

**DATASHEET - DILM170(RDC24)**

**Contactors, 3 pole, 380 V 400 V 90 kW, RDC 24: 24 - 27 V DC, DC operation, Screw terminals**

Powering Business Worldwide™

**Part no. DILM170(RDC24)**  
**Catalog No. 107016**  
**Alternate Catalog No. XTCE170G00TD**  
**EL-Nummer (Norway) 4130452**

**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	170
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	225
enclosed	$I_{th}$	A	166
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	460
enclosed	$I_{th}$	A	415

**Max. rating for three-phase motors, 50 - 60 Hz**

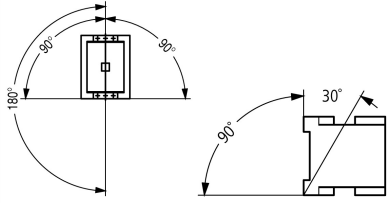
AC-3			
220 V 230 V	P	kW	52
380 V 400 V	P	kW	90
660 V 690 V	P	kW	96
AC-4			
220 V 230 V	P	kW	20
380 V 400 V	P	kW	33
660 V 690 V	P	kW	48

Contact sequence			
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<b>Instructions</b>			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 24: 24 - 27 V DC
Voltage AC/DC			DC operation
Connection to SmartWire-DT			no

**Technical data**

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

DC operated	Operations	$\times 10^6$	10
Operating frequency, mechanical			
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	-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	2.25
Screw connector terminals			
Terminal capacity main cable			
Flexible with ferrule		mm <sup>2</sup>	1 x (10 - 95) 2 x (10 - 70)
Stranded		mm <sup>2</sup>	1 x (16 - 95) 2 x (16 - 70)
Solid or stranded		AWG	single 8...3/0, double 8...2/0
Flat conductor	Lamellenzahl x Breite x Dicke	mm	2 x (6 x 16 x 0.8)
Stripping length		mm	24
Terminal screw			M10
Tightening torque		Nm	14
Tool			
Hexagon socket-head spanner	SW	mm	5
Terminal capacity control circuit cables			
Solid		mm <sup>2</sup>	1 x (0.75 - 4) 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	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	690
between the contacts		V AC	690
Making capacity (p.f. to IEC/EN 60947)			
	$U_p$ to 690 V	A	2100
Breaking capacity			
220 V 230 V		A	1500
380 V 400 V		A	1500
500 V		A	1500
660 V 690 V		A	1320
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	250
690 V	gG/gL 690 V	A	250
Type "1" coordination			
400 V	gG/gL 500 V	A	250
690 V	gG/gL 690 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	225
at 50 °C	$I_{th} = I_e$	A	200
at 55 °C	$I_{th} = I_e$	A	190
at 60 °C	$I_{th} = I_e$	A	185
enclosed	$I_{th}$	A	166
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	460
enclosed	$I_{th}$	A	415
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	170
240 V	$I_e$	A	170
380 V 400 V	$I_e$	A	170
415 V	$I_e$	A	170
440V	$I_e$	A	170
500 V	$I_e$	A	170
660 V 690 V	$I_e$	A	100
380 V 400 V	$I_e$	A	170
Motor rating	P	kWh	
220 V 230 V	P	kW	52
240V	P	kW	57

380 V 400 V	P	kW	90
415 V	P	kW	100
440 V	P	kW	105
500 V	P	kW	120
660 V 690 V	P	kW	96
<b>AC-4</b>			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I <sub>e</sub>	A	65
240 V	I <sub>e</sub>	A	65
380 V 400 V	I <sub>e</sub>	A	65
415 V	I <sub>e</sub>	A	65
440 V	I <sub>e</sub>	A	65
500 V	I <sub>e</sub>	A	65
660 V 690 V	I <sub>e</sub>	A	50
<b>Motor rating</b>			
220 V 230 V	P	kW	20
240 V	P	kW	22
380 V 400 V	P	kW	33
415 V	P	kW	39
440 V	P	kW	41
500 V	P	kW	47
660 V 690 V	P	kW	48

**DC**

<b>Rated operational current, open</b>			
<b>DC-1</b>			
60 V	I <sub>e</sub>	A	160
110 V	I <sub>e</sub>	A	160
220 V	I <sub>e</sub>	A	90

**Current heat loss**

3 pole, at I <sub>th</sub> (60°)		W	48.7
Current heat loss at I <sub>e</sub> to AC-3/400 V		W	41.1
Impedance per pole		mΩ	0.6

