




**Contactor, 3p, 37kW/400V/AC3**

**Part no. DILM80(24V50/60HZ)**  
**Catalog No. 239406**  
**Eaton Catalog No. XTCE080F00T**  
**EL-Nummer 4134049**  
**(Norway)**

**Delivery program**

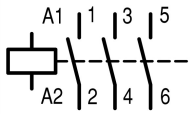
|                      |  |  |  |
|----------------------|--|--|--|
| Product range        |  |  | Contactors   |
| Application          |  |  | Contactors for Motors  |
| Subrange             |  |  | Contactors up to 170 A, 3 pole   |
| Utilization category |  |  | AC-1: Non-inductive or slightly inductive loads, resistance furnaces<br>NAC-3: Normal AC induction motors: starting, switch off during running<br>AC-4: Normal AC induction motors: starting, plugging, reversing, inching |
|                      |  |  |    |
| Notes                |  |  | Also suitable for motors with efficiency class IE3.<br>IE3-ready devices are identified by the logo on their packaging.  |
| Connection technique |  |  | Screw terminals  |
| Number of poles      |  |  | 3 pole   |

**Rated operational current**

|   |                |   |     |
|---|----------------|---|-----|
| AC-3  |                |   |     |
| 380 V 400 V   | $I_e$          | A | 80  |
| AC-1  |                |   |     |
| Conventional free air thermal current, 3 pole, 50 - 60 Hz |                |   |     |
| Open  |                |   |     |
| at 40 °C  | $I_{th} = I_e$ | A | 110 |
| enclosed  | $I_{th}$       | A | 80  |
| Conventional free air thermal current, 1 pole             |                |   |     |
| open  | $I_{th}$       | A | 225 |
| enclosed  | $I_{th}$       | A | 200 |

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

|             |   |    |      |
|-------------|---|----|------|
| AC-3        |   |    |      |
| 220 V 230 V | P | kW | 25   |
| 380 V 400 V | P | kW | 37   |
| 660 V 690 V | P | kW | 63   |
| AC-4        |   |    |      |
| 220 V 230 V | P | kW | 11.5 |
| 380 V 400 V | P | kW | 20   |
| 660 V 690 V | P | kW | 26   |

|                  |  |  |  |
|------------------|--|--|--|
| Contact sequence |  |  |  |
|------------------|--|--|--|

|  |  |  |                                       |
|--|--|--|---------------------------------------|
| <b>Instructions</b>                    |  |  | Contacts to EN 50 012.                |
| Can be combined with auxiliary contact |  |  | DILM150-XHI(V)..<br>DILM1000-XHI(V).. |
| Voltage AC/DC                          |  |  | AC operation                          |

**Technical data**

|                      |            |               |                                 |
|----------------------|------------|---------------|---------------------------------|
| <b>General</b>       |            |               |                                 |
| Standards            |            |               | IEC/EN 60947, VDE 0660, UL, CSA |
| Lifespan, mechanical |            |               |                                 |
| AC operated          | Operations | $\times 10^6$ | 10                              |

