

Contactor, 230 V 50 Hz, 240 V 60 Hz, 3 pole, 380 V 400 V, 5.5 kW, Contacts N/  
O = Normally open= 1 N/O, Screw terminals, AC operation



Part no. **DILEM12-10-EA(230V50HZ,240V60HZ)**  
Catalog No. **189987**

## Delivery program

Product range		Contactors
Application		Contactors for Motors Mini Contactors for Motors and Resistive Loads
Subrange		DILEM contactors
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 terminals
Description		With auxiliary contact
Number of poles		3 pole

## Rated operational current

AC-3			
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

## Max. rating for three-phase motors, 50 - 60 Hz

AC-3			
220 V 230 V	P	kW	3
380 V 400 V	P	kW	5.5
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>Contacts</b>			
N/O = Normally open			1 N/O
For use with			...DILEM ...DILE
Actuating voltage			230 V 50 Hz, 240 V 60 Hz
Voltage AC/DC			AC operation

## Technical data

General			
Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical; Coil 50/60 Hz	Operations	$\times 10^6$	5
Lifespan, mechanical	Operations	$\times 10^6$	5
Maximum operating frequency		Ops./h	9000
Mechanical		Operations/h	See characteristic curves
electrical (Contactors without overload relay)			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	0.17
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	120
Breaking capacity			
220 V 230 V		A	96
380 V 400 V		A	96
500 V		A	72
660 V 690 V		A	42
Short-circuit protection maximum fuse			
Type "2", 500 V	gL/gG	A	20
Type "1", 500 V	gL/gG	A	35

### 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
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	$I_{th}$	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.)		
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	10.5
440 V	$I_e$	A	10.5
500 V	$I_e$	A	9
660 V 690 V	$I_e$	A	5.2
Motor rating	P	kWh	
220 V 230 V	P	kW	3
240 V	P	kW	3
380 V 400 V	P	kW	5.5
415 V	P	kW	5.5
440 V	P	kW	5.5
500 V	P	kW	5.5
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	1.5
380 V 400 V	P	kW	3
415 V	P	kW	3
440 V	P	kW	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			
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	$\times U_c$	0.8 - 1.1

Dual-frequency coil 50/60 Hz	Pick-up	x U <sub>c</sub>	
Voltage tolerance Dual-frequency coil 50/60 Hz, max. pick-up voltage		x U <sub>c</sub>	1.1
Power consumption			
AC operation			
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	VA	25
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	W	22
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	VA	4.6
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	W	1.8
Duty factor		% DF	100
Switching times at 100 % U <sub>c</sub>			
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 <sub>c</sub>			
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 <sub>th</sub> , 50 °C		W	5.9
at I <sub>e</sub> to AC-3/400 V		W	2.1
Impedance per pole		mΩ	9.18

### Auxiliary contacts

Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact module			Yes
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	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 <sub>e</sub>	A	6
380 V 415 V	I <sub>e</sub>	A	3
500 V	I <sub>e</sub>	A	1.5
DC L/R ≤ 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 <sub>th</sub>	A	10
Control circuit reliability	Failure rate	λ	<10 <sup>-8</sup> , < one failure at 100 million operations (at U <sub>e</sub> = 24 V DC, U <sub>min</sub> = 17 V, I <sub>min</sub> = 5.4 mA)
Component lifespan at U <sub>e</sub> = 240 V			
AC-15	Operations	x 10 <sup>6</sup>	0.2
DC current			
L/R = 50 ms: 2 contacts in series at I <sub>e</sub> = 0.5 A	Operations	x 10 <sup>6</sup>	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	HP	2
208 V		
230 V	HP	3
240 V		
460 V	HP	5
480 V		
575 V	HP	5
600 V		
Single-phase		
115 V	HP	0.5
120 V		
230 V	HP	1.5
240 V		
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 12
Heat dissipation per pole, current-dependent	$P_{vid}$	W 0.7
Equipment heat dissipation, current-dependent	$P_{vid}$	W 2.1
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	230 - 230
Rated control supply voltage Us at AC 60HZ	V	240 - 240
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	12
Rated operation power at AC-3, 400 V	kW	5.5
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