



Contactor, 3p+2N/O+2N/C, 110kW/400V/AC3

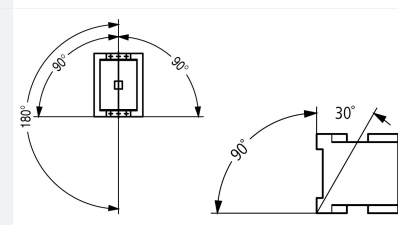
**Part no.** DILM225A/22(RAC24)  
**Article no.** 139544  
**Catalog No.** XTCE225H22T

## Delivery programme

Product range			Contactors
Application			Contactors for Motors
Subrange			Standard 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
<b>Rated operational current</b>			
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	386
enclosed	$I_{th}$	A	275
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	707
enclosed	$I_{th}$	A	636
<b>Max. rating for three-phase motors, 50 - 60 Hz</b>			
AC-3			
220 V 230 V	P	kW	70
380 V 400 V	P	kW	110
660 V 690 V	P	kW	150
1000 V	P	kW	108
AC-4			
220 V 230 V	P	kW	51
380 V 400 V	P	kW	90
660 V 690 V	P	kW	110
1000 V	P	kW	77
Contact sequence			
Can be combined with auxiliary contact			DILM1000-XHI...
Actuating voltage			RAC 24: 24 V 50/60 Hz
Voltage AC/DC			AC operation
<b>Contacts</b>			
N/O = Normally open			2 N/O
N/C = Normally closed			2 NC
<b>Auxiliary contacts</b>			
possible variants at auxiliary contact module fitting options			on the side: 2 x DILM1000-XHI(V)11-SI; 2 x DILM1000-XHI11-SA
Side mounting auxiliary contacts			
<strong>Instructions</strong>			integrated suppressor circuit in actuating electronics 660 V, 690 V or 1000 V: not directly reversing

## Technical data

<b>General</b>			
Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			

AC operated	Operations	$\times 10^6$	10
DC operated	Operations	$\times 10^6$	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			
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			
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		3.54
DC operated	kg		3.54
Weight	kg		3.54
Terminal capacity main cable			
Flexible with cable lug	mm <sup>2</sup>		50 - 185
Stranded with cable lug	mm <sup>2</sup>		70 - 185
Solid or stranded	AWG		2/0 - 250 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	32
Main cable connection screw/bolt			
M10			
Tightening torque			
Nm 24			
Terminal capacity control circuit cables			
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 - 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
<b>Main conducting paths</b>			
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 <sub>e</sub>	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	2700
Breaking capacity			
220 V 230 V		A	2250
380 V 400 V		A	2250
500 V		A	2250
660 V 690 V		A	2250
1000 V		A	760
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	315
690 V	gG/gL 690 V	A	250
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	315
1000 V	gG/gL 1000 V	A	200
<b>AC</b>			
AC-1			
Rated operational current			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	I <sub>th</sub> = I <sub>e</sub>	A	386
at 50 °C	I <sub>th</sub> = I <sub>e</sub>	A	345
at 55 °C	I <sub>th</sub> = I <sub>e</sub>	A	329
at 60 °C	I <sub>th</sub> = I <sub>e</sub>	A	315
enclosed	I <sub>th</sub>	A	275
Notes			At maximum permissible ambient air temperature.
Conventional free air thermal current, 1 pole			
Note			at maximum permissible ambient air temperature
open	I <sub>th</sub>	A	707
enclosed	I <sub>th</sub>	A	636
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I <sub>e</sub>	A	225
240 V	I <sub>e</sub>	A	225
415 V	I <sub>e</sub>	A	225
440V	I <sub>e</sub>	A	225
500 V	I <sub>e</sub>	A	225
660 V 690 V	I <sub>e</sub>	A	160
1000 V	I <sub>e</sub>	A	76
Motor rating	P	kWh	
220 V 230 V	P	kW	70
240V	P	kW	75
380 V 400 V	P	kW	110
415 V	P	kW	132