|  |                                     |    |                                      |
|--|-------------------------------------|----|--------------------------------------|
| Operating frequency, mechanical  |                                     |    |                                      |
| AC operated  | Operations/h                        |    | 3600                                 |
| Climatic proofing  |                                     |    |                                      |
| Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |                                     |    |                                      |
| Ambient temperature  |                                     |    |                                      |
| Open   | °C                                  |    | -25 - +60                            |
| Enclosed   | °C                                  |    | -25 - 40                             |
| Storage  | °C                                  |    | -40 - 80                             |
| Mounting position  |                                     |    |                                      |
|  |                                     |    |                                      |
| Mechanical shock resistance (IEC/EN 60068-2-27)                                |                                     |    |                                      |
| Half-sinusoidal shock, 10 ms   |                                     |    |                                      |
| Main contacts  |                                     |    |                                      |
| N/O contact  | g                                   |    | 10                                   |
| Auxiliary contacts   |                                     |    |                                      |
| N/O contact  | g                                   |    | 7                                    |
| N/C contact  | g                                   |    | 5                                    |
| Mechanical shock resistance (IEC/EN 60068-2-27) when tabletop-mounted          |                                     |    |                                      |
| Half-sinusoidal shock, 10 ms   |                                     |    |                                      |
| Main contacts  |                                     |    |                                      |
| N/O contact  | g                                   |    | 10                                   |
| Auxiliary contacts   |                                     |    |                                      |
| N/O contact  | g                                   |    | 7                                    |
| N/C contact  | g                                   |    | 5                                    |
| Degree of Protection   |                                     |    |                                      |
|  |                                     |    | IP00                                 |
| Protection against direct contact when actuated from front (EN 50274)          |                                     |    |                                      |
|  |                                     |    | Finger and back-of-hand proof        |
| Weight   |                                     |    |                                      |
| AC operated  | kg                                  |    | 2.18                                 |
| Screw connector terminals  |                                     |    |                                      |
| Terminal capacity main cable   |                                     |    |                                      |
| Flexible with ferrule  | mm <sup>2</sup>                     |    | 1 x (10 - 70)<br>2 x (10 - 50)       |
| Stranded   | mm <sup>2</sup>                     |    | 1 x (16 - 70)<br>2 x (16 - 50)       |
| Solid or stranded  | AWG                                 |    | single 8...3/0, double 8...2/0       |
| Flat conductor   | Lamellenzahl<br>x Breite x<br>Dicke | mm | 2 x (6 x 16 x 0.8)                   |
| Stripping length   | mm                                  |    | 24                                   |
| Terminal screw   |                                     |    | M10                                  |
| Tightening torque  | Nm                                  |    | 14                                   |
| Tool   |                                     |    |                                      |
| Hexagon socket-head spanner  | SW                                  | mm | 5                                    |
| Terminal capacity control circuit cables                                       |                                     |    |                                      |
| Solid  | mm <sup>2</sup>                     |    | 1 x (0.75 - 4)<br>2 x (0.75 - 2.5)   |
| Flexible with ferrule  | mm <sup>2</sup>                     |    | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Solid or stranded  | AWG                                 |    | 18 - 14                              |
| Stripping length   | mm                                  |    | 10                                   |
| Terminal screw   |                                     |    | M3.5                                 |
| Tightening torque  | Nm                                  |    | 1.2                                  |
| Tool   |                                     |    |                                      |
| Pozidriv screwdriver   | Size                                |    | 2                                    |
| Standard screwdriver   | mm                                  |    | 0.8 x 5.5                            |

**Main conducting paths**

|  |             |      |       |
|--|-------------|------|-------|
| Rated impulse withstand voltage        | $U_{imp}$   | V AC | 8000  |
| Overvoltage category/pollution degree  |             |      | III/3 |
| Rated insulation voltage               | $U_i$       | V AC | 690   |
| Rated operational voltage              | $U_e$       | V AC | 690   |
| Safe isolation to EN 61140             |             |      |       |
| between coil and contacts              |             | V AC | 690   |
| between the contacts                   |             | V AC | 690   |
| Making capacity (p.f. to IEC/EN 60947) |             |      |       |
|  | Up to 690 V | A    | 1120  |
| Breaking capacity                      |             |      |       |
| 220 V 230 V                            |             | A    | 800   |
| 380 V 400 V                            |             | A    | 800   |
| 500 V                                  |             | A    | 800   |
| 660 V 690 V                            |             | A    | 650   |
| Short-circuit rating                   |             |      |       |
| Short-circuit protection maximum fuse  |             |      |       |
| Type "2" coordination                  |             |      |       |
| 400 V                                  | gG/gL 500 V | A    | 160   |
| 690 V                                  | gG/gL 690 V | A    | 160   |
| Type "1" coordination                  |             |      |       |
| 400 V                                  | gG/gL 500 V | A    | 250   |
| 690 V                                  | gG/gL 690 V | A    | 200   |

**AC**

|   |                |     |      |
|---|----------------|-----|------|
| AC-1  |                |     |      |
| Rated operational current                                 |                |     |      |
| Conventional free air thermal current, 3 pole, 50 - 60 Hz |                |     |      |
| Open  |                |     |      |
| at 40 °C  | $I_{th} = I_e$ | A   | 110  |
| at 50 °C  | $I_{th} = I_e$ | A   | 98   |
| at 55 °C  | $I_{th} = I_e$ | A   | 94   |
| at 60 °C  | $I_{th} = I_e$ | A   | 90   |
| enclosed  | $I_{th}$       | A   | 80   |
| Conventional free air thermal current, 1 pole             |                |     |      |
| open  | $I_{th}$       | A   | 225  |
| enclosed  | $I_{th}$       | A   | 200  |
| AC-3  |                |     |      |
| Rated operational current                                 |                |     |      |
| Open, 3-pole: 50 – 60 Hz                                  |                |     |      |
| 220 V 230 V   | $I_e$          | A   | 80   |
| 240 V   | $I_e$          | A   | 80   |
| 380 V 400 V   | $I_e$          | A   | 80   |
| 415 V   | $I_e$          | A   | 80   |
| 440V  | $I_e$          | A   | 80   |
| 500 V   | $I_e$          | A   | 80   |
| 660 V 690 V   | $I_e$          | A   | 65   |
| 380 V 400 V   | $I_e$          | A   | 80   |
| Motor rating  | P              | kWh |      |
| 220 V 230 V   | P              | kW  | 25   |
| 240V  | P              | kW  | 27.5 |
| 380 V 400 V   | P              | kW  | 37   |
| 415 V   | P              | kW  | 48   |
| 440 V   | P              | kW  | 51   |

