



139535
DILM185A/22(RAC48)

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DELIVERY PROGRAM

Product range
Contactors

Application
Contactors for Motors

Subrange
Standard devices greater than 170 A

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 connection

Rated operational current

AC-3
380 V 400 V [I_e]
185 A

AC-1
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 40 °C [I_{th} = I_e]
337 A

AC-1
Conventional free air thermal current, 3 pole, 50 -
60 Hz
enclosed [I_{th}]
245 A

AC-1
Conventional free air thermal current, 1 pole
open [I_{th}]
688 A

AC-1
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
613 A

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

AC-3
220 V 230 V [P]
55 kW

AC-3
380 V 400 V [P]
90 kW

AC-3
660 V 690 V [P]
140 kW

AC-3
1000 V [P]
108 kW

AC-4
220 V 230 V [P]
41 kW

AC-4
380 V 400 V [F]
75 kW

AC-4
660 V 690 V [F]
102 kW

AC-4
1000 V [F]
77 kW

Contact sequence



Can be combined with auxiliary contact
DILM1000-XHI...

Actuating voltage
RAC 48: 42 - 48 V 50/60 Hz

Voltage AC/DC
AC operation

Contacts

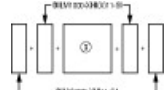
NO = Normally open
2 NO

NC = Normally closed
2 NC

Auxiliary contacts

possible variants at auxiliary contact module fitting
options
on the side: 2 x DILM1000-XHI(V)11-SI; 2 x
DILM1000-XHI11-SA

Side mounting auxiliary contacts



Instructions

Interlocked opposing contacts according to IEC/EN 60947-5-1 Appendix L, inside the auxiliary contact module

Auxiliary contacts used as mirror contacts according to IEC/EN 60947-4-1 Appendix F (not NC late open)

Instructions

integrated suppressor circuit in actuating electronics

660 V, 690 V or 1000 V: not directly reversing

TECHNICAL DATA

General

Standards

IEC/EN 60947, VDE 0660, UL, CSA

Lifespan, mechanical

AC operated [Operations]

10×10^6

Operating frequency, mechanical

AC operated [Operations/h]

3000

Climatic proofing

Damp heat, constant, to IEC 60068-2-78

Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature

Open

-40 - +60 °C

Ambient temperature

Enclosed

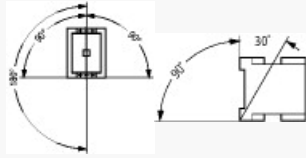
- 40 - + 40 °C

Ambient temperature

Storage

- 40 - + 80 °C

Mounting position



Mechanical shock resistance (IEC/EN 60068-2-27)

Half-sinusoidal shock, 10 ms

Main contacts

N/O contact

10 g

Mechanical shock resistance (IEC/EN 60068-2-27)

Half-sinusoidal shock, 10 ms

Auxiliary contacts

N/O contact

10 g

Mechanical shock resistance (IEC/EN 60068-2-27)

Half-sinusoidal shock, 10 ms

Auxiliary contacts

N/C contact

8 g

Degree of Protection

IP00

Protection against direct contact when actuated from front (EN 50274)

Finger and back-of-hand proof with terminal shroud or terminal block

Altitude

Max. 2000 m

Weight

AC operated

3.54 kg

Weight

DC operated

3.54 kg

Weight

Weight

3.54 kg

Terminal capacity main cable

Flexible with cable lug
50 - 185 mm²

Terminal capacity main cable
Stranded with cable lug
50 - 185 mm²

Terminal capacity main cable
Solid or stranded
1/0 - 350 MCM AWG

Terminal capacity main cable
Flat conductor [Lamellenzahl x Breite x Dicke]
Fixing with flat cable terminal or cable terminal
blocks
See terminal capacity for cable terminal blocks mm

Terminal capacity main cable
Busbar [Width]
32 mm

Main cable connection screw/bolt
M10

Tightening torque
24 Nm

Terminal capacity control circuit cables
Solid
1 x (0.75 - 2.5)
2 x (0.75 - 2.5) mm²

