



Contactor, 3p, 18.5kW/400V/AC3

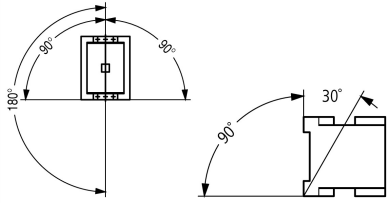
Part no. DILM40(RDC60)
Article no. 277781
Catalog No. XTCE040D00WD

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				Also suitable for motors with efficiency class IE3. IE3-ready devices are identified by the logo on their packaging.
Connection technique				Screw terminals
Number of poles				3 pole
Rated operational current				
AC-3				
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				
Instructions				Contacts to EN 50012. integrated suppressor circuit in actuating electronics
Can be combined with auxiliary contact				DILM150-XHI(V).. DILM1000-XHI(V)..
Voltage AC/DC				DC operation

Technical data

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

AC operated	Operations	x 10 ⁶	10
DC operated	Operations	x 10 ⁶	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			
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
Weight			
AC operated	kg		0.9
DC operated	kg		1.1
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		12 - 2
Flat conductor	Lamellenzahl x Breite x Dicke	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 ²		1 x (0.75 - 4) 2 x (0.75 - 4)
Flexible with ferrule	mm ²		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

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)			
	U_p 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			
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
380 V 400 V	I_e	A	40

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
440 V	I_e	A	2.9
DC-3			
60 V	I_e	A	50
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	50
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	12.3
Current heat loss at I_e to 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
DC operated	Pick-up	$x U_c$	0.7 - 1.2
Notes			RDC 60 (U_{min} 48 V DC/ U_{max} 60 V DC) Example: $U_c = 0.7 \times U_{min} - 1.2 \times U_{max} / U_c = 0.7 \times 48 \text{ V} - 1.2 \times 60 \text{ V DC}$
DC operated	Drop-out	$x U_c$	0.15 - 0.6

Notes			at least smoothed two-phase bridge rectifier or three-phase rectifier
Power consumption of the coil in a cold state and $1.0 \times U_C$			
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
Changeover time at 100 % U_C (recommended value)			
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		$\times 10^6$	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

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	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 6.0

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@ss8.1-27-37-10-03 [AAB718012])		
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	48 - 60
Voltage type for actuating		DC
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 I_e at AC-4, 400 V	kW	9
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

