Contactor, 230 V 50 Hz, 240 V 60 Hz, 3 pole, 380 V 400 V, 3 kW, Contacts N/C = Normally closed= 1 NC, Screw terminals, AC operation



Part no. DILEEM-01-EA(230V50HZ,240V60HZ)

Catalog No. 189981

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IIOIIVORV	nroaram
DELIVELY	program
,	P. 0 31. 01.11

Subrange  Ublikation category  Works  Works  Contactors DILEEM  AC-1: Non-inductive or silphty inductive loads, resistance funneess AC-4: Normal AC induction motors: Starting, switching off while running AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal AC induction motors: Starting, plugging, reversing, inching AC-4: Normal	Delivery program			
Utilization category  Water AC-31-Non-inductive or slightly inductive loads, resistance furnaces AC-34AC-2a- Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching off while running AC-4-Normal AC induction notrost: Starting, switching, eversing, inching AC-4-Normal AC induction notrost: Starting, posterior induction notr	Application			Mini Contactors for Motors and Resistive Loads
AC-3/AC-3/R Normal AC induction motors: Starting, switching off while running in AC-3/AC-3/R Normal AC induction motors: Starting, switching off while running in AC-3/AC-3/R Normal AC induction motors: starting, butching off while running in AC-3/R Normal AC induction motors: starting, butching off while running in AC-3/R Normal AC induction motors: starting, butching off while running in AC-3/R Normal AC induction motors: starting, butching off while running in AC-3/R Normal AC induction motors: starting, switching off while running in AC-3/R Normal AC induction motors: starting, switching off while running in AC-3/R Normal AC induction motors: starting, switching off while running in AC-3/R Normal AC induction motors starting, switching off while running in AC-3/R Normal AC induction motors starting, switching off while running in AC-3/R Normal AC induction motors starting, switching off while running in AC-3/R Normal AC induction motors starting points in AC-3. Also suitable for motors with efficiency class IE3. Also suitable for motors with efficiency motors in Aclas according to AC-3R. Also tested second motors starting points in AC-3. Also tested second motors starting for the AC-3R. Also tested second motors starting	Subrange			Contactors DILEEM
Also tested according to AC-3e.   Connection technique	Utilization category			AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running
Description         Number of poles         With auxiliary contact           Rated operational current         Yes         3 pole           AC-3         380 V 400 V         Io         A         66           AC-1         Conventional free air thermal current, 3 pole, 50-60 Hz         Yes         Yes         Yes           Open         In = Io         A         22         22           MAX. rating for three-phase motors, 50-60 Hz         Yes         Yes         Yes           220 V 230 V         P         KW         1.5           380 V 400 V         P         KW         3           4C-4         Yes         Yes           220 V 230 V         P         KW         3           4C-4         Yes         Yes           220 V 230 V         P         KW         1           380 V 400 V         P         KW         2.2           4060 V 690 V         P         KW         2.2           Contacts         Yes         Yes         Yes           N/C = Normally closed         P         KW         2.2           Contacts         Yes         Yes         Yes         Yes           N/C = Normally closed         Yes	Notes			
Mumber of poles         Rated operational current         AC-3         Image: Conventional free air thermal current, 3 pole, 50 - 60 Hz         AC-1         AC-2         AC-2         AC-2         AC-3         AC-4	Connection technique			Screw terminals
Rated operational current         AC-3         AC 6.6           380 V 400 V         Ie         A 6.6           AC-1         Conventional free air thermal current, 3 pole, 50 - 60 Hz         The le         A 22           Open         at 40 °C         Ith ele         A 22           Max. rating for three-phase motors, 50 - 60 Hz         F         KW         1.5           220 V 230 V         P         kW         3           380 V 400 V         P         kW         3           660 V 690 V         P         kW         3           AC-4         220 V 230 V         P         kW         1.1           380 V 400 V         P         kW         2.2           660 V 690 V         P         kW         2.2           660 V 690 V         P         kW         2.2           Contacts         F         kW         2.2           N/C = Normally closed         F         kW         2.0           For use with         L         L         L.0 ILE           Actuating voltage         F         W         230 V 50 Hz, 240 V 60 Hz	Description			With auxiliary contact
AC-3 380 V 400 V  AC-1 Conventional free air thermal current, 3 pole, 50 - 60 Hz  Open at 40 °C  Max. rating for three-phase motors, 50 - 60 Hz  AC-3  220 V 230 V  AC-3  220 V 230 V  P  WW 33  AC-4  220 V 230 V  P  WW 3  AC-4  220 V 230 V  P  WW 3  AC-4  220 V 230 V  P  WW 3  AC-4  AC-4  220 V 230 V  P  WW 22  Contacts  N/C = Normally closed  N/C = Normally closed  AC-4  L  AC-3  AC-4  A	Number of poles			3 pole
