _e	A	300
220 V	I _e	A	300
DC-5			
60 V	I _e	A	300
110 V	I _e	A	300
220 V	I _e	A	300

Current heat loss

3-pole at I _{th}		W	34
Current heat loss at I _e to AC-3/400 V		W	16

Magnet systems

Voltage tolerance		x U _c	
U _c			24 - 48 V DC
DC operated	Pick-up	x U _c	

	Pick-up	$\times U_c$	$0.7 \times U_{c \min} - 1.15 \times U_{c \max}$
DC operated	Drop-out	$\times U_c$	
	Drop-out	$\times U_c$	$0.2 \times U_{c \min} - 0.6 \times U_{c \max}$
Power consumption of the coil in a cold state and $1.0 \times U_c$			
50 Hz	Pick-up	VA	380
AC operated	Pick-up	W	250
60 Hz	Pick-up	VA	360
60 Hz	Pick-up	W	325
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	VA	4.3
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	W	3.3
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	VA	4.3
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	W	3.3
Duty factor		% DF	100
Switching times at 100 % U_c (approximate values)			
Main contacts			
AC operated			
Closing delay		ms	100
Opening delay		ms	80
DC operated			
Closing delay		ms	50
Opening delay		ms	40
Behaviour in marginal and transitional conditions			
Sealing			
Voltage interruptions			
$(0 \dots 0.2 \times U_{c \min}) \leq 10 \text{ ms}$			Time is bridged successfully
$(0 \dots 0.2 \times U_{c \min}) > 10 \text{ ms}$			Drop-out of the contactor
Voltage drops			
$(0.2 \dots 0.6 \times U_{c \min}) \leq 12 \text{ ms}$			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
$(> 1.3 \times U_{c \max}) \leq 3 \text{ s}$			Contactor remains switched on
$(> 1.3 \times U_{c \max}) > 3 \text{ s}$			Drop-out of the contactor
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
$(> 1.15 \times U_{c \max})$			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)

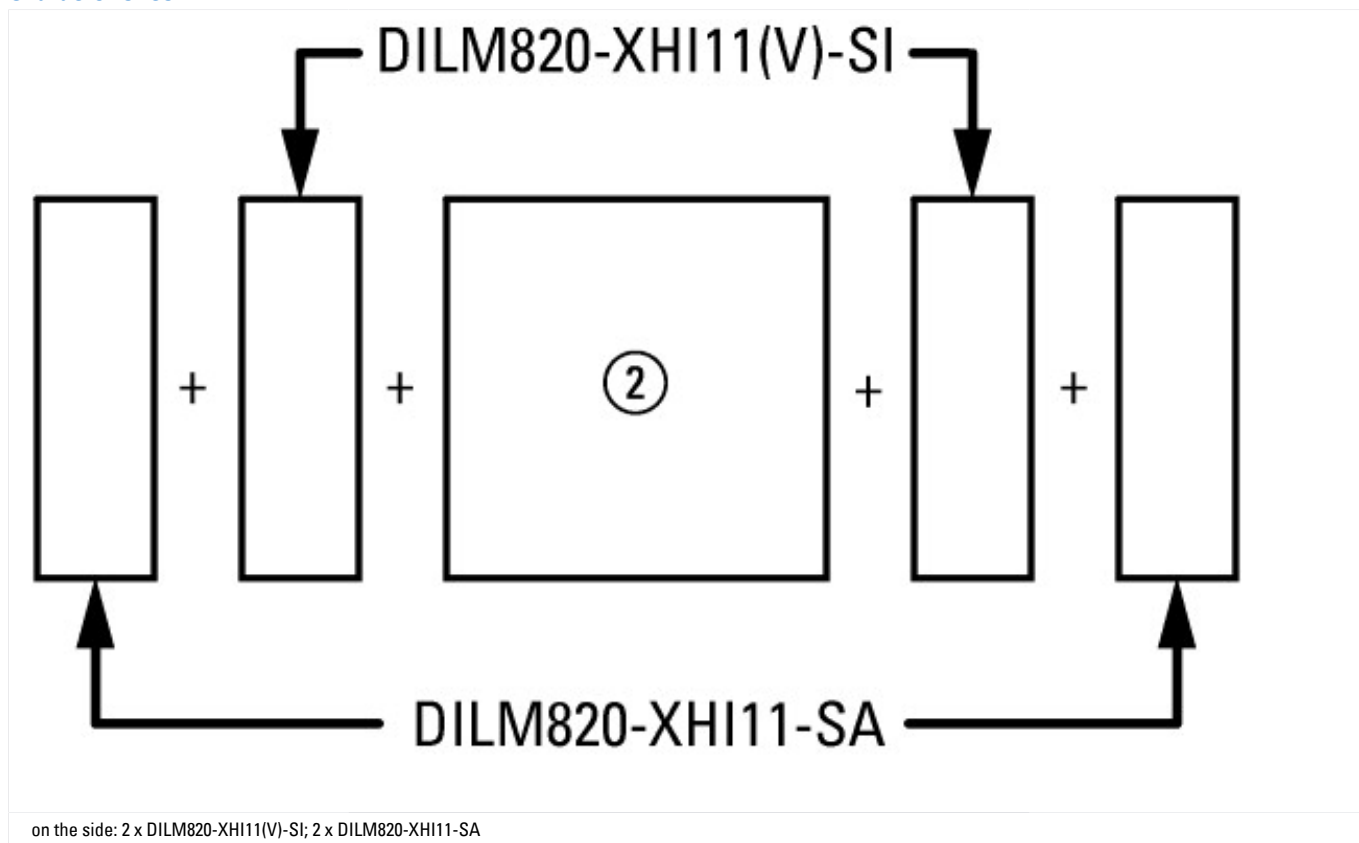
Electromagnetic compatibility			This product is designed for operation in industrial environments (environment 2). The use in residential environments (environment 1) could cause electrical interference so that addition suppression must be planned.
-------------------------------	--	--	--

