

Contactor, 380 V 400 V 110 kW, 2 N/O, 2 NC, RAC 440: 380 - 440 V 50/60 Hz, AC operation, Screw connection



Part no. DILM225A/22(RAC440)  
 Catalog No. 139548  
 Alternate Catalog No. XTCE225H22L  
 EL-Nummer (Norway) 4134288

**Delivery program**

Product range			Contactors
Application			Contactors for Motors
Subrange			Standard devices greater than 170 A
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
Connection technique			Screw connection

**Rated operational current**

AC-3				
380 V 400 V	$I_e$	A		225
AC-1				
Conventional free air thermal current, 3 pole, 50 - 60 Hz				
Open				
at 40 °C	$I_{th} = I_e$	A		386
enclosed	$I_{th}$	A		275
Conventional free air thermal current, 1 pole				
open	$I_{th}$	A		788
enclosed	$I_{th}$	A		688

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

AC-3				
220 V 230 V	P	kW		70
380 V 400 V	P	kW		110
660 V 690 V	P	kW		150
1000 V	P	kW		108
AC-4				
220 V 230 V	P	kW		51
380 V 400 V	P	kW		90
660 V 690 V	P	kW		110
1000 V	P	kW		77

Can be combined with auxiliary contact				DILM1000-XHI...
Actuating voltage				RAC 440: 380 - 440 V 50/60 Hz
Voltage AC/DC				AC operation

**Contacts**

N/O = Normally open				2 N/O
N/C = Normally closed				2 NC

**Auxiliary contacts**

possible variants at auxiliary contact module fitting options				on the side: 2 x DILM1000-XHI(V)11-SI; 2 x DILM1000-XHI11-SA
---	--	--	--	--

<b>Instructions</b>				Interlocked opposing contacts according to IEC/EN 60947-5-1 Appendix L, inside the auxiliary contact module Auxiliary contacts used as mirror contacts according to IEC/EN 60947-4-1 Appendix F (not N/C late open)
---------------------	--	--	--	--

<b>Instructions</b>				integrated suppressor circuit in actuating electronics 660 V, 690 V or 1000 V: not directly reversing
---------------------	--	--	--	--

## 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		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
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	10
N/C contact		g	8
Degree of Protection			IP00
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof with terminal shroud or terminal block
Altitude		m	Max. 2000
Weight			
AC operated		kg	3.54
DC operated		kg	3.54
Weight		kg	3.54
Terminal capacity main cable			
Flexible with cable lug		mm <sup>2</sup>	50 - 185
Stranded with cable lug		mm <sup>2</sup>	70 - 185
Solid or stranded		AWG	2/0 - 250 MCM
Flat conductor	Lamellenzahl x Breite x Dicke	mm	Fixing with flat cable terminal or cable terminal blocks See terminal capacity for cable terminal blocks
Busbar	Width	mm	32
Main cable connection screw/bolt			M10
Tightening torque		Nm	24
Terminal capacity control circuit cables			
Solid		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 - 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			
Width across flats		mm	16
Control circuit cables			
Pozidriv screwdriver		Size	2

### 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	1000
Rated operational voltage	$U_e$	V AC	1000
Safe isolation to EN 61140			
between coil and contacts		V AC	1000

between the contacts		V AC	1000
Making capacity (p.f. to IEC/EN 60947)		A	2700
Breaking capacity			
220 V 230 V		A	2250
380 V 400 V		A	2250
500 V		A	2250
660 V 690 V		A	2250
1000 V		A	760
Component lifespan			
			AC1: See → Engineering, characteristic curves AC3: See → Engineering, characteristic curves AC4: See → Engineering, characteristic curves
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	315
690 V	gG/gL 690 V	A	250
1000 V	gG/gL 1000 V	A	160
Type "1" coordination			
400 V	gG/gL 500 V	A	400
690 V	gG/gL 690 V	A	315
1000 V	gG/gL 1000 V	A	200

## 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	386
at 50 °C	$I_{th} = I_e$	A	345
at 55 °C	$I_{th} = I_e$	A	329
at 60 °C	$I_{th} = I_e$	A	315
enclosed	$I_{th}$	A	275
Notes			At maximum permissible ambient air temperature.
Conventional free air thermal current, 1 pole			
Note			at maximum permissible ambient air temperature
open	$I_{th}$	A	788
enclosed	$I_{th}$	A	688
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	225
240 V	$I_e$	A	225
380 V 400 V	$I_e$	A	225
415 V	$I_e$	A	225
440V	$I_e$	A	225
500 V	$I_e$	A	225
660 V 690 V	$I_e$	A	160
1000 V	$I_e$	A	76
Motor rating	P	kWh	
220 V 230 V	P	kW	70
240V	P	kW	75
380 V 400 V	P	kW	110
415 V	P	kW	132
440 V	P	kW	138

