

Contactor, 3 pole, 380 V 400 V 5.5 kW, 1 NC, 220 V DC, DC operation, Screw terminals



Part no. DILM12-01(220VDC)
Catalog No. 276884
Alternate Catalog No. XTCE012B01BD

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		
Rated operational current			
AC-3			
Notes	At maximum permissible ambient temperature (open.) Also tested according to AC-3e.		
380 V 400 V	I_e	A	12
AC-1			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open			
at 40 °C	$I_{th} = I_e$	A	22
enclosed	I_{th}	A	18
Conventional free air thermal current, 1 pole			
open	I_{th}	A	50
enclosed	I_{th}	A	45
Max. rating for three-phase motors, 50 - 60 Hz			
AC-3			
220 V 230 V	P	kW	3.5
380 V 400 V	P	kW	5.5
660 V 690 V	P	kW	6.5
AC-4			
220 V 230 V	P	kW	2
380 V 400 V	P	kW	3
660 V 690 V	P	kW	4.4
Contacts			
N/C = Normally closed	1 NC		
Can be combined with auxiliary contact	DILA-XHI(V)...(-PI) DILA-XHI...-S DILM32-XHI...-PI		
Actuating voltage	220 V DC		
Voltage AC/DC	DC operation		
Connection to SmartWire-DT	no		
Instructions	Contacts to EN 50 012. Integrated varistor suppressor circuit. with mirror contact.		
Frame size	1		

Technical data

General

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

DC operated	Operations	$\times 10^6$	10
Operating frequency, mechanical			
DC operated	Operations/h		9000
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		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		5.7
Auxiliary contacts			
N/O contact	g		3.4
N/C contact	g		3.4
Degree of Protection			IP20
Protection against direct contact when actuated from front (EN 50274)			Finger and back-of-hand proof
Altitude	m		Max. 2000
Weight			
DC operated	kg		0.296
Screw connector terminals			
Terminal capacity main cable			
Solid	mm ²		1 x (0.75 - 4) 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		single 18 - 10, double 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
Terminal capacity control circuit cables			
Solid	mm ²		1 x (0.75 - 4) 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
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	400
between the contacts		V AC	400
Making capacity (p.f. to IEC/EN 60947)			
	Up to 690 V	A	168
Breaking capacity			
220 V 230 V		A	120
380 V 400 V		A	120
500 V		A	100
660 V 690 V		A	70
Short-circuit rating			
Short-circuit protection maximum fuse			
Type "2" coordination			
400 V	gG/gL 500 V	A	20
690 V	gG/gL 690 V	A	20
Type "1" coordination			
400 V	gG/gL 500 V	A	35
690 V	gG/gL 690 V	A	25

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	22
at 50 °C	I _{th} = I _e	A	21
at 55 °C	I _{th} = I _e	A	21
at 60 °C	I _{th} = I _e	A	20
enclosed	I _{th}	A	18
Conventional free air thermal current, 1 pole			
open	I _{th}	A	50
enclosed	I _{th}	A	45

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	12
240 V	I _e	A	12
380 V 400 V	I _e	A	12
415 V	I _e	A	12
440 V	I _e	A	12
500 V	I _e	A	10
660 V 690 V	I _e	A	7
Motor rating	P	kWh	
220 V 230 V	P	kW	3.5
240 V	P	kW	4
380 V 400 V	P	kW	5.5
415 V	P	kW	7
440 V	P	kW	7.5
500 V	P	kW	7
660 V 690 V	P	kW	6.5
AC-4			
Open, 3-pole: 50 – 60 Hz			

220 V 230 V	I_e	A	7
240 V	I_e	A	7
380 V 400 V	I_e	A	7
415 V	I_e	A	7
440 V	I_e	A	7
500 V	I_e	A	6
660 V 690 V	I_e	A	5
Motor rating	P	kWh	
220 V 230 V	P	kW	2
240 V	P	kW	2.2
380 V 400 V	P	kW	3
415 V	P	kW	3.4
440 V	P	kW	3.6
500 V	P	kW	3.5
660 V 690 V	P	kW	4.4