|                          |                |    |      |
|--------------------------|----------------|----|------|
| 500 V                    | P              | kW | 58   |
| 660 V 690 V              | P              | kW | 63   |
| <b>AC-4</b>              |                |    |      |
| Open, 3-pole: 50 – 60 Hz |                |    |      |
| 220 V 230 V              | I <sub>e</sub> | A  | 40   |
| 240 V                    | I <sub>e</sub> | A  | 40   |
| 380 V 400 V              | I <sub>e</sub> | A  | 40   |
| 415 V                    | I <sub>e</sub> | A  | 40   |
| 440 V                    | I <sub>e</sub> | A  | 40   |
| 500 V                    | I <sub>e</sub> | A  | 40   |
| 660 V 690 V              | I <sub>e</sub> | A  | 27   |
| Motor rating             |                |    |      |
| 220 V 230 V              | P              | kW | 11.5 |
| 240 V                    | P              | kW | 13   |
| 380 V 400 V              | P              | kW | 20   |
| 415 V                    | P              | kW | 24   |
| 440 V                    | P              | kW | 25   |
| 500 V                    | P              | kW | 29   |
| 660 V 690 V              | P              | kW | 26   |

## DC

|                                 |                |   |     |
|---------------------------------|----------------|---|-----|
| Rated operational current, open |                |   |     |
| DC-1                            |                |   |     |
| 60 V                            | I <sub>e</sub> | A | 110 |
| 110 V                           | I <sub>e</sub> | A | 110 |
| 220 V                           | I <sub>e</sub> | A | 70  |

## Current heat loss

|   |  |    |      |
|---|--|----|------|
| 3 pole, at I <sub>th</sub> (60°)                  |  | W  | 11.4 |
| Current heat loss at I <sub>e</sub> to AC-3/400 V |  | W  | 9    |
| Impedance per pole                                |  | mΩ | 0.6  |

## Magnet systems

|  |  |                   |   |
|--|--|-------------------|---|
| Voltage tolerance  |  |                   |   |
| AC operated  | Pick-up  | x U <sub>c</sub>  | 0.8 - 1.1   |
| Drop-out voltage AC operated   | Drop-out   | x U <sub>c</sub>  | 0.3 - 0.6   |
| Power consumption of the coil in a cold state and 1.0 x U <sub>S</sub> |  |                   |   |
| 50/60 Hz   | Pick-up  | VA                | 372<br>328  |
| 50/60 Hz   | Sealing  | VA                | 37.1<br>22.6  |
| 50/60 Hz   | Sealing  | W                 | 5.8   |
| Duty factor  |  | % DF              | 100   |
| Changeover time at 100 % U <sub>S</sub> (recommended value)            |  |                   |   |
| Main contacts  |  |                   |   |
| AC operated  |  |                   |   |
|  | Closing delay  | ms                | 14 - 20   |
|  | Opening delay  | ms                | 9 - 14  |
|  | Arcing time  | ms                | 15  |
|  | Permissible residual current with actuation of A1 - A2 by the electronics (with 0 signal). | mA                | ≤ 1   |
| Lifespan, mechanical; Coil 50/60 Hz                                    |  | x 10 <sup>6</sup> | Mechanical lifespan at 50 Hz approx. 30% lower than under "General" |