500 V	P	kW	160
660 V 690 V	P	kW	150
1000 V	P	kW	108
<b>AC-4</b>			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I <sub>e</sub>	A	164
240 V	I <sub>e</sub>	A	164
380 V 400 V	I <sub>e</sub>	A	164
415 V	I <sub>e</sub>	A	164
440 V	I <sub>e</sub>	A	164
500 V	I <sub>e</sub>	A	164
660 V 690 V	I <sub>e</sub>	A	120
1000 V	I <sub>e</sub>	A	55
Motor rating			
220 V 230 V	P	kW	51
240 V	P	kW	54
380 V 400 V	P	kW	90
415 V	P	kW	96
440 V	P	kW	102
500 V	P	kW	116
660 V 690 V	P	kW	110
1000 V	P	kW	77

### Condensator operation

Individual compensation, rated operational current I <sub>e</sub> of three-phase capacitors			
Open			
up to 525 V		A	220
690 V		A	133
Max. inrush current peak		x I <sub>e</sub>	30
Component lifespan	Operations	x 10 <sup>6</sup>	0.1
Max. operating frequency		Ops/h	200

### DC

Rated operational current, open			
DC-1			
Notes			see DILDC300/DILDC600 or on request

### Current heat loss

3 pole, at I <sub>th</sub> (60°)		W	45
Current heat loss at I <sub>e</sub> to AC-3/400 V		W	23
Impedance per pole		mΩ	0.15

### Magnet systems

Voltage tolerance			
U <sub>S</sub>			380 - 440 V 50/60 Hz
AC operated	Pick-up		0.8 x U <sub>S min</sub> - 1.15 x U <sub>S max</sub>
AC operated	Drop-out		0.25 x U <sub>S min</sub> - 0.6 x U <sub>S max</sub>
Power consumption of the coil in a cold state and 1.0 x U <sub>S</sub>			
Pull-in power	Pick-up	VA	210
Pull-in power	Pick-up	W	180
Sealing power	Sealing	VA	2.6
Sealing power	Sealing	W	2.1
Duty factor		% DF	100
Changeover time at 100 % U <sub>S</sub> (recommended value)			
Main contacts			
Closing delay		ms	60
Opening delay		ms	40

## Electromagnetic compatibility (EMC)

Electromagnetic compatibility			This product is designed for operation in industrial environments (environment A). Its use in residential environments (environment B) may cause radio-frequency interference, requiring additional noise suppression measures.
-------------------------------	--	--	---

## Rating data for approved types

Switching capacity			
Maximum motor rating			
Three-phase			
200 V 208 V	HP		60
230 V 240 V	HP		75
460 V 480 V	HP		150
575 V 600 V	HP		200
General use	A		250
Auxiliary contacts			
Pilot Duty			
AC operated			A600
DC operated			P300
General Use			
AC	V		600
AC	A		15
DC	V		250
DC	A		1
Short Circuit Current Rating		SCCR	
Basic Rating			
SCCR	kA		10
max. Fuse	A		700
max. CB	A		600
480 V High Fault			
SCCR (fuse)	kA		100
max. Fuse	A		600 Class J
SCCR (CB)	kA		65
max. CB	A		350
600 V High Fault			
SCCR (fuse)	kA		100
max. Fuse	A		600 Class J
SCCR (CB)	kA		50
max. CB	A		350
Special Purpose Ratings			
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)			
LRA 480V 60Hz 3phase	A		2016
FLA 480V 60Hz 3phase	A		336
LRA 600V 60Hz 3phase	A		1680
FLA 600V 60Hz 3phase	A		280

## Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	$I_n$	A	225
Heat dissipation per pole, current-dependent	$P_{vid}$	W	7.67
Equipment heat dissipation, current-dependent	$P_{vid}$	W	0
Static heat dissipation, non-current-dependent	$P_{vs}$	W	2.1
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 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 $U_s$ at AC 50HZ	V	380 - 440
Rated control supply voltage $U_s$ at AC 60HZ	V	380 - 440
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	356
Rated operation current $I_e$ at AC-3, 400 V	A	225
Rated operation power at AC-3, 400 V	kW	110
Rated operation current $I_e$ at AC-4, 400 V	A	164
Rated operation power at AC-4, 400 V	kW	90
Rated operation power NEMA	kW	111
Modular version		No
Number of auxiliary contacts as normally open contact		2
Number of auxiliary contacts as normally closed contact		2
Type of electrical connection of main circuit		Rail connection
Number of normally closed contacts as main contact		0
Number of normally open contacts as main contact		3