**Magnet systems**

<b>Voltage tolerance</b>			
DC operated	Pick-up	x U <sub>c</sub>	0.7 - 1.2
Notes			RDC 24 (U <sub>min</sub> 24 V DC/U <sub>max</sub> 27 V DC) Example: U <sub>S</sub> = 0.7 x U <sub>min</sub> - 1.2 x U <sub>max</sub> / U <sub>S</sub> = 0.7 x 24V - 1.2 x 27V DC
DC operated	Drop-out	x U <sub>c</sub>	0.15 - 0.6
Notes			at least smoothed two-phase bridge rectifier or three-phase rectifier
<b>Power consumption of the coil in a cold state and 1.0 x U<sub>S</sub></b>			
DC operated	Pick-up	W	149
DC operated	Sealing	W	1.9
Duty factor		% DF	100
<b>Changeover time at 100 % U<sub>S</sub> (recommended value)</b>			
<b>Main contacts</b>			
DC operated		ms	
Closing delay		ms	35
Opening delay		ms	30
Arcing time		ms	15
Permissible residual current with actuation of A1 - A2 by the electronics (with 0 signal).		mA	≤ 1

**Electromagnetic compatibility (EMC)**

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

**Rating data for approved types**

Switching capacity			
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<b>Maximum motor rating</b>			
<b>Three-phase</b>			
200 V 208 V	HP	50	
230 V 240 V	HP	60	
460 V 480 V	HP	125	
575 V 600 V	HP	125	
<b>Single-phase</b>			
115 V 120 V	HP	10	
230 V 240 V	HP	30	
<b>General use</b>		A	225
<b>Short Circuit Current Rating</b>		<b>SCCR</b>	
<b>Basic Rating</b>			
<b>SCCR</b>		kA	10
max. Fuse		A	600
max. CB		A	600
<b>480 V High Fault</b>			
<b>SCCR (fuse)</b>		kA	30/100
max. Fuse		A	300/300 Class J
<b>SCCR (CB)</b>		kA	65
max. CB		A	250
<b>600 V High Fault</b>			
<b>SCCR (fuse)</b>		kA	30/100
max. Fuse		A	300/600 Class J
<b>SCCR (CB)</b>		kA	30
max. CB		A	350
<b>Special Purpose Ratings</b>			
<b>Electrical Discharge Lamps (Ballast)</b>			
480V 60Hz 3phase, 277V 60Hz 1phase		A	160
600V 60Hz 3phase, 347V 60Hz 1phase		A	160
<b>Incandescent Lamps (Tungsten)</b>			
480V 60Hz 3phase, 277V 60Hz 1phase		A	160
600V 60Hz 3phase, 347V 60Hz 1phase		A	160
<b>Resistance Air Heating</b>			
480V 60Hz 3phase, 277V 60Hz 1phase		A	160
600V 60Hz 3phase, 347V 60Hz 1phase		A	160
<b>Refrigeration Control (CSA only)</b>			
LRA 480V 60Hz 3phase		A	540
FLA 480V 60Hz 3phase		A	90
LRA 600V 60Hz 3phase		A	540
FLA 600V 60Hz 3phase		A	90
<b>Definite Purpose Ratings (100,000 cycles acc. to UL 1995)</b>			
LRA 480V 60Hz 3phase		A	1020
FLA 480V 60Hz 3phase		A	170
<b>Elevator Control</b>			
200V 60Hz 3phase		HP	30
200V 60Hz 3phase		A	92
240V 60Hz 3phase		HP	40
240V 60Hz 3phase		A	104
480V 60Hz 3phase		HP	75
480V 60Hz 3phase		A	96
600V 60Hz 3phase		HP	100
600V 60Hz 3phase		A	99

## Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	$I_n$	A	170
Heat dissipation per pole, current-dependent	$P_{vid}$	W	13.7
Equipment heat dissipation, current-dependent	$P_{vid}$	W	41.1
Static heat dissipation, non-current-dependent	$P_{vs}$	W	1.9
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 $U_s$ at AC 50HZ		V	0 - 0
Rated control supply voltage $U_s$ at AC 60HZ		V	0 - 0
Rated control supply voltage $U_s$ at DC		V	24 - 27
Voltage type for actuating			DC
Rated operation current $I_e$ at AC-1, 400 V		A	225
Rated operation current $I_e$ at AC-3, 400 V		A	170
Rated operation power at AC-3, 400 V		kW	90
Rated operation current $I_e$ at AC-4, 400 V		A	65
Rated operation power at AC-4, 400 V		kW	33
Rated operation power NEMA		kW	93
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

