



## Contactor,22kW/400V,AC-operated



Powering Business Worldwide™

**Part no.** DILM50(110V50HZ,120V60HZ)

**Article no.** 277827

### Delivery programme

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: Squirrel-cage motors: starting, switching off during running AC-4: Squirrel-cage motors: starting, plugging, reversing, inching
Connection technique			Screw terminals
Pole			3 pole
Rated operational current			
AC-3			
380 V 400 V	$I_e$	A	50
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	80
at 50 °C	$I_{th} = I_e$	A	71
at 55 °C	$I_{th} = I_e$	A	68
at 60 °C	$I_{th} = I_e$	A	65
enclosed	$I_{th}$	A	58
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	162
enclosed	$I_{th}$	A	145
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	15.5
380 V 400 V	P	kW	22
660 V 690 V	P	kW	30
AC-4			
220 V 230 V	P	kW	6
380 V 400 V	P	kW	10
660 V 690 V	P	kW	14
Contact sequence			
<b>Instructions</b>			Contacts to EN 50012.
Can be combined with auxiliary contact			DILM150-XHI(V).. DILM1000-XHI(V)..
Voltage AC/DC			AC operation

### Approbationen

UL approval	Yes
CSA approval	Yes
Product Standards	IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking
UL File No.	E29096
UL CCN	NLDX
CSA File No.	012528
CSA Class No.	2411-03, 3211-04
NA Certification	UL listed, CSA certified
Specially designed for NA	No

### General

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
AC operated	Operations	x 10 <sup>6</sup>	10
DC operated	Operations	x 10 <sup>6</sup>	10
Operating frequency, mechanical			
AC operated	Operations/ h		5000
DC operated	Operations/ h		5000
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, 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	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
Protection type			IP00
Protection against direct contact when actuated from front (EN 50274)			Finger- and back-of-hand proof
Weight			
AC operated		kg	0.9
DC operated		kg	1.1
Terminal capacity main cable			
Solid		mm <sup>2</sup>	1 x (0.75 - 16) 2 x (0.75 - 16)
Flexible with ferrule		mm <sup>2</sup>	1 x (0.75 - 35) 2 x (0.75 - 25)
Stranded		mm <sup>2</sup>	1 x (16 - 50) 2 x (16 - 35)
Solid or stranded		AWG	12 - 2
Flat conductor	Number of segments x width x thickness	mm	2 x (6 x 9 x 0.8)
Main cable connection screw/bolt			M6
Tightening torque		Nm	3.3
Terminal capacity control circuit cables			
Solid		mm <sup>2</sup>	1 x (0.75 - 4) 2 x (0.75 - 4)

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
Control circuit cable connection screw/bolt			M3.5
Tightening torque		Nm	1.2
Tool			
Main cable			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 x 5.5 1 x 6
Control circuit cables			
Pozidriv screwdriver		Size	2
Standard screwdriver		mm	0.8 x 5.5 1 x 6
Terminal capacity control circuit cables			
Solid		mm <sup>2</sup>	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Flexible		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 - 1.5) 2 x (0.75 - 1.5)
Solid or stranded		AWG	18 - 14
Tool			
Stripping length		mm	10
Screwdriver blade width		mm	3.5