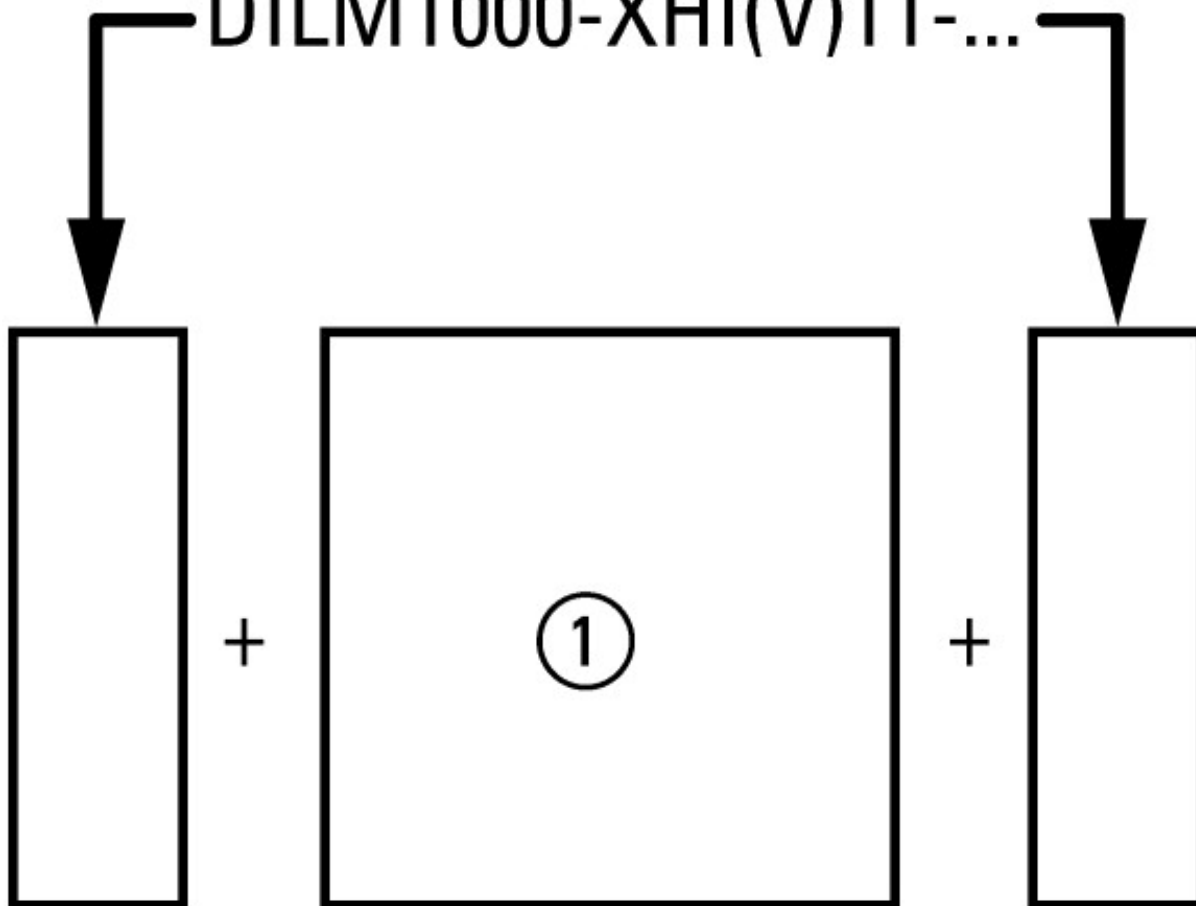
Approvals

Product Standards		IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; 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

