



**Contactor, 3p+1N/O, 4kW/400V/AC3**



**Part no. DILM9-10(415V50HZ,480V60HZ)**  
**Catalog No. 276693**  
**Eaton Catalog No. XTCE009B10C**

**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>AC-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  |
| <b>Rated operational current</b>                          |                |    |  |   |
| AC-3  |                |    |  |   |
| 380 V 400 V   | $I_e$          | A  |  | 9   |
| AC-1  |                |    |  |   |
| Conventional free air thermal current, 3 pole, 50 - 60 Hz |                |    |  |   |
| Open  |                |    |  |   |
| at 40 °C  | $I_{th} = I_e$ | A  |  | 22  |
| enclosed  | $I_{th}$       | A  |  | 18  |
| Conventional free air thermal current, 1 pole             |                |    |  |   |
| open  | $I_{th}$       | A  |  | 50  |
| enclosed  | $I_{th}$       | A  |  | 45  |
| <b>Max. rating for three-phase motors, 50 - 60 Hz</b>     |                |    |  |   |
| AC-3  |                |    |  |   |
| 220 V 230 V   | P              | kW |  | 2.5   |
| 380 V 400 V   | P              | kW |  | 4   |
| 660 V 690 V   | P              | kW |  | 4.5   |
| AC-4  |                |    |  |   |
| 220 V 230 V   | P              | kW |  | 1.5   |
| 380 V 400 V   | P              | kW |  | 2.5   |
| 660 V 690 V   | P              | kW |  | 3.6   |
| <b>Contacts</b>   |                |    |  |   |
| N/O = Normally open                                       |                |    |  | 1 N/O   |
| Contact sequence  |                |    |  |   |
| <b>Instructions</b>                                       |                |    |  |   |
| Can be combined with auxiliary contact                    |                |    |  | DILM32-XHI..<br>DILA-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   | x 10 <sup>6</sup> | 10                                   |
| Operating frequency, mechanical  |              |                   |                                      |
| AC operated  | Operations/h |                   | 9000                                 |
| 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                 | 5.7                                  |
| Auxiliary contacts   |              |                   |                                      |
| N/O contact  |              | g                 | 3.4                                  |
| N/C contact  |              | g                 | 3.4                                  |
| Degree of Protection   |              |                   |                                      |
|  |              |                   | IP20                                 |
| Protection against direct contact when actuated from front (EN 50274)          |              |                   |                                      |
|  |              |                   | Finger and back-of-hand proof        |
| Weight   |              |                   |                                      |
| AC operated  |              | kg                | 0.24                                 |
| Screw connector terminals  |              |                   |                                      |
| Terminal capacity main cable   |              |                   |                                      |
| 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               | single 18 - 10, double 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<br>1 x 6                   |
| 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<br>1 x 6 |
|----------------------|--|----|--------------------|

### 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 | 400   |
| between the contacts                   |             | V AC | 400   |
| Making capacity (p.f. to IEC/EN 60947) |             |      |       |
|  | Up to 690 V | A    | 112   |
| Breaking capacity                      |             |      |       |
| 220 V 230 V                            |             | A    | 90    |
| 380 V 400 V                            |             | A    | 90    |
| 500 V                                  |             | A    | 70    |
| 660 V 690 V                            |             | A    | 50    |
| Short-circuit rating                   |             |      |       |
| Short-circuit protection maximum fuse  |             |      |       |
| Type "2" coordination                  |             |      |       |
| 400 V                                  | gG/gL 500 V | A    | 20    |
| 690 V                                  | gG/gL 690 V | A    | 16    |
| Type "1" coordination                  |             |      |       |
| 400 V                                  | gG/gL 500 V | A    | 35    |
| 690 V                                  | gG/gL 690 V | A    | 20    |

### 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   | 22  |
| at 50 °C  | $I_{th} = I_e$ | A   | 21  |
| at 55 °C  | $I_{th} = I_e$ | A   | 21  |
| at 60 °C  | $I_{th} = I_e$ | A   | 20  |
| enclosed  | $I_{th}$       | A   | 18  |
| Conventional free air thermal current, 1 pole             |                |     |     |
| open  | $I_{th}$       | A   | 50  |
| enclosed  | $I_{th}$       | A   | 45  |
| AC-3  |                |     |     |
| Rated operational current                                 |                |     |     |
| Open, 3-pole: 50 – 60 Hz                                  |                |     |     |
| 220 V 230 V   | $I_e$          | A   | 9   |
| 240 V   | $I_e$          | A   | 9   |
| 380 V 400 V   | $I_e$          | A   | 9   |
| 415 V   | $I_e$          | A   | 9   |
| 440V  | $I_e$          | A   | 9   |
| 500 V   | $I_e$          | A   | 7   |
| 660 V 690 V   | $I_e$          | A   | 5   |
| 380 V 400 V   | $I_e$          | A   | 9   |
| Motor rating  | P              | kWh |     |
| 220 V 230 V   | P              | kW  | 2.5 |
| 240V  | P              | kW  | 3   |
| 380 V 400 V   | P              | kW  | 4   |
| 415 V   | P              | kW  | 5.5 |
| 440 V   | P              | kW  | 5.5 |