AC-1	Rated operational current			
AC-1 Conventional free air thermal current, 3 pole, 50 - 60 Hz Open at 40 °C  Max. rating for three-phase motors, 50 - 60 Hz AC-3  220 V 230 V P KW 1.5 380 V 400 V P KW 3 660 V 690 V P KW 1.1  AC-4  220 V 230 V P KW 2.2  Contacts  N/C = Normally closed  N/C = Normally closed  For use with Actuating voltage	AC-3			
Conventional free air thermal current, 3 pole, 50 - 60 Hz         Image: Part of the Pole of t	380 V 400 V	l <sub>e</sub>	Α	6.6
Open         Inh = Ie         A         22           Max. rating for three-phase motors, 50 - 60 Hz         V         V           AC-3         V         V           220 V 230 V         P         kW         1.5           380 V 400 V         P         kW         3           660 V 690 V         P         kW         3           AC-4         V         V         1.1           380 V 400 V         P         kW         2.2           660 V 690 V         P         kW         2.2           660 V 690 V         P         kW         2.2           Contacts         V         2.2           N/C = Normally closed         P         kW         2.2           For use with         1 NC        DILE           Actuating voltage         20 V 50 Hz, 240 V 60 Hz	AC-1			
Max. rating for three-phase motors, 50 - 60 Hz         P         kW         1.5           220 V 230 V         P         kW         3           380 V 400 V         P         kW         3           660 V 690 V         P         kW         3           AC-4         XW         1.1           380 V 400 V         P         kW         2.2           660 V 690 V         P         kW         2.2           660 V 690 V         P         kW         2.2           Contacts         Y         L         1 NC           For use with        DILE        DILE           Actuating voltage         S         T         200 V 50 Hz, 240 V 60 Hz	Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Max. rating for three-phase motors, 50 - 60 Hz         AC-3       F       kW       1.5         220 V 230 V       P       kW       3         660 V 690 V       P       kW       3         AC-4       F       kW       1.1         380 V 400 V       P       kW       2.2         660 V 690 V       P       kW       2.2         Contacts       F       kW       2.2         N/C = Normally closed       F       KW       1 NC         For use with       DILE       DILE         Actuating voltage       230 V 50 Hz, 240 V 60 Hz       230 V 50 Hz, 240 V 60 Hz	Open			
AC-3  220 V 230 V  P	at 40 °C	$I_{th} = I_e$	Α	22
220 V 230 V   P   KW   1.5     380 V 400 V   P   KW   3     660 V 690 V   P   KW   3     AC-4	Max. rating for three-phase motors, 50 - 60 Hz			
380 V 400 V       P       kW       3         660 V 690 V       P       kW       3         AC-4       F       KW       1.1         220 V 230 V       P       kW       2.2         660 V 690 V       P       kW       2.2         Contacts       KW       2.2         N/C = Normally closed       N/C = Normally closed       1 NC         For use with      DILE      DILE         Actuating voltage       30 V 50 Hz, 240 V 60 Hz	AC-3			
660 V 690 V       P       kW       3         AC-4       V       V         220 V 230 V       P       kW       1.1         380 V 400 V       P       kW       2.2         660 V 690 V       P       kW       2.2         Contacts       V       V         N/C = Normally closed       For use with       1 NC         Actuating voltage       L       I         Actuating voltage       230 V 50 Hz, 240 V 60 Hz	220 V 230 V	Р	kW	1.5
AC-4  220 V 230 V  P  kW  1.1  380 V 400 V  P  kW  2.2  Contacts  N/C = Normally closed  For use with  Actuating voltage  Actuating voltage  AC-4  P  kW  1.1  1.0  1.0  1.0  1.0  1.0  1.0  1.	380 V 400 V	P	kW	3
220 V 230 V       P       kW       1.1         380 V 400 V       P       kW       2.2         660 V 690 V       P       kW       2.2         Contacts       N/C = Normally closed       INC         For use with      DILE         Actuating voltage       230 V 50 Hz, 240 V 60 Hz	660 V 690 V	P	kW	3
380 V 400 V       P       kW       2.2         660 V 690 V       P       kW       2.2         Contacts         N/C = Normally closed       INC         For use with      DILE         Actuating voltage       230 V 50 Hz, 240 V 60 Hz	AC-4			
660 V 690 V       P       kW       2.2         Contacts       V/C = Normally closed       1 NC         For use with      DILE         Actuating voltage       230 V 50 Hz, 240 V 60 Hz	220 V 230 V	Р	kW	1.1
Contacts         Inc           N/C = Normally closed         1 NC           For use with        DILE           Actuating voltage         230 V 50 Hz, 240 V 60 Hz	380 V 400 V	P	kW	2.2
N/C = Normally closed       1 NC         For use with      DILE         Actuating voltage       230 V 50 Hz, 240 V 60 Hz	660 V 690 V	Р	kW	2.2
For use withDILE Actuating voltageDILEDILE	Contacts			
Actuating voltage 230 V 50 Hz, 240 V 60 Hz	N/C = Normally closed			1 NC
	For use with			DILE
Voltage AC/DC AC operation	Actuating voltage			230 V 50 Hz, 240 V 60 Hz
	Voltage AC/DC			AC operation