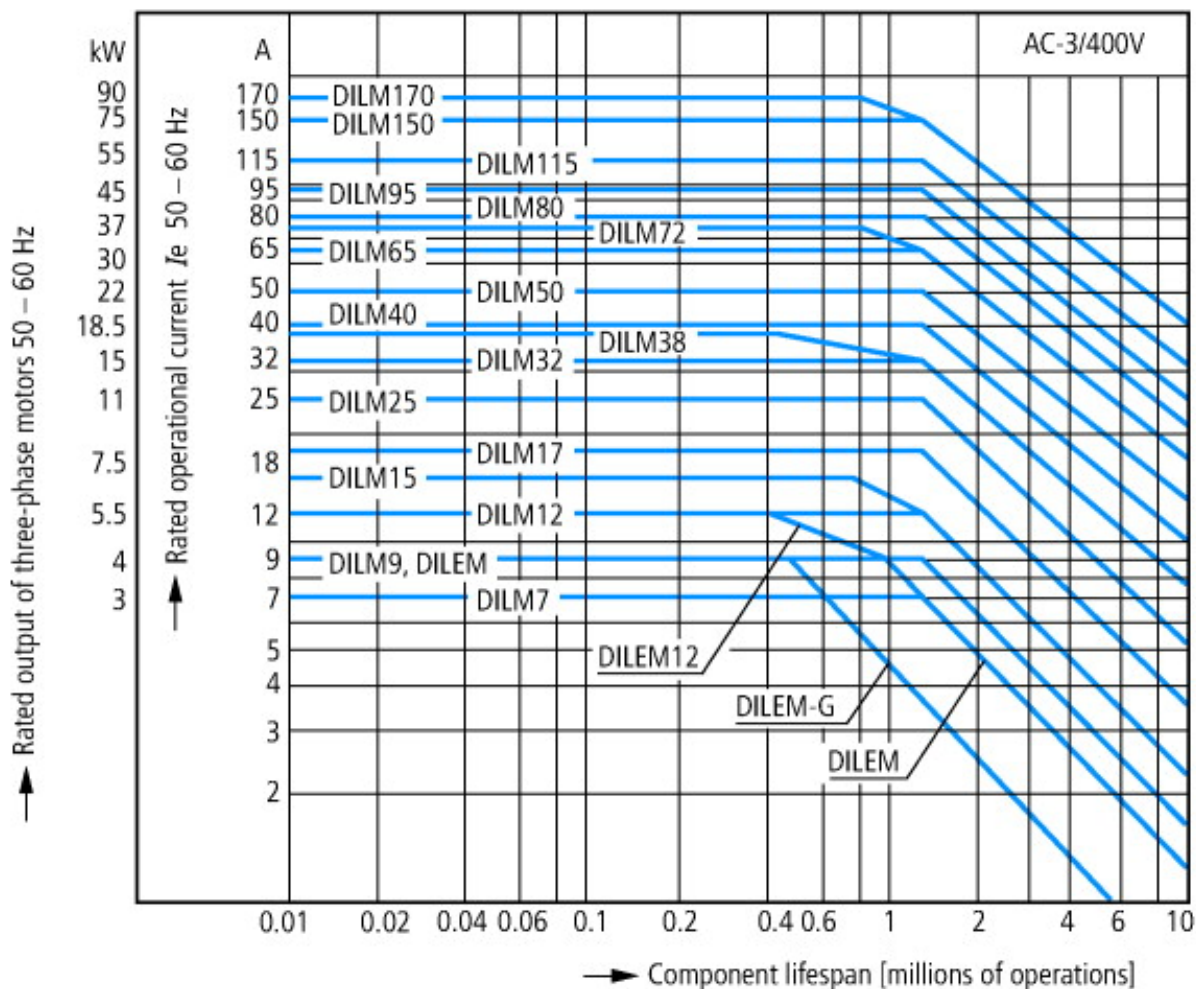


- 1: Overload relay
- 2: Suppressor
- 3: Auxiliary contact modules

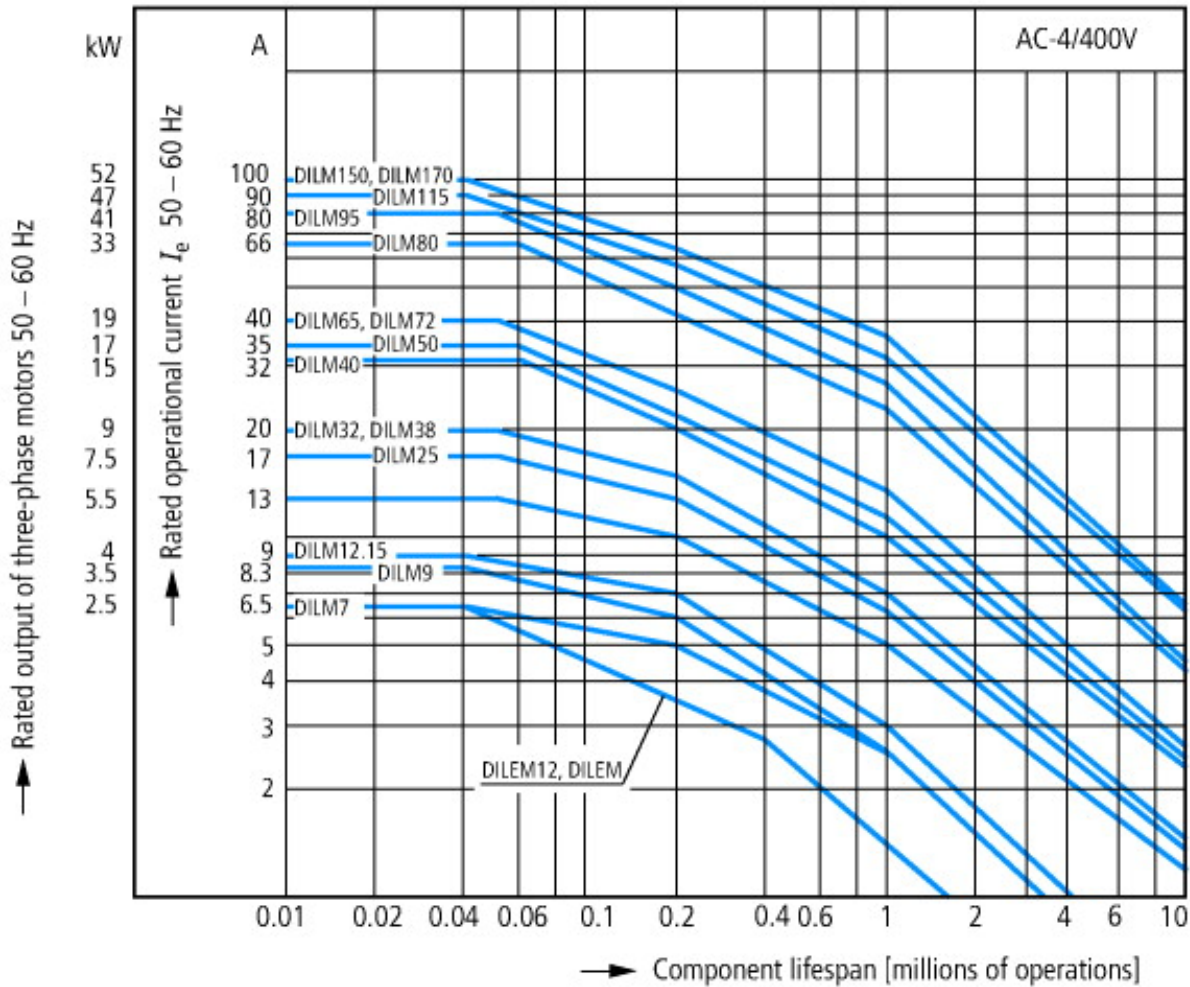
DILM1000-XHI(V)11-...