440 V	P	kW	138
500 V	P	kW	160
660 V 690 V	P	kW	150
1000 V	P	kW	108
<b>AC-4</b>			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I <sub>e</sub>	A	164
240 V	I <sub>e</sub>	A	164
380 V 400 V	I <sub>e</sub>	A	164
415 V	I <sub>e</sub>	A	164
440 V	I <sub>e</sub>	A	164
500 V	I <sub>e</sub>	A	164
660 V 690 V	I <sub>e</sub>	A	120
1000 V	I <sub>e</sub>	A	55
Motor rating			
220 V 230 V	P	kW	51
240 V	P	kW	54
380 V 400 V	P	kW	90
415 V	P	kW	96
440 V	P	kW	102
500 V	P	kW	116
660 V 690 V	P	kW	110
1000 V	P	kW	77

### Condensator operation

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

### DC

Rated operational current, open			
DC-1			
60 V	I <sub>e</sub>	A	300
110 V	I <sub>e</sub>	A	300
220 V	I <sub>e</sub>	A	300
440 V	I <sub>e</sub>	A	11
DC-3			
60 V	I <sub>e</sub>	A	300
110 V	I <sub>e</sub>	A	300
220 V	I <sub>e</sub>	A	300
DC-5			
60 V	I <sub>e</sub>	A	300
110 V	I <sub>e</sub>	A	300
220 V	I <sub>e</sub>	A	300

### Current heat loss

3-pole at I <sub>th</sub>		W	45
Current heat loss at I <sub>e</sub> to AC-3/400 V		W	23

### Magnet systems

Voltage tolerance			
U <sub>C</sub>		x U <sub>C</sub>	24 V 50/60 Hz
AC operated	Pick-up	x U <sub>C</sub>	0.8 x U <sub>C min</sub> - 1.15 x U <sub>C max</sub>

AC operated	Drop-out	x U <sub>c</sub>	0.25 x U <sub>c min</sub> - 0.6 x U <sub>c max</sub>
Power consumption of the coil in a cold state and 1.0 x U <sub>c</sub>			
Pull-in power	Pick-up	VA	210
Pull-in power	Pick-up	W	180
Sealing power	Sealing	VA	2.6
Sealing power	Sealing	W	2.1
Duty factor		% DF	100
Switching times at 100 % U <sub>c</sub> (approximate values)			
Main contacts			
Closing delay		ms	60
Opening delay		ms	40
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 <sub>n</sub>	A	225
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	7.67
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0
Static heat dissipation, non-current-dependent	P <sub>vs</sub>	W	2.1
Heat dissipation capacity	P <sub>diss</sub>	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.

