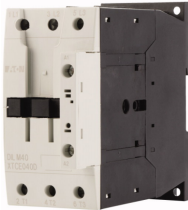


DATASHEET - DILM40(230V50HZ,240V60HZ)



Contactor, 3 pole, 380 V 400 V 18.5 kW, 230 V 50 Hz, 240 V 60 Hz operation, Screw terminals



Powering Business Worldwide™

Part no. DILM40(230V50HZ,240V60HZ)
Catalog No. 277766
Alternate Catalog XTCE040D00F
No.
EL-Nummer 4130439
(Norway)

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 AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running AC-4: Normal AC induction motors: starting, plugging, reversing, inching
	<div>IE3</div>
Notes	Also 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.) Also tested according to AC-3e.
380 V 400 V	I _e	A	40
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	I _{th} = I _e	A	60
enclosed	I _{th}	A	45
Conventional free air thermal current, 1 pole			
open	I _{th}	A	125
enclosed	I _{th}	A	112

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

AC-3			
220 V 230 V	P	kW	12.5
380 V 400 V	P	kW	18.5
660 V 690 V	P	kW	23
AC-4			
220 V 230 V	P	kW	5
380 V 400 V	P	kW	9
660 V 690 V	P	kW	12

Contact sequence	<div><div>A1135</div><div>A2246</div></div>
Can be combined with auxiliary contact	DILM150-XHI(V)... DILM1000-XHI(V)...
Actuating voltage	230 V 50 Hz, 240 V 60 Hz
Voltage AC/DC	AC operation
Connection to SmartWire-DT	no
Instructions	Contacts to EN 50 012.
Frame size	3

Technical data
General

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
AC operated	Operations	x 10 ⁶	10
Operating frequency, mechanical			
AC 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			
AC operated		kg	0.872
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)
Stranded		mm ²	1 x (16 - 50) 2 x (16 - 35)
Solid or stranded		AWG	single 14 - 1, double 14 - 2
Flat conductor	Lamellenzahl mm x Breite x Dicke		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	560
Breaking capacity			
220 V 230 V		A	400
380 V 400 V		A	400
500 V		A	400
660 V 690 V		A	250
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	63
690 V	gG/gL 690 V	A	50
Type "1" coordination			
400 V	gG/gL 500 V	A	125
690 V	gG/gL 690 V	A	80

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	60
at 50 °C	I _{th} = I _e	A	57
at 55 °C	I _{th} = I _e	A	55
at 60 °C	I _{th} = I _e	A	50
enclosed	I _{th}	A	45
Conventional free air thermal current, 1 pole			
open	I _{th}	A	125
enclosed	I _{th}	A	112
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
Notes			At maximum permissible ambient temperature (open.) Also tested according to AC-3e.
220 V 230 V	I _e	A	40
240 V	I _e	A	40
380 V 400 V	I _e	A	40

415 V	I _e	A	40
440V	I _e	A	40
500 V	I _e	A	40
660 V 690 V	I _e	A	25
Motor rating	P	kWh	
220 V 230 V	P	kW	12.5
240V	P	kW	13.5
380 V 400 V	P	kW	18.5
415 V	P	kW	24
440 V	P	kW	25
500 V	P	kW	28
660 V 690 V	P	kW	23
AC-4			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I _e	A	18
240 V	I _e	A	18
380 V 400 V	I _e	A	18
415 V	I _e	A	18
440 V	I _e	A	18
500 V	I _e	A	18
660 V 690 V	I _e	A	14
Motor rating	P	kWh	
220 V 230 V	P	kW	5
240 V	P	kW	5.5
380 V 400 V	P	kW	9
415 V	P	kW	9.5
440 V	P	kW	10
500 V	P	kW	11
660 V 690 V	P	kW	12
DC			
Rated operational current, open			
DC-1			
60 V	I _e	A	50
110 V	I _e	A	50
220 V	I _e	A	45
Current heat loss			
3 pole, at I _{th} (60°)		W	10.3
Current heat loss at AC-3/400 V		W	6.6
Impedance per pole		mΩ	1.9
Magnet systems			
Voltage tolerance			
AC operated	Pick-up	x U _c	0.8 - 1.1
Drop-out voltage AC operated	Drop-out	x U _c	0.3 - 0.6
Power consumption of the coil in a cold state and 1.0 x U _c			
50 Hz	Pick-up	VA	149
50 Hz	Sealing	VA	16
50 Hz	Sealing	W	4.1
60 Hz	Pick-up	VA	178
60 Hz	Sealing	VA	19
60 Hz	Sealing	W	4.1
Duty factor		% DF	100
Changeover time at 100 % (recommended value)			
Main contacts			
AC operated			