### Main conducting paths

Rated impulse withstand voltage	U <sub>imp</sub>	V AC	8000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U <sub>i</sub>	V AC	690
Rated operational voltage	U <sub>e</sub>	V AC	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1			
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	700
Breaking capacity			
220/230 V		A	500
380/400 V		A	500
500 V		A	500
660/690 V		A	320
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	80
690 V	gG/gL 690 V	A	63
Type "1" coordination			
400 V	gG/gL 500 V	A	160
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	80
at 50 °C	$I_{th} = I_e$	A	71
at 55 °C	$I_{th} = I_e$	A	68
at 60 °C	$I_{th} = I_e$	A	65
enclosed	$I_{th}$	A	58
Conventional free air thermal current, 1 pole			
open	$I_{th}$	A	162
enclosed	$I_{th}$	A	145
<b>AC-3</b>			
Rated operational current			
offen, 3-polig, 50 - 60 Hz			
220 V 230 V	$I_e$	A	50
240 V	$I_e$	A	50
380 V 400 V	$I_e$	A	50
415 V	$I_e$	A	50
440V	$I_e$	A	50
500 V	$I_e$	A	50
660 V 690 V	$I_e$	A	32
Motor rating	P	kWh	
220/230 V	P	kW	15.5
240V	P	kW	17
380/400 V	P	kW	22
415 V	P	kW	30
440 V	P	kW	32
500 V	P	kW	36
660/690 V	P	kW	30
<b>AC-4</b>			
offen, 3-polig, 50 - 60 Hz			
220/230 V	$I_e$	A	21
240 V	$I_e$	A	21
380/400 V	$I_e$	A	21
415 V	$I_e$	A	21
440 V	$I_e$	A	21
500 V	$I_e$	A	21
660/690 V	$I_e$	A	17
Motor rating	P	kWh	
220/230 V	P	kW	6
240 V	P	kW	6.5
380/400 V	P	kW	10
415 V	P	kW	11
440 V	P	kW	12
500 V	P	kW	13
660/690 V	P	kW	14
<b>DC</b>			
Rated operational current, open			
<b>DC-1</b>			
60 V	$I_e$	A	60
110 V	$I_e$	A	50
220 V	$I_e$	A	45
440 V	$I_e$	A	2.9
<b>DC-3</b>			
60 V	$I_e$	A	60

110 V	$I_e$	A	50
220 V	$I_e$	A	25
440 V	$I_e$	A	0.6
DC-5			
60 V	$I_e$	A	60
110 V	$I_e$	A	50
220 V	$I_e$	A	25
440 V	$I_e$	A	0.6

### Current heat loss

3-pole at $I_{th}$		W	19
Current heat loss at $I_e$ to AC-3/400 V		W	11.3
Impedance per pole		m $\Omega$	1.5

### Magnet systems

Voltage tolerance		$x U_c$	
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
DC operated	Pick-up	$x U_c$	0.7 - 1.2
Notes			at least smoothed two-phase bridge rectifier or three-phase rectifier
DC operated	Drop-out	$x U_c$	0.15 - 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	4.3
60 Hz	Pick-up	VA	178
60 Hz	Sealing	VA	19
60 Hz	Sealing	W	5.3
50/60 Hz	Pick-up	VA	168 154
50/60 Hz	Sealing	VA	22 14
50/60 Hz	Sealing	W	5.3 4.3
DC operated	Pick-up	W	24
DC operated	Sealing	W	0.5
Duty factor		% DF	100
Switching times at 100 % $U_c$ (approximate values)			
Main contacts			
AC operated			
Closing delay		ms	12 - 18
Opening delay		ms	8 - 13
DC operated		ms	
Closing delay		ms	54
Opening delay		ms	24
Arcing time		ms	10
Lifespan, mechanical; Coil 50/60 Hz	at 50 Hz		Mechanical lifespan at 50 Hz approx. 30% lower than under "Technical data, general"

