



199235

DILM9-01(110V50HZ,120V60HZ)-PI

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## DELIVERY PROGRAM

Product range  
Contactors

Application  
Contactors for Motors

Subrange  
Contactors up to 95 A, 3 pole

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.

Connection technique  
Push in terminals

Number of poles  
3 pole

### Rated operational current

AC-3  
Notes  
At maximum permissible ambient temperature  
(open.)  
Also tested according to AC-3e.

AC-3  
380 V 400 V [ $I_e$ ]  
9 A

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

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

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

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

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

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

AC-3

380 V 400 V [F]  
4 kW

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

AC-4  
220 V 230 V [F]  
1.5 kW

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

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

## Contacts

NC = Normally closed  
1 NC

Contact sequence



## Instructions

Contacts to EN 50 012.  
with mirror contact.

Can be combined with auxiliary contact  
DILM12-XHI...-PI  
DILM32-XHI...-PI  
DILA-XHI(V)...-PI

Actuating voltage  
110 V 50 Hz, 120 V 60 Hz

Voltage AC/DC  
AC operation

Connection to SmartWire-DT  
no

Frame size  
1

## TECHNICAL DATA

### General

Standards  
IEC/EN 60947, VDE 0660, UL, CSA

Operating frequency, mechanical  
AC operated [Operations/h]  
9000

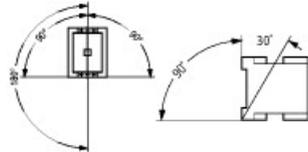
Climatic proofing  
Damp heat, constant, to IEC 60068-2-78  
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature  
Open  
-25 - +60 °C

Ambient temperature  
Enclosed  
- 25 - 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  
NO contact  
7 g

Mechanical shock resistance (IEC/EN 60068-2-27)  
Half-sinusoidal shock, 10 ms  
Auxiliary contacts  
NC contact  
5 g

Mechanical shock resistance (IEC/EN 60068-2-27)  
when tabletop-mounted  
Half-sinusoidal shock, 10 ms  
Main contacts  
NO contact  
5.7 g

Mechanical shock resistance (IEC/EN 60068-2-27)  
when tabletop-mounted  
Half-sinusoidal shock, 10 ms  
Auxiliary contacts  
NO contact  
3.4 g

Mechanical shock resistance (IEC/EN 60068-2-27)  
when tabletop-mounted  
Half-sinusoidal shock, 10 ms  
Auxiliary contacts  
NC contact  
3.4 g

Degree of Protection  
IP20

Protection against direct contact when actuated  
from front (EN 50274)  
Finger and back-of-hand proof

Altitude  
Max. 2000 m

Weight  
AC operated  
0.24 kg

Spring-loaded terminal connection  
Tool  
Standard screw driver  
3.0 x 0.5

Push-in terminals  
Terminal capacity main cable  
Solid  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity main cable  
flexible  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity main cable  
flexible with ferrules  
1 x (0,5 - 1,5)  
2 x (0,5 - 1,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity main cable  
flexible with ultrasonic welded busbar end  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity main cable  
flexible with uninsulated wire end ferrule  
1 x (1 - 6)  
2 x (1 - 6) mm<sup>2</sup>

Push-in terminals  
Terminal capacity main cable  
Solid or stranded  
20 - 14 AWG

Push-in terminals  
Terminal capacity main cable  
Stripping length  
10 mm

Push-in terminals  
Terminal capacity main cable  
Standard screw driver  
3.0 x 0.5

Push-in terminals  
Terminal capacity control circuit cables  
Solid  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity control circuit cables  
flexible  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity control circuit cables  
flexible with ferrules  
1 x (0,5 - 1,5)  
2 x (0,5 - 1,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity control circuit cables  
flexible with ultrasonic welded busbar end  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity control circuit cables  
flexible with uninsulated wire end ferrule  
1 x (0,5 - 2,5)  
2 x (0,5 - 2,5) mm<sup>2</sup>