DC

Rated operational current, open			
DC-1			
60 V	I_e	A	20
110 V	I_e	A	20
220 V	I_e	A	15

Current heat loss

3 pole, at I_{th} (60°)		W	4.2
Current heat loss at I_e to AC-3/400 V		W	1.5
Impedance per pole		$m\Omega$	4.6

Magnet systems

Voltage tolerance			
DC operated	Pick-up	$\times U_c$	0.8 - 1.1
Notes			0.85 - 1.1 only with auxiliary contact module with 3 or more N/C contacts
DC operated	Drop-out	$\times U_c$	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 $1.0 \times U_S$			
DC operated	Pick-up	W	4.5
DC operated	Sealing	W	4.5
Duty factor		% DF	100
Changeover time at 100 % U_S (recommended value)			
Main contacts			
DC operated		ms	
Closing delay		ms	
Closing delay		ms	31
Opening delay		ms	
Opening delay		ms	12
Arcing time		ms	10

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	HP	3	
208 V			
230 V	HP	3	
240 V			
460 V	HP	10	
480 V			
575 V	HP	10	

600 V			
Single-phase			
115 V	HP	1	
120 V			
230 V	HP	2	
240 V			
General use	A	20	
Auxiliary contacts			
Pilot Duty			
AC operated		A600	
DC operated		P300	
General Use			
AC	V	600	
AC	A	10	
DC	V	250	
DC	A	1	
Short Circuit Current Rating	SCCR		
Basic Rating			
SCCR	kA	5	
max. Fuse	A	45	
max. CB	A	60	
480 V High Fault			
SCCR (fuse)	kA	30/100	
max. Fuse	A	25 Class RK5/45 Class J	
600 V High Fault			
SCCR (fuse)	kA	30/100	
max. Fuse	A	25 Class RK5/45 Class J	
Special Purpose Ratings			
Electrical Discharge Lamps (Ballast)			
480V 60Hz 3phase, 277V 60Hz 1phase	A	20	
600V 60Hz 3phase, 347V 60Hz 1phase	A	20	
Incandescent Lamps (Tungsten)			
480V 60Hz 3phase, 277V 60Hz 1phase	A	14	
600V 60Hz 3phase, 347V 60Hz 1phase	A	14	
Resistance Air Heating			
480V 60Hz 3phase, 277V 60Hz 1phase	A	20	
600V 60Hz 3phase, 347V 60Hz 1phase	A	20	
Refrigeration Control (CSA only)			
LRA 480V 60Hz 3phase	A	60	
FLA 480V 60Hz 3phase	A	10	
LRA 600V 60Hz 3phase	A	60	
FLA 600V 60Hz 3phase	A	10	
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)			
LRA 480V 60Hz 3phase	A	72	
FLA 480V 60Hz 3phase	A	12	
Elevator Control			
200V 60Hz 3phase	HP	2	
200V 60Hz 3phase	A	7.8	
240V 60Hz 3phase	HP	2	
240V 60Hz 3phase	A	6.8	
480V 60Hz 3phase	HP	7.5	
480V 60Hz 3phase	A	11	
600V 60Hz 3phase	HP	7.5	
600V 60Hz 3phase	A	9	

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I _n	A	12
Heat dissipation per pole, current-dependent	P _{vid}	W	0.5
Equipment heat dissipation, current-dependent	P _{vid}	W	0
Static heat dissipation, non-current-dependent	P _{vs}	W	4.5
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 Us at AC 50Hz	V	0 - 0
Rated control supply voltage Us at AC 60Hz	V	0 - 0
Rated control supply voltage Us at DC	V	220 - 220
Voltage type for actuating		DC
Rated operation current Ie at AC-1, 400 V	A	22
Rated operation current Ie at AC-3, 400 V	A	12
Rated operation power at AC-3, 400 V	kW	5.5
Rated operation current Ie at AC-4, 400 V	A	7
Rated operation power at AC-4, 400 V	kW	3
Rated operation power NEMA	kW	7.4
Modular version		No
Number of auxiliary contacts as normally open contact		0
Number of auxiliary contacts as normally closed contact		1
Type of electrical connection of main circuit		Screw connection
Number of normally closed contacts as main contact		0