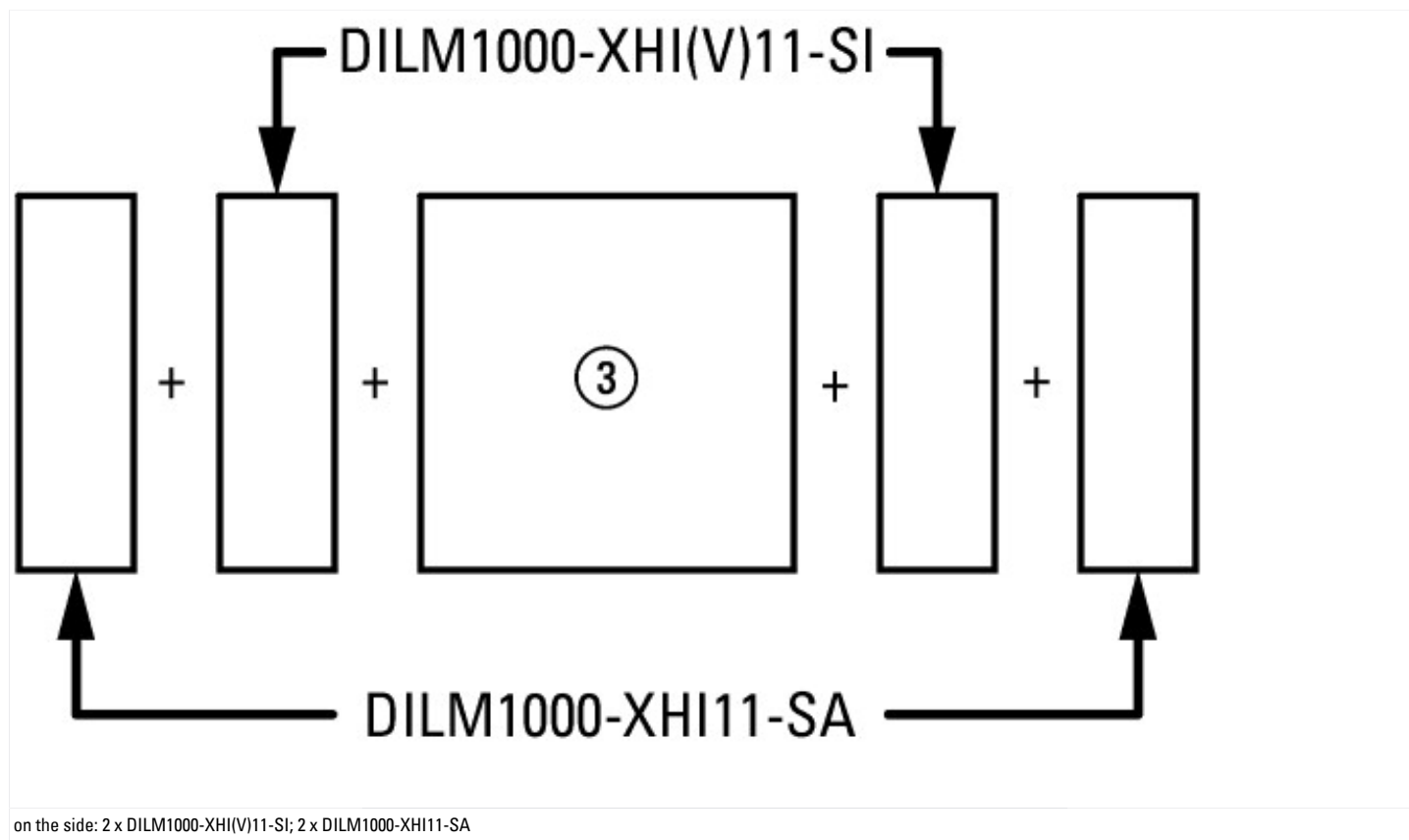
## Technical data ETIM 5.0

Low-voltage industrial components (EG000017) / Magnet contactor, AC-switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss8-27-37-10-03 [AAB718011])		
Rated control supply voltage Us at AC 50HZ	V	24 - 24
Rated control supply voltage Us at AC 60HZ	V	24 - 24
Rated control supply voltage Us at DC	V	0 - 0
Voltage type for actuating		AC
Rated operation current Ie at AC-1, 400 V	A	356
Rated operation current Ie at AC-3, 400 V	A	225
Rated operation power at AC-3, 400 V	kW	110
Rated operation current Ie at AC-4, 400 V	A	164
Rated operation power Ie at AC-4, 400 V	kW	90
Modular version		No
Number of auxiliary contacts as normally open contact		2
Number of auxiliary contacts as normally closed contact		2
Connection type main current 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; UL508;CSA-C22.2 No.14-05; CE marking
UL File No.		E29096
UL Category Control No.		NLDX
CSA File No.		2389068
CSA Class No.		3211-04
North America Certification		UL listed, CSA certified
Specially designed for North America		No