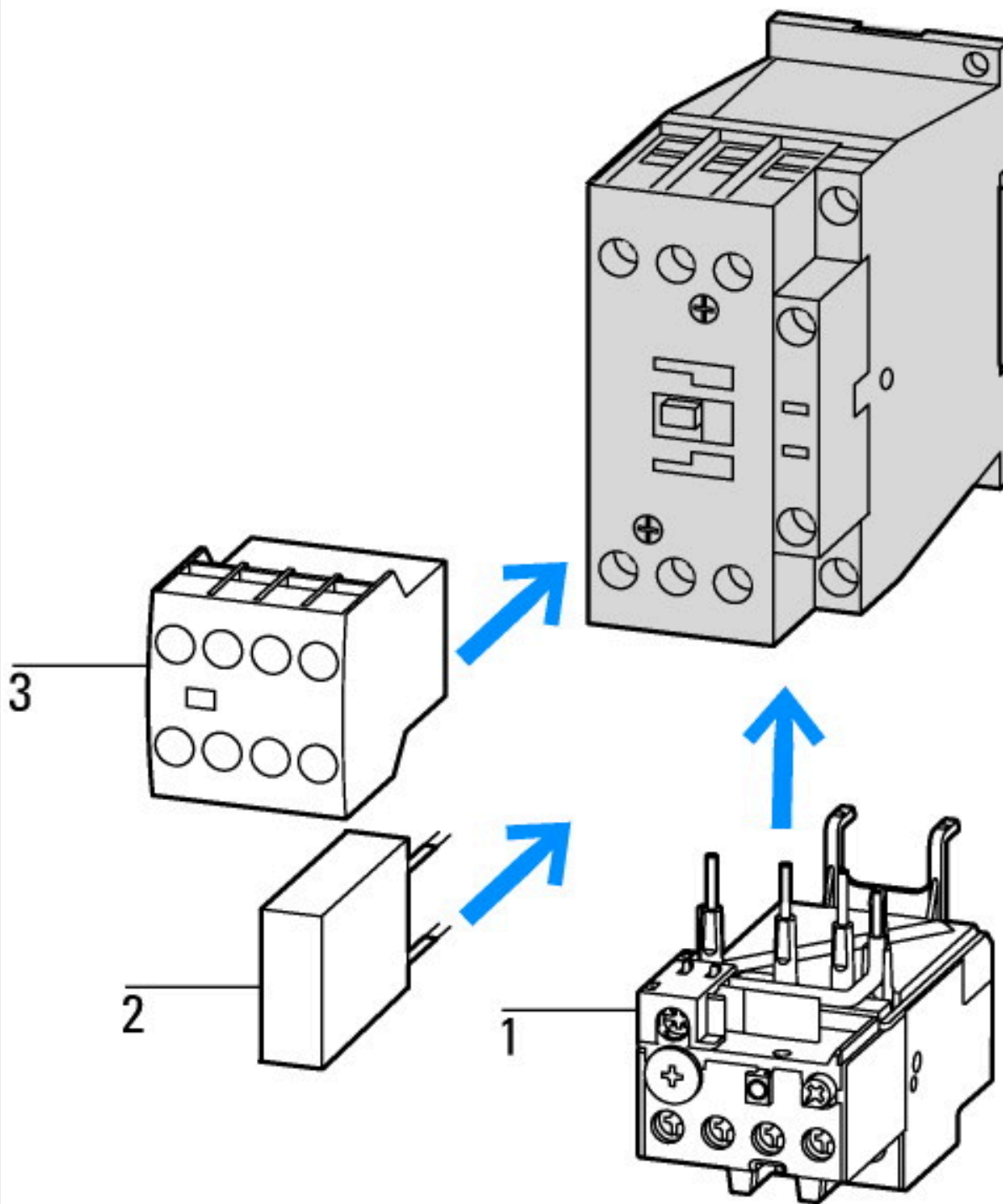
Number of main contacts as normally open contact