## **Technical data**

## General

deneral			
Standards			IEC/EN 60947, VDE 0660, UL, CSA
Lifespan, mechanical; Coil 50/60 Hz	Operations	x 10 <sup>6</sup>	7
Lifespan, mechanical	Operations	x 10 <sup>6</sup>	10
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
		C	As required, except vertical with terminals A1/A2 at the bottom
Mounting position  Mechanical shock resistance (IEC/EN 60068-2-27)			As required, except vertical with terminals AT/AZ at the bottom
Half-sinusoidal shock, 10 ms  Basic unit without auxiliary contact module			
,			10
Main contacts, make contacts		g	10
Main contacts Make/break contacts		g	10
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 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)
		11/1111	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
May distancing Assessed		N	1x6
Max. tightening torque  Main conducting paths		Nm	1.2
Rated impulse withstand voltage	$U_{imp}$	V AC	6000
Overvoltage category/pollution degree	шр		III/3
Rated insulation voltage	Ui	V AC	690
Rated operational voltage	U <sub>e</sub>	V AC	690
Safe isolation to EN 61140	O <sub>e</sub>	VAC	0.00
between coil and contacts		V AC	300
between the contacts		V AC	300
Making capacity (cos φ to IEC/EN 60947)		Α	110
Breaking capacity			00
220 V 230 V		A	90
380 V 400 V		A	90
500 V		A	64
660 V 690 V		Α	42
Short-circuit protection maximum fuse	1// 0		
Type "2", 500 V	gL/gG	A	10
Type "1", 500 V AC	gL/gG	Α	20
AC-1			
Rated operational current			
Conventional free air thermal current, 3 pole, 50 - 60 Hz			
Open at 40 °C	11	٨	22
	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>	Α	16
Notes			At maximum permissible ambient air temperature.
Conventional free air thermal current, 1 pole			

