



**276957**  
**DILMP20(24V50HZ)**

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## DELIVERY PROGRAM

Product range  
Contactors

Application  
Contactors for 4 pole electric consumers

Subrange  
Contactors up to 200 A, 4 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

Connection technique  
Screw terminals

Number of poles  
4 pole

## Rated operational current

AC-1

Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
at 40 °C [ $t_{th} = t_a$ ]  
22 A

AC-1

Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
at 50 °C [ $t_{th} = t_a$ ]  
21 A

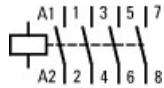
AC-1

Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
at 55 °C [ $t_{th} = t_a$ ]  
20.5 A

AC-1

Conventional free air thermal current, 3 pole, 50 -  
60 Hz  
at 60 °C [ $t_{th} = t_a$ ]  
20 A

Contact sequence



For use with  
DILM32-XH(C)...  
DILA-XH(V)(C)...

Actuating voltage  
24 V 50 Hz

Voltage AC/DC  
AC operation

Connection to SmartWire-DT  
no

### Instructions

Contacts to EN 50012.

# TECHNICAL DATA

## General

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

Lifespan, mechanical  
AC operated [Operations]  
 $10 \times 10^6$

Lifespan, mechanical  
DC operated [Operations]  
 $10 \times 10^6$

Operating frequency, mechanical  
AC operated [Operations/h]  
5000

Operating frequency, mechanical  
DC operated [Operations/h]  
5000

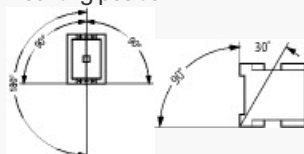
Climatic proofing  
Damp heat, constant, to IEC 60068-2-3  
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature  
Open  
-25 - +60 °C

Ambient temperature  
Enclosed  
- 25 - 40 °C

Ambient temperature  
Storage  
- 40 - 80 °C

Mbunting position  
Mbunting position



Mechanical shock resistance (IEC/EN 60068-2-27)  
Half-sinusoidal shock, 10 ms  
Main contacts  
NO 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

Degree of Protection  
IP20

Altitude  
Max. 2000 m

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

Stripping length  
10 mm

Terminal capacity main cable  
Solid  
1 x (0.75 - 4)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity main cable  
Flexible with ferrule  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity main cable  
Solid or stranded  
18 - 14 AWG

Terminal capacity main cable  
Terminal screw  
M3.5

Terminal capacity main cable  
Tightening torque  
1.2 Nm

Terminal capacity main cable  
Stripping length  
10 mm

Terminal capacity main cable  
Push-in terminals  
Solid  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity main cable  
Push-in terminals  
flexible  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity main cable  
Push-in terminals  
flexible with ferrules  
1 x (0.75 - 1.5)  
2 x (0.75 - 1.5) mm<sup>2</sup>

Terminal capacity main cable  
Push-in terminals  
Solid or stranded  
18 - 14 AWG

Terminal capacity control circuit cables  
Solid  
1 x (0.75 - 4)  
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

Terminal capacity control circuit cables  
Stripping length  
10 mm

Terminal capacity control circuit cables  
Terminal screw  
M3.5

Terminal capacity control circuit cables  
Tightening torque  
1.2 Nm

Terminal capacity control circuit cables  
Push-in terminals  
Solid  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity control circuit cables  
Push-in terminals  
Flexible  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal capacity control circuit cables  
Push-in terminals  
Flexible with ferrule  
1 x (0.75 - 1.5)  
2 x (0.75 - 1.5) mm<sup>2</sup>

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

Tool  
Main cable  
Pozidriv screw driver  
2 Size

Tool  
Main cable  
Standard screw driver  
0.8 x 5.5  
1 x 6 mm

Tool  
Control circuit cables  
Pozidriv screw driver  
2 Size

Tool  
Control circuit cables  
Standard screw driver

0.8 x 5.5  
1 x 6 mm

### Main conducting paths

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

Overvoltage category/pollution degree  
III/3

Rated insulation voltage [ $U_i$ ]  
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 ( $\cos \phi$ ) [Up to 690 V]  
144  
According to IEC/EN 60947 A

