DILM400-S/22(110-120V50/60HZ) - Contactor, 380 V 400 V 212 kW, 2 N/O, 2 NC, 110 - 120 V 50/60 Hz, AC operation, Screw connection

274195
DILM400-S/22(110-120V50/60HZ)

Overview
Specifications
Resources

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]
400 A

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

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

AC-1
Conventional free air thermal current, 1 pole
open [I_{th}]
1250 A

AC-1
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
1125 A

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

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

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

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

AC-3
1000 V [P]
132 kW

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

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

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

AC-4
1000 V [P]
132 kW

Contact sequence

Can be combined with auxiliary contact
DILM820-XHI…

Actuating voltage
110 - 120 V 50/60 Hz

Voltage AC/DC
AC operation

Contacts

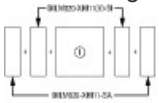
N/O = Normally open
2 N/O

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

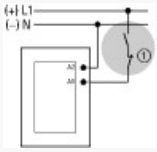
Side mounting auxiliary contacts



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

Notes
DILM..-S power contactors are actuated traditionally



□ Stopping in the event of an emergency (emergency switching off)

TECHNICAL DATA

General

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

Lifespan, mechanical
AC operated [Operations]
7×10^6

Operating frequency, mechanical
AC operated [Operations/h]
2000

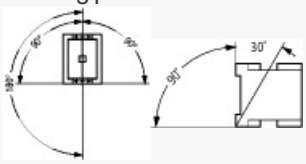
Climatic proofing
Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

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
8.5 kg

Weight

DC operated
8.5 kg

Weight
Weight
8.5 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)
5500 A

Breaking capacity
220 V 230 V
5000 A

Breaking capacity
380 V 400 V
5000 A

Breaking capacity
500 V
5000 A

Breaking capacity
660 V 690 V
5000 A

Breaking capacity
1000 V
950 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]
500 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “2” coordination
690 V [gG/gL 690 V]
500 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “2” coordination
1000 V [gG/gL 1000 V]
200 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “1” coordination
400 V [gG/gL 500 V]
630 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “1” coordination
690 V [gG/gL 690 V]
630 A

Short-circuit rating
Short-circuit protection maximum fuse
Type “1” coordination
1000 V [gG/gL 1000 V]
250 A

AC

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

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

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

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

AC-1
Rated operational current
Conventional free air thermal current, 3 pole, 50 - 60 Hz
enclosed [I_{th}]
450 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}]
1250 A

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
1125 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]
400 A

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

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

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

AC-3
Rated operational current

Open, 3-pole: 50 – 60 Hz
440V [I_e]
400 A

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

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

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

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

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

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

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

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

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

AC-3
Motor rating [P]
660 V 690 V [P]
300 kW

AC-3
Motor rating [P]
1000 V [P]
132 kW

AC-4
Rated operational current
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
296 A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

AC-4
Motor rating [P]
1000 V [P]
132 kW

Condensor operation

Individual compensation, rated operational current
I_e of three-phase capacitors
Open
up to 525 V
307 A

Individual compensation, rated operational current
I_e of three-phase capacitors
Open
690 V
177 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°)
58 W

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

Impedance per pole
0.077 mΩ

Magnet systems

Voltage tolerance
U_S
110 - 120 V 50/60 Hz

Voltage tolerance
AC operated [Pick-up]
0.85 x $U_{S\,min}$ - 1.1 x $U_{S\,max}$

Voltage tolerance
AC operated [Drop-out]
0.2 x $U_{S\,min}$ - 0.4 x $U_{S\,max}$

Power consumption of the coil in a cold state and
1.0 x U_S
Note on power consumption
Control transformer with u_k □ 10%

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

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

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

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

Duty factor
100 % DF

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

Changeover time at 100 % U_S (recommended value)
Main contacts
Opening delay
50 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

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
125 HP

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

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

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

Switching capacity
General use
450 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
30 kA

Short Circuit Current Rating
Basic Rating
max. Fuse
800 A

Short Circuit Current Rating
Basic Rating
max. CB
600 A

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

Short Circuit Current Rating
480 V High Fault
max. Fuse
800/600 Class J A

Short Circuit Current Rating
480 V High Fault

SCCR (CB)
100 kA

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

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

Short Circuit Current Rating
600 V High Fault
max. Fuse
800/600 Class J A

Short Circuit Current Rating
600 V High Fault
SCCR (CB)
30 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
3300 A

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

Special Purpose Ratings
Definite Purpose Ratings (100,000 cycles acc. to UL 1995)
LRA 600V 60Hz 3phase
3120 A

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

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

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

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

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

Static heat dissipation, non-current-dependent [P_{vs}]
4.6 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 - 120 V

Rated control supply voltage Us at AC 60HZ
110 - 120 V

Rated control supply voltage Us at DC
0 - 0 V

Voltage type for actuating
AC

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

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

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

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

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

Rated operation power NEMA
223 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

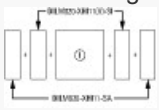
CSA Class No.
3211-04

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 DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA

Characteristic curve

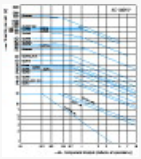
Normal switching duty
Normal AC induction motor
Operating characteristics
Switch on: from stop
Switch off: during run

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