

Contactor, 230 V 50 Hz, 240 V 60 Hz, 3 pole, 380 V 400 V, 4 kW, Contacts N/O  
= Normally open= 1 N/O, Screw terminals, AC operation



Part no. **DILEM-10-EA(230V50HZ,240V60HZ)**  
Catalog No. **189983**

## 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	
<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>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	$\times 10^6$	7
Lifespan, mechanical	Operations	$\times 10^6$	10
Maximum operating frequency		Ops./h	9000
Mechanical			
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	0.17			
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			
between the contacts			
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
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.) 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			
-------------------	--	--	--

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	$\times U_c$	
Voltage tolerance Dual-frequency coil 50/60 Hz, max. pick-up voltage		$\times U_c$	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 % $U_c$			
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 % $U_c$			
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
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	$\lambda$	$<10^{-8}$ , < 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	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	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	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	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