Breaking capacity  
220 V 230 V  
120 A

Breaking capacity  
380 V 400 V  
120 A

Breaking capacity  
500 V  
100 A

Breaking capacity  
660 V 690 V  
70 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]  
20 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]  
25 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 [ $I_{th} = I_e$ ]  
20.5 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 [ $I_{th}$ ]  
60 A

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

AC-1  
Mtor rating [P]  
220/230 V [P]  
8 kW

AC-1  
Mtor rating [P]  
240 V [P]  
9 kW

AC-1  
Mtor rating [P]  
380/400 V [P]  
14 kW

AC-1  
Mtor rating [P]  
415 V [P]  
15 kW

AC-1  
Mtor rating [P]  
440 V [P]  
16 kW

AC-1  
Mtor rating [P]  
500 V [P]  
18 kW

AC-1  
MOTOR rating [P]  
690 V [P]  
24 kW

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<sub>e</sub>]  
12 A

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

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

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

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

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

AC-3

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

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

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

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

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

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

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

AC-3  
MOTOR rating [P]  
660 V 690 V [P]  
6.5 kW

## DC

Rated operational current, open  
DC-1  
60 V [I<sub>e</sub>]  
22 A

Rated operational current, open  
DC-1  
110 V [I<sub>e</sub>]

22 A

Rated operational current, open  
DC-1  
220 V [ $U_e$ ]  
6 A

### Current heat loss

3 pole, at  $I_{th}$  (60°)  
3 W

Impedance per pole  
2.5 m $\Omega$

### Magnet systems

Voltage tolerance  
AC operated 50 Hz [Pick-up]  
0.8 - 1.1 x  $U_c$

Voltage tolerance  
AC operated 50/60 Hz  
0.8 - 1.1 x  $U_c$

Voltage tolerance  
Drop-out voltage AC operated [Drop-out]  
0.4 - 0.6 x  $U_c$

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
AC operated 50/60 Hz [Pick-up]  
24 VA

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
AC operated 50/60 Hz [Pick-up]  
19 W

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
AC operated 50/60 Hz [Sealing]  
4 VA

Power consumption of the coil in a cold state and  
1.0 x  $U_S$   
AC operated 50/60 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)

Permissible residual current with actuation of A1 - A2 by the electronics (with 0 signal).  
□ 1 mA

### Rating data for approved types

Switching capacity  
General use  
20 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 kA

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

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

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

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

Special Purpose Ratings  
Electrical Discharge Lamps (Ballast)  
600V 60Hz 3phase, 347V 60Hz 1phase  
20 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  
20 A

Special Purpose Ratings  
Resistance Air Heating  
600V 60Hz 3phase, 347V 60Hz 1phase  
20 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  
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

### Technical data for design verification

Rated operational current for specified heat  
dissipation [ $I_r$ ]  
22 A

Heat dissipation per pole, current-dependent [ $P_{id}$ ]  
1 W

Equipment heat dissipation, current-dependent  
[ $P_{id}$ ]  
3 W

Static heat dissipation, non-current-dependent [ $P_{is}$ ]  
1.4 W

Heat dissipation capacity [ $P_{diss}$ ]

0 W

Operating ambient temperature min.  
-25 °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  
0 - 0 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  
12 A

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

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

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

Rated operation power NEMA  
0 kW

Modular version  
No

Number of auxiliary contacts as normally open  
contact  
0

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 main contacts as normally open contact  
4

## 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

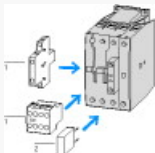
CSA File No.  
012528

CSA Class No.  
2411-03, 3211-04

North America Certification  
UL listed, CSA certified

Specially designed for North America  
No

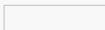
## CHARACTERISTICS



### Accessories

- 1: Auxiliary contact module
- 2: Suppressor

### Characteristic curve



Switching conditions for 4 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

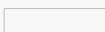
Utilization category

100 % AC-1

Typical examples of application

Electric heat

## DIMENSIONS



Contactor with auxiliary contact module



DLMP20