## 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<br>208 V  | HP   | 25              |
| 230 V<br>240 V  | HP   | 30              |
| 460 V<br>480 V  | HP   | 60              |
| 575 V<br>600 V  | HP   | 75              |
| Single-phase  |      |                 |
| 115 V<br>120 V  | HP   | 7.5             |
| 230 V<br>240 V  | HP   | 15              |
| General use   | A    | 125             |
| Short Circuit Current Rating                              | SCCR |                 |
| Basic Rating  |      |                 |
| SCCR  | kA   | 10              |
| max. Fuse   | A    | 600             |
| max. CB   | A    | 600             |
| 480 V High Fault  |      |                 |
| SCCR (fuse)   | kA   | 30/100          |
| max. Fuse   | A    | 300/300 Class J |
| SCCR (CB)   | kA   | 65              |
| max. CB   | A    | 250             |
| 600 V High Fault  |      |                 |
| SCCR (fuse)   | kA   | 30/100          |
| max. Fuse   | A    | 300/300 Class J |
| SCCR (CB)   | kA   | 30              |
| max. CB   | A    | 350             |
| Special Purpose Ratings                                   |      |                 |
| Electrical Discharge Lamps (Ballast)                      |      |                 |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A    | 100             |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A    | 100             |
| Incandescent Lamps (Tungsten)                             |      |                 |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A    | 100             |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A    | 100             |
| Resistance Air Heating                                    |      |                 |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A    | 100             |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A    | 100             |
| Refrigeration Control (CSA only)                          |      |                 |
| LRA 480V 60Hz 3phase                                      | A    | 540             |
| FLA 480V 60Hz 3phase                                      | A    | 90              |
| LRA 600V 60Hz 3phase                                      | A    | 420             |
| FLA 600V 60Hz 3phase                                      | A    | 70              |
| Definite Purpose Ratings (100,000 cycles acc. to UL 1995) |      |                 |
| LRA 480V 60Hz 3phase                                      | A    | 480             |
| FLA 480V 60Hz 3phase                                      | A    | 80              |
| Elevator Control  |      |                 |
| 200V 60Hz 3phase  | HP   | 20              |
| 200V 60Hz 3phase  | A    | 62.1            |
| 240V 60Hz 3phase  | HP   | 25              |
| 240V 60Hz 3phase  | A    | 68              |
| 480V 60Hz 3phase  | HP   | 50              |
| 480V 60Hz 3phase  | A    | 65              |
| 600V 60Hz 3phase  | HP   | 60              |
| 600V 60Hz 3phase  | A    | 62              |

## Design verification as per IEC/EN 61439

| Technical data for design verification   |            |    |  |
|--|------------|----|--|
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 80   |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 3  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 9  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 5.8  |
| Heat dissipation capacity  | $P_{diss}$ | W  | 0  |
| Operating ambient temperature min.   |            | °C | -25  |
| Operating ambient temperature max.   |            | °C | 60   |
| IEC/EN 61439 design verification   |            |    |  |
| 10.2 Strength of materials and parts   |            |    |  |
| 10.2.2 Corrosion resistance  |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.3.1 Verification of thermal stability of enclosures   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 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.   |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |            |    |  |
|  |            |    | Meets the product standard's requirements.   |
| 10.2.5 Lifting   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.6 Mechanical impact   |            |    |  |
|  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 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.   |
| 10.9.3 Impulse withstand voltage   |            |    |  |
|  |            |    | Is the panel builder's responsibility.   |
| 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.                         |