Closing delay		ms	12 - 18
Opening delay		ms	8 - 13
Arcing time		ms	10
Electromagnetic compatibility (EMC)			
Emitted interference			to EN 60947-1
Interference immunity			to EN 60947-1
Rating data for approved types			
Switching capacity			
Maximum motor rating			
Three-phase			
200 V 208 V		HP	10
230 V 240 V		HP	15
460 V 480 V		HP	30
575 V 600 V		HP	40
Single-phase			
115 V 120 V		HP	3
230 V 240 V		HP	7.5
General use		A	63
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	79
600V 60Hz 3phase, 347V 60Hz 1phase		A	79
Incandescent Lamps (Tungsten)			
480V 60Hz 3phase, 277V 60Hz 1phase		A	74
600V 60Hz 3phase, 347V 60Hz 1phase		A	74
Resistance Air Heating			
480V 60Hz 3phase, 277V 60Hz 1phase		A	79
600V 60Hz 3phase, 347V 60Hz 1phase		A	79
Elevator Control			
200V 60Hz 3phase		HP	7.5
200V 60Hz 3phase		A	25.3
240V 60Hz 3phase		HP	10
240V 60Hz 3phase		A	28
480V 60Hz 3phase		HP	25
480V 60Hz 3phase		A	34
600V 60Hz 3phase		HP	30
600V 60Hz 3phase		A	32

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I _n	A	40
Heat dissipation per pole, current-dependent	P _{vid}	W	2.2
Equipment heat dissipation, current-dependent	P _{vid}	W	6.6
Static heat dissipation, non-current-dependent	P _{vs}	W	4.1
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 h			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal 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 8.0

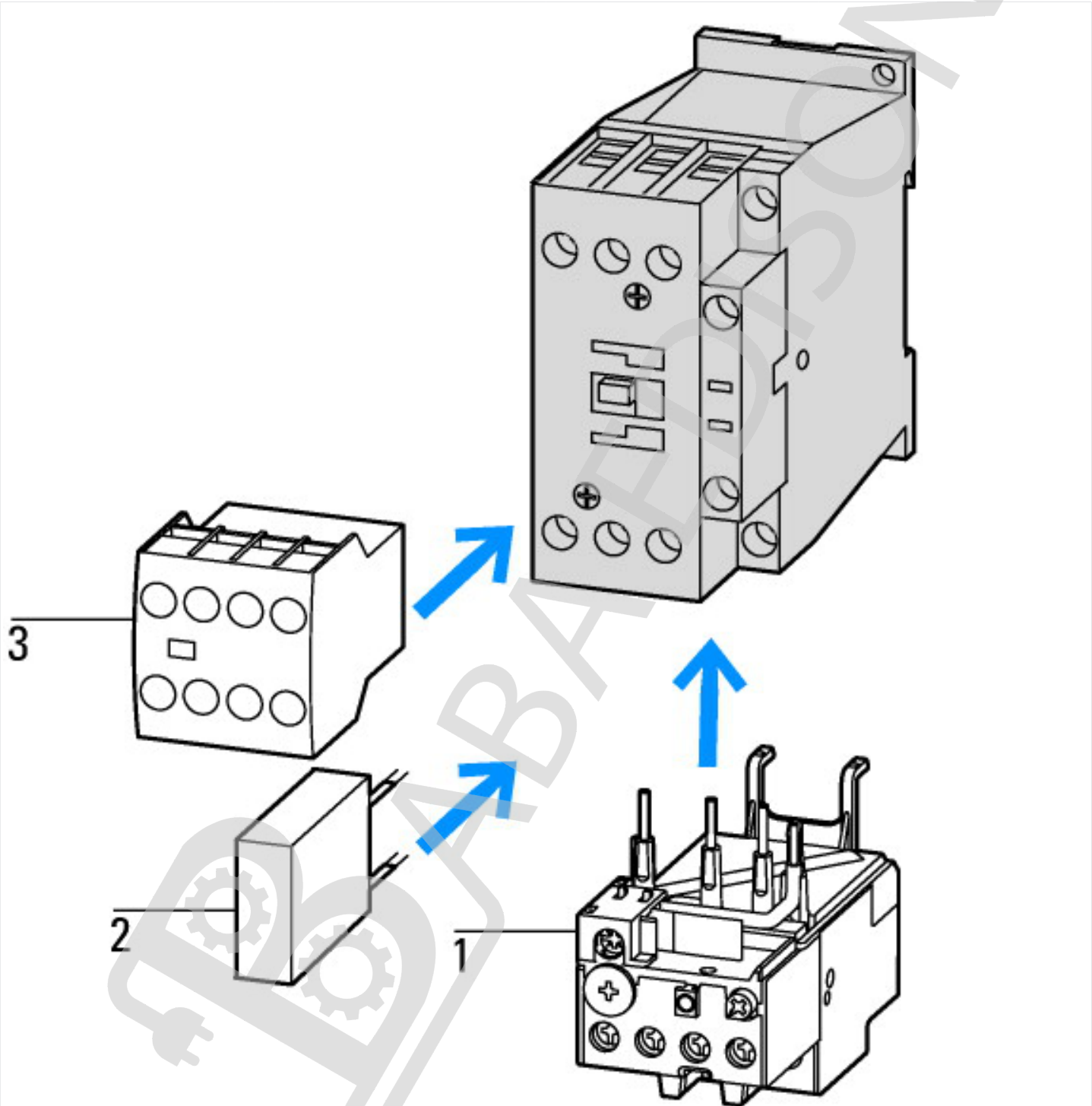
Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)		
Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])		
Rated control supply voltage Us at AC 50HZ	V	230 - 230
Rated control supply voltage Us at AC 60HZ	V	240 - 240
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	60
Rated operation current Ie at AC-3, 400 V	A	40
Rated operation power at AC-3, 400 V	kW	18.5
Rated operation current Ie at AC-4, 400 V	A	18
Rated operation power at AC-4, 400 V	kW	9
Rated operation power NEMA	kW	22
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 normally open contacts as main contact			3
--------------------------------------------------	--	--	---