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

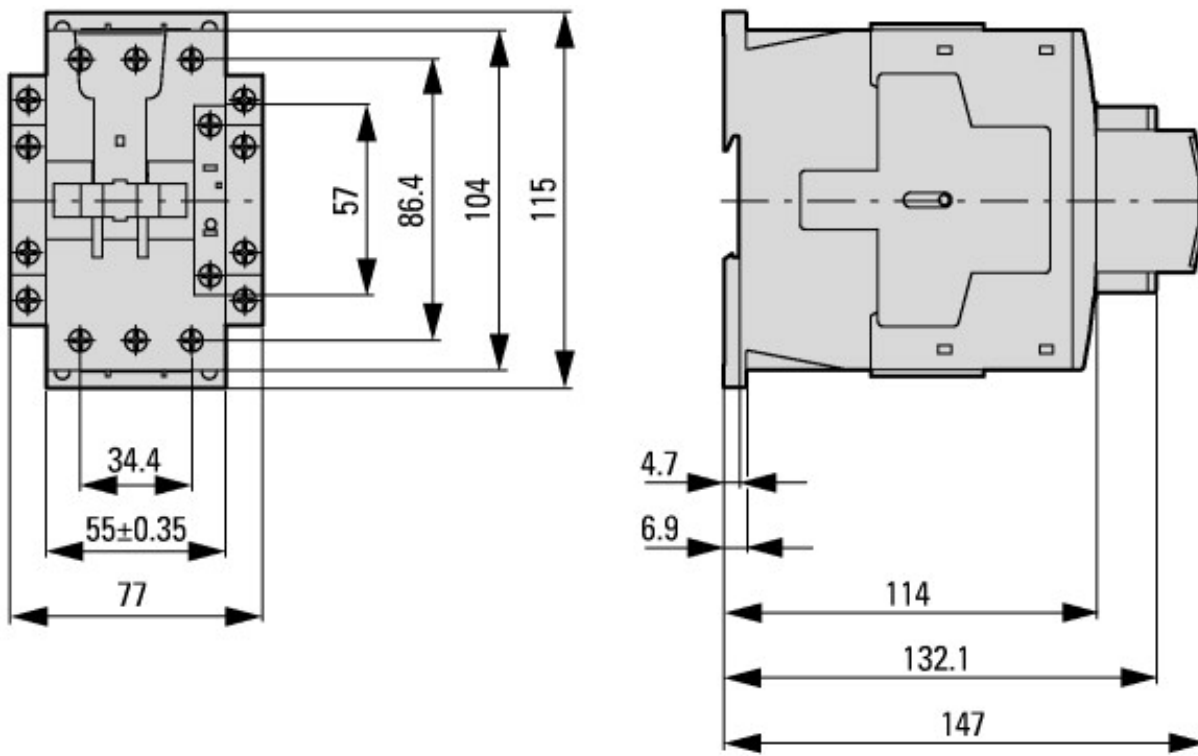


Extreme switching duty
 Squirrel-cage motor
 Operating characteristics
 Inching, plugging, reversing
 Electrical characteristics
 Make: up to 6 x rated motor current
 Break: up to 6 x rated motor current
 Utilization category
 100 % AC-4
 Typical applications
 Printing presses
 Wire-drawing machines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

IL03407033Z (AWA2100-2247) Contactor DILM, basic unit

IL03407033Z (AWA2100-2247) Contactor DILM, basic unit ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407033Z2012_03.pdf

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

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

UL/CSA: UL/CSA: Short Circuit Current Rating (SCCR) <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

X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely http://www.moeller.net/binary/ver_techpapers/ver938en.pdf

Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control 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
Motor starters and "Special Purpose Ratings" for the North American market	http://www.moeller.net/binary/ver_techpapers/ver953en.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