

Contactor, 380 V 400 V 160 kW, 2 N/O, 2 NC, RA 250: 110 - 250 V 40 - 60 Hz/110 - 350 V DC, AC and DC operation, Screw connection

Part no. DILM300A/22(RA250)
Catalog No. 139556
Alternate Catalog No. XTCE300L22A
EL-Nummer (Norway) 4134296

Delivery program

Product range			Contactors
Application			Contactors for Motors
Subrange			Comfort 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	300
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	490
enclosed	I_{th}	A	315
Conventional free air thermal current, 1 pole			
open	I_{th}	A	1000
enclosed	I_{th}	A	788
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	90
380 V 400 V	P	kW	160
660 V 690 V	P	kW	170
1000 V	P	kW	132
AC-4			
220 V 230 V	P	kW	75
380 V 400 V	P	kW	132
660 V 690 V	P	kW	137
1000 V	P	kW	108
Can be combined with auxiliary contact			DILM820-XHI...
Actuating voltage			RA 250: 110 - 250 V 40 - 60 Hz/110 - 350 V DC
Voltage AC/DC			AC and DC 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 DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA
Instructions			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)
Instructions			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, EN 45545, IEC 61374, 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		3000
DC 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	-40 - +60
Enclosed		°C	- 40 - + 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	7.1
DC operated		kg	7.1
Weight		kg	7.1
Terminal capacity main cable			
Flexible with cable lug		mm ²	50 - 240
Stranded with cable lug		mm ²	70 - 240
Solid or stranded		AWG	2/0 - 500 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	25
Main cable connection screw/bolt			M10
Tightening torque		Nm	24
Terminal capacity control circuit cables			
Solid		mm ²	1 x (0.75 - 2.5) 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
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	3600
Breaking capacity			
220 V 230 V		A	3000
380 V 400 V		A	3000
500 V		A	3000
660 V 690 V		A	3000
1000 V		A	950
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	400
690 V	gG/gL 690 V	A	315
1000 V	gG/gL 1000 V	A	160
Type “1” coordination			
400 V	gG/gL 500 V	A	500
690 V	gG/gL 690 V	A	400
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	490
at 50 °C	$I_{th} = I_e$	A	438
at 55 °C	$I_{th} = I_e$	A	418
at 60 °C	$I_{th} = I_e$	A	400
enclosed	I_{th}	A	315
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	1000
enclosed	I_{th}	A	788
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	300
240 V	I_e	A	300
380 V 400 V	I_e	A	300
415 V	I_e	A	300
440V	I_e	A	300
500 V	I_e	A	300
660 V 690 V	I_e	A	185
1000 V	I_e	A	95
Motor rating	P	kWh	
220 V 230 V	P	kW	90
240V	P	kW	100
380 V 400 V	P	kW	160

415 V	P	kW	175
440 V	P	kW	185
500 V	P	kW	210
660 V 690 V	P	kW	170
1000 V	P	kW	132
AC-4			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I _e	A	240
240 V	I _e	A	240
380 V 400 V	I _e	A	240
415 V	I _e	A	240
440 V	I _e	A	240
500 V	I _e	A	240
660 V 690 V	I _e	A	150
1000 V	I _e	A	76
Motor rating			
220 V 230 V	P	kWh	
240 V	P	kW	75
380 V 400 V	P	kW	82
415 V	P	kW	132
440 V	P	kW	142
500 V	P	kW	150
660 V 690 V	P	kW	170
1000 V	P	kW	137
	P	kW	108

Condensor operation

Individual compensation, rated operational current I _e of three-phase capacitors			
Open			
up to 525 V		A	307
690 V		A	177
Max. inrush current peak		x I _e	30
Component lifespan	Operations	x 10 ⁶	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 _{th} (60°)		W	37
Current heat loss at I _e to AC-3/400 V		W	21
Impedance per pole		mΩ	0.077