Approvals

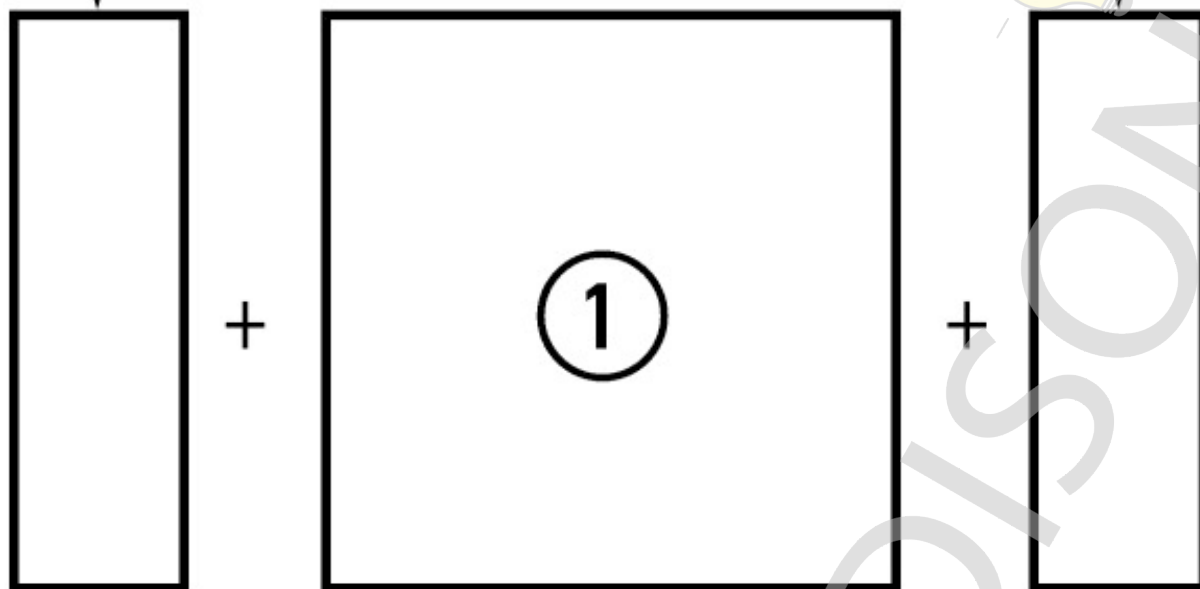
Product Standards			IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking
UL File No.			E29096
UL Category Control No.			NLDX
CSA File No.			012528
CSA Class No.			2411-03, 3211-04
North America Certification			UL listed, CSA certified
Specially designed for North America			No