### Electromagnetic compatibility (EMC)

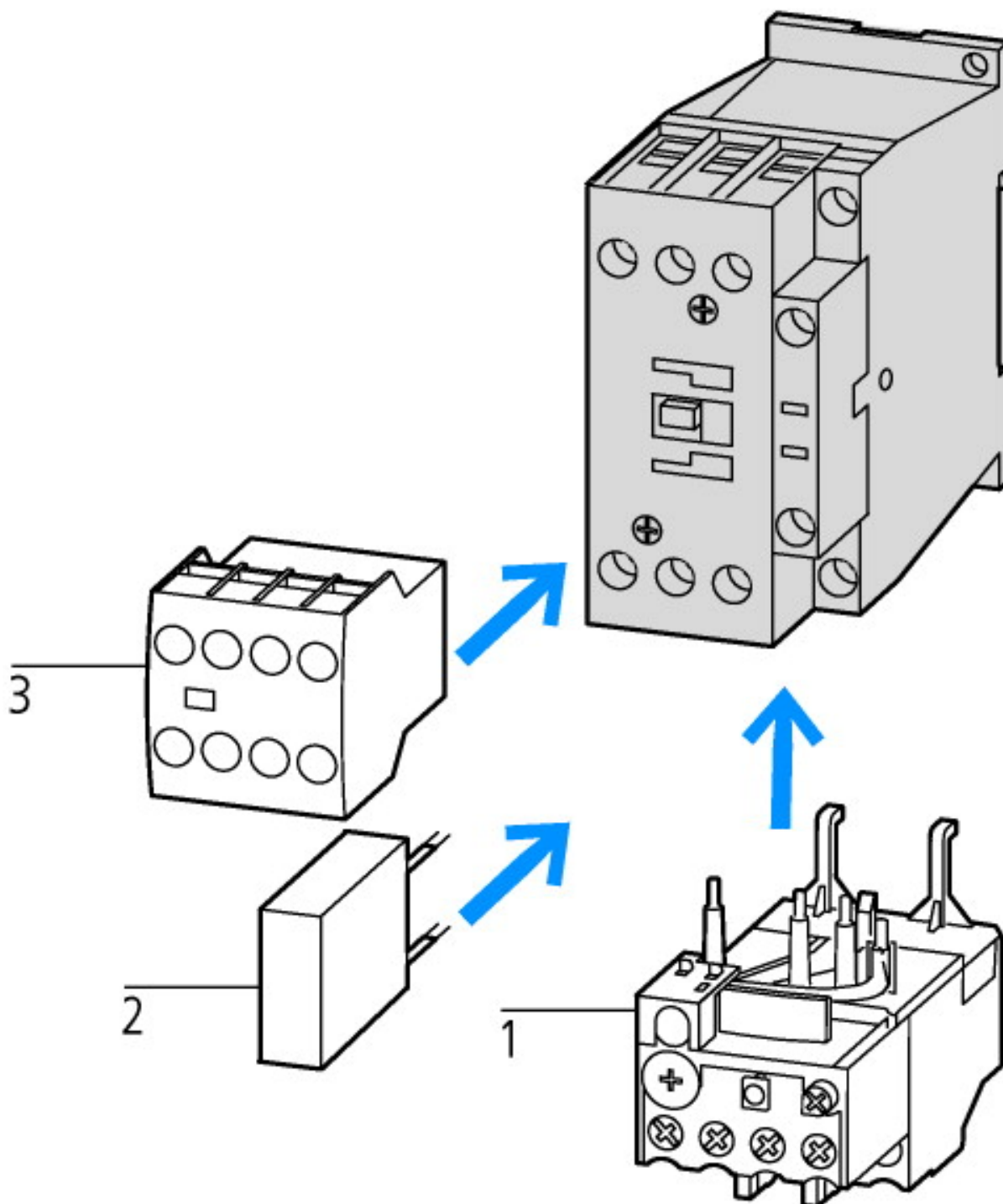
Emitted interference			to EN 60947-1
Interference immunity			to EN 60947-1

### Technical data ETIM 4.0

Number of main contacts as N/Os			3
Rated operation current $I_e$ at AC-1, 400 V			80
Connection type main circuit			Screw connection
Rated control voltage $U_s$ at AC 60HZ		V	120
Number of auxiliary contacts as N/Os			0