|                          |                |    |     |
|--------------------------|----------------|----|-----|
| 500 V                    | P              | kW | 4.5 |
| 660 V 690 V              | P              | kW | 4.5 |
| <b>AC-4</b>              |                |    |     |
| Open, 3-pole: 50 – 60 Hz |                |    |     |
| 220 V 230 V              | I <sub>e</sub> | A  | 6   |
| 240 V                    | I <sub>e</sub> | A  | 6   |
| 380 V 400 V              | I <sub>e</sub> | A  | 6   |
| 415 V                    | I <sub>e</sub> | A  | 6   |
| 440 V                    | I <sub>e</sub> | A  | 6   |
| 500 V                    | I <sub>e</sub> | A  | 5   |
| 660 V 690 V              | I <sub>e</sub> | A  | 4.5 |
| Motor rating             |                |    |     |
| 220 V 230 V              | P              | kW | 1.5 |
| 240 V                    | P              | kW | 1.6 |
| 380 V 400 V              | P              | kW | 2.5 |
| 415 V                    | P              | kW | 2.8 |
| 440 V                    | P              | kW | 3   |
| 500 V                    | P              | kW | 2.8 |
| 660 V 690 V              | P              | kW | 3.6 |

## DC

|                                 |                |   |    |
|---------------------------------|----------------|---|----|
| Rated operational current, open |                |   |    |
| DC-1                            |                |   |    |
| 60 V                            | I <sub>e</sub> | A | 20 |
| 110 V                           | I <sub>e</sub> | A | 20 |
| 220 V                           | I <sub>e</sub> | A | 15 |

## Current heat loss

|   |  |    |     |
|---|--|----|-----|
| 3 pole, at I <sub>th</sub> (60°)                  |  | W  | 3   |
| Current heat loss at I <sub>e</sub> to AC-3/400 V |  | W  | 0.6 |
| Impedance per pole                                |  | mΩ | 2.5 |

## 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 Hz  | Pick-up  | VA               | 24        |
| 50 Hz  | Sealing  | VA               | 3.4       |
| 50 Hz  | Sealing  | W                | 1.4       |
| 60 Hz  | Pick-up  | VA               | 30        |
| 60 Hz  | Sealing  | VA               | 4.4       |
| 60 Hz  | Sealing  | W                | 1.4       |
| Duty factor  |          | % DF             | 100       |
| Changeover time at 100 % U <sub>S</sub> (recommended value)            |          |                  |           |
| Main contacts  |          |                  |           |
| AC operated  |          |                  |           |
| Closing delay  |          | ms               | 15 - 21   |
| Opening delay  |          | ms               | 9 - 18    |
| Arcing time  |          | ms               | 10        |

## 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 | 3 |

|   |    |                         |
|---|----|-------------------------|
| 230 V<br>240 V  | HP | 3                       |
| 460 V<br>480 V  | HP | 5                       |
| 575 V<br>600 V  | HP | 7.5                     |
| Single-phase  |    |                         |
| 115 V<br>120 V  | HP | 0.5                     |
| 230 V<br>240 V  | HP | 1.5                     |
| General use   | A  | 20                      |
| <b>Auxiliary contacts</b>                                 |    |                         |
| Pilot Duty  |    |                         |
| AC operated   |    | A600                    |
| DC operated   |    | P300                    |
| General Use   |    |                         |
| AC  | V  | 600                     |
| AC  | A  | 10                      |
| DC  | V  | 250                     |
| DC  | A  | 1                       |
| <b>Short Circuit Current Rating</b>                       |    |                         |
| SCCR  |    |                         |
| Basic Rating  |    |                         |
| SCCR  | kA | 5                       |
| max. Fuse   | A  | 45                      |
| max. CB   | A  | 60                      |
| 480 V High Fault  |    |                         |
| SCCR (fuse)   | kA | 30/100                  |
| max. Fuse   | A  | 25 Class RK5/20 Class J |
| SCCR (CB)   | kA | 65                      |
| max. CB   | A  | 16                      |
| 600 V High Fault  |    |                         |
| SCCR (fuse)   | kA | 30/100                  |
| max. Fuse   | A  | 25 Class RK5/20 Class J |
| <b>Special Purpose Ratings</b>                            |    |                         |
| Electrical Discharge Lamps (Ballast)                      |    |                         |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A  | 18                      |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A  | 18                      |
| Incandescent Lamps (Tungsten)                             |    |                         |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A  | 14                      |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A  | 14                      |
| Resistance Air Heating                                    |    |                         |
| 480V 60Hz 3phase, 277V 60Hz 1phase                        | A  | 18                      |
| 600V 60Hz 3phase, 347V 60Hz 1phase                        | A  | 18                      |
| Refrigeration Control (CSA only)                          |    |                         |
| LRA 480V 60Hz 3phase                                      | A  | 60                      |
| FLA 480V 60Hz 3phase                                      | A  | 10                      |
| LRA 600V 60Hz 3phase                                      | A  | 60                      |
| FLA 600V 60Hz 3phase                                      | A  | 10                      |
| Definite Purpose Ratings (100,000 cycles acc. to UL 1995) |    |                         |
| LRA 480V 60Hz 3phase                                      | A  | 54                      |
| FLA 480V 60Hz 3phase                                      | A  | 9                       |
| Elevator Control  |    |                         |
| 200V 60Hz 3phase  | HP | 2                       |
| 200V 60Hz 3phase  | A  | 7.8                     |
| 240V 60Hz 3phase  | HP | 2                       |
| 240V 60Hz 3phase  | A  | 6.8                     |