Characteristics

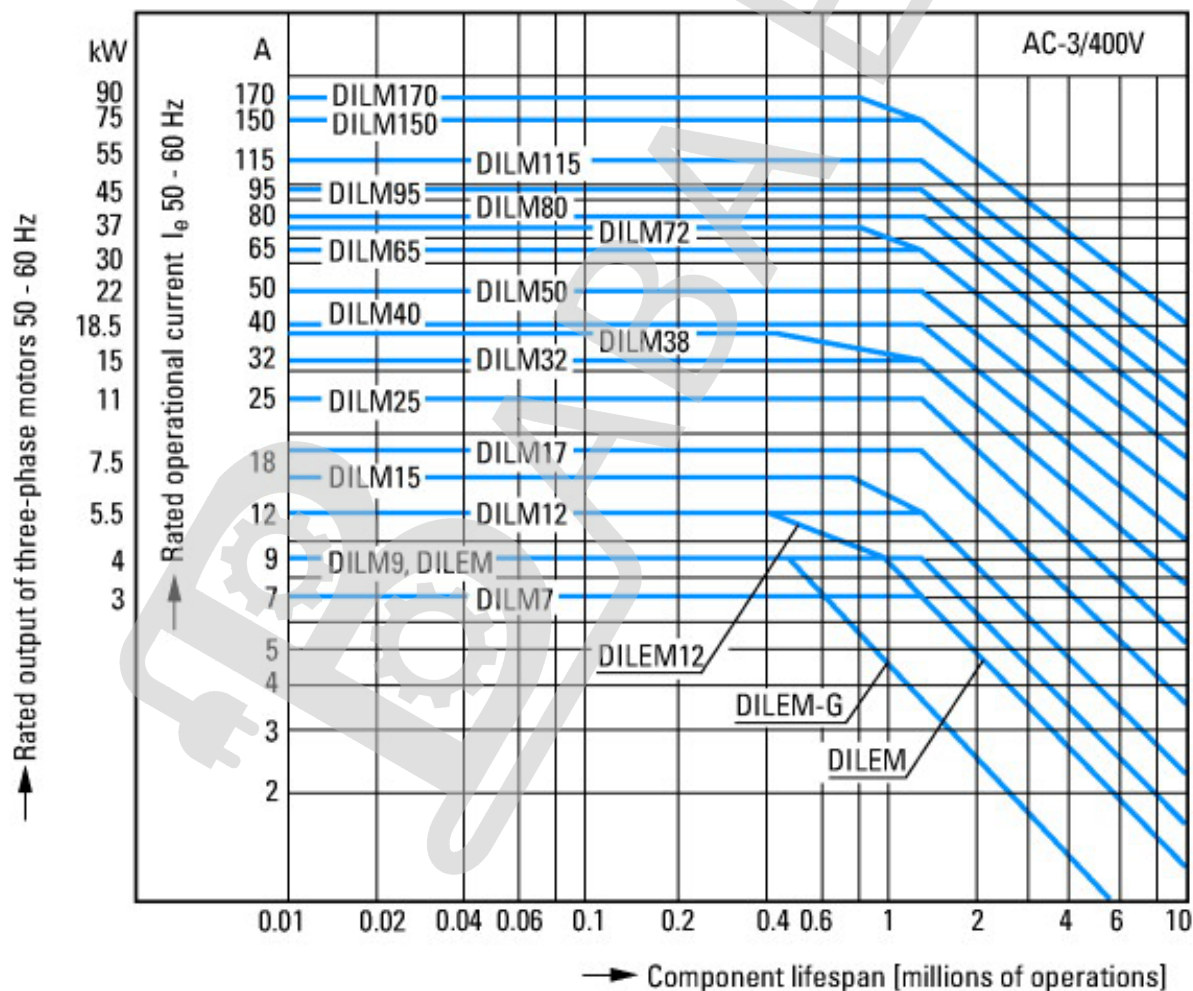


1: Overload relay
2: Suppressor
3: Auxiliary contact modules

