DATASHEET - DILM500/22(RA250)

Contactor, 380 V 400 V 265 kW, 2 N/O, 2 NC, RA 250: 110 - 250 V 40 - 60 Hz/110 - 350 V DC, AC and DC operation, Screw connection

Powering Business Worldwide™

Part no.	**DILM500/22(RA250)**
Catalog No.	**208213**
Alternate Catalog No.	**XTCE500M22A**
EL-Nummer (Norway)	**4134086**

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	500
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	800
enclosed	I_{th}	A	600
Conventional free air thermal current, 1 pole			
open	I_{th}	A	1625
enclosed	I_{th}	A	1500
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	155
380 V 400 V	P	kW	265
660 V 690 V	P	kW	300
1000 V	P	kW	132
AC-4			
220 V 230 V	P	kW	112
380 V 400 V	P	kW	200
660 V 690 V	P	kW	240
1000 V	P	kW	132
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	7
DC operated	Operations	x 10^6	7
Operating frequency, mechanical			
AC operated	Operations/h		2000
DC operated	Operations/h		2000
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	8.66
DC operated		kg	8.66
Weight		kg	8.66
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	30
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	5500
Breaking capacity			
220 V 230 V		A	5000
380 V 400 V		A	5000
500 V		A	5000
660 V 690 V		A	5000
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	500
690 V	gG/gL 690 V	A	500
1000 V	gG/gL 1000 V	A	200
Type “1” coordination			
400 V	gG/gL 500 V	A	630
690 V	gG/gL 690 V	A	630
1000 V	gG/gL 1000 V	A	250

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	800
at 50 °C	$I_{th} = I_e$	A	715
at 55 °C	$I_{th} = I_e$	A	682
at 60 °C	$I_{th} = I_e$	A	650
enclosed	I_{th}	A	600
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	1625
enclosed	I_{th}	A	1500
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	500
240 V	I_e	A	500
380 V 400 V	I_e	A	500
415 V	I_e	A	500
440V	I_e	A	500
500 V	I_e	A	500
660 V 690 V	I_e	A	325
1000 V	I_e	A	95
Motor rating	P	kWh	
220 V 230 V	P	kW	155
240V	P	kW	170
380 V 400 V	P	kW	265

415 V	P	kW	290
440 V	P	kW	315
500 V	P	kW	355
660 V 690 V	P	kW	300
1000 V	P	kW	132
AC-4			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
220 V 230 V	I_e	A	360
240 V	I_e	A	360
380 V 400 V	I_e	A	360
415 V	I_e	A	360
440 V	I_e	A	360
500 V	I_e	A	360
660 V 690 V	I_e	A	260
1000 V	I_e	A	95
Motor rating	P	kWh	
220 V 230 V	P	kW	112
240 V	P	kW	122
380 V 400 V	P	kW	200
415 V	P	kW	216
440 V	P	kW	229
500 V	P	kW	250
660 V 690 V	P	kW	240
1000 V	P	kW	132

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	113
Current heat loss at I_e to AC-3/400 V		W	58
Impedance per pole		mΩ	0.089

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 $u_k \leqq 6\%$
Pull-in power	Pick-up	VA	450
Pull-in power	Pick-up	W	350
Sealing power	Sealing	VA	14.2
Sealing power	Sealing	W	7.9

Duty factor	% DF	100
Changeover time at 100 % U_S (recommended value)		
Main contacts		
Closing delay	ms	80
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.

Rating data for approved types

Switching capacity		
Maximum motor rating		
Three-phase		
200 V 208 V	HP	150
230 V 240 V	HP	200
460 V 480 V	HP	400
575 V 600 V	HP	500
General use	A	550
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	30
max. Fuse	A	800
max. CB	A	600
480 V High Fault		
SCCR (fuse)	kA	30/100
max. Fuse	A	800/600 Class J

SCCR (CB)		kA	100
max. CB		A	600
600 V High Fault			
SCCR (fuse)		kA	30/100
max. Fuse		A	800/600 Class J
SCCR (CB)		kA	30
max. CB		A	600
Special Purpose Ratings			
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)			
LRA 480V 60Hz 3phase		A	3900
FLA 480V 60Hz 3phase		A	635
LRA 600V 60Hz 3phase		A	3120
FLA 600V 60Hz 3phase		A	520

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	500
Heat dissipation per pole, current-dependent	P_{vid}	W	19.33
Equipment heat dissipation, current-dependent	P_{vid}	W	0
Static heat dissipation, non-current-dependent	P_{vs}	W	7.9
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 (ecl@ss10.0.1-27-37-10-03 [AAB718015])			
Rated control supply voltage Us 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			DC
Rated operation current Ie at AC-1, 400 V		A	800
Rated operation current Ie at AC-3, 400 V		A	500
Rated operation power at AC-3, 400 V		kW	250
Rated operation current Ie at AC-4, 400 V		A	360
Rated operation power at AC-4, 400 V		kW	200
Rated operation power NEMA		kW	298
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