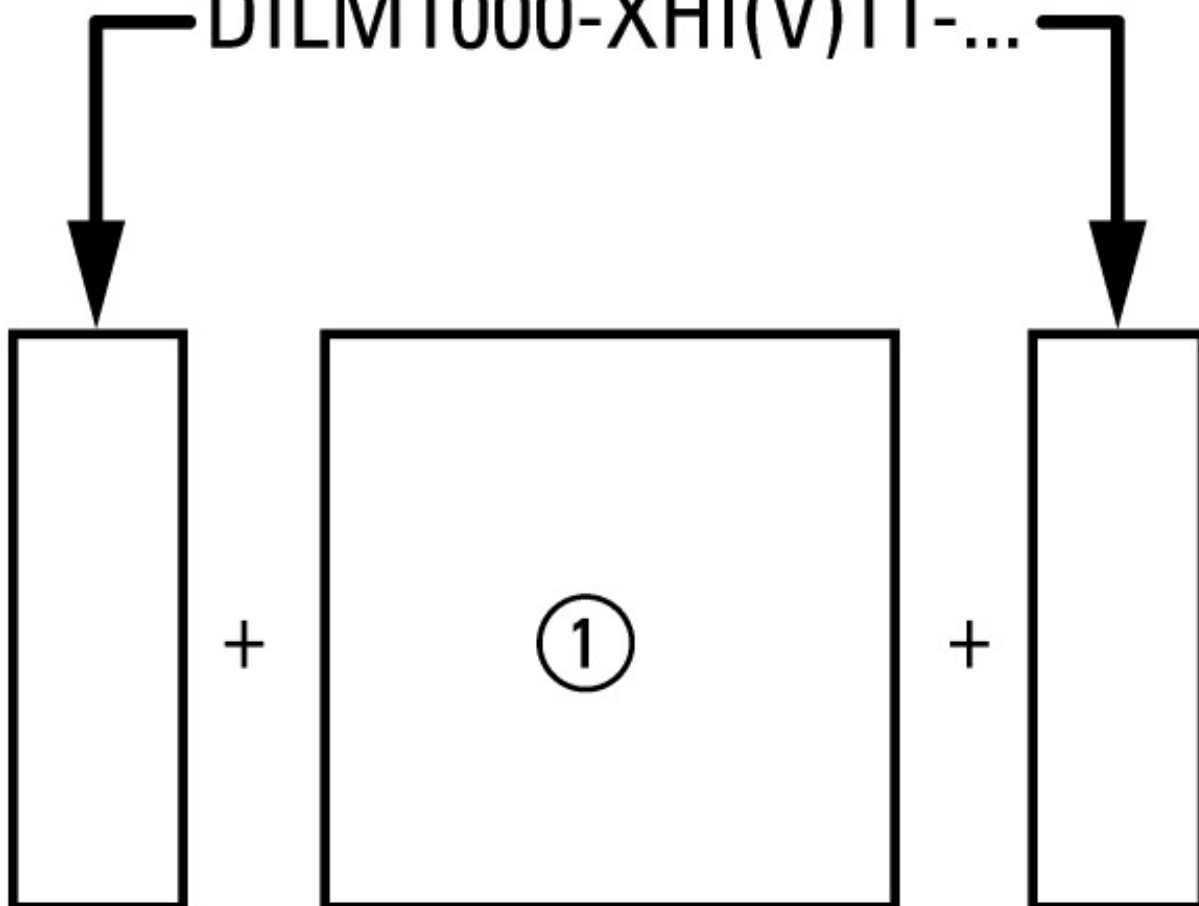
Rated control voltage $U_s$ at AC 50HZ	V	110
Number of auxiliary contacts as N/Cs		0
Suitable for rail-mounting		No
Rated control voltage $U_s$ at DC	V	0
Voltage type for actuation		AC
Rated operation current $I_e$ at AC-3, 400 V	A	50
Number of N/Cs as main contact		0
Motor rating at AC-3, 400 V	kWh	22