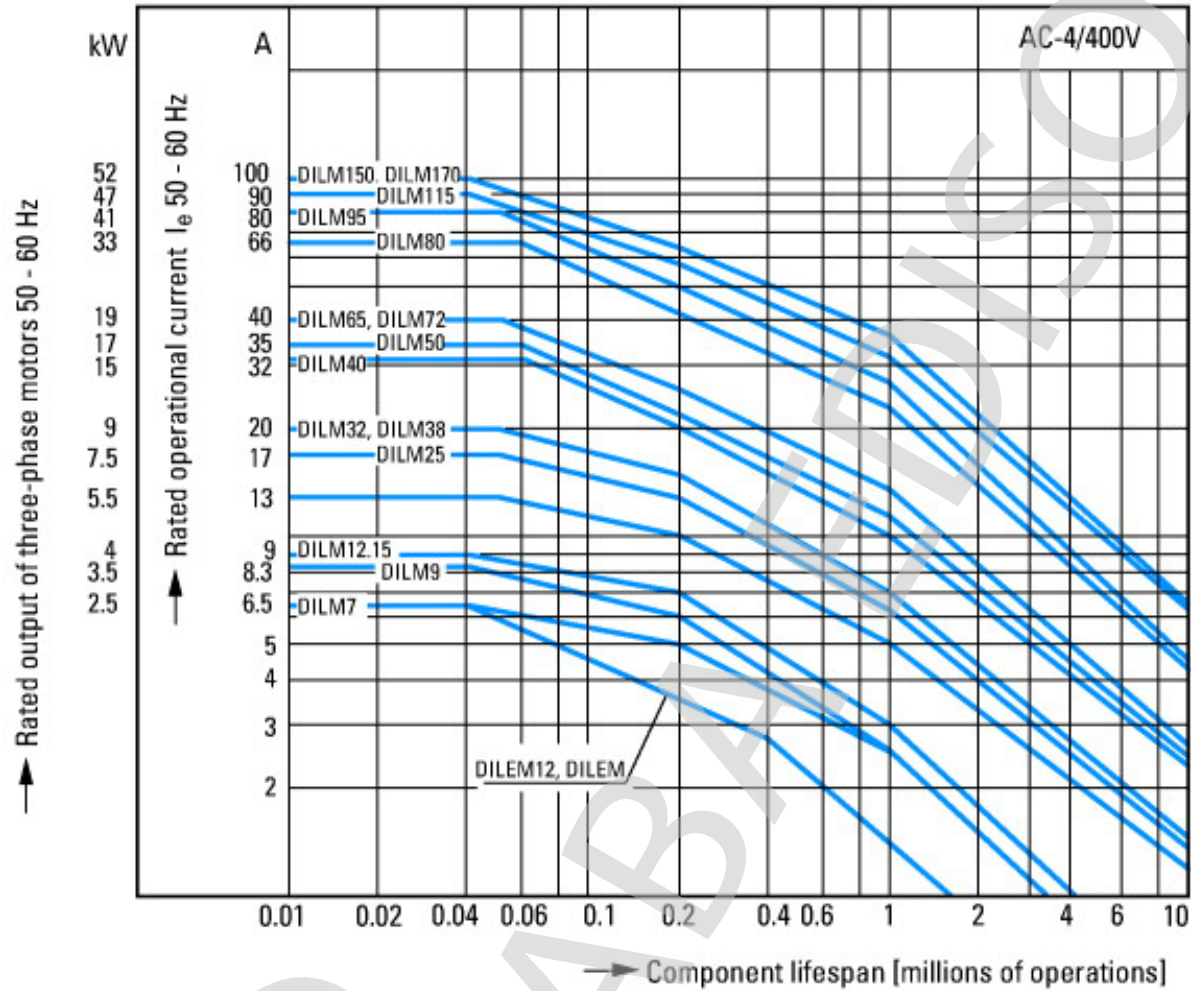
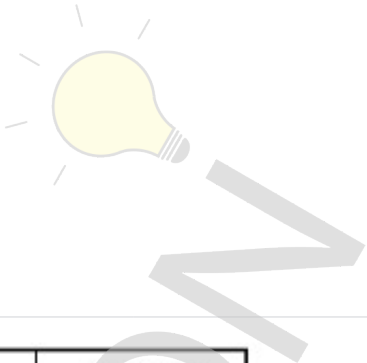
DILM1000-XHI(V)11-...