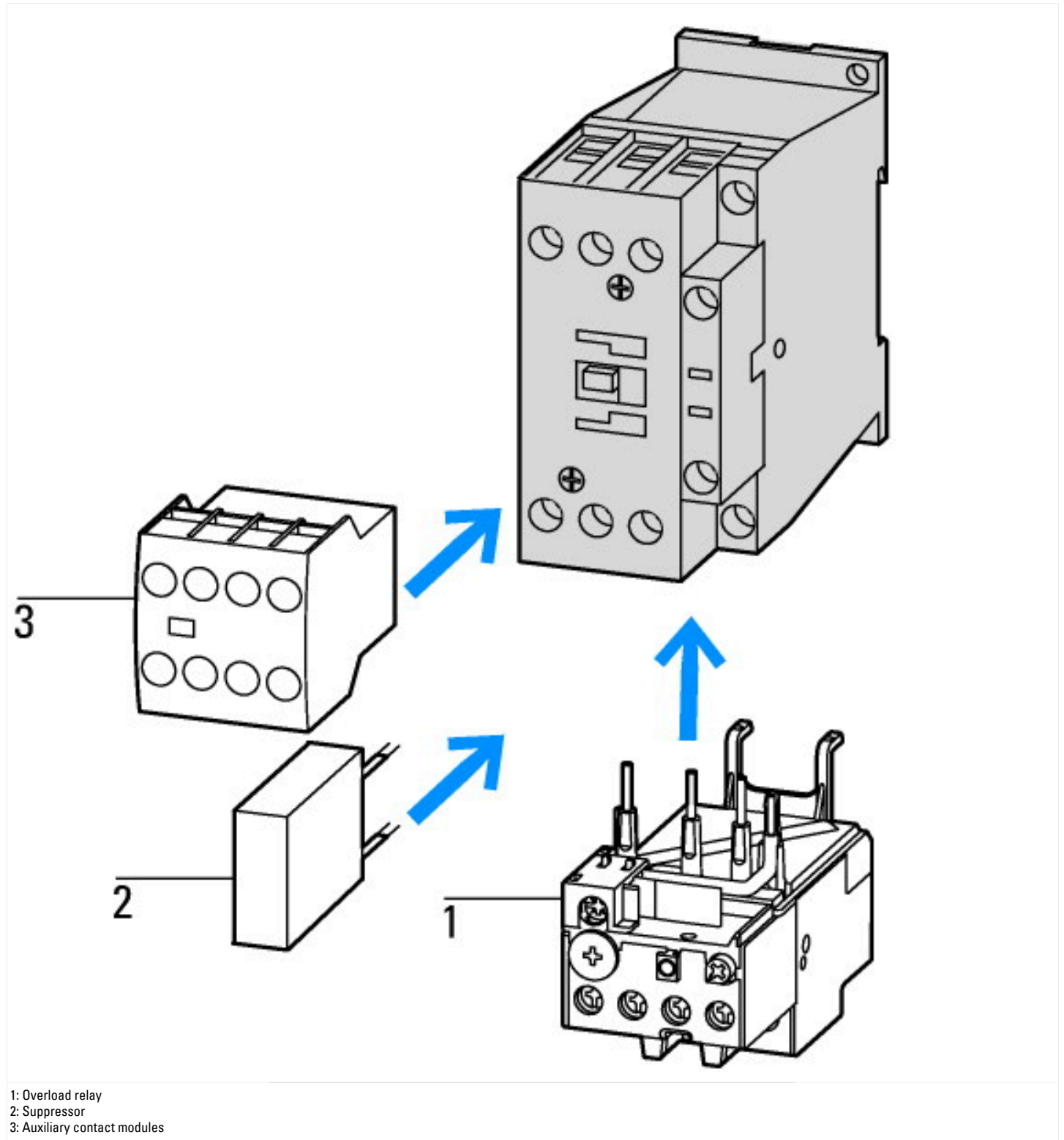
## Technical data ETIM 6.0

| 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@ss8.1-27-37-10-03 [AAB718012]) |  |    |                  |
| Rated control supply voltage $U_s$ at AC 50HZ  |  | V  | 24 - 24          |
| Rated control supply voltage $U_s$ at AC 60HZ  |  | V  | 24 - 24          |
| Rated control supply voltage $U_s$ at DC   |  | V  | 0 - 0            |
| Voltage type for actuating   |  |    | AC               |
| Rated operation current $I_e$ at AC-1, 400 V   |  | A  | 110              |
| Rated operation current $I_e$ at AC-3, 400 V   |  | A  | 80               |
| Rated operation power at AC-3, 400 V   |  | kW | 37               |
| Rated operation current $I_e$ at AC-4, 400 V   |  | A  | 40               |
| Rated operation power $I_e$ at AC-4, 400 V   |  | kW | 20               |
| 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   |  |    | 3                |