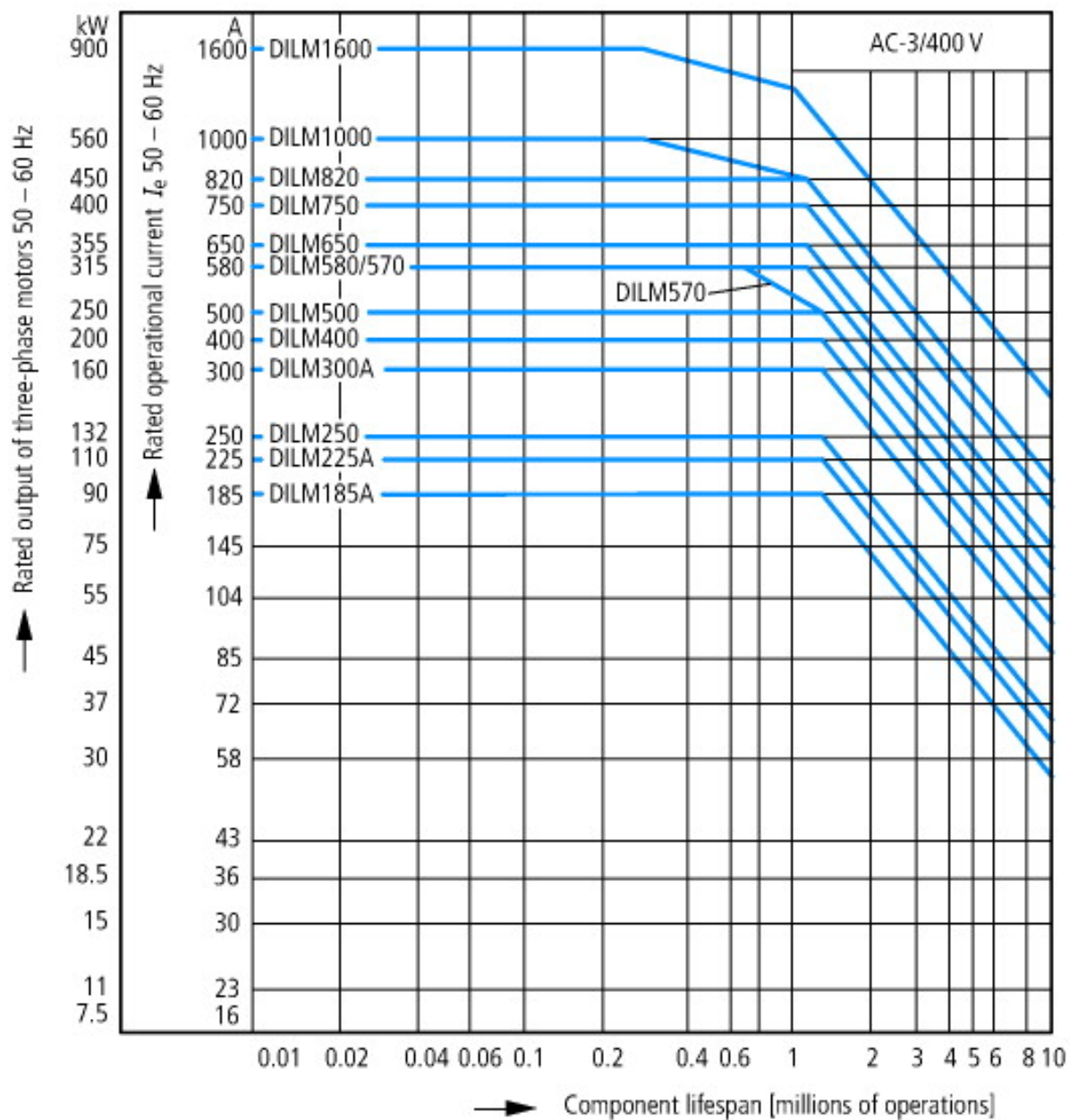
Technical data ETIM 4.0

Number of main contacts as N/Os			3
Rated operation current I_e at AC-1, 400 V			337
Connection type main circuit			Screw connection
Rated control voltage U_s at AC 60HZ		V	0

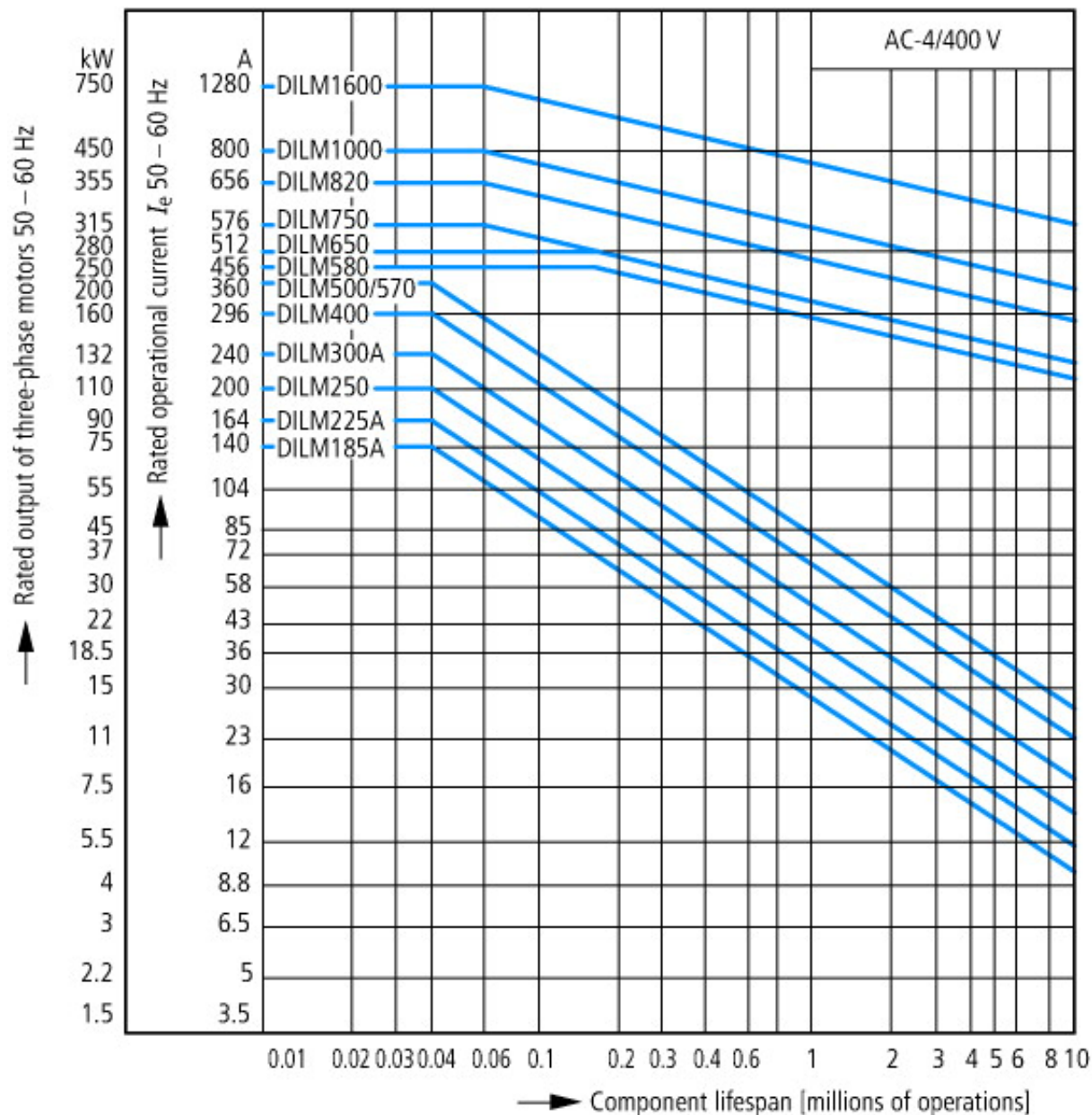
Number of auxiliary contacts as N/Os			2
Rated control voltage Us at AC 50HZ		V	0
Number of auxiliary contacts as N/Cs			2
Suitable for rail-mounting			No
Rated control voltage Us at DC		V	48
Voltage type for actuation			DC
Rated operation current Ie at AC-3, 400 V		A	185
Number of N/Cs as main contact			0
Motor rating at AC-3, 400 V		kWh	90