|                  |    |     |
|------------------|----|-----|
| 480V 60Hz 3phase | HP | 3   |
| 480V 60Hz 3phase | A  | 4.8 |
| 600V 60Hz 3phase | HP | 5   |
| 600V 60Hz 3phase | A  | 6.1 |

## Design verification as per IEC/EN 61439

|  |            |    |  |
|--|------------|----|--|
| Technical data for design verification   |            |    |  |
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 9  |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0.2  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 1.4  |
| 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

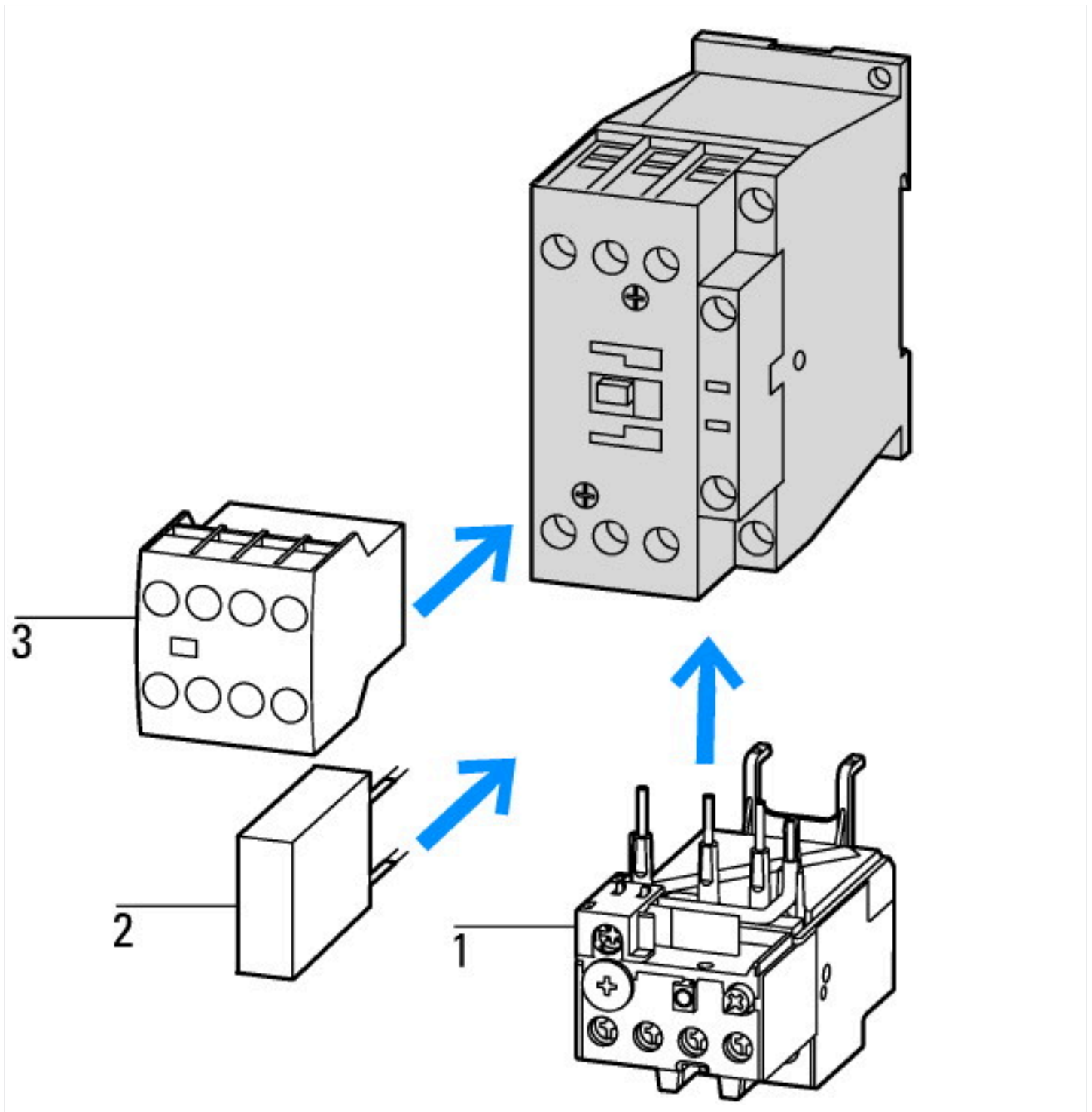
|  |    |           |
|--|----|-----------|
| Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)  |    |           |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss8.1-27-37-10-03 [AAB718012]) |    |           |
| Rated control supply voltage $U_s$ at AC 50HZ  | V  | 415 - 415 |
| Rated control supply voltage $U_s$ at AC 60HZ  | V  | 480 - 480 |
| 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  | 22        |
| Rated operation current $I_e$ at AC-3, 400 V   | A  | 9         |
| Rated operation power at AC-3, 400 V   | kW | 4         |
| Rated operation current $I_e$ at AC-4, 400 V   | A  | 6         |
| Rated operation power $I_e$ at AC-4, 400 V   | kW | 2.5       |
| Modular version  |    | No        |