## Approvals

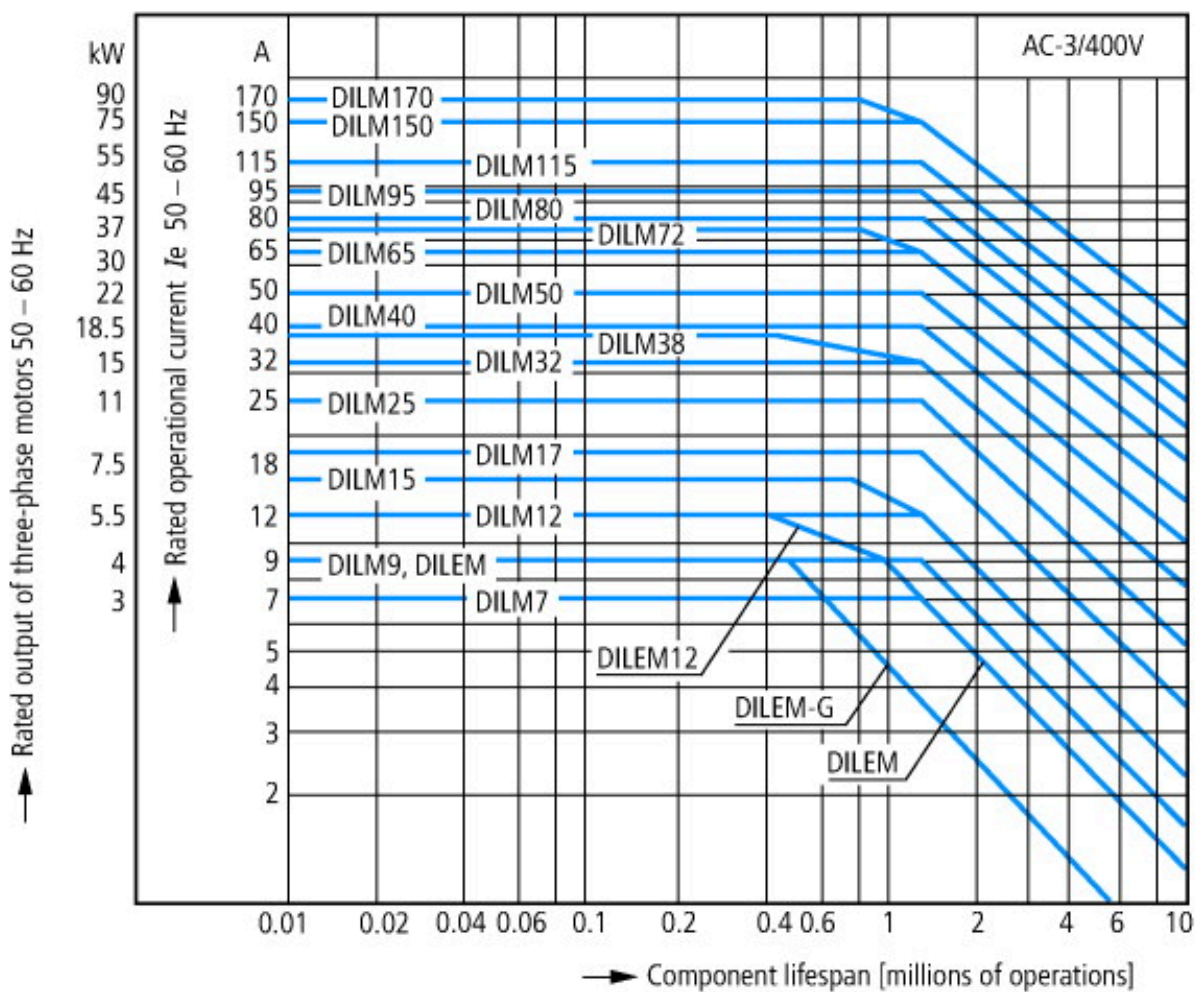
|                                      |  |
|--------------------------------------|--|
| Product Standards                    | IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking |
| UL File No.                          | E29096   |
| UL Category Control No.              | NLDX   |
| 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