3

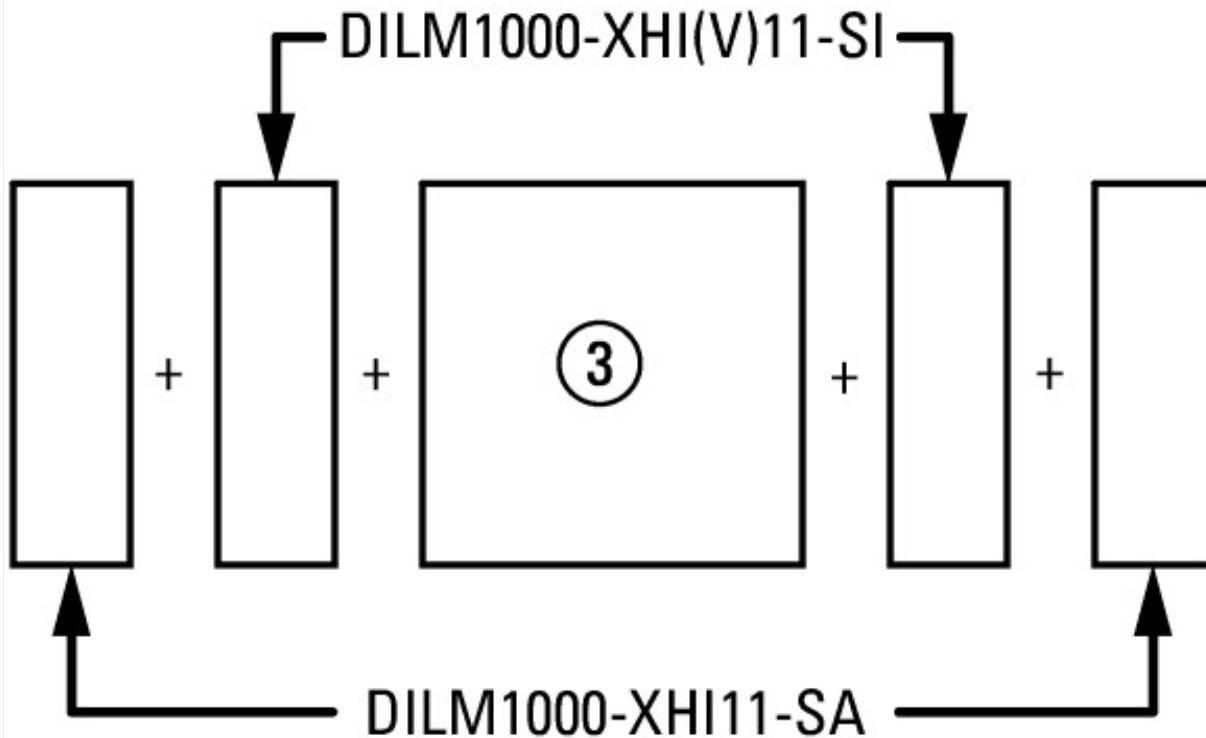
## Approvals

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

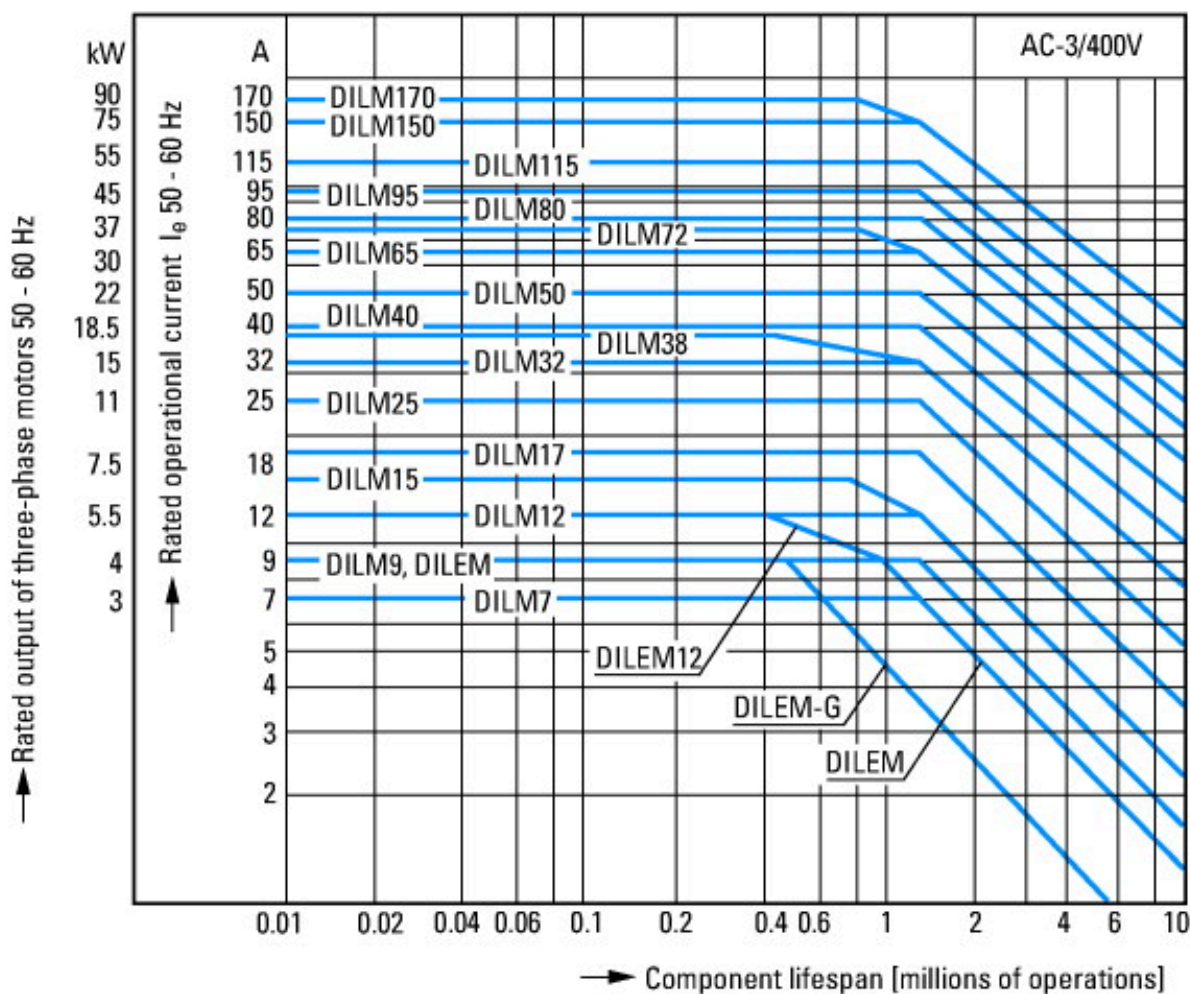
## Characteristics



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