|   |  |                  |
|---|--|------------------|
| Number of auxiliary contacts as normally open contact   |  | 1                |
| 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                |

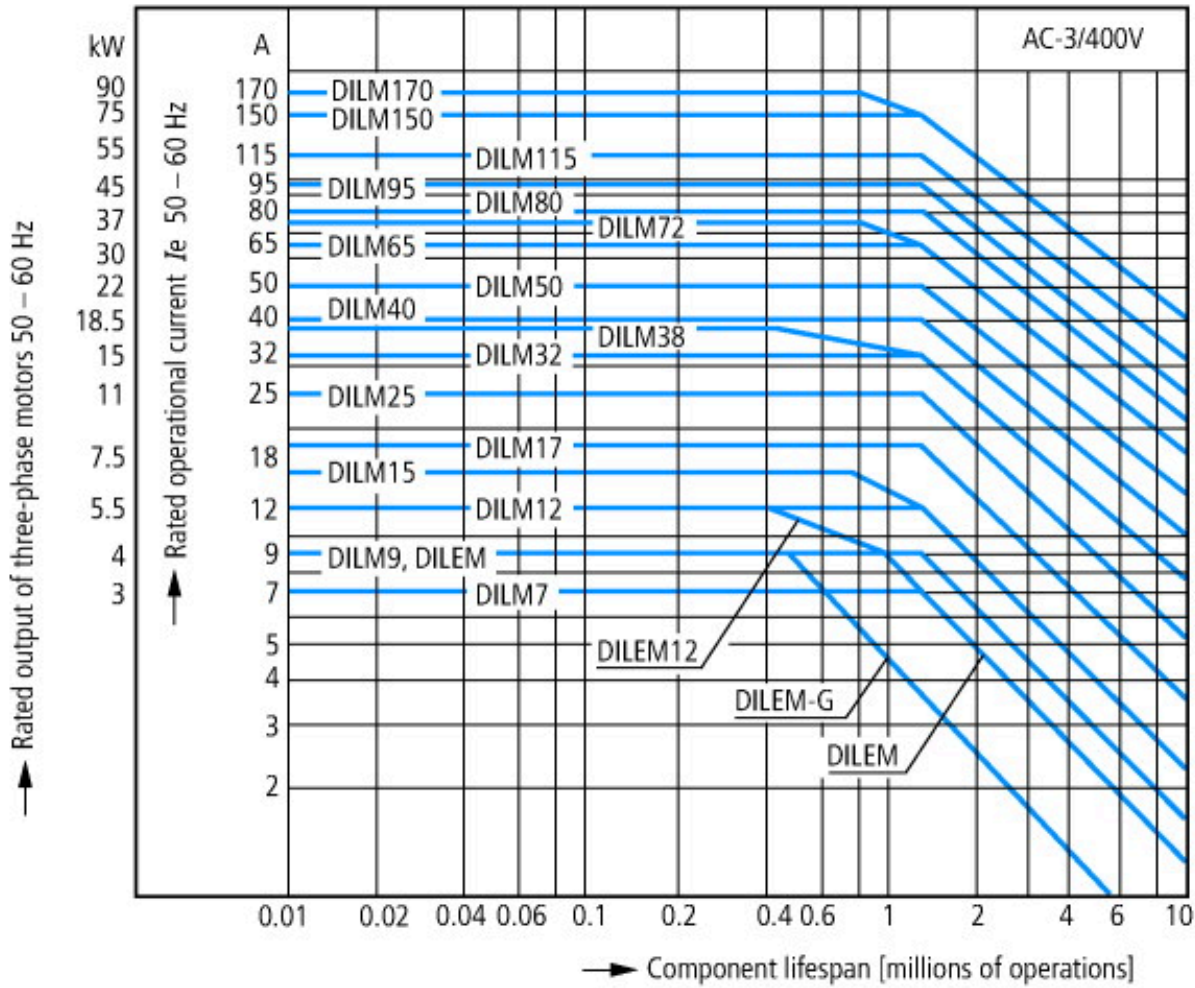
## Approvals

|                                      |  |  |
|--------------------------------------|--|--|
| 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