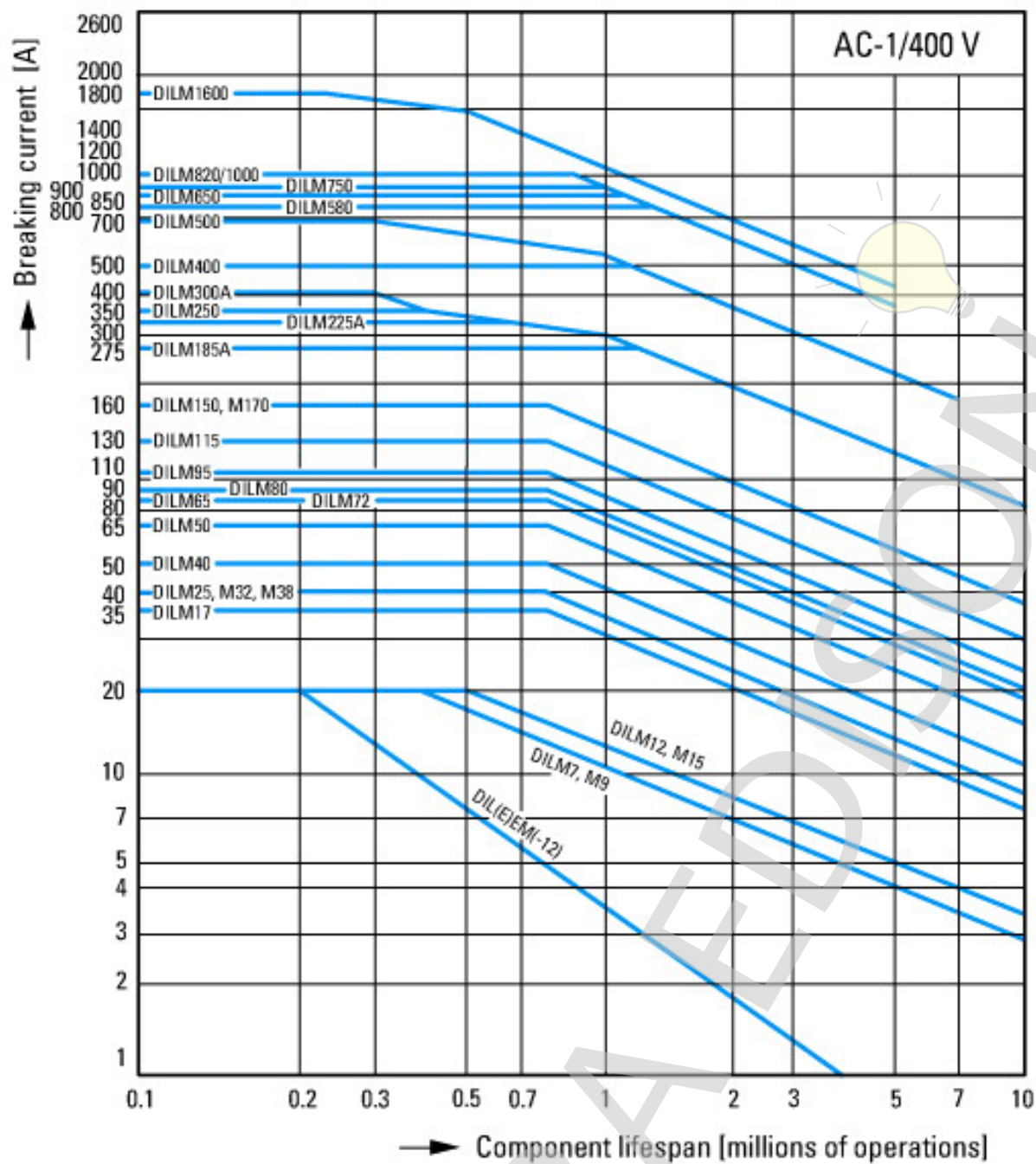
on the side: 2 x DILM1000-XHI(V)11-SI; surface mounting: 1 x DILM150-XHIA11
 on the side: 2 x DILM1000-XHI(V)11-SA; surface mounting: 1 x DILM150-XHI (2 pole)
 on the side: 1 x DILM1000-XHI(V)11-SI; surface mounting: 1 x DILM150-XHIA22
 on the side: 1 x DILM1000-XHI(V)11-SA; surface mounting: 1 x DILM150-XHI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