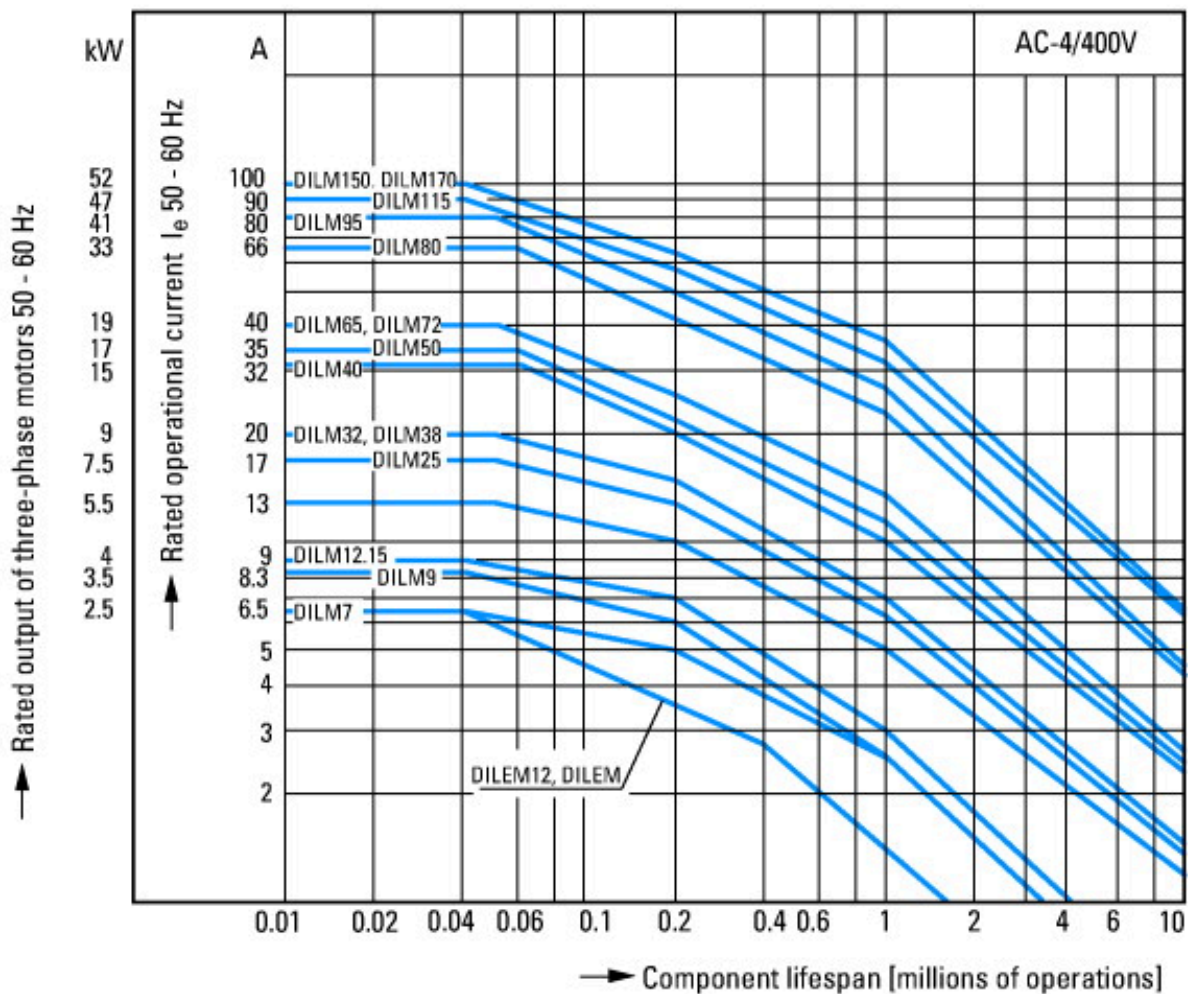


on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA



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

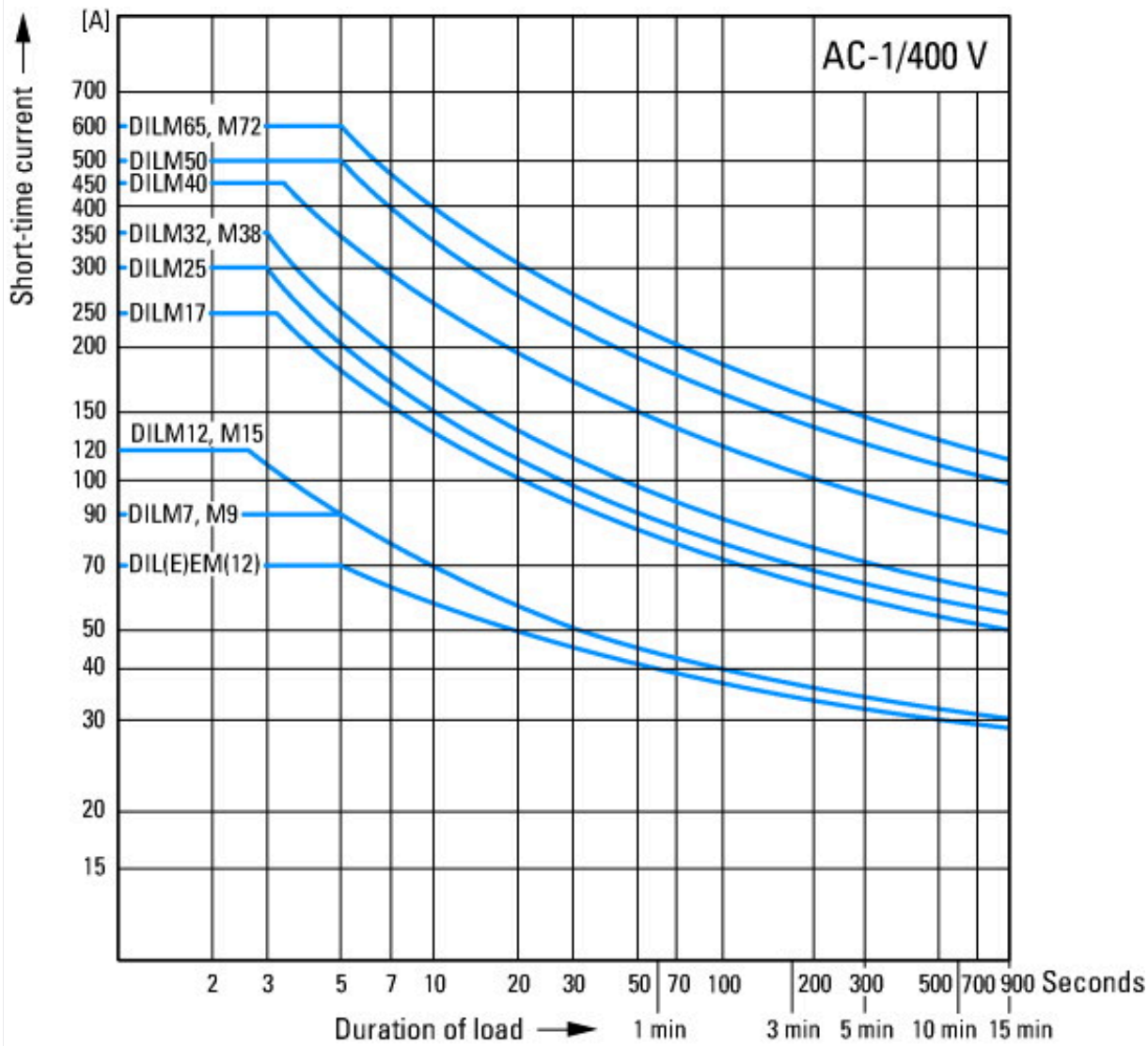
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- Fans
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevators
- Air conditioning system
- General drives in manufacturing and processing machines



