

Contactor, 24 V DC, 3 pole, 380 V 400 V, 4 kW, Contacts N/O = Normally open= 1 N/O, Screw terminals, DC operation



Part no. DILEM-10-G-EA(24VDC)
Catalog No. 189984

Delivery program

Product range		Contactors		
Application		Mini Contactors for Motors and Resistive Loads		
Subrange		DILEM contactors		
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. Also tested according to AC-3e.		
Connection technique		Screw terminals		
Description		With auxiliary contact		
Number of poles		3 pole		
Rated operational current				
AC-3				
380 V 400 V	I_e	A	9	
AC-1				
Conventional free air thermal current, 3 pole, 50 - 60 Hz				
Open				
at 40 °C	$I_{th} = I_e$	A	22	
Max. rating for three-phase motors, 50 - 60 Hz				
AC-3				
220 V 230 V	P	kW	2.2	
380 V 400 V	P	kW	4	
660 V 690 V	P	kW	4	
AC-4				
220 V 230 V	P	kW	1.5	
380 V 400 V	P	kW	3	
660 V 690 V	P	kW	3	
Contacts				
N/O = Normally open			1 N/O	
Instructions				
For use with			Integrated diode-resistor combination	
			...DILEM	
			...DILE	
Actuating voltage			24 V DC	
Voltage AC/DC			DC operation	

Technical data

General

Standards		IEC/EN 60947, VDE 0660, UL, CSA	
Lifespan, mechanical	Operations	$\times 10^6$	20
Maximum operating frequency			
Mechanical		Ops./h	9000
electrical (Contactors without overload relay)	Operations/h		See characteristic curves
Climatic proofing			Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Ambient temperature			
Open		°C	-25 - +50
Enclosed		°C	-25 - 40
Storage		°C	

Min. ambient temperature, storage	°C	- 40
Ambient temperature, storage max.	°C	+ 80
Mounting position	As required, except vertical with terminals A1/A2 at the bottom	
Mechanical shock resistance (IEC/EN 60068-2-27)		
Half-sinusoidal shock, 10 ms		
Basic unit without auxiliary contact module		
Main contacts, make contacts	g	10
Main contacts Make/break contacts	g	
Make	g	8
Basic unit with auxiliary contact module		
Main contacts make contact	g	
Make	g	10
Auxiliary contacts Make/break contacts	g	20 / 20
Degree of Protection	IP20	
Protection against direct contact when actuated from front (EN 50274)	Finger and back-of-hand proof	
Altitude	m	max. 2000 m
Weight	kg	0.206
Terminal capacity of auxiliary and main contacts		
Screw terminals		
Solid	mm ²	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)
Flexible with ferrule	mm ²	1 x (0.75 - 1.5) 2 x (0.75 - 1.5)
Solid or stranded	AWG	18 - 14
Stripping length	mm	8
Terminal screw		M3.5
Pozidriv screwdriver	Size	2
Standard screwdriver	mm	0.8 x 5.5 1 x 6
Max. tightening torque	Nm	1.2

Main conducting paths

Rated impulse withstand voltage	U _{imp}	V AC	6000
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 300		
between the contacts	V AC 300		
Making capacity (cos φ to IEC/EN 60947)		A	110
Breaking capacity			
220 V 230 V		A	90
380 V 400 V		A	90
500 V		A	64
660 V 690 V		A	42
Short-circuit protection maximum fuse			
Type "2", 500 V	gL/gG	A	10
Type "1", 500 V	gL/gG	A	20

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	20
enclosed	I _{th}	A	16
Notes	At maximum permissible ambient air temperature.		

Conventional free air thermal current, 1 pole			
Notes	At maximum permissible ambient air temperature.		
open	I_{th}	A	50
enclosed	I_{th}	A	40
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	9
240 V	I_e	A	9
380 V 400 V	I_e	A	9
415 V	I_e	A	9
440 V	I_e	A	9
500 V	I_e	A	6.4
660 V 690 V	I_e	A	4.8
Motor rating	P	kWh	
220 V 230 V	P	kW	2.2
240 V	P	kW	2.5
380 V 400 V	P	kW	4
415 V	P	kW	4.3
440 V	P	kW	4.6
500 V	P	kW	4
660 V 690 V	P	kW	4
AC-4			
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
Notes	At maximum permissible ambient air temperature.		
220 V 230 V	I_e	A	6.6
240 V	I_e	A	6.6
380 V 400 V	I_e	A	6.6
415 V	I_e	A	6.6
440 V	I_e	A	6.6
500 V	I_e	A	5
660 V 690 V	I_e	A	3.4
Motor rating	P	kWh	
220 V 230 V	P	kW	1.5
240 V	P	kW	1.8
380 V 400 V	P	kW	3
415 V	P	kW	3.1
440 V	P	kW	3.3
500 V	P	kW	3
660 V 690 V	P	kW	3