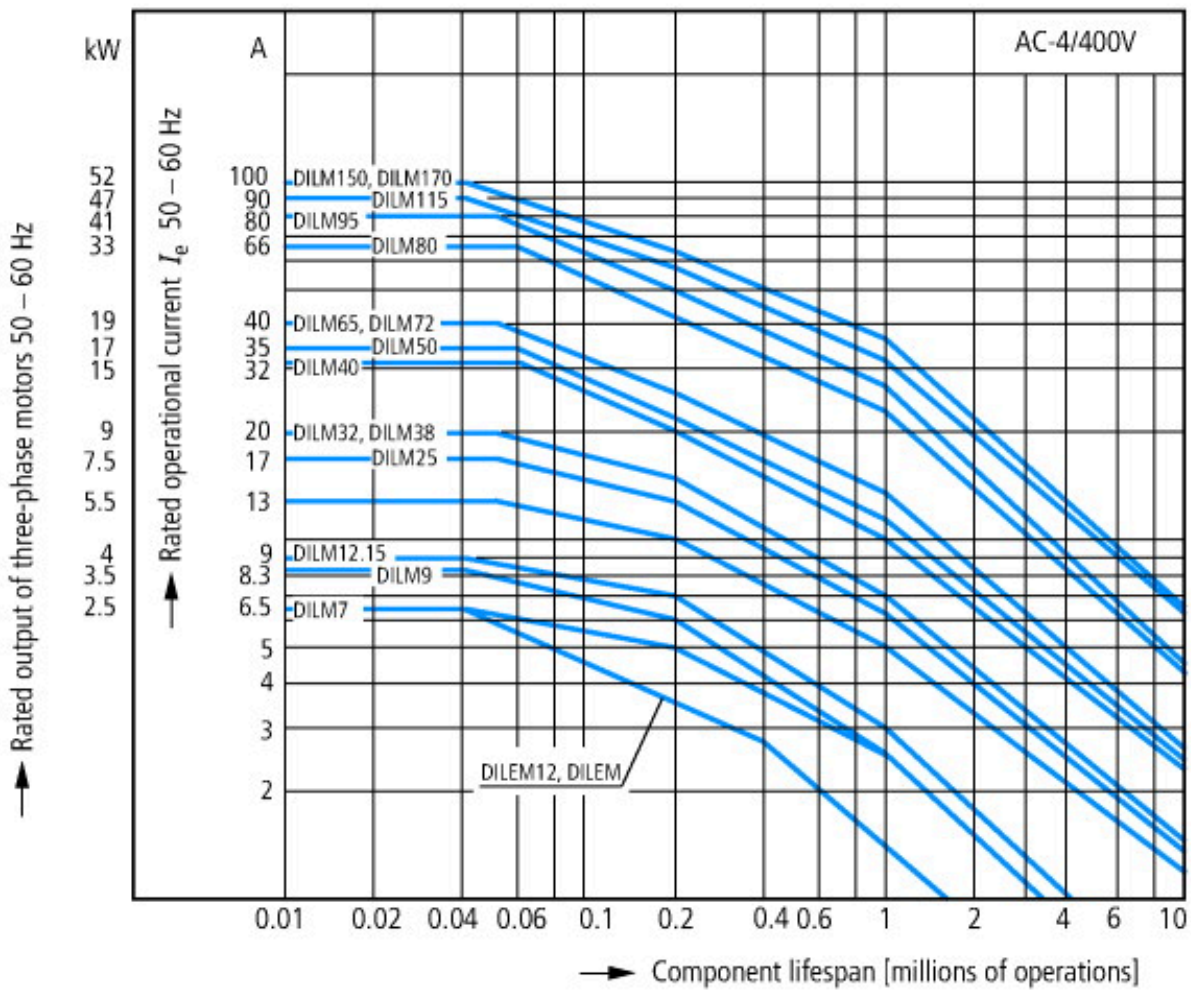


1: Overload relay

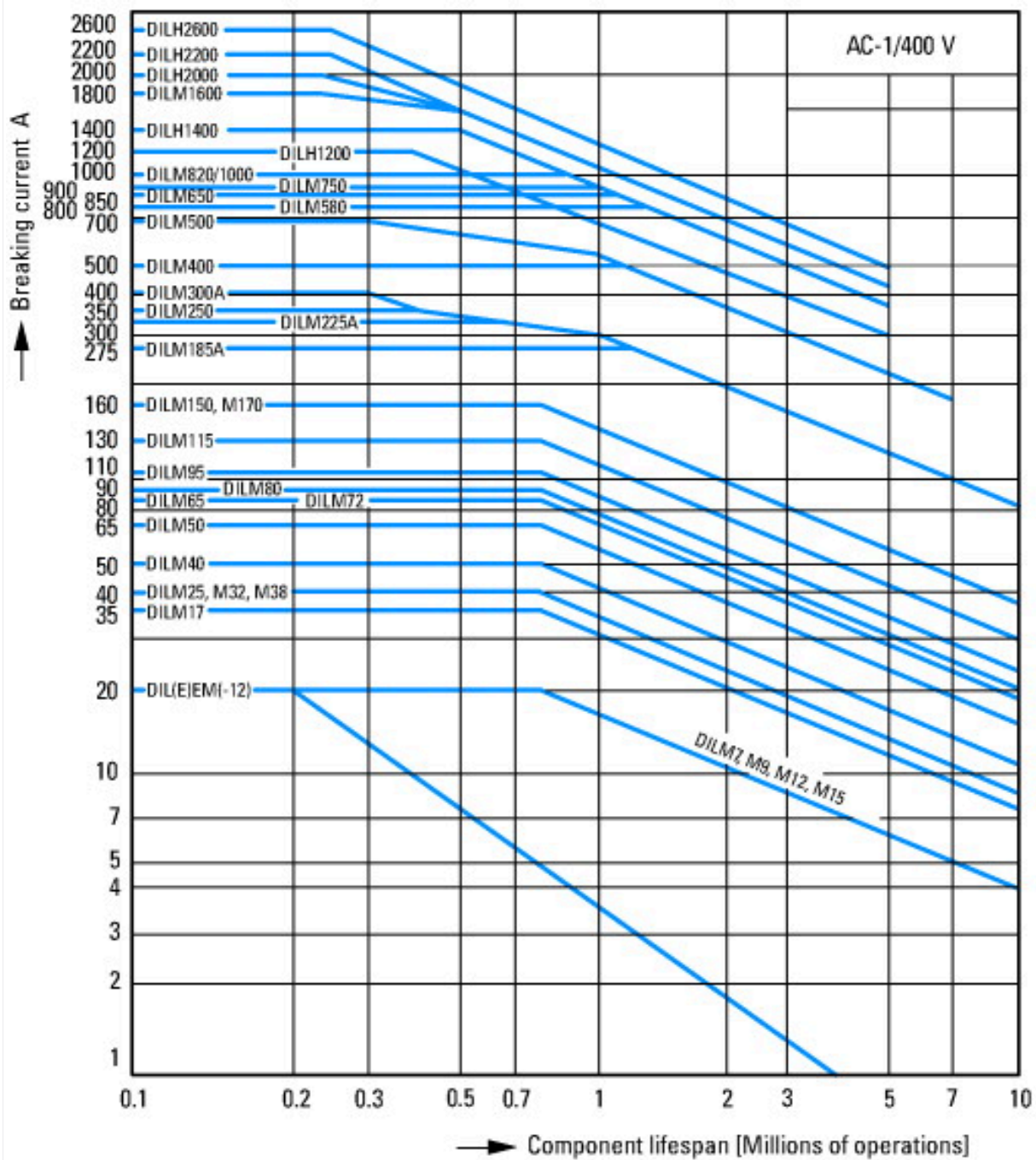


- Squirrel-cage motor
- Operating characteristics
- Starting: from rest
- Stopping: after attaining full running speed
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 1 x rated motor current
- Utilization category
- 100 % AC-3
- Typical applications
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- Fans
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevators
- Air conditioning system
- General drives in manufacturing and processing machines