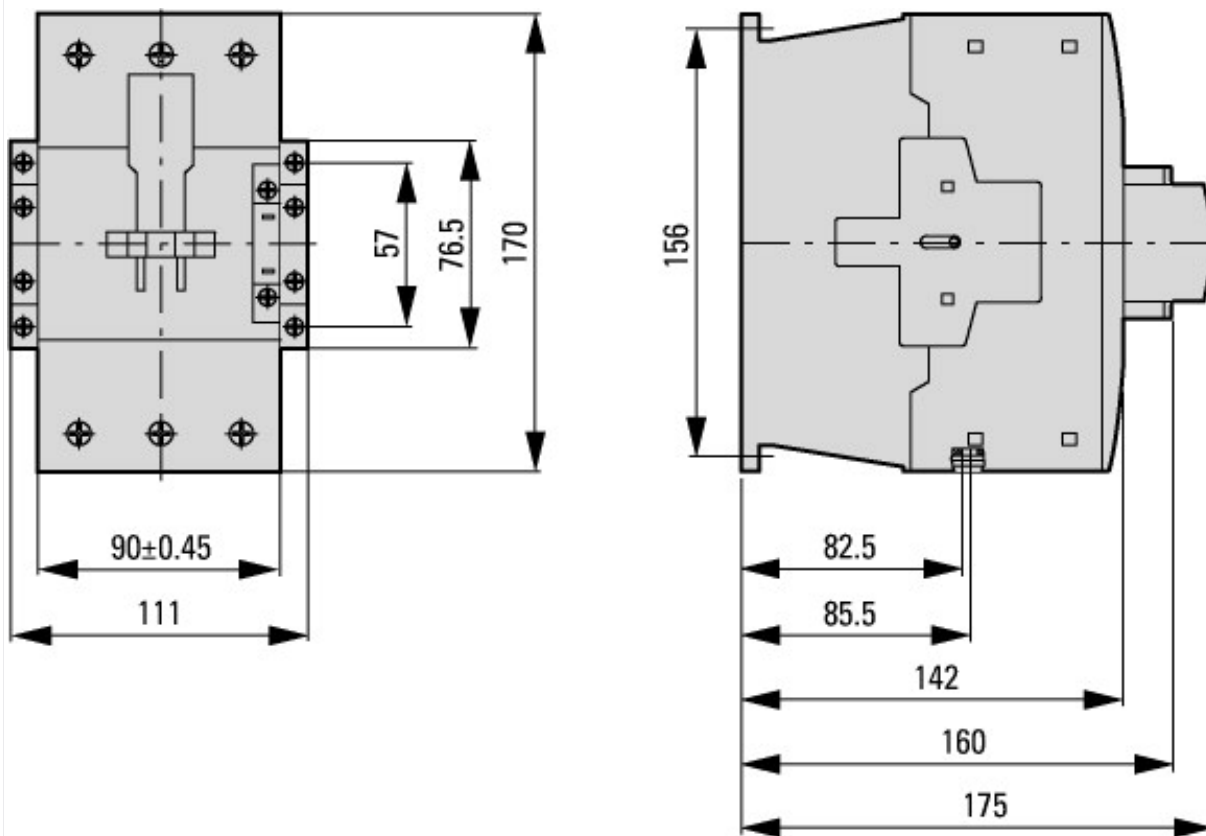
- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, plugging, reversing
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 6 x rated motor current
- Utilization category
- 100 % AC-4
- Typical applications
- Printing presses
- Wire-drawing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