Push-in terminals  
Terminal capacity control circuit cables  
Solid or stranded  
20 - 14 AWG

Push-in terminals  
Terminal capacity control circuit cables  
Stripping length  
10 mm

Push-in terminals  
Tool  
Standard screw driver  
3.0 x 0.5 mm

## Main conducting paths

Rated impulse withstand voltage [U<sub>imp</sub>]  
6000 V AC

Overvoltage category/pollution degree  
III/3

Rated insulation voltage [U]  
690 V AC

Rated operational voltage [ $U_e$ ]  
690 V AC

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

Safe isolation to EN 61140  
between the contacts  
400 V AC

Making capacity (p.f. to IEC/EN 60947) [Up to 690  
V]  
112 A

Breaking capacity  
220 V 230 V  
90 A

Breaking capacity  
380 V 400 V  
90 A

Breaking capacity  
500 V  
70 A

Breaking capacity  
660 V 690 V  
50 A

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

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

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

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

## AC

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

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

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

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

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

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

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

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

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

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

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

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

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

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

AC-3  
Rated operational current

Open, 3-pole: 50 – 60 Hz  
660 V 690 V [I<sub>e</sub>]  
5 A

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

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

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

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

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

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

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

AC-4  
Open, 3-pole: 50 – 60 Hz  
220 V 230 V [I<sub>e</sub>]  
6 A

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

AC-4

Open, 3-pole: 50 – 60 Hz  
380 V 400 V [I<sub>e</sub>]  
6 A

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

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

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

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

AC-4  
MOTOR rating [F]  
220 V 230 V [F]  
1.5 kW

AC-4  
MOTOR rating [F]  
240 V [F]  
1.6 kW

AC-4  
MOTOR rating [F]  
380 V 400 V [F]  
2.5 kW

AC-4  
MOTOR rating [F]  
415 V [F]  
2.8 kW

AC-4  
MOTOR rating [F]  
440 V [F]  
3 kW

AC-4

Motor rating [P]  
500 V [P]  
2.8 kW

AC-4  
Motor rating [P]  
660 V 690 V [P]  
3.6 kW

## Current heat loss

3 pole, at  $I_{th}$  (60°)  
3 W

Current heat loss at  $I_c$  to AC-3/400 V  
0.6 W

Impedance per pole  
2.5 mΩ

## Magnet systems

Voltage tolerance  
AC operated [Pick-up]  
0.8 - 1.1 x  $U_c$

Voltage tolerance  
Drop-out voltage AC operated [Drop-out]  
0.3 - 0.6 x  $U_c$

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
50 Hz [Pick-up]  
24 VA

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
50 Hz [Sealing]  
3.4 VA

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
50 Hz [Sealing]  
1.4 W

Power consumption of the coil in a cold state and  
1.0 x  $U_S$

60 Hz [Pick-up]  
30 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_S$   
60 Hz [Sealing]  
4.4 VA

Power consumption of the coil in a cold state and  
 $1.0 \times U_S$   
60 Hz [Sealing]  
1.4 W

Duty factor  
100 % DF

Changeover time at 100 %  $U_S$  (recommended  
value)  
Main contacts  
AC operated  
Closing delay  
15 - 21 ms

Changeover time at 100 %  $U_S$  (recommended  
value)  
Main contacts  
AC operated  
Opening delay  
9 - 18 ms

Changeover time at 100 %  $U_S$  (recommended  
value)  
Arcing time  
10 ms

## Electromagnetic compatibility (EMC)

Emitted interference  
According to EN 60947-1

Interference immunity  
According to EN 60947-1

## Rating data for approved types

Switching capacity  
Maximum motor rating  
Three-phase  
200 V

208 V  
3 HP

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

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

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

Switching capacity  
Maximum motor rating  
Single-phase  
115 V  
120 V  
0.5 HP