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

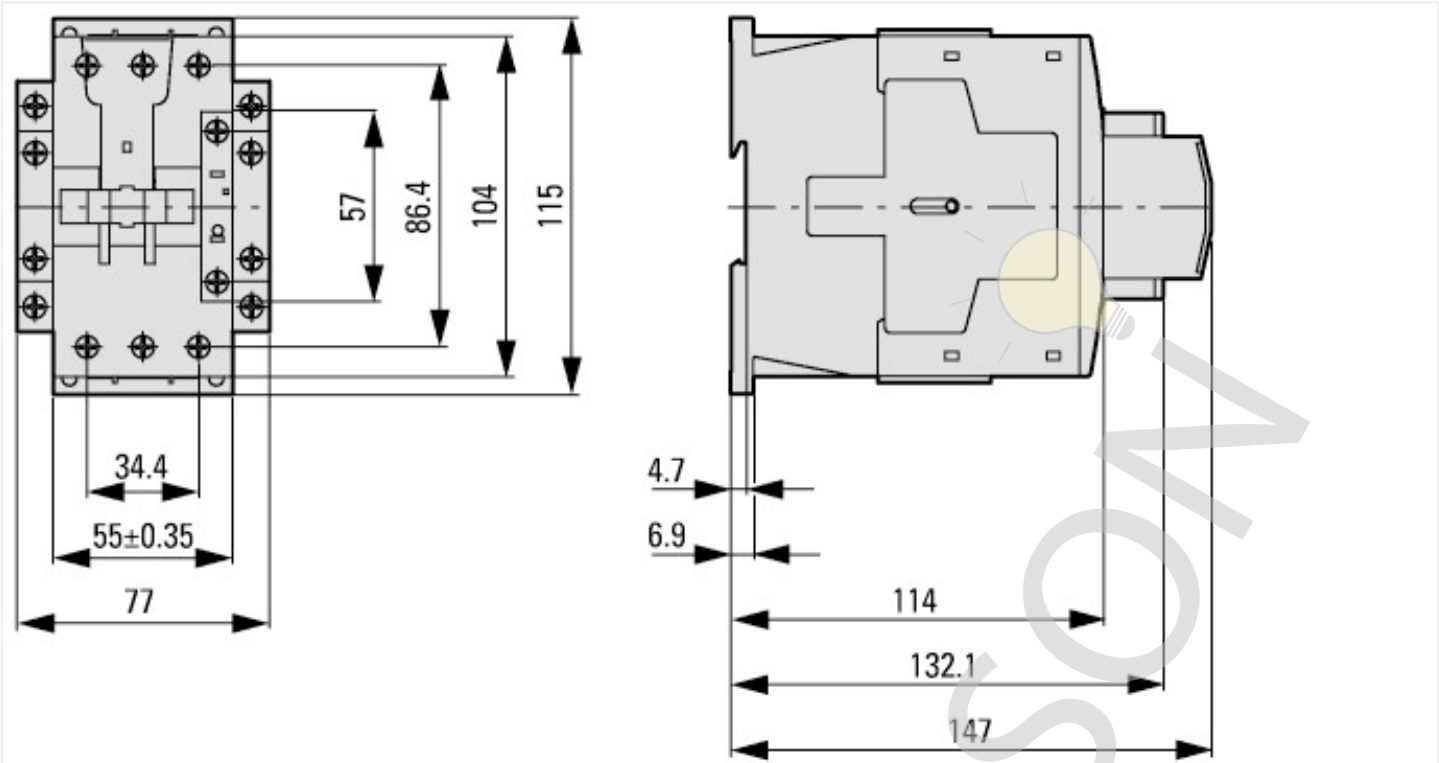


Extreme switching duty
Squirrel-cage motor
Operating characteristics
Inching, plugging, reversing
Electrical characteristics
Make: up to 6 x rated motor current
Break: up to 6 x rated motor current
Utilization category
100 % AC-4
Typical applications
Printing presses
Wire-drawing machines
Centrifuges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