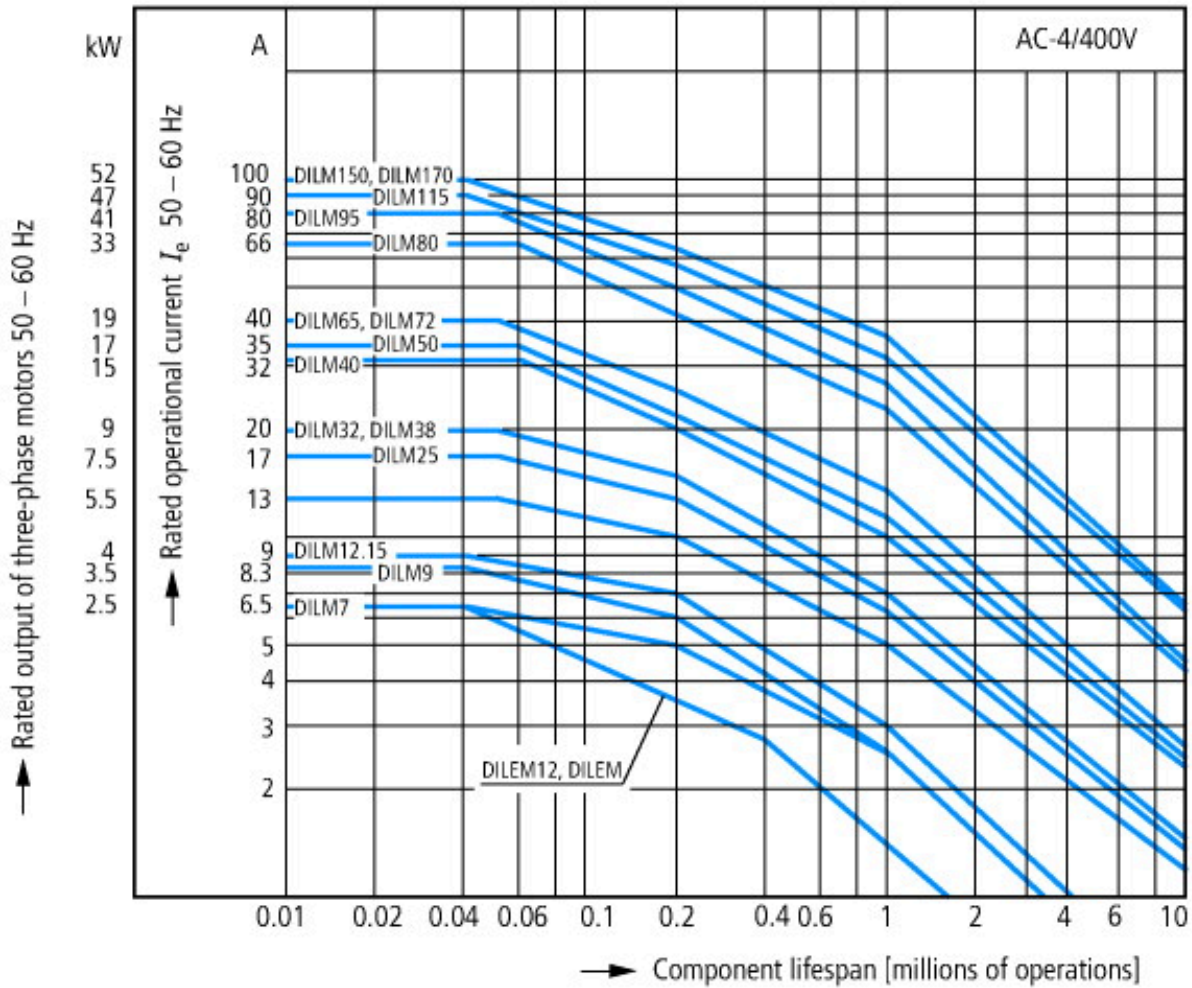
on the side: 2 x DILM820-XHI11(V)-SI; 2 x DILM820-XHI11-SA