Characteristics

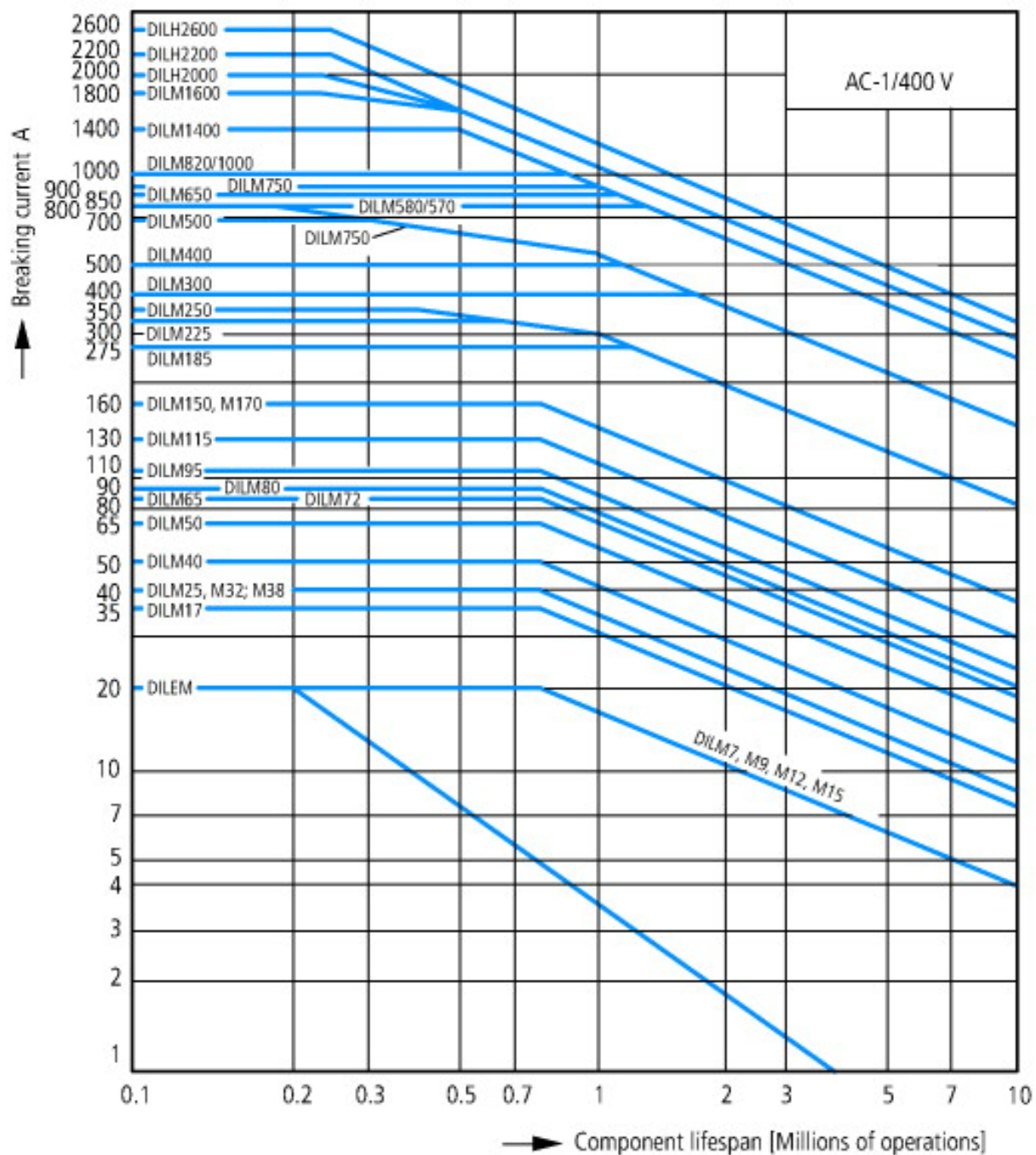




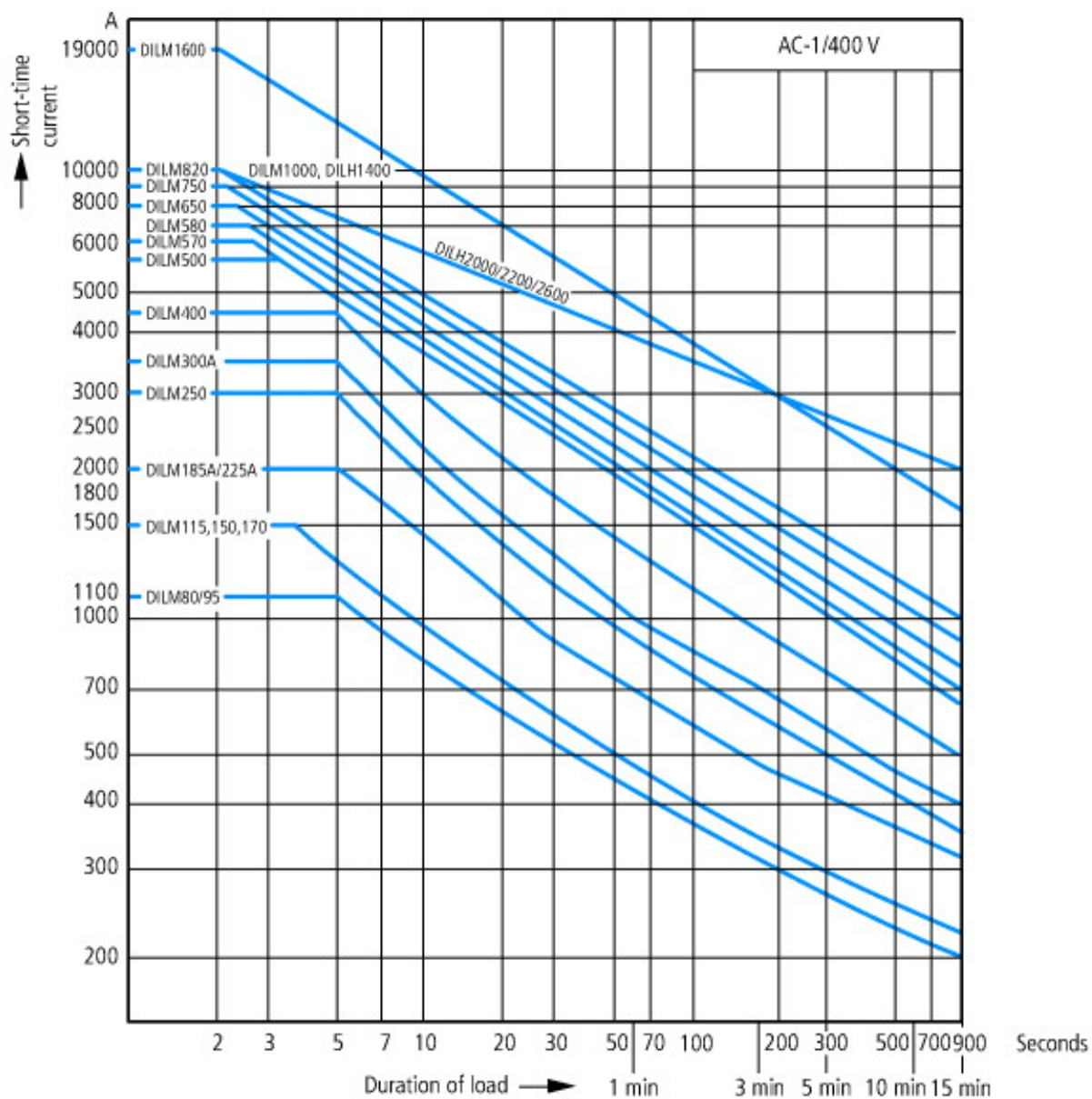
Squirrel-cage motor
 Operating characteristics
 Starting: from rest
 Stopping: after attaining full running speed
 Electrical characteristics
 Make: up to 6 x rated motor current
 Break: up to 1 x rated motor current
 Utilization category
 100 % AC-3
 Typical applications
 Compressors
 Lifts
 Mixers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