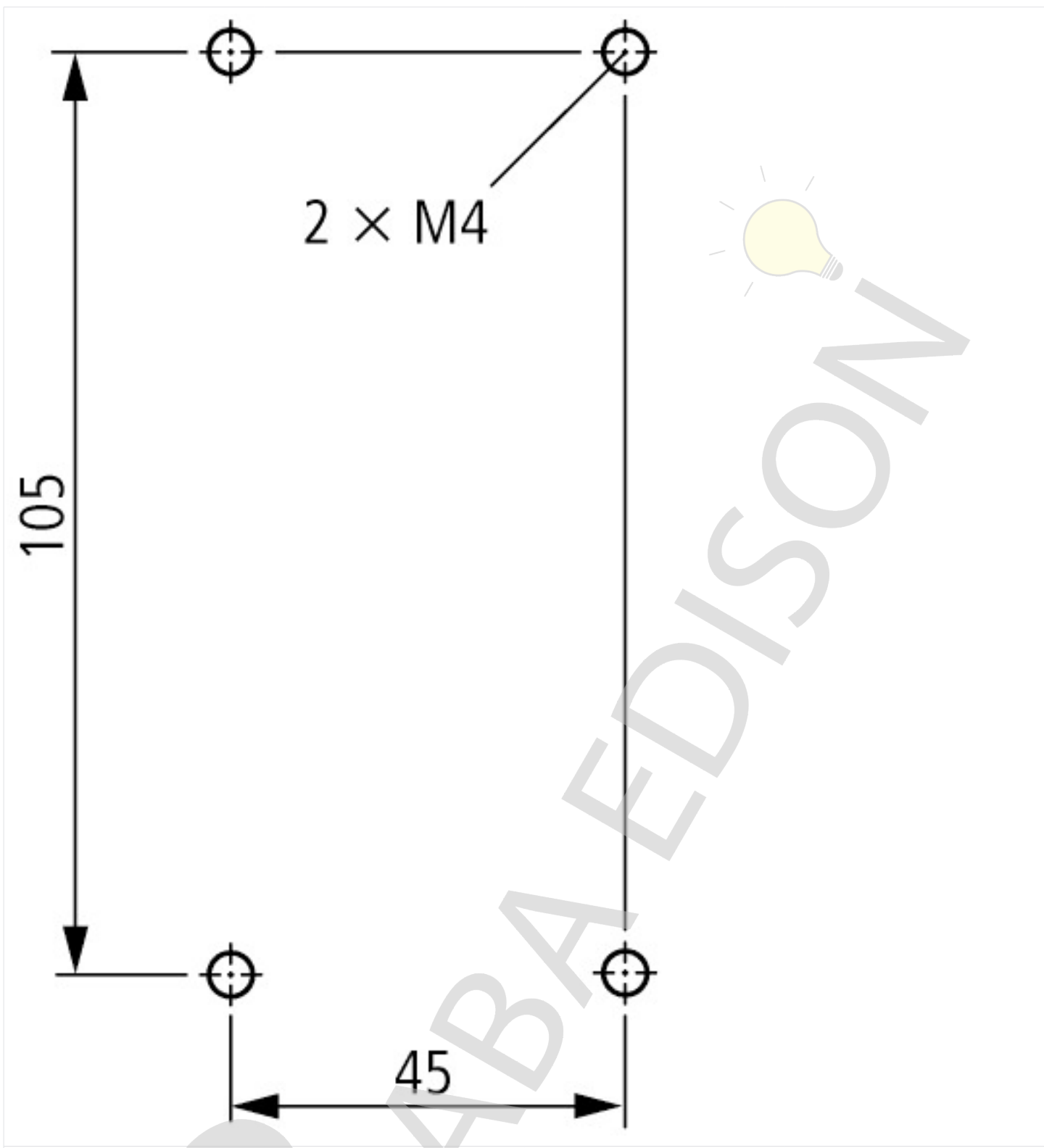


Switching conditions for non-motor consumers, 3 pole, 4 pole
 Operating characteristics
 Non inductive and slightly inductive loads
 Electrical characteristics
 Switch on: 1 x rated operational current
 Switch off: 1 x rated operational current
 Utilization category
 100 % AC-1
 Typical examples of application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

Dimensions



Contactor with auxiliary contact module



Lateral clearance to earthed parts: 6 mm	
DILM40...DILM72	
DILMC40...DILMC65	
DILMF40...DILMF65	

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 Secure	http://www.moeller.net/binary/ver_techpapers/ver938en.pdf
Mirror Contacts for Highly-Reliable Information Relating to Safety-Related 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
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