Notes			At maximum permissible ambient air temperature.
	L.	A	50
open	I <sub>th</sub>		
enclosed	I <sub>th</sub>	Α	40
AC-3			
Rated operational current			
Open, 3-pole: 50 – 60 Hz Notes			At maximum permissible ambient temperature (annu.)
Notes			At maximum permissible ambient temperature (open.) Also tested according to AC-3e.
220 V 230 V	Ie	Α	6.6
240 V	I <sub>e</sub>	Α	6.6
380 V 400 V	I <sub>e</sub>	Α	6.6
415 V	I <sub>e</sub>	Α	6.6
440V	I <sub>e</sub>	Α	6.6
500 V	I <sub>e</sub>	Α	5
660 V 690 V	I <sub>e</sub>	Α	3.5
Motor rating	P	kWh	
220 V 230 V	P	kW	1.5
220 V 230 V 240V	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
NC-4	•	KVV	
Rated operational current			
Open, 3-pole: 50 – 60 Hz			
Notes			At maximum permissible ambient air temperature.
220 V 230 V	I <sub>e</sub>	Α	5
240 V	I <sub>e</sub>	Α	5
380 V 400 V	l <sub>e</sub>	A	5
415 V		A	5
	l <sub>e</sub>		
440 V	l <sub>e</sub>	A	5
500 V	I <sub>e</sub>	Α	3.7
660 V 690 V	l <sub>e</sub>	Α	2.9
Motor rating	Р	kWh	
220 V 230 V	Р	kW	1.1
240 V	Р	kW	1.3
380 V 400 V	P	kW	2.2
415 V	P	kW	2.3
440 V	P	kW	2.4
500 V	P	kW	2.2
660 V 690 V	P	kW	2.2
lated operational current open			
DC-1			
12 V	I <sub>e</sub>	Α	20
24 V	I <sub>e</sub>	Α	20
60 V	l <sub>e</sub>	A	20
110 V	I <sub>e</sub>	A	20
220 V		A	20
lagnet systems	l <sub>e</sub>	А	20
oltage tolerance			
AC operated			
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	x U <sub>c</sub>	0.8 - 1.1
5.2	о ор	0	

Dual-frequency coil 50/60 Hz	Pick-up	x U <sub>c</sub>	
	Ріск-ир		
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 % $\ensuremath{\text{U}_{\text{C}}}$			
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)		W	5.5
at I <sub>th</sub> , 50 °C			
at I <sub>e</sub> to AC-3/400 V		W	0.6
Impedance per pole Auxiliary contacts		mΩ	9.18
Positive operating contacts to EN 60947-5-1 appendix L, including auxiliary contact	ct		Yes
module			
Rated impulse withstand voltage	U <sub>imp</sub>	V AC	6000
Overvoltage category/pollution degree			III/3
Rated insulation voltage	$U_{i}$	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	Ie	Α	6
380 V 415 V	I <sub>e</sub>	Α	3
500 V	I <sub>e</sub>	Α	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	Α	1.5
3	220 V	Α	0.5
Conv. thermal current	I <sub>th</sub>	A	10
Control circuit reliability	Failure rate	λ	$<10^{-8}$ , $<$ 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 $U_e = 240 \text{ V}$			
AC-15	0	6	0.2
112 12	Operations	x 10°	0.E
DC current	Uperations	x 10 <sup>6</sup>	\

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 <sub>th</sub> per contact	W	1.1
Rating data for approved types		
Switching capacity		
Maximum motor rating		
Three-phase		
200 V 208 V	НР	1.5
230 V 240 V	HP	2
460 V 480 V	НР	3
575 V 600 V	НР	3
Single-phase		
115 V 120 V	НР	0.25
230 V 240 V	НР	1
General use	Α	15
Auxiliary contacts		
Pilot Duty		
AC operated		A600
DC operated		P300
General Use		
AC	V	600
AC	A	10
DC	V	250
DC		0.5
Short Circuit Current Rating	SCCR	
Basic Rating		
SCCR	kA	5
max. Fuse	Α	45

Switch-on and switch-off conditions based on DC-13, time constant as specified

## Design verification as per IEC/EN 61439

Notes

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	6.6
Heat dissipation per pole, current-dependent	P <sub>vid</sub>	W	0.2
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	0.6
Static heat dissipation, non-current-dependent	$P_{vs}$	W	1.8
Heat dissipation capacity	P <sub>diss</sub>	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 (E	C000066)		
Electric engineering, automation, process control engineering / Low-voltage switc	h technology / Co	ontactor	(LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015])
Rated control supply voltage Us at AC 50HZ	V	<b>V</b>	230 - 230
Rated control supply voltage Us at AC 60HZ	V	<b>V</b>	240 - 240
Rated control supply voltage Us at DC	V	<b>V</b>	0 - 0
/oltage type for actuating			AC
Rated operation current le  at AC-1, 400 V	A	Д	22
Rated operation current le  at AC-3, 400 V	A	Д	6.6
Rated operation power at AC-3, 400 V	k	κW	3
Rated operation current le at AC-4, 400 V	A	Д	5
Rated operation power at AC-4, 400 V	k	κW	2.2
Rated operation power NEMA	k	κW	2.2
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