239601
DILM150-22(RDC24)

DELIVERY PROGRAM

Product range
Contactors

Application
Contactors for Motors

Subrange
Complete devices up to 170 A

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

Connection technique
Screw terminals

IE3

Notes
Also suitable for motors with efficiency class IE3.
Also tested according to AC-3e.

Rated operational current

AC-3
380 V 400 V [I_e]
150 A

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

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

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

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

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

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

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

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

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

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

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

Contacts

N/O = Normally open
2 N/O

N/C = Normally closed
2 NC

Instructions
Contacts to EN 50 012.
integrated suppressor circuit in actuating electronics
with mirror contact.

Contact sequence


Actuating voltage
RDC 24: 24 - 27 V DC

Voltage AC/DC
DC operation

TECHNICAL DATA

General

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

Lifespan, mechanical
DC operated [Operations]
6.4 x 10^6

Operating frequency, mechanical
DC operated [Operations/h]
3600

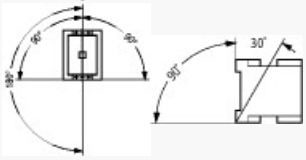
Climatic proofing
Damp heat, constant, to IEC 60068-2-78
Damp heat, cyclic, to IEC 60068-2-30

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
N/O contact
7 g

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

Mechanical shock resistance (IEC/EN 60068-2-27)
when tabletop-mounted
Half-sinusoidal shock, 10 ms
Main contacts
N/O contact
10 g

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

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

Degree of Protection
IP00

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

Altitude
Max. 2000 m

Weight
DC operated
2.1 kg

Screw connector terminals
Terminal capacity main cable
Flexible with ferrule
1 x (10 - 95)
2 x (10 - 70) mm^2

Screw connector terminals
Terminal capacity main cable
Stranded
1 x (16 - 95)
2 x (16 - 70) mm^2

Screw connector terminals
Terminal capacity main cable
Solid or stranded

single 8…3/0, double 8…2/0 AWG

Screw connector terminals
Terminal capacity main cable
Flat conductor [Lamellenzahl x Breite x Dicke]
2 x (6 x 16 x 0.8) mm

Screw connector terminals
Terminal capacity main cable
Stripping length
24 mm

Screw connector terminals
Terminal capacity main cable
Terminal screw
M10

Screw connector terminals
Terminal capacity main cable
Tightening torque
14 Nm

Screw connector terminals
Terminal capacity main cable
Tool
Hexagon socket-head spanner [SW]
5 mm

Screw connector terminals
Terminal capacity control circuit cables
Solid
1 x (0.75 - 2.5)
2 x (0.75 - 2.5) mm^2

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

Screw connector terminals
Terminal capacity control circuit cables
Solid or stranded
18 - 14 AWG

Screw connector terminals
Terminal capacity control circuit cables
Stripping length
10 mm

Screw connector terminals
Terminal capacity control circuit cables
Terminal screw
M3.5

Screw connector terminals
Terminal capacity control circuit cables
Tightening torque
1.2 Nm

Screw connector terminals
Terminal capacity control circuit cables
Tool
Pozidriv screwdriver
2 Size

Screw connector terminals
Terminal capacity control circuit cables
Tool
Standard screwdriver
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
690 V AC

Safe isolation to EN 61140
between the contacts
690 V AC

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

2100 A

Breaking capacity
220 V 230 V
1500 A

Breaking capacity
380 V 400 V
1500 A

Breaking capacity
500 V
1500 A

Breaking capacity
660 V 690 V
1200 A

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

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

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

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

AC

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

190 A

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

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

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

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

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

AC-1
Rated operational current
Conventional free air thermal current, 1 pole
enclosed [I_{th}]
360 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]
150 A