## Characteristics

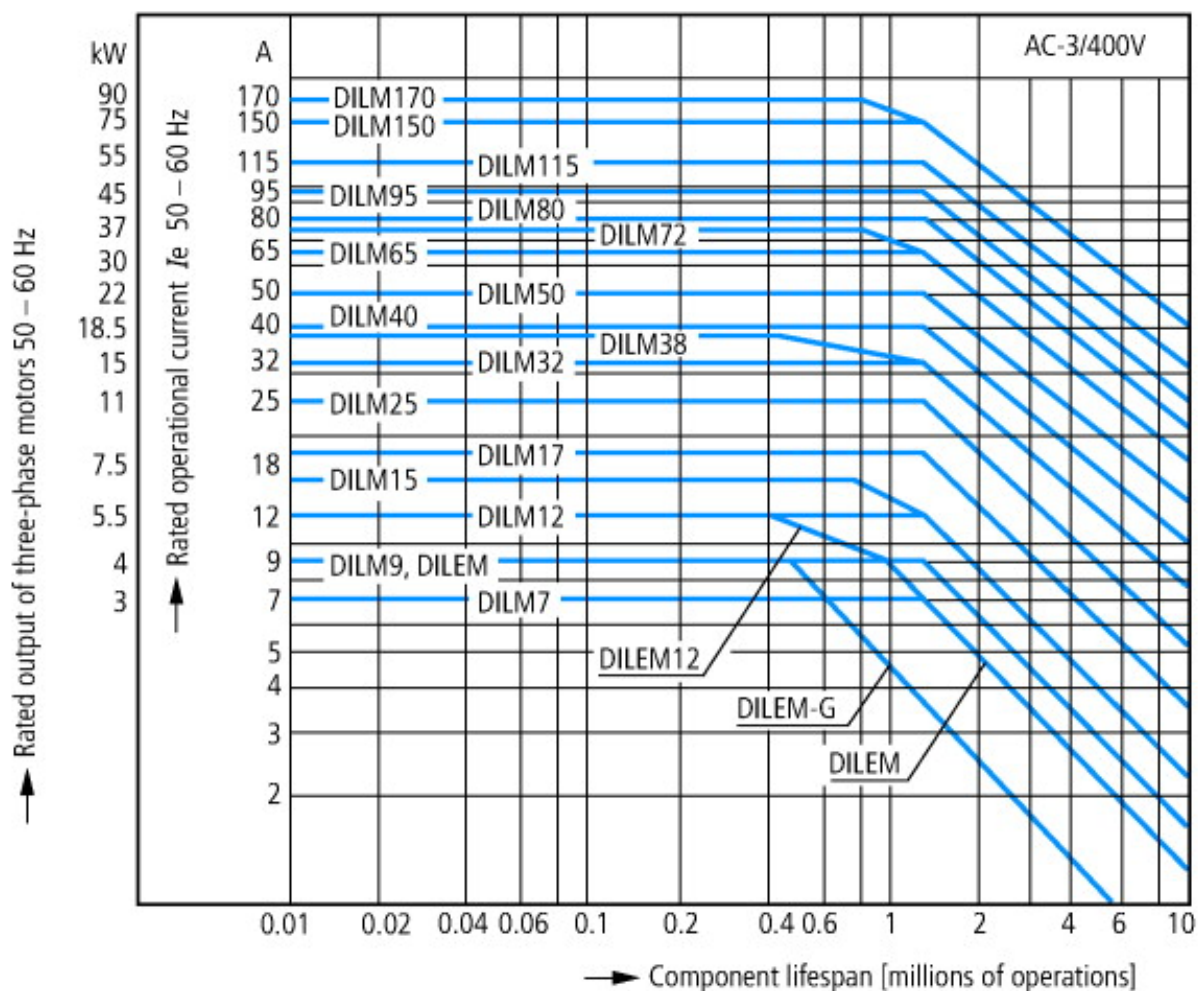


- 1: Overload relay
- 2: Suppressor
