208201
DILM250/22(RA250)

DELIVERY PROGRAM

Product range
Contactors

Application
Contactors for Motors

Subrange
Comfort 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]
250 A

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

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

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

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

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

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

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

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

AC-3
1000 V [P]
108 kW

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

AC-4
380 V 400 V [P]
110 kW

AC-4
660 V 690 V [P]
137 kW

AC-4
1000 V [P]
108 kW

Contact sequence


Can be combined with auxiliary contact
DILM820-XHI…

Actuating voltage
RA 250: 110 - 250 V 40 - 60 Hz/110 - 350 V DC

Voltage AC/DC
AC and DC operation

Contacts

N/O = Normally open
2 N/O

N/C = Normally closed
2 NC

Auxiliary contacts

possible variants at auxiliary contact module fitting options
on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-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 N/C 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

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

Operating frequency, mechanical
AC operated [Operations/h]
3000

Operating frequency, mechanical
DC operated [Operations/h]
3000

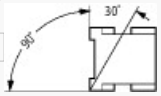
Climatic proofing
Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

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
7.07 kg

Weight
DC operated
7.07 kg

Weight
Weight
7.07 kg

Terminal capacity main cable
Flexible with cable lug
50 - 240 mm^2

Terminal capacity main cable
Stranded with cable lug
70 - 240 mm^2

Terminal capacity main cable
Solid or stranded
2/0 - 500 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]
25 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^2

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

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 screwdriver
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)
3000 A

Breaking capacity
220 V 230 V
2500 A

Breaking capacity
380 V 400 V
2500 A

Breaking capacity

500 V
2500 A

Breaking capacity
660 V 690 V
2500 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]
400 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “2” coordination
690 V [gG/gL 690 V]
315 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]
400 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 [$I_{th} = I_e$]
430 A

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

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

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

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
enclosed [I_{th}]
300 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}]
875 A

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
750 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]
250 A

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

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

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

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

AC-3
Rated operational current

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

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

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

AC-3
Motor rating [P]
220 V 230 V [P]
75 kW

AC-3
Motor rating [P]
240V [P]
85 kW

AC-3
Motor rating [P]
380 V 400 V [P]
132 kW

AC-3
Motor rating [P]
415 V [P]
143 kW

AC-3
Motor rating [P]
440 V [P]
152 kW

AC-3
Motor rating [P]
500 V [P]
173 kW

AC-3
Motor rating [P]
660 V 690 V [P]
170 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]
200 A

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

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

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

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

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

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

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

AC-4
Motor rating [P]
220 V 230 V [P]
62 kW

AC-4
Motor rating [P]
240 V [P]
68 kW

AC-4
Motor rating [P]
380 V 400 V [P]
110 kW

AC-4
Motor rating [P]
415 V [P]
117 kW

AC-4
Motor rating [P]
440 V [P]
125 kW

AC-4
Motor rating [P]
500 V [P]
138 kW

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

AC-4
Motor rating [P]
1000 V [P]
108 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 x I_e

Component lifespan [Operations]
0.1 x 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°)
55 W

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

Impedance per pole
0.15 mΩ

Magnet systems

Voltage tolerance
U_S
110 - 250 V 40-60 Hz
110 - 350 V DC

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

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

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

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

Power consumption of the coil in a cold state and
1.0 x U_S
Note on power consumption
Control transformer with u_k □ 6%

Power consumption of the coil in a cold state and
1.0 x U_S
Pull-in power [Pick-up]
380 VA

Power consumption of the coil in a cold state and
1.0 x U_S
Pull-in power [Pick-up]
250 W

Power consumption of the coil in a cold state and
1.0 x U_S
Sealing power [Sealing]
0 CO

Power consumption of the coil in a cold state and
1.0 x U_S
Sealing power [Sealing]
10.5 VA

Power consumption of the coil in a cold state and
1.0 x U_S
Sealing power [Sealing]
5.5 W

Duty factor
100 % DF

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

100 ms

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

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

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

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

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

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

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

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

Behaviour in marginal and transitional conditions
Sealing

Pick-up phase
(0.7 x $U_{c\,min}$ … 1.15 x $U_{c\,max}$)
Contactor switches on with certainty

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

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
Maximum motor rating
Three-phase
200 V
208 V
75 HP

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

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

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

Switching capacity
General use
350 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

Short Circuit Current Rating
Basic Rating
SCCR
18 kA

Short Circuit Current Rating
Basic Rating
max. Fuse
700 A

Short Circuit Current Rating
Basic Rating
max. CB
600 A

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

Short Circuit Current Rating
480 V High Fault
max. Fuse
700 Class L A

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

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

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

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

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

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

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to
UL 1995)
LRA 480V 60Hz 3phase
2050 A

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

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)
LRA 600V 60Hz 3phase
1800 A

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

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]
250 A

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

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

Static heat dissipation, non-current-dependent [P_{vs}]
5.5 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 Us at AC 50HZ
110 - 250 V

Rated control supply voltage Us at AC 60HZ
110 - 250 V

Rated control supply voltage Us at DC
110 - 250 V

Voltage type for actuating
AC/DC

Rated operation current Ie at AC-1, 400 V
429 A

Rated operation current Ie at AC-3, 400 V
250 A

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

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

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

Rated operation power NEMA
149 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.
1017510

CSA Class No.
3211-04

North America Certification
UL listed, CSA certified

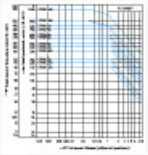
Specially designed for North America
No

CHARACTERISTICS

Side mounting auxiliary contacts

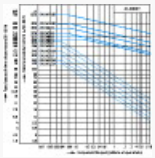
possible variants at auxiliary contact module fitting options
on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA

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

- DILM820-XHI11(V)-SI
- DILM820-XHI11-SA