Magnet systems

Voltage tolerance			
U _S			110 - 250 V 40-60 Hz 110 - 350 V DC
AC operated	Pick-up		0.7 x U _{S min} - 1.15 x U _{S max}
DC operated	Pick-up		0.7 x U _{S min} - 1.15 x U _{S max}
AC operated	Drop-out		0.2 x U _{S max} - 0.6 x U _{S min}
DC operated	Drop-out		0.2 x U _{S max} - 0.6 x U _{S min}
Power consumption of the coil in a cold state and 1.0 x U _S			
Note on power consumption			
Control transformer with u _k ≤ 6%			
Pull-in power	Pick-up	VA	380
Pull-in power	Pick-up	W	250
Sealing power	Sealing	VA	10.5
Sealing power	Sealing	W	5.5

Duty factor	% DF	100
Changeover time at 100 % U _S (recommended value)		
Main contacts		
Closing delay	ms	100
Opening delay	ms	110
Behaviour in marginal and transitional conditions		
Sealing		
Voltage interruptions		
(0 ... 0.2 x U _{C min}) ≤ 10 ms		Time is bridged successfully
(0 ... 0.2 x U _{C min}) > 10 ms		Drop-out of the contactor
Voltage drops		
(0.2 ... 0.6 x U _{C min}) ≤ 12 ms		Time is bridged successfully
(0.2 ... 0.6 x U _{C min}) > 12 ms		Drop-out of the contactor
(0.6 ... 0.7 x U _{C min})		Contactor remains switched on
Excess voltage		
(1.15 ... 1.3 x U _{C max})		Contactor remains switched on
Pick-up phase		
(0 ... 0.7 x U _{C min})		Contactor does not switch on
(0.7 x U _{C min} ... 1.15 x U _{C max})		Contactor switches on with certainty
Admissible transitional contact resistance (of the external control circuit device when actuating A11)	mΩ	≤ 500
PLC signal level (A3 - A4) to IEC/EN 61131-2 (type 2)		
High	V	15
Low	V	5

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.
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Rating data for approved types

Switching capacity		
Maximum motor rating		
Three-phase		
200 V 208 V	HP	100
230 V 240 V	HP	125
460 V 480 V	HP	250
575 V 600 V	HP	300
General use	A	350
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	18
max. Fuse	A	700
max. CB	A	600
480 V High Fault		
SCCR (fuse)	kA	18
max. Fuse	A	700 Class L

SCCR (CB)	kA	65
max. CB	A	250
600 V High Fault		
SCCR (fuse)	kA	18
max. Fuse	A	700 Class J
SCCR (CB)	kA	18
max. CB	A	600
Special Purpose Ratings		
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)		
LRA 480V 60Hz 3phase	A	2160
FLA 480V 60Hz 3phase	A	360
LRA 600V 60Hz 3phase	A	1800
FLA 600V 60Hz 3phase	A	300

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I _n	A	300
Heat dissipation per pole, current-dependent	P _{vid}	W	7
Equipment heat dissipation, current-dependent	P _{vid}	W	0
Static heat dissipation, non-current-dependent	P _{vs}	W	5.5
Heat dissipation capacity	P _{diss}	W	0
Operating ambient temperature min.		°C	-40
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 (ec!@ss10.0.1-27-37-10-03 [AAB718015])		
Rated control supply voltage U _s at AC 50HZ	V	110 - 250

Rated control supply voltage Us at AC 60HZ	V	110 - 250
Rated control supply voltage Us at DC	V	110 - 250
Voltage type for actuating		AC/DC
Rated operation current Ie at AC-1, 400 V	A	490
Rated operation current Ie at AC-3, 400 V	A	300
Rated operation power at AC-3, 400 V	kW	160
Rated operation current Ie at AC-4, 400 V	A	240
Rated operation power at AC-4, 400 V	kW	132
Rated operation power NEMA	kW	186
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