## Characteristics



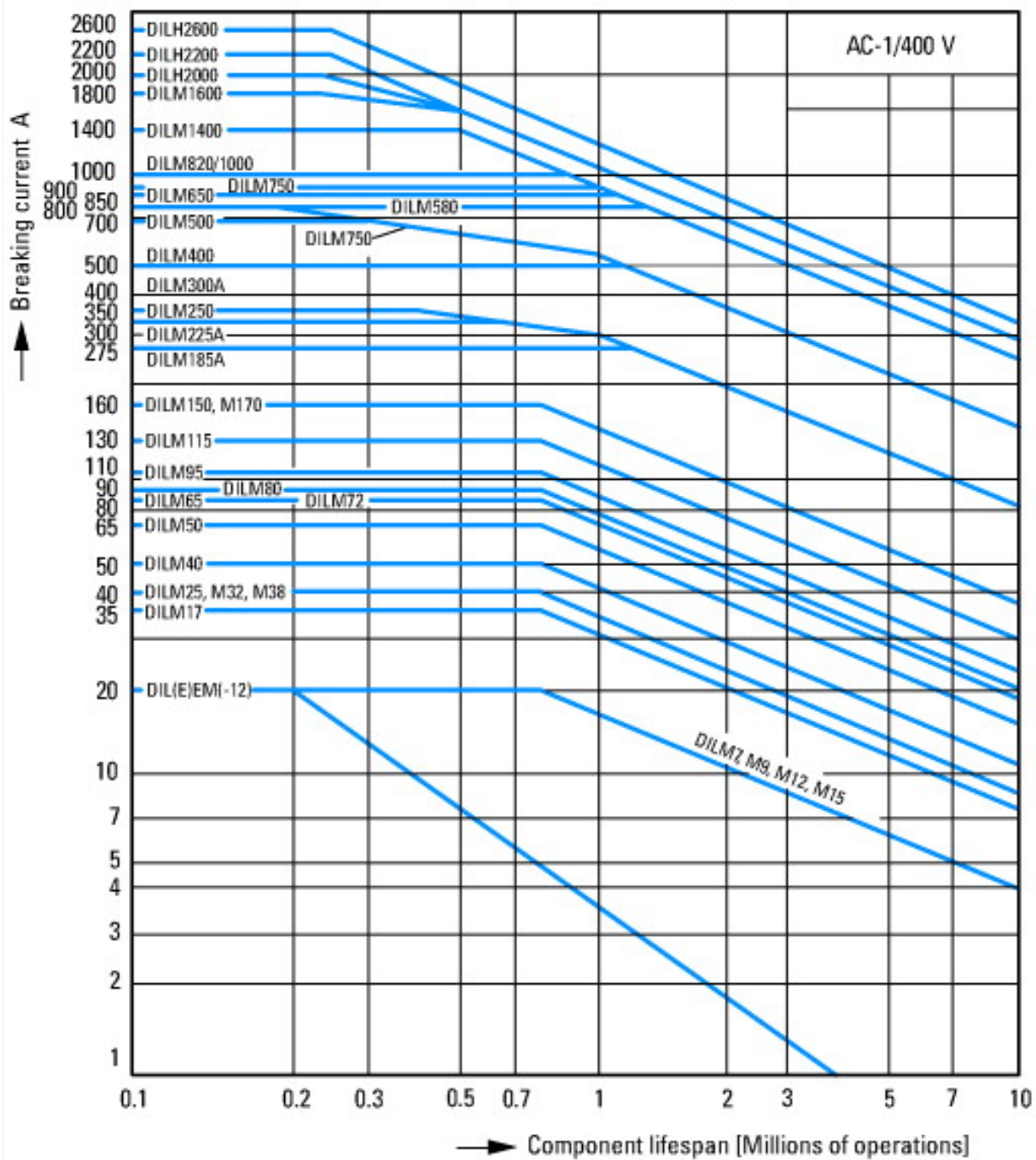


Normal switching duty  
 Normal AC induction motor  
 Operating characteristics  
 Switch on: from stop  
 Switch off: during run  
 Electrical characteristics:  
 Switch on: up to 6 x Rated motor current  
 Switch off: up to 1 x Rated motor current  
 Utility category  
 100 % AC-3  
 Typical Applications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