DC

Rated operational current open			
DC-1			
12 V	I_e	A	20
24 V	I_e	A	20
60 V	I_e	A	20
110 V	I_e	A	20
220 V	I_e	A	20
Magnet systems			
Voltage tolerance			
DC operated			

Pick-up voltage		0.8 - 1.1
Power consumption		
DC operation		
Power consumption Pick-up = Sealing	VA/W	2.3
Notes		Smoothed DC voltage or three-phase bridge rectifier
Duty factor	% DF	100
Switching times at 100 % U_c		
Make contact	ms	
Closing delay	ms	
Closing delay min.	ms	26
Closing delay max.	ms	35
Opening delay	ms	
Opening delay min.	ms	15
Opening delay max.	ms	25
Closing delay with top mounting auxiliary contact	ms	70
Reversing contactors		
Changeover time at 110 % U_c		
Changeover time min.	ms	40
Changeover time max.	ms	50
Arcing time at 690 V AC	ms	12

Current heat losses (3- or 4-pole)

at I_{th} , 50 °C	W	4.4
at I_e to AC-3/400 V	W	0.9
Impedance per pole	$\text{m}\Omega$	7.86

Auxiliary contacts

Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact module			Yes
Rated impulse withstand voltage	U_{imp}	V AC	6000
Oversupply category/pollution degree			III/3
Rated insulation voltage	U_i	V AC	690
Rated operational voltage	U_e	V AC	600
Safe isolation to EN 61140			
between coil and auxiliary contacts		V AC	300
between the auxiliary contacts		V AC	300
Rated operational current			
AC-15			
220 V 240 V	I_e	A	6
380 V 415 V	I_e	A	3
500 V	I_e	A	1.5
DC L/R \leq 15 ms			
Contacts in series:		A	
1	24 V	A	2.5
2	60 V	A	2.5
3	100 V	A	1.5
3	220 V	A	0.5
Conv. thermal current	I_{th}	A	10
Control circuit reliability	Failure rate	λ	$<10^{-8}$, < one failure at 100 million operations (at $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA)
Component lifespan at $U_e = 240$ V			
AC-15	Operations	$\times 10^6$	0.2
DC current			
L/R = 50 ms: 2 contacts in series at $I_e = 0.5$ A	Operations	$\times 10^6$	0.15
Notes			Switch-on and switch-off conditions based on DC-13, time constant as specified
Short-circuit rating without welding			
Maximum overcurrent protective device			

Short-circuit protection only		PKZM0-4
Short-circuit protection maximum fuse		
500 V	A gG/gL	6
500 V	A fast	10
Current heat loss at a load of I_{th} per contact	W	1.1
Rating data for approved types		
Switching capacity		
Maximum motor rating		
Three-phase		
200 V 208 V	HP	2
230 V 240 V	HP	3
460 V 480 V	HP	5
575 V 600 V	HP	5
Single-phase		
115 V 120 V	HP	0.5
230 V 240 V	HP	1.5
General use	A	15
Auxiliary contacts		
Pilot Duty		
AC operated		A600
DC operated		P300
General Use		
AC	V	600
AC	A	10
DC	V	250
DC	A	0.5
Short Circuit Current Rating	SCCR	
Basic Rating		
SCCR	kA	5
max. Fuse	A	45

Design verification as per IEC/EN 61439

Technical data for design verification		
Rated operational current for specified heat dissipation	I_n	A 9
Heat dissipation per pole, current-dependent	P_{vid}	W 0.3
Equipment heat dissipation, current-dependent	P_{vid}	W 0.9
Static heat dissipation, non-current-dependent	P_{vs}	W 2.3
Heat dissipation capacity	P_{diss}	W 0
Operating ambient temperature min.		°C -25
Operating ambient temperature max.		°C 50
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	24 - 24
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	9
Rated operation power at AC-3, 400 V	kW	4
Rated operation current Ie at AC-4, 400 V	A	6.6
Rated operation power at AC-4, 400 V	kW	3
Rated operation power NEMA	kW	3.7
Modular version		No
Number of auxiliary contacts as normally open contact		1
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 normally open contacts as main contact		3