

Contactor, 12 V DC, 4 pole, 380 V 400 V, 4 kW, Screw terminals, DC operation



**Part no.** DILEM4-G(12VDC)  
**Catalog No.** 079680  
**Alternate Catalog No.** XTMF9A00RD

## 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		
Number of poles	4 pole		
<b>Rated operational current</b>			
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
<b>Max. rating for three-phase motors, 50 - 60 Hz</b>			
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
<b>Instructions</b>			
For use with	Integrated diode-resistor combination		
	...DILEM ...DILE		
Actuating voltage	12 V DC		
Voltage AC/DC	DC operation		

## Technical data

### General

Standards	IEC/EN 60947, VDE 0660, CSA, UL		
Lifespan, mechanical	Operations	$\times 10^6$	20
Maximum operating frequency		Ops./h	9000
Mechanical			Page 05/070
electrical (Contactors without overload relay)	Operations/h		Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
Climatic proofing			
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	
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	
Weight	kg	0.206	
Terminal capacity of auxiliary and main contacts			
Screw terminals			
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 - 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 <sub>imp</sub>	V AC	6000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	U <sub>i</sub>	V AC	690
Rated operational voltage	U <sub>e</sub>	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 <sub>th</sub> = I <sub>e</sub>	A	22
at 50 °C	I <sub>th</sub> = I <sub>e</sub>	A	20
at 55 °C	I <sub>th</sub> = I <sub>e</sub>	A	19
enclosed	I <sub>th</sub>	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 <sub>th</sub>	A	60

enclosed	$I_{th}$	A	50
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
440V	$I_e$	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
240V	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			0.85 - 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	5.9
Impedance per pole	$m\Omega$	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
Overtoltage 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	$\lambda$	$<10^{-8}$ , < 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	
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	22
Heat dissipation per pole, current-dependent	$P_{vid}$	W	1.79
Equipment heat dissipation, current-dependent	$P_{vid}$	W	7.17
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.

## 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	12 - 12
Voltage type for actuating		DC
Rated operation current le at AC-1, 400 V	A	22
Rated operation current le at AC-3, 400 V	A	9
Rated operation power at AC-3, 400 V	kW	4
Rated operation current le 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		0
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		4