- 3: Auxiliary contact modules

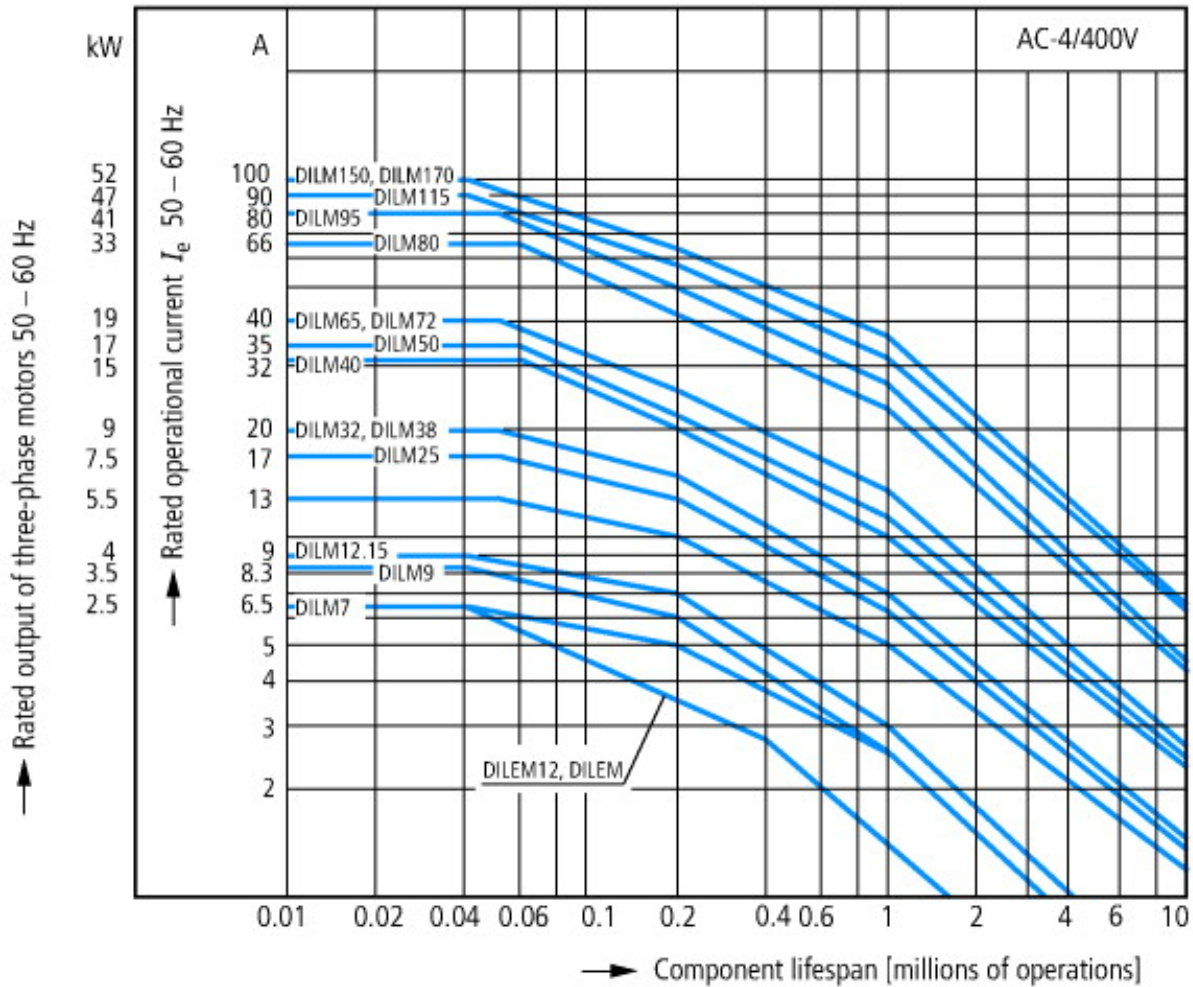
# DILM1000-XHI(V)11-...



