

Contactor, 24 V 50/60 Hz, 3 pole, 380 V 400 V, 4 kW, Contacts N/C =
Normally closed= 1 NC, Screw terminals, AC operation



Part no. **DILEM-01(24V50/60HZ)**
Catalog No. **020402**
Alternate Catalog No. **XTMC9A01T**
EL-Nummer (Norway) **4130381**

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/C = Normally closed	1 NC		
For use with	...DILE		
Actuating voltage	24 V 50/60 Hz		
Voltage AC/DC	AC operation		

Technical data

General			
Standards		IEC/EN 60947, VDE 0660, CSA, UL	
Lifespan, mechanical; Coil 50/60 Hz	Operations	$\times 10^6$	7
Lifespan, mechanical	Operations	$\times 10^6$	10
Maximum operating frequency		Ops./h	9000
Mechanical			
electrical (Contactors without overload relay)	Operations/h		Page 05/070
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				
Break contact	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	0.17			
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

at 55 °C	$I_{th} = I_e$	A	19
enclosed	I_{th}	A	16
Notes	At maximum permissible ambient air temperature.		
Conventional free air thermal current, 1 pole	At maximum permissible ambient air temperature.		
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
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			
AC operated			
Dual-frequency coil 50/60 Hz	Pick-up	$x U_c$	0.85 - 1.1
Power consumption			
AC operation			
Dual-frequency coil 50/60 Hz at 50 Hz	Pick-up	VA	30
Dual-frequency coil 50/60 Hz at 50 Hz	Pick-up	W	26
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	VA	5.4
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	W	1.8
Dual-frequency coil 50/60 Hz at 60 Hz	Pick-up	VA	29
Dual-frequency coil 50/60 Hz at 60 Hz	Pick-up	W	24
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	VA	3.9
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	W	1.8
Duty factor		% DF	100
Switching times at 100 % U_c			
Make contact		ms	
Closing delay		ms	
Closing delay min.		ms	14
Closing delay max.		ms	21
Opening delay		ms	
Opening delay min.		ms	8
Opening delay max.		ms	18
Closing delay with top mounting auxiliary contact		ms	45
Reversing contactors			
Changeover time at 110 % U_c		ms	
Changeover time min.		ms	16
Changeover time max.		ms	21
Arcing time at 690 V AC		ms	12

Current heat losses (3- or 4-pole)

at I_{th} , 50 °C		W	5.9
at I_e to AC-3/400 V		W	1.2
Impedance per pole		$m\Omega$	9.18

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
Overvoltage 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	0.4
Equipment heat dissipation, current-dependent	P _{vid}	W	1.2
Static heat dissipation, non-current-dependent	P _{vs}	W	1.8
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	24 - 24
Rated control supply voltage Us at AC 60Hz	V	24 - 24
Rated control supply voltage Us at DC	V	0 - 0
Voltage type for actuating		AC
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		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
Number of normally open contacts as main contact		3