

**Contactor, 3 pole, 380 V 400 V 18.5 kW, 220 V 50/60 Hz, AC operation, Screw terminals**



**Part no. DILM40(220V50/60HZ)**  
**Catalog No. 277773**  
**Alternate Catalog No. XTCE040D00AO**

**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
Notes			Also suitable for motors with efficiency class IE3.
Connection technique			Screw terminals
Number of poles			3 pole
<b>Rated operational current</b>			
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
<b>Max. rating for three-phase motors, 50 - 60 Hz</b>			
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			
<b>Instructions</b>			Contacts to EN 50 012.
Can be combined with auxiliary contact			DILM150-XHI(V)... DILM1000-XHI(V)...
Actuating voltage			220 V 50/60 Hz
Voltage AC/DC			AC operation
Connection to SmartWire-DT			no
Frame size			3

## Technical data

### General

Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical			
AC operated	Operations	$\times 10^6$	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 <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		single 14 - 1, double 14 - 2
Flat conductor	Lamellenzahl x Breite x Dicke	mm	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 <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	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
<b>AC-4</b>			
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
<b>DC</b>			
Rated operational current, open			
DC-1			
60 V	$I_e$	A	50
110 V	$I_e$	A	50
220 V	$I_e$	A	45
<b>Current heat loss</b>			
3 pole, at $I_{th}$ (60°)		W	10.3
Current heat loss at $I_e$ to AC-3/400 V		W	6.6
Impedance per pole		mΩ	1.9
<b>Magnet systems</b>			
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 $U_S$			
50/60 Hz	Pick-up	VA	168 154
50/60 Hz	Sealing	VA	22 14
50/60 Hz	Sealing	W	4.1
Duty factor		% DF	100
Changeover time at 100 % $U_S$ (recommended value)			
Main contacts			
AC operated			
Closing delay		ms	12 - 18
Opening delay		ms	8 - 13

Arcing time	ms	10
Lifespan, mechanical; Coil 50/60 Hz	$\times 10^6$	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

### 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		
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 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	220 - 220
Rated control supply voltage $U_s$ at AC 60HZ		V	220 - 220
Rated control supply voltage $U_s$ at DC		V	0 - 0
Voltage type for actuating			AC
Rated operation current $I_e$ at AC-1, 400 V		A	60
Rated operation current $I_e$ at AC-3, 400 V		A	40
Rated operation power at AC-3, 400 V		kW	18.5
Rated operation current $I_e$ 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

## Approvals

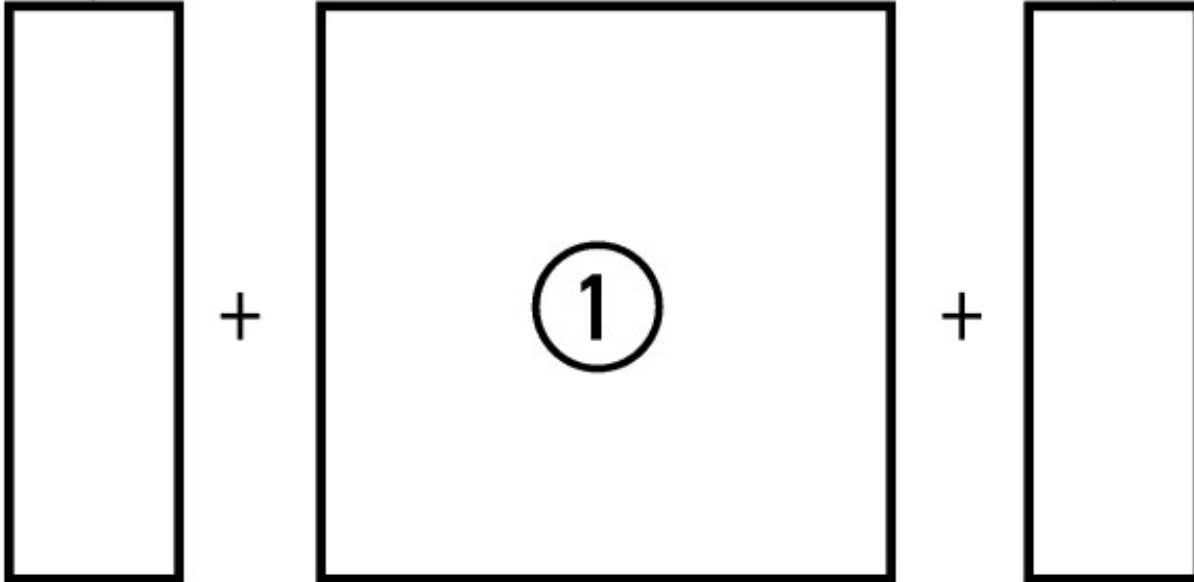
Product Standards	IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking
UL File No.	E29096
UL Category Control No.	NLDX
CSA File No.	012528
CSA Class No.	2411-03, 3211-04
North America Certification	UL listed, CSA certified
Specially designed for North America	No

