



272441
DILH1400/22(RAW250)

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DELIVERY PROGRAM

Product range
Contactors

Application
Mains contactors for resistive loads from 1000 A

Subrange
AC-1 contactors greater than 1000 A

Utilization category
AC-1: Non-inductive or slightly inductive loads, resistance furnaces

Connection technique
Screw connection

Rated operational current

AC-1
Conventional free air thermal current, 3 pole, 50 - 60 Hz

Open
at 40 °C [$I_{th} = I_e$]
1714 A

AC-1
Conventional free air thermal current, 1 pole
open [I_{th}]
3500 A

Contact sequence



For use with
DILM820-XH1...

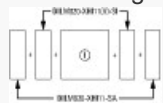
Actuating voltage
RAW 250: 230 - 250 V 50 - 60 Hz/230 - 350 V DC

Voltage AC/DC
AC and DC operation

Auxiliary contacts

possible variants at auxiliary contact module fitting
options
on the side: 2 x DILM820-XH11(V)-SI; 2 x
DILM820-XH11-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
N/C late open)

Instructions

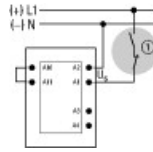
integrated suppressor circuit in actuating
electronics
660 V, 690 V or 1000 V: not directly reversing

Note concerning the product

Classical

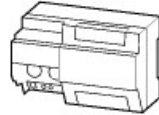
DILM250 to
DILM1000,
DILH1400

A1/A2 are attached to power
as normal



Direct from the PLC

A 24 V output from the PLC
can be directly connected to
the connections A3/A4.



From a lower-power actuating device

Low-power actuating devices
such as PCB relays, actuating
devices or position switches
can be directly connected to
A10/A11.

Stopping in
case of
emergency
(Emergenca-
stop)

max.
capacity 6 nF

TECHNICAL DATA

General

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

Lifespan, mechanical
AC operated [Operations]
 5×10^6

Lifespan, mechanical
DC operated [Operations]
 5×10^6

Operating frequency, mechanical
AC operated [Operations/h]
1000

Operating frequency, mechanical
DC operated [Operations/h]
1000

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
Storage
- 40 - + 80 °C

Mounting position

<input type="checkbox"/>	<input type="checkbox"/>
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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

Altitude
Max. 2000 m

Weight
14.4 kg

Terminal capacity main cable

Busbar [Width]
80 mm

Main cable connection screw/bolt
M12

Tightening torque
35 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

Stripping length
10 mm

Control circuit cable connection screw/bolt
M3.5

Tightening torque
1.2 Nm

Tool
Main cable
Width across flats
18 mm

Tool
Control circuit cables
Pozidriv screwdriver
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]
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)
9840 A

Breaking capacity
220 V 230 V
8200 A

Breaking capacity
380 V 400 V
8200 A

Breaking capacity
500 V
8200 A

Breaking capacity
660 V 690 V
8200 A

Breaking capacity
1000 V
5800 A

Component lifespan
AC1: See → Engineering, characteristic curves

AC

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 40 °C [$t_{th} = t_a$]
1714 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 50 °C [$t_{th} = t_a$]
1533 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 55 °C [$t_{th} = t_a$]
1462 A

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 -
60 Hz
Open
at 60 °C [$t_{th} = t_a$]
1400 A

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 [t_{th}]
3500 A

Current heat loss

3 pole, at I_{th} (60°)
189 W

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

Magnet systems

Voltage tolerance
 U_S
230 - 250 V 50/60 Hz
230 - 350 V DC

Voltage tolerance
AC operated [Pick-up]
 $0.7 \times U_{S \min} - 1.15 \times U_{S \max}$

Voltage tolerance
DC operated [Pick-up]
 $0.7 \times U_{S \min} - 1.15 \times U_{S \max}$

Voltage tolerance
AC operated [Drop-out]
 $0.2 \times U_{S \max} - 0.6 \times U_{S \min}$

Voltage tolerance
DC operated [Drop-out]
 $0.2 \times U_{S \max} - 0.6 \times U_{S \min}$

Power consumption of the coil in a cold state and
 $1.0 \times U_S$
Note on power consumption
Control transformer with $u_k \leq 7\%$

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

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

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

26.5 VA

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

Duty factor
100 % DF

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

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

Behaviour in marginal and transitional conditions
Sealing
Voltage interruptions
($0 \dots 0.2 \times U_{c,min}$) \square 10 ms
Time is bridged successfully

Behaviour in marginal and transitional conditions
Sealing
Voltage interruptions
($0 \dots 0.2 \times U_{c,min}$) $>$ 10 ms
Drop-out of the contactor

Behaviour in marginal and transitional conditions
Sealing
Voltage drops
($0.2 \dots 0.6 \times U_{c,min}$) \square 12 ms
Time is bridged successfully

Behaviour in marginal and transitional conditions
Sealing
Voltage drops
($0.2 \dots 0.6 \times U_{c,min}$) $>$ 12 ms
Drop-out of the contactor

Behaviour in marginal and transitional conditions
Sealing
Voltage drops
($0.6 \dots 0.7 \times U_{c,min}$)
Contactor remains switched on

Behaviour in marginal and transitional conditions
Sealing
Excess voltage
($1.15 \dots 1.3 \times U_{c,max}$)
Contactor remains switched on

Behaviour in marginal and transitional conditions
Sealing
Pick-up phase
($0 \dots 0.7 \times U_{c,min}$)
Contactor does not switch on

Behaviour in marginal and transitional conditions
Sealing
Pick-up phase
($0.7 \times U_{c,min} \dots 1.15 \times U_{c,max}$)
Contactor switches on with certainty

Admissible transitional contact resistance (of the external control circuit device when actuating A11)
 500 m Ω

PLC signal level (A3 - A4) to IEC/EN 61131-2 (type 2)
High
15 V

PLC signal level (A3 - A4) to IEC/EN 61131-2 (type 2)
Low
5 V

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
General use
1600 A

Auxiliary contacts
Pilot Duty
AC operated
A600

Auxiliary contacts
Pilot 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

Special Purpose Ratings
Resistance Air Heating
480V 60Hz 3phase, 277V 60Hz 1phase
1400 A

Special Purpose Ratings
Resistance Air Heating
600V 60Hz 3phase, 347V 60Hz 1phase
1400 A

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat
dissipation [I_n]

1400 A

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

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

Static heat dissipation, non-current-dependent [P_{st}]
6.5 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
230 - 250 V

Rated control supply voltage U_s at AC 60HZ
230 - 250 V

Rated control supply voltage U_s at DC
230 - 250 V

Voltage type for actuating
AC/DC

Rated operation current I_e at AC-1, 400 V
1714 A

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

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

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

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

Rated operation power NEMA
0 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.
012528

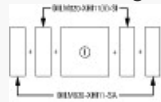
CSA Class No.
3211-04

North America Certification
UL listed, CSA certified

Specially designed for North America
No

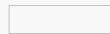
CHARACTERISTICS

Side mounting auxiliary contacts



possible variants at auxiliary contact module fitting
options
on the side: 2 x DILMB20-XH11(V)-SI; 2 x
DILMB20-XH11-SA

Characteristic curve



Electrical lifespan AC-1

Characteristic curve



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

DIMENSIONS