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

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

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

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

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

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

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

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

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

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

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

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

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

AC-4
Open, 3-pole: 50 – 60 Hz
220 V 230 V [I_e]
65 A

AC-4
Open, 3-pole: 50 – 60 Hz
240 V [I_e]
65 A

AC-4
Open, 3-pole: 50 – 60 Hz
380 V 400 V [I_e]
65 A

AC-4
Open, 3-pole: 50 – 60 Hz
415 V [I_e]
65 A

AC-4
Open, 3-pole: 50 – 60 Hz
440 V [I_e]
65 A

AC-4
Open, 3-pole: 50 – 60 Hz
500 V [I_e]
65 A

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

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

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

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

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

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

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

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

DC

Rated operational current, open
DC-1

60 V [I_e]
160 A

Rated operational current, open
DC-1
110 V [I_e]
160 A

Rated operational current, open
DC-1
220 V [I_e]
90 A

Current heat loss

3 pole, at I_{th} (60°)
36.5 W

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

Impedance per pole
0.6 mΩ

Magnet systems

Voltage tolerance
DC operated [Pick-up]
0.7 - 1.2 x U_c

Voltage tolerance
Notes
RDC 24 (U_{min} 24 V DC/U_{max} 27 V DC)
Example: U_S = 0.7 x U_{min} - 1.2 x U_{max} / U_S = 0.7 x 24V - 1.2 x 27V DC

Voltage tolerance
DC operated [Drop-out]
0.15 - 0.6 x U_c

Voltage tolerance
Notes
at least smoothed two-phase bridge rectifier or three-phase rectifier

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

DC operated [Pick-up]
149 W

Power consumption of the coil in a cold state and 1.0 x U_S
DC operated [Sealing]
1.9 W

Duty factor
100 % DF

Changeover time at 100 % U_S (recommended value)
Main contacts
DC operated
Closing delay
Closing delay
35 ms

Changeover time at 100 % U_S (recommended value)
Main contacts
DC operated
Opening delay
Opening delay
30 ms

Changeover time at 100 % U_S (recommended value)
Arcing time
15 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

Lifespan, mechanical; Coil 50/60 Hz
Mechanical lifespan at 50 Hz approx. 30% lower than under “Technical data, general” x 10^6

Electromagnetic compatibility (EMC)

Emitted interference
to EN 60947-1

Interference immunity
to EN 60947-1

Rating data for approved types

Switching capacity
Maximum motor rating
Three-phase
200 V
208 V
50 HP

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

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

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

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

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

Switching capacity
General use
225 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
10 kA

Short Circuit Current Rating
Basic Rating
max. Fuse
600 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
300/300 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
250 A

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

Short Circuit Current Rating
600 V High Fault
max. Fuse
300/600 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
350 A

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

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

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

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

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

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

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

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

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

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

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

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

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

Special Purpose Ratings
Elevator Control
200V 60Hz 3phase

92 A

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

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

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

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

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

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

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

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

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

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

Static heat dissipation, non-current-dependent [P_{vs}]
2.1 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 Us at AC 50HZ
0 - 0 V

Rated control supply voltage Us at AC 60HZ
0 - 0 V

Rated control supply voltage Us at DC
24 - 27 V

Voltage type for actuating
DC

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

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

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

Rated operation current Ie at AC-4, 400 V

65 A

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

Rated operation power NEMA
93 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
Screw 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

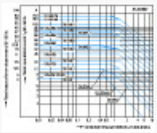
CHARACTERISTICS

Accessories
1: Overload relay
2: Suppressor

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

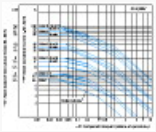
Characteristic curve



Squirrel-cage motor
Operating characteristics
Starting:from rest
Stopping:after attaining full running speed
Electrical characteristics
Make: up to 6 x rated motor current
Break: up to 1 x rated motor current
Utilization category
100 % AC-3
Typical applications
Compressors
Lifts
Mixers
Pumps
Escalators

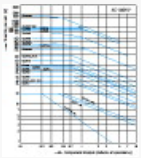
Agitators
Fans
Conveyor belts
Centrifuges
Hinged flaps
Bucket-elevators
Air conditioning system
General drives in manufacturing and processing machines

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

DIMENSIONS

Contactor with auxiliary contact module

distance at side to earthed parts: 10 mm

DILM80…DILM170
DILMC80…DILMC150
DILMF80…DILMF150

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