Terminal capacity control circuit cables
Flexible with ferrule
1 x (0.75 - 2.5)
2 x (0.75 - 2.5) mm²

Terminal capacity control circuit cables
Solid or stranded
18 - 14 AWG

Control circuit cable connection screw/bolt
M3.5

Tightening torque
1.2 Nm

Tool
Main cable
Width across flats
16 mm

Tool
Control circuit cables
Pozidriv screw driver
2 Size

Main conducting paths

Rated impulse withstand voltage [U_{imp}]
8000 V AC

Overvoltage category/pollution degree
III/3

Rated insulation voltage [U_i]
1000 V AC

Rated operational voltage [U_e]
1000 V AC

Safe isolation to EN 61140
between coil and contacts
1000 V AC

Safe isolation to EN 61140
between the contacts
1000 V AC

Making capacity (p.f. to IEC/EN 60947)
2700 A

Breaking capacity
220 V 230 V
2250 A

Breaking capacity
380 V 400 V
2250 A

Breaking capacity
500 V
2250 A

Breaking capacity
660 V 690 V
2250 A

Breaking capacity
1000 V
760 A

Component lifespan
AC1: See → Engineering, characteristic curves
AC3: See → Engineering, characteristic curves
AC4: See → Engineering, characteristic curves

Short-circuit rating
Short-circuit protection maximum fuse
Type "2" coordination
400 V [gG/gL 500 V]
315 A

Short-circuit rating
Short-circuit protection maximum fuse
Type "2" coordination
690 V [gG/gL 690 V]
250 A

Short-circuit rating
Short-circuit protection maximum fuse
Type "2" coordination
1000 V [gG/gL 1000 V]
160 A

Short-circuit rating
Short-circuit protection maximum fuse
Type "1" coordination
400 V [gG/gL 500 V]
400 A

Short-circuit rating
Short-circuit protection maximum fuse
Type "1" coordination
690 V [gG/gL 690 V]
315 A

Short-circuit rating
Short-circuit protection maximum fuse
Type "1" coordination
1000 V [gG/gL 1000 V]
200 A

AC

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 40 °C [$t_{th} = t_a$]
337 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 50 °C [$t_{th} = t_a$]
301 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 55 °C [$t_{th} = t_a$]
287 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 60 °C [$t_{th} = t_a$]
275 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
enclosed [t_{th}]
245 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Notes
At maximum permissible ambient air temperature.

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
Note
at maximum permissible ambient air temperature

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
open [I_{th}]
688 A

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
613 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
Notes
At maximum permissible ambient temperature
(open.)

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
185 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
240 V [I_e]
185 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
380 V 400 V [I_e]
185 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
415 V [I_e]
185 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
440V [I_e]
185 A

AC-3
Rated operational current

Open, 3-pole: 50 – 60 Hz
500 V [I_e]
185 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
660 V 690 V [I_e]
150 A

AC-3
Rated operational current
Open, 3-pole: 50 – 60 Hz
1000 V [I_e]
76 A

AC-3
Mtor rating [P]
220 V 230 V [P]
55 kW

AC-3
Mtor rating [P]
240V [P]
62 kW

AC-3
Mtor rating [P]
380 V 400 V [P]
90 kW

AC-3
Mtor rating [P]
415 V [P]
110 kW

AC-3
Mtor rating [P]
440 V [P]
115 kW

AC-3
Mtor rating [P]
500 V [P]
132 kW

AC-3
Mtor rating [P]
660 V 690 V [P]
140 kW

AC-3
Motor rating [P]
1000 V [P]
108 kW

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
240 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
380 V 400 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
415 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
440 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
500 V [I_e]
136 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
660 V 690 V [I_e]
110 A

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
1000 V [I_e]
55 A

AC-4
Mtor rating [P]
220 V 230 V [P]
41 kW

AC-4
Mtor rating [P]
240 V [P]
45 kW

AC-4
Mtor rating [P]
380 V 400 V [P]
75 kW

AC-4
Mtor rating [P]
415 V [P]
80 kW

AC-4
Mtor rating [P]
440 V [P]
85 kW

AC-4
Mtor rating [P]
500 V [P]
96 kW

AC-4
Mtor rating [P]
660 V 690 V [P]
102 kW

AC-4
Mtor rating [P]
1000 V [P]
77 kW

Condensor operation

Individual compensation, rated operational current
 I_e of three-phase capacitors
Open
up to 525 V
220 A