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)

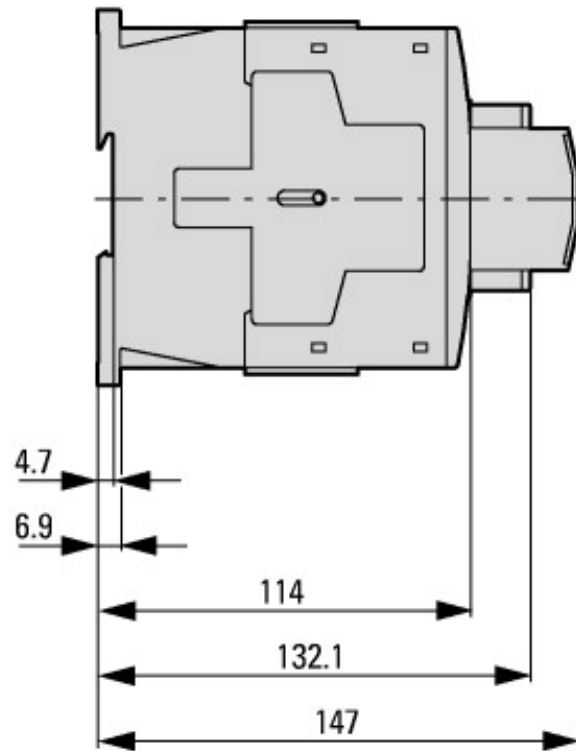
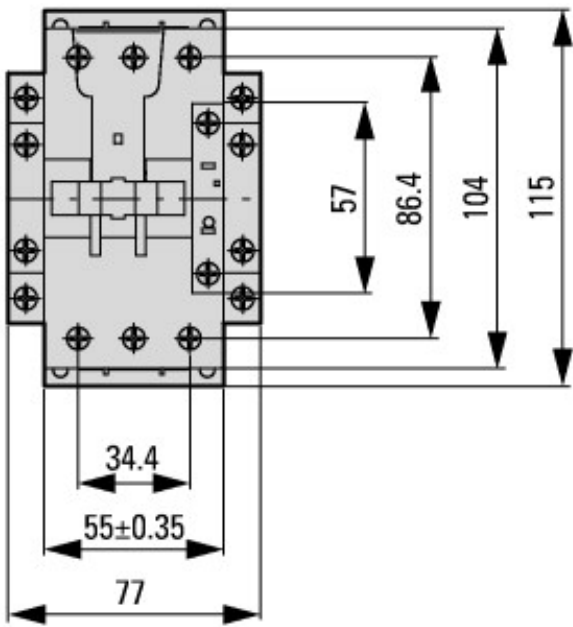


Squirrel-cage motor  
 Operating characteristics  
 Starting: from rest  
 Stopping: after attaining full running speed  
 Electrical characteristics  
 Make: up to 6 x rated motor current  
 Break: up to 1 x rated motor current  
 Utilization category  
 100 % AC-3  
 Typical applications  
 Compressors  
 Lifts  
 Mixers  
 Pumps  
 Escalators  
 Agitators  
 Fans  
 Conveyor belts  
 Centrifuges  
 Hinged flaps  
 Bucket-elevators  
 Air conditioning system  
 General drives in manufacturing and processing machines