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

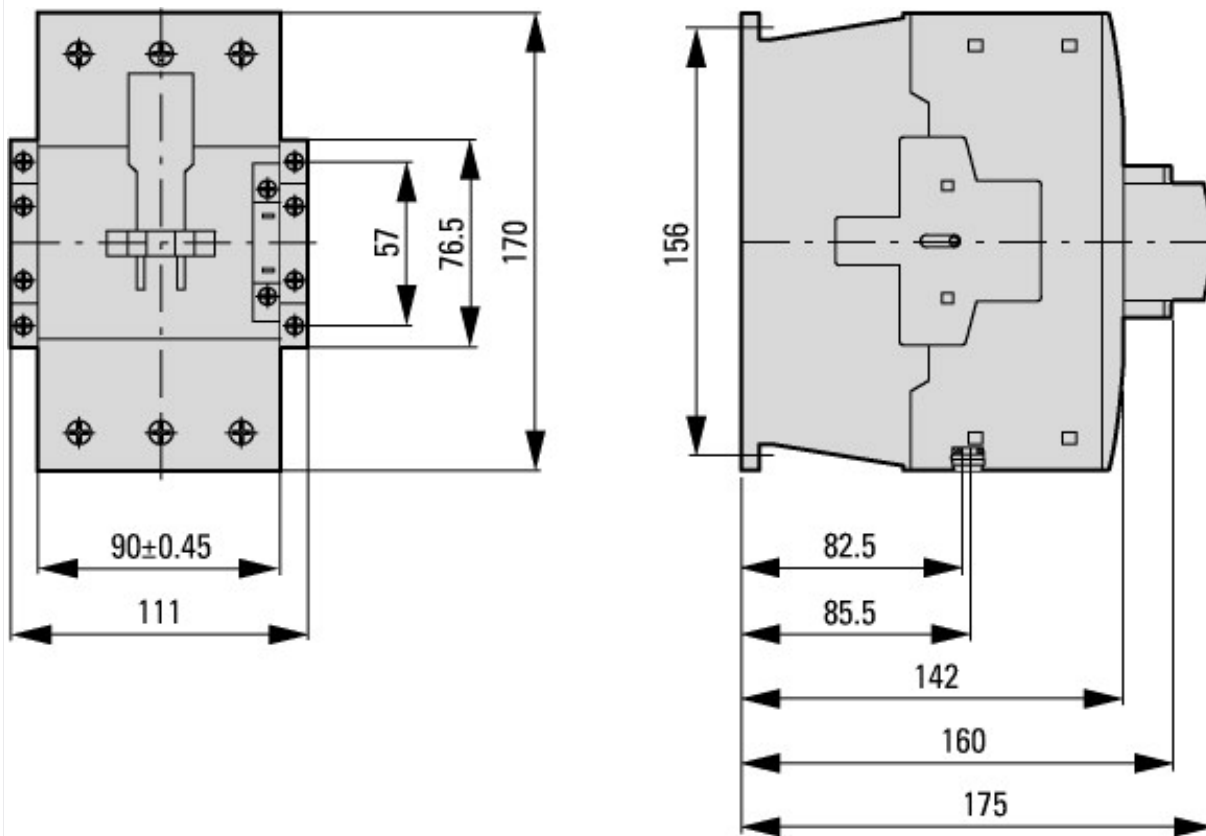


- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, plugging, reversing
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 6 x rated motor current
- Utilization category
- 100 % AC-4
- Typical applications
- Printing presses
- Wire-drawing machines
- Centrifuges
- Special drives for manufacturing and processing machines



Switching conditions for non-motor consumers, 3 pole, 4 pole  
 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



Contacteur avec module de contact auxiliaire



distance at side to earthed parts: 10 mm

DILM80...DILM170  
 DILMC80...DILMC150  
 DILMF80...DILMF150

## Assets (Links)

### Declaration of Conformity

00002559

### Instruction Leaflets

IL03407039Z2010\_10

## Additional product information (links)

### IL03407039Z (AWA2100-2286) Contactors

IL03407039Z (AWA2100-2286) Contactors

[ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03407039Z2010\\_10.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407039Z2010_10.pdf)

Switchgear of Power Factor Correction Systems

[http://www.moeller.net/binary/ver\\_techpapers/ver934en.pdf](http://www.moeller.net/binary/ver_techpapers/ver934en.pdf)

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| X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely                 | <a href="http://www.moeller.net/binary/ver_techpapers/ver938en.pdf">http://www.moeller.net/binary/ver_techpapers/ver938en.pdf</a> |
| Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions   | <a href="http://www.moeller.net/binary/ver_techpapers/ver944en.pdf">http://www.moeller.net/binary/ver_techpapers/ver944en.pdf</a> |
| Effect of the Cabel Capacitance of Long Control Cables on the Actuation of Contactors          | <a href="http://www.moeller.net/binary/ver_techpapers/ver949en.pdf">http://www.moeller.net/binary/ver_techpapers/ver949en.pdf</a> |
| Motor starters and "Special Purpose Ratings" for the North American market                     | <a href="http://www.moeller.net/binary/ver_techpapers/ver953en.pdf">http://www.moeller.net/binary/ver_techpapers/ver953en.pdf</a> |
| Switchgear for Luminaires  | <a href="http://www.moeller.net/binary/ver_techpapers/ver955en.pdf">http://www.moeller.net/binary/ver_techpapers/ver955en.pdf</a> |
| Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts | <a href="http://www.moeller.net/binary/ver_techpapers/ver956en.pdf">http://www.moeller.net/binary/ver_techpapers/ver956en.pdf</a> |
| The Interaction of Contactors with PLCs  | <a href="http://www.moeller.net/binary/ver_techpapers/ver957en.pdf">http://www.moeller.net/binary/ver_techpapers/ver957en.pdf</a> |
| Busbar Component Adapters for modern Industrial control panels                                 | <a href="http://www.moeller.net/binary/ver_techpapers/ver960en.pdf">http://www.moeller.net/binary/ver_techpapers/ver960en.pdf</a> |