

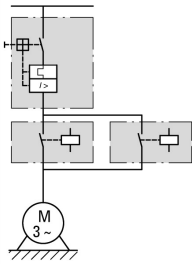