Switching capacity  
Maximum motor rating  
Single-phase  
230 V  
240 V  
1.5 HP

Switching capacity  
General use  
20 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  
10 A

Auxiliary contacts  
General Use  
DC  
250 V

Auxiliary contacts  
General Use  
DC  
1 A

Short Circuit Current Rating  
Basic Rating  
SCCR  
5 kA

Short Circuit Current Rating  
Basic Rating  
max. Fuse  
45 A

Short Circuit Current Rating  
Basic Rating  
max. CB  
60 A

Short Circuit Current Rating  
480 V High Fault  
SCCR (fuse)  
30/100 kA

Short Circuit Current Rating  
480 V High Fault  
max. Fuse  
25 Class RK5/20 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  
16 A

Short Circuit Current Rating  
600 V High Fault  
SCCR (fuse)  
30/100 kA

Short Circuit Current Rating  
600 V High Fault  
max. Fuse  
25 Class RK5/20 Class J A

Special Purpose Ratings  
Electrical Discharge Lamps (Ballast)  
480V 60Hz 3phase, 277V 60Hz 1phase  
18 A

Special Purpose Ratings  
Electrical Discharge Lamps (Ballast)  
600V 60Hz 3phase, 347V 60Hz 1phase  
18 A

Special Purpose Ratings  
Incandescent Lamps (Tungsten)  
480V 60Hz 3phase, 277V 60Hz 1phase  
14 A

Special Purpose Ratings  
Incandescent Lamps (Tungsten)  
600V 60Hz 3phase, 347V 60Hz 1phase  
14 A

Special Purpose Ratings  
Resistance Air Heating  
480V 60Hz 3phase, 277V 60Hz 1phase  
18 A

Special Purpose Ratings  
Resistance Air Heating  
600V 60Hz 3phase, 347V 60Hz 1phase  
18 A

Special Purpose Ratings  
Refrigeration Control (CSA only)  
LRA 480V 60Hz 3phase  
60 A

Special Purpose Ratings  
Refrigeration Control (CSA only)  
FLA 480V 60Hz 3phase  
10 A

Special Purpose Ratings  
Refrigeration Control (CSA only)  
LRA 600V 60Hz 3phase  
60 A

Special Purpose Ratings  
Refrigeration Control (CSA only)  
FLA 600V 60Hz 3phase  
10 A

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

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

Special Purpose Ratings  
Elevator Control  
200V 60Hz 3phase  
2 HP

Special Purpose Ratings  
Elevator Control  
200V 60Hz 3phase  
7.8 A

Special Purpose Ratings  
Elevator Control  
240V 60Hz 3phase  
2 HP

Special Purpose Ratings  
Elevator Control  
240V 60Hz 3phase  
6.8 A

Special Purpose Ratings  
Elevator Control  
480V 60Hz 3phase  
3 HP

Special Purpose Ratings  
Elevator Control  
480V 60Hz 3phase  
4.8 A

Special Purpose Ratings  
Elevator Control  
600V 60Hz 3phase  
5 HP

Special Purpose Ratings  
Elevator Control  
600V 60Hz 3phase  
6.1 A

## DESIGN VERIFICATION AS PER IEC/EN 61439

Operating ambient temperature min.  
-25 °C

Operating ambient temperature max.  
+60 °C

## 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  
110 - 110 V

Rated control supply voltage  $U_s$  at AC 60HZ  
120 - 120 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  
22 A

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

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

Rated operation current  $I_e$  at AC-4, 400 V  
6 A

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

Rated operation power NEMA  
0 kW

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  
Spring clamp 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.  
012528

CSA Class No.  
2411-03, 3211-04

North America Certification  
UL listed, CSA certified

Specially designed for North America  
No

# CHARACTERISTICS

Accessories  
1: Overload relay  
2: Suppressor  
3: Auxiliary contact modules

Switching conditions for non-motor consumers, 3  
pole, 4 pole

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

# DIMENSIONS