Individual compensation, rated operational current
 I_e of three-phase capacitors
Open
690 V
133 A

Max. inrush current peak
 $30 \times I_e$

Component lifespan [Operations]
 0.1×10^6

Max. operating frequency
200 Ops/h

DC

Rated operational current, open
DC-1
Notes
see DILDC300/DILDC600 or on request

Current heat loss

3 pole, at I_{th} (60°)
34 W

Current heat loss at I_e to AC-3/400 V
16 W

Impedance per pole
0.15 mΩ

Magnet systems

Voltage tolerance
 U_S
48 - 110 V 40-60 Hz

Voltage tolerance
AC operated [Pick-up]
 $0.8 \times U_{Smin} - 1.15 \times U_{Smax}$

Voltage tolerance

AC operated [Drop-out]
 $0.25 \times U_{S\min} - 0.6 \times U_{S\max}$

Power consumption of the coil in a cold state and
 $1.0 \times U_S$
Pull-in power [Pick-up]
210 VA

Power consumption of the coil in a cold state and
 $1.0 \times U_S$
Pull-in power [Pick-up]
180 W

Power consumption of the coil in a cold state and
 $1.0 \times U_S$
Sealing power [Sealing]
2.6 VA

Power consumption of the coil in a cold state and
 $1.0 \times U_S$
Sealing power [Sealing]
2.1 W

Duty factor
100 % DF

Changeover time at 100 % U_S (recommended
value)
Main contacts
Closing delay
60 ms

Changeover time at 100 % U_S (recommended
value)
Main contacts
Opening delay
40 ms

Electromagnetic compatibility (EMC)

Electromagnetic compatibility
This product is designed for operation in industrial environments (environment A). Its use in residential environments (environment B) may cause radio-frequency interference, requiring additional noise suppression measures.

Rating data for approved types

Switching capacity
Maximum motor rating
Three-phase
200 V
208 V
50 HP

Switching capacity
Maximum motor rating
Three-phase
230 V
240 V
60 HP

Switching capacity
Maximum motor rating
Three-phase
460 V
480 V
125 HP

Switching capacity
Maximum motor rating
Three-phase
575 V
600 V
150 HP

Switching capacity
General use
250 A

Auxiliary contacts
Flot Duty
AC operated
A600

Auxiliary contacts
Flot Duty
DC operated
P300

Auxiliary contacts
General Use
AC
600 V

Auxiliary contacts
General Use
AC
15 A

Auxiliary contacts
General Use
DC
250 V

Auxiliary contacts
General Use
DC
1 A

Short Circuit Current Rating
Basic Rating
SCCR
10 kA

Short Circuit Current Rating
Basic Rating
max. Fuse
700 A

Short Circuit Current Rating
Basic Rating
max. CB
800 A

Short Circuit Current Rating
480 V High Fault
SCCR (fuse)
100 kA

Short Circuit Current Rating
480 V High Fault
max. Fuse
600 Class J A

Short Circuit Current Rating
480 V High Fault
SCCR (CB)
65 kA

Short Circuit Current Rating
480 V High Fault
max. CB
350 A

Short Circuit Current Rating
600 V High Fault
SCCR (fuse)
100 kA

Short Circuit Current Rating
600 V High Fault
max. Fuse
600 Class J A

Short Circuit Current Rating
600 V High Fault
SCCR (CB)
50 kA

Short Circuit Current Rating
600 V High Fault
max. CB
350 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to
UL 1995)
LRA 480V 60Hz 3phase
2016 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to
UL 1995)
FLA 480V 60Hz 3phase
336 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to
UL 1995)
LRA 600V 60Hz 3phase
1680 A

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to
UL 1995)
FLA 600V 60Hz 3phase
280 A