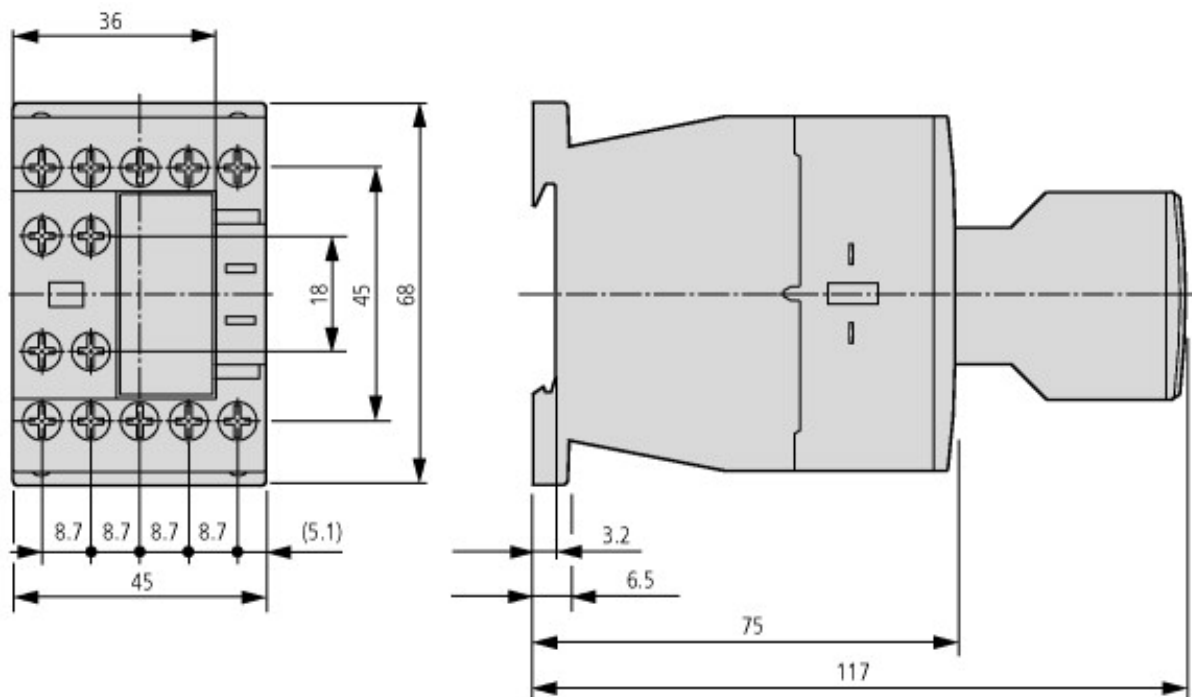


- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, plugging, reversing
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 6 x rated motor current
- Utilization category
- 100 % AC-4
- Typical applications
- Printing presses
- Wire-drawing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

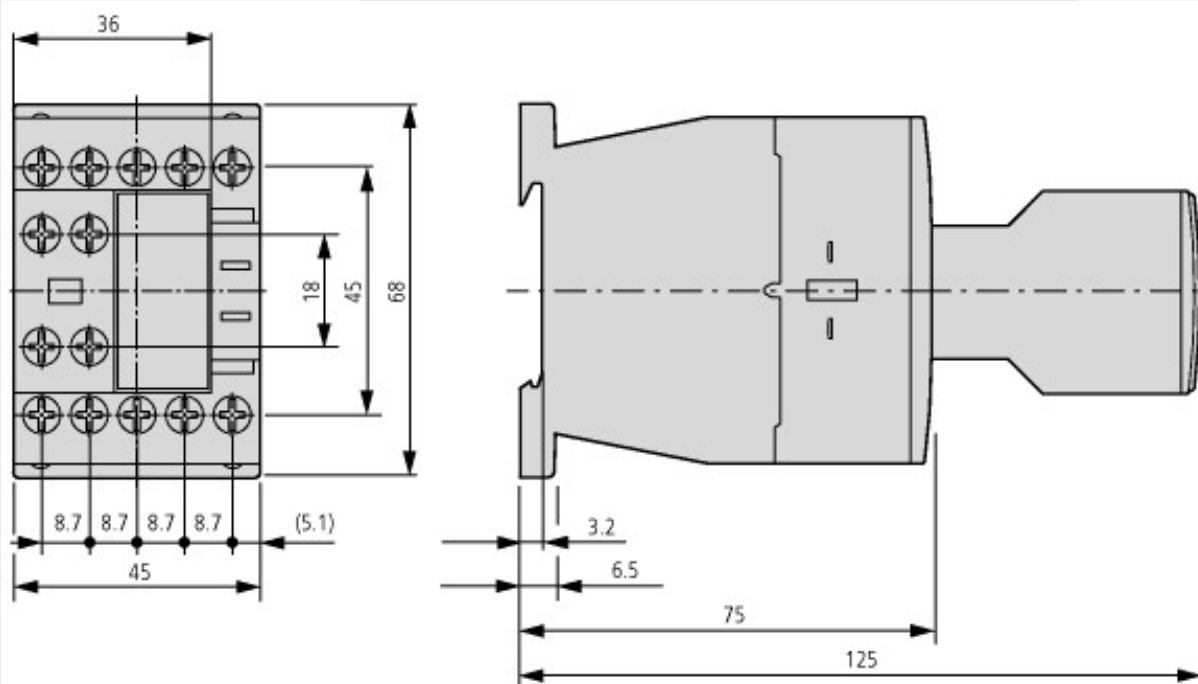


Switching conditions for non-motor consumers, 3 pole, 4 pole  
 Operating characteristics  
 Non inductive and slightly inductive loads  
 Electrical characteristics  
 Switch on: 1 x rated operational current  
 Switch off: 1 x rated operational current  
 Utilization category  
 100 % AC-1  
 Typical examples of application  
 Electric heat