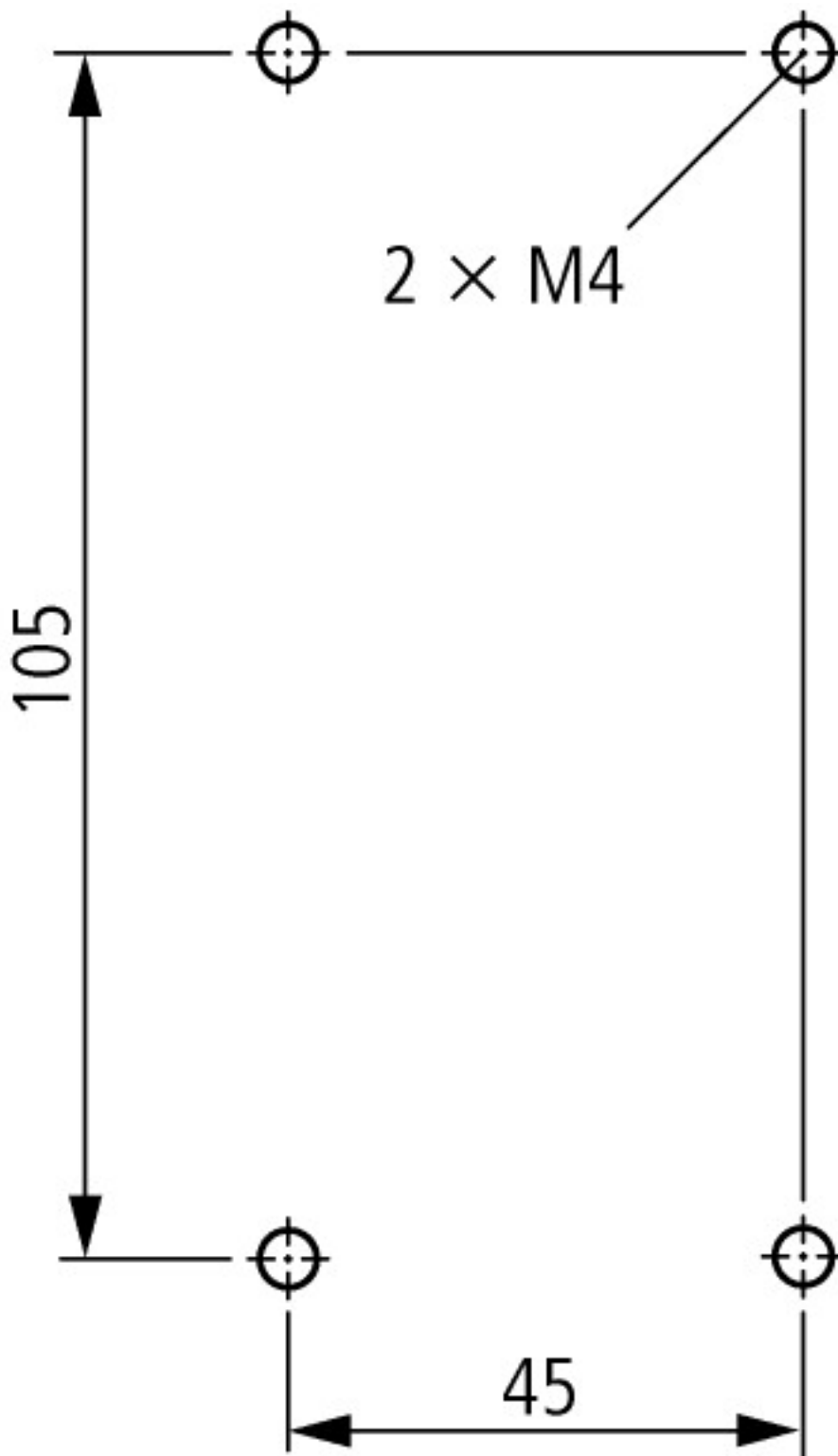


Extreme switching duty  
 Squirrel-cage motor  
 Operating characteristics  
 Inching, plugging, reversing  
 Electrical characteristics  
 Make: up to 6 x rated motor current  
 Break: up to 6 x rated motor current  
 Utilization category  
 100 % AC-4  
 Typical applications  
 Printing presses  
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

## Dimensions



Contactor with auxiliary contact module



Lateral clearance to earthed parts: 6 mm

DILM40...DILM72  
 DILMC40...DILMC65  
 DILMF40...DILMF65

**Additional product information (links)**

**IL03407033Z (AWA2100-2247) Contactor DILM, basic unit**

IL03407033Z (AWA2100-2247) Contactor DILM, basic unit [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03407033Z2012\\_03.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407033Z2012_03.pdf)

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

<http://de.ecat.moeller.net/flip-cat/?edition=HPLTE&startpage=5.85>

<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](http://www.moeller.net/binary/ver_techpapers/ver934en.pdf)

X-Start - New Generation:100 years of Moeler contactors - Continous Progress- [http://www.moeller.net/binary/ver\\_techpapers/ver937en.pdf](http://www.moeller.net/binary/ver_techpapers/ver937en.pdf)

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 Cabel 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>