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat
dissipation [I_r]
185 A

Heat dissipation per pole, current-dependent [P_{vid}]
5.33 W

Equipment heat dissipation, current-dependent
[P_{vid}]
0 W

Static heat dissipation, non-current-dependent [P_{vs}]
2.1 W

Heat dissipation capacity [P_{diss}]
0 W

Operating ambient temperature min.
-40 °C

Operating ambient temperature max.
+60 °C

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 Strength of materials and parts
10.2.3.1 Verification of thermal stability of enclosures
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts
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 Strength of materials and parts
10.2.4 Resistance to ultra-violet (UV) radiation
Meets the product standard's requirements.

10.2 Strength of materials and parts

10.2.5 Lifting

Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts

10.2.6 Mechanical impact

Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts

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 Insulation properties

10.9.3 Impulse withstand voltage

Is the panel builder's responsibility.

10.9 Insulation properties

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 7.0

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 U_s at AC 50HZ
48 - 110 V

Rated control supply voltage U_s at AC 60HZ
48 - 110 V

Rated control supply voltage U_s at DC
0 - 0 V

Voltage type for actuating
AC

Rated operation current I_e at AC-1, 400 V
337 A

Rated operation current I_e at AC-3, 400 V
185 A

Rated operation power at AC-3, 400 V
90 kW

Rated operation current Ie at AC-4, 400 V
136 A

Rated operation power at AC-4, 400 V
75 kW

Rated operation power NEMA
93 kW

Modular version
No

Number of auxiliary contacts as normally open
contact
2

Number of auxiliary contacts as normally closed
contact
2

Type of electrical connection of main circuit
Rail connection

Number of normally closed contacts as main
contact
0

Number of main contacts as normally open contact
3

APPROVALS

Product Standards
IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No.
60947-4-1-14; CE marking

UL File No.
E29096

UL Category Control No.
NLDX

CSA File No.
2389068

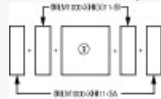
CSA Class No.
3211-04

North America Certification
UL listed, CSA certified

Specially designed for North America
No

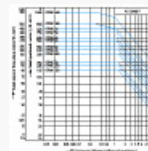
CHARACTERISTICS

Side mounting auxiliary contacts



possible variants at auxiliary contact module fitting
options
on the side: 2 x DILM1000-XH(V)11-SI; 2 x
DILM1000-XH11-SA

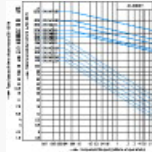
Characteristic curve



Normal switching duty
Normal AC induction motor
Operating characteristics
Switch on: from stop
Switch off: during run
Electrical characteristics:
Switch on: up to 6 x Rated motor current
Switch off: up to 1 x Rated motor current
Utility category
100 % AC-3
Typical Applications
Compressors
Lifts

Mixers
 Pumps
 Escalators
 Agitators
 fan
 Conveyor belts
 Centrifuges
 Hinged flaps
 Bucket-elevator
 Air-conditioning systems
 General drives for manufacturing and processing machines

Characteristic curve



Extreme switching duty
 Squirrel-cage motor
 Operating characteristics
 Inching, plugging, reversing
 Electrical characteristics
 Make: up to 6 x rated motor current
 Break: up to 6 x rated motor current
 Utilization category
 100 % AC-4
 Typical applications
 Printing presses
 Wire-drawing machines
 Centrifuges
 Special drives for manufacturing and processing machines

Characteristic curve



Switching conditions for 3 pole, non-motor loads
 Operating characteristics
 Non inductive and slightly inductive loads
 Electrical characteristics
 Switch on: 1 x rated operational current
 Switch off: 1 x rated operational current
 Utilization category
 100 % AC-1
 Typical examples of application
 Electric heat

Characteristic curve



Short-time loading, 3-pole
 Time interval between two loading cycles: 15 minutes

DIMENSIONS



- DILM1000-XH(V)11-SI
- DILM1000-XH11-SA

DILM185...DILM500
DILMC185-S...DILMC500-S
DILM185-S...DILM500-S