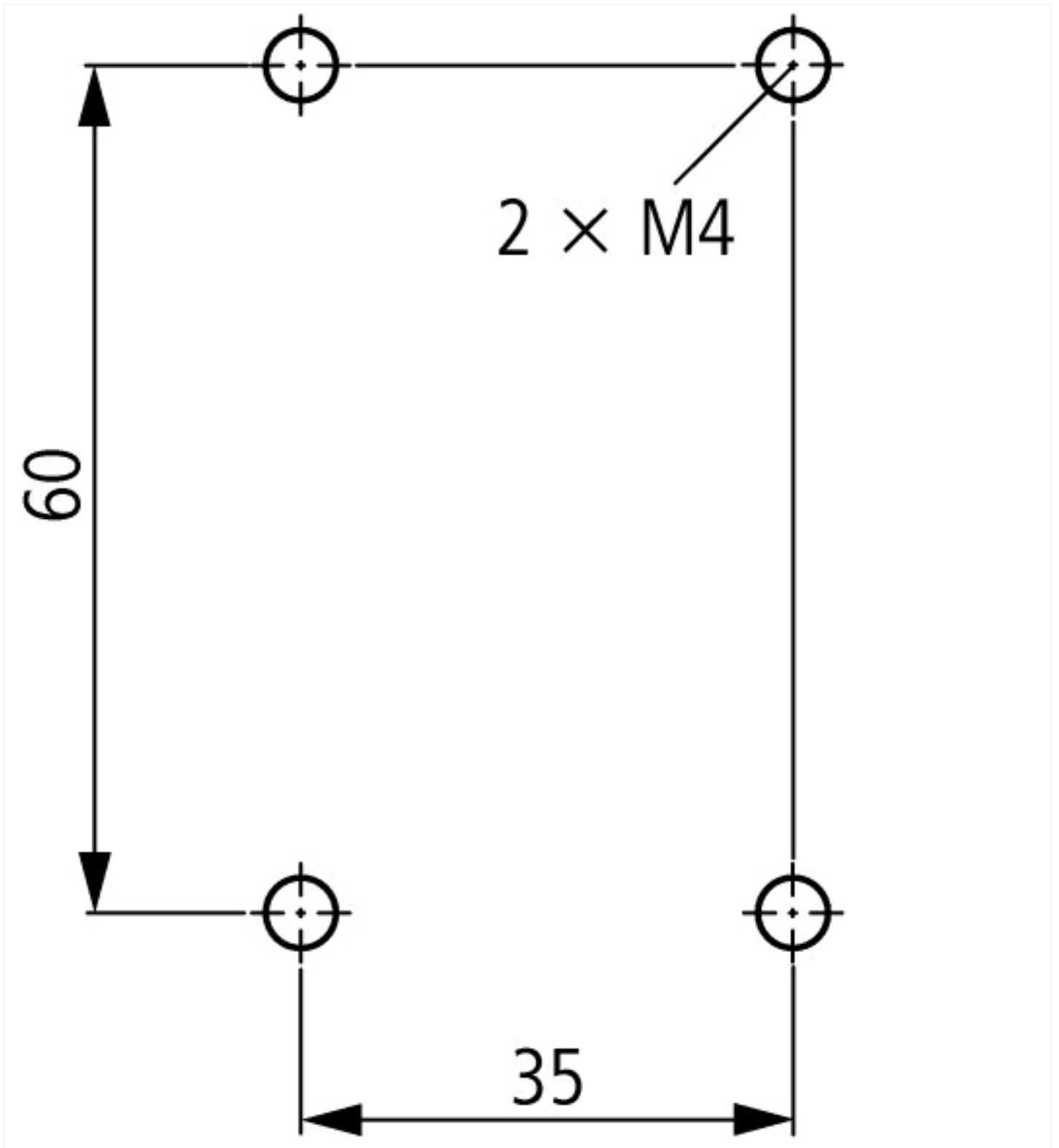
## Dimensions



Contactor with auxiliary contact module DILM32-XHI.../DILA-XHI...



Contactor with auxiliary contact module DILA-XHIT...



### Additional product information (links)

#### IL03407013Z (AWA2100-2126) Contactors

|  |   |
|--|---|
| IL03407013Z (AWA2100-2126) Contactors  | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407013Z2018_04.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407013Z2018_04.pdf</a> |
| Switchgear of Power Factor Correction Systems  | <a href="http://www.moeller.net/binary/ver_techpapers/ver934en.pdf">http://www.moeller.net/binary/ver_techpapers/ver934en.pdf</a>                                     |
| 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>                                     |

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| 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> |