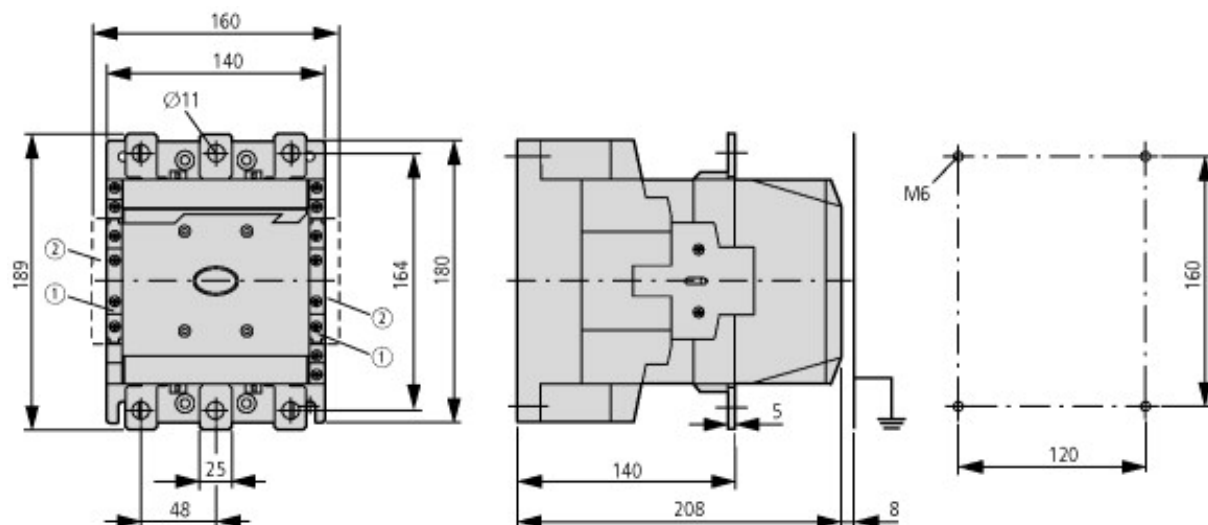
Switching duty for non-motor loads, 3-pole, 4-pole
 Operating characteristics
 Non-inductive or slightly inductive loads
 Electrical characteristics
 Make: 1 x rated current
 Break: 1 x rated current
 Utilization category
 100 % AC-1
 Typical applications
 Electric heat



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

Normal switching duty

Dimensions



- ① DILM820-XHI11(V)-SI
- ② DILM820-XHI11-SA

DILM185...DILM500
DILMC185-S...DILMC500-S
DILM185-S...DILM500-S

Additional product information (links)

http://de.ecat.moeller.net/flip-cat/?edition=HPLTE&startpage=5.84	
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 Cable 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