



**139534**  
**DILM185A/22(RAC24)**

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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 [F]  
55 kW

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

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

AC-3  
1000 V [F]  
108 kW

AC-4  
220 V 230 V [F]  
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 24: 24 V 50/60 Hz

Voltage AC/DC  
AC operation

## Contacts

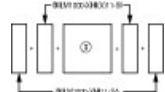
NO = Normally open  
2 NO

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]

$10 \times 10^6$

#### 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

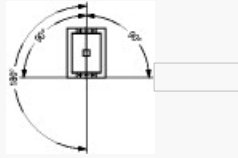
- 40 - + 40 °C

#### 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 mm<sup>2</sup>

Terminal capacity main cable  
Stranded with cable lug  
50 - 185 mm<sup>2</sup>

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) mm<sup>2</sup>

Terminal capacity control circuit cables  
Flexible with ferrule  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

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<sub>e</sub>]  
185 A

AC-3  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
660 V 690 V [I<sub>e</sub>]  
150 A

AC-3  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
1000 V [I<sub>e</sub>]  
76 A

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

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

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

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

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

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

AC-3  
MOTOR 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<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
240 V [I<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
380 V 400 V [I<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
415 V [I<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
440 V [I<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
500 V [I<sub>e</sub>]  
136 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
660 V 690 V [I<sub>e</sub>]  
110 A

AC-4  
Rated operational current  
Open, 3-pole: 50 – 60 Hz  
1000 V [I<sub>e</sub>]  
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]  
 $0.1 \times 10^6$

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  
 $U_S$   
24 V 50/60 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  
24 - 24 V

Rated control supply voltage  $U_s$  at AC 60HZ  
24 - 24 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

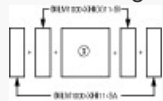
CSA Class No.  
3211-04

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