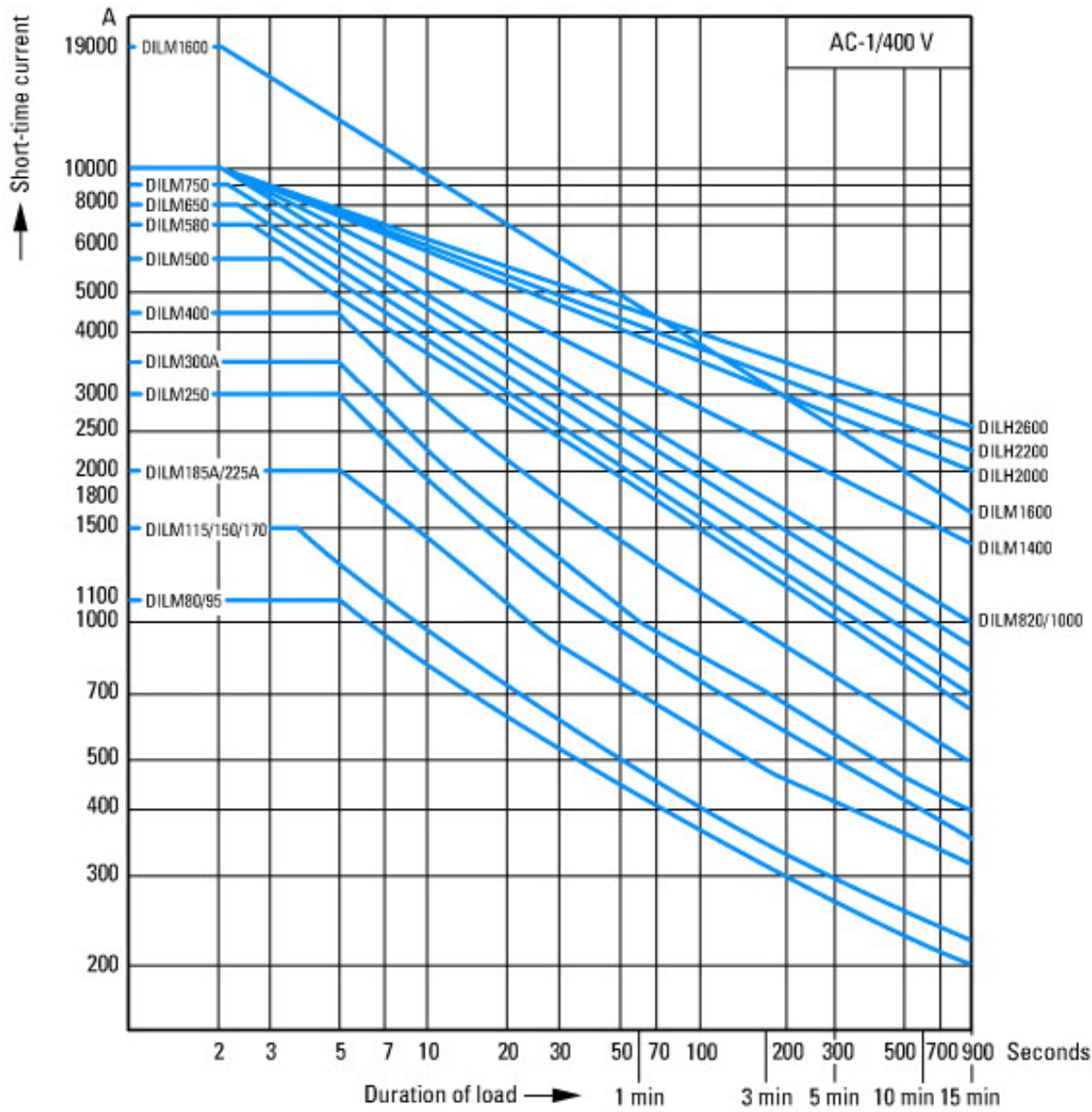


Extreme switching duty  
 Squirrel-cage motor  
 Operating characteristics  
 Inching, plugging, reversing  
 Electrical characteristics  
 Make: up to 6 x rated motor current  
 Break: up to 6 x rated motor current  
 Utilization category  
 100 % AC-4  
 Typical applications  
 Printing presses  
 Wire-drawing machines  
 Centrifuges  
 Special drives for manufacturing and processing machines