## 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

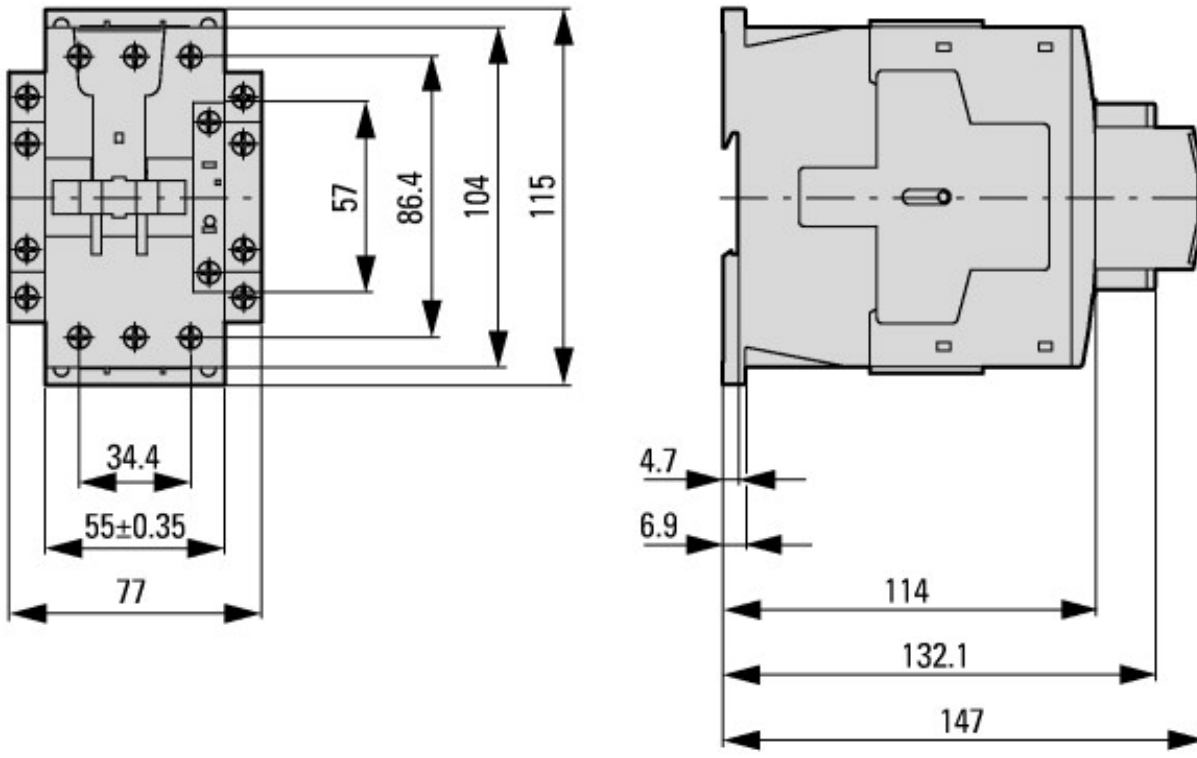


Extreme switching duty  
 Squirrel-cage motor  
 Operating characteristics  
 Inching, plugging, reversing  
 Electrical characteristics  
 Make: up to 6 x rated motor current  
 Break: up to 6 x rated motor current  
 Utilization category  
 100 % AC-4  
 Typical applications  
 Printing presses  
 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



Contacteur 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	<a href="http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf">http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.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 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>
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>