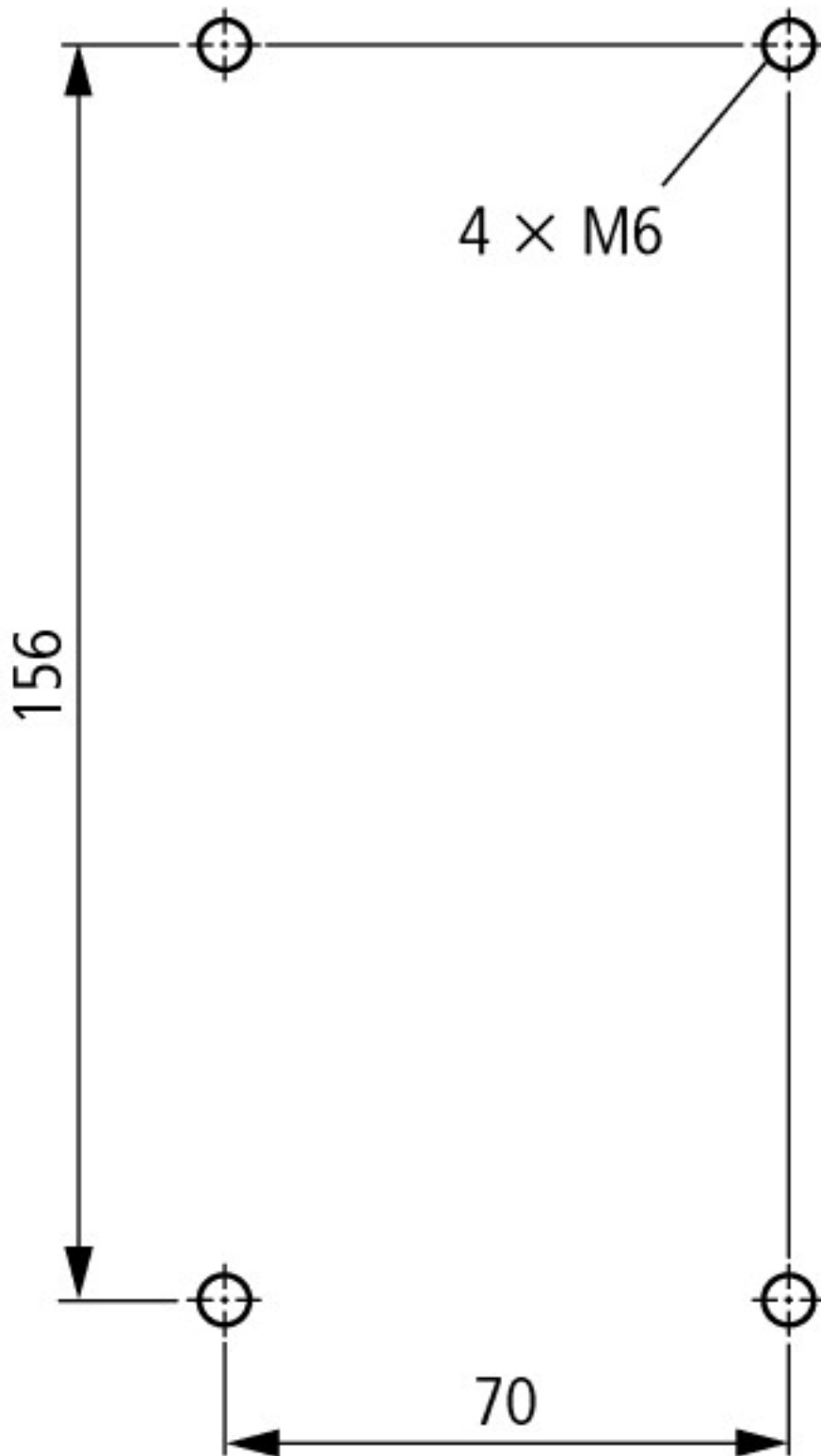
Switching conditions for non-motor consumers, 3 pole, 4 pole  
 Operating characteristics  
 Non inductive and slightly inductive loads  
 Electrical characteristics  
 Switch on: 1 x rated operational current  
 Switch off: 1 x rated operational current  
 Utilization category  
 100 % AC-1  
 Typical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



**Dimensions**



Contactor with auxiliary contact module



distance at side to earthed parts: 10 mm

DILM80...DILM170  
DILMC80...DILMC150  
DILMF80...DILMF150



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