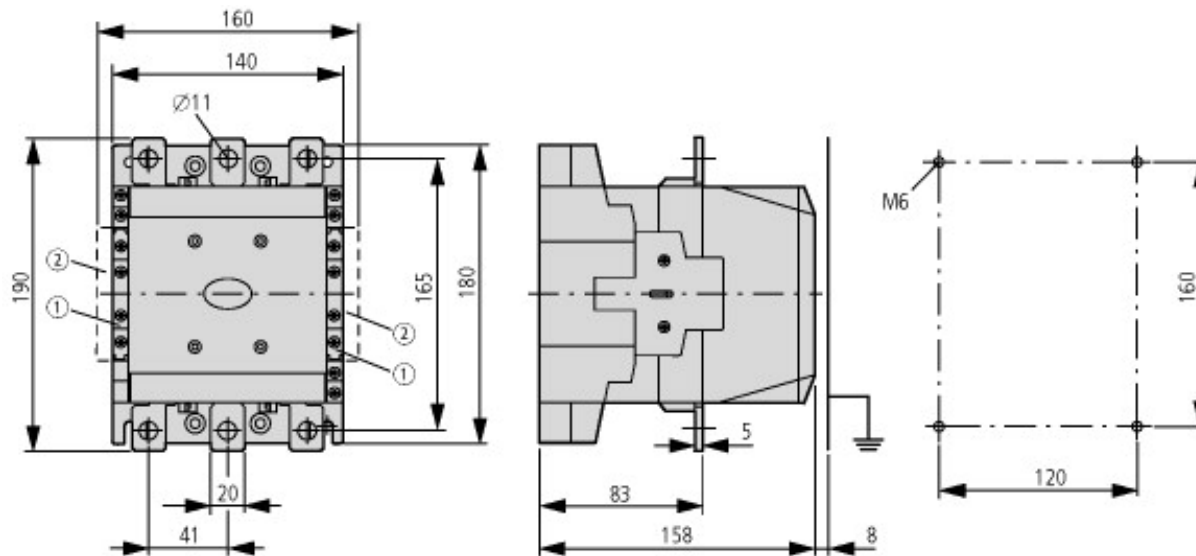


Switching duty for non-motor loads, 3-pole, 4-pole  
 Operating characteristics  
 Non-inductive or slightly inductive loads  
 Electrical characteristics  
 Make: 1 x rated current  
 Break: 1 x rated current  
 Utilization category  
 100 % AC-1  
 Typical applications  
 Electric heat



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

## Dimensions



- ① DILM1000-XHI(V)11-SI
- ② DILM1000-XHI11-SA

## Additional product information (links)

IL03406001Z Contactors	
IL03406001Z Contactors	<a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03406001Z2010_06.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03406001Z2010_06.pdf</a>
Switchgear of Power Factor Correction Systems	<a href="http://www.moeller.net/binary/ver_techpapers/ver934en.pdf">http://www.moeller.net/binary/ver_techpapers/ver934en.pdf</a>
X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely	<a href="http://www.moeller.net/binary/ver_techpapers/ver938en.pdf">http://www.moeller.net/binary/ver_techpapers/ver938en.pdf</a>
Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions	<a href="http://www.moeller.net/binary/ver_techpapers/ver944en.pdf">http://www.moeller.net/binary/ver_techpapers/ver944en.pdf</a>
Effect of the Cable Capacitance of Long Control Cables on the Actuation of Contactors	<a href="http://www.moeller.net/binary/ver_techpapers/ver949en.pdf">http://www.moeller.net/binary/ver_techpapers/ver949en.pdf</a>
Motor starters and "Special Purpose Ratings" for the North American market	<a href="http://www.moeller.net/binary/ver_techpapers/ver953en.pdf">http://www.moeller.net/binary/ver_techpapers/ver953en.pdf</a>
Switchgear for Luminaires	<a href="http://www.moeller.net/binary/ver_techpapers/ver955en.pdf">http://www.moeller.net/binary/ver_techpapers/ver955en.pdf</a>
Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts	<a href="http://www.moeller.net/binary/ver_techpapers/ver956en.pdf">http://www.moeller.net/binary/ver_techpapers/ver956en.pdf</a>
The Interaction of Contactors with PLCs	<a href="http://www.moeller.net/binary/ver_techpapers/ver957en.pdf">http://www.moeller.net/binary/ver_techpapers/ver957en.pdf</a>
Busbar Component Adapters for modern Industrial control panels	<a href="http://www.moeller.net/binary/ver_techpapers/ver960en.pdf">http://www.moeller.net/binary/ver_techpapers/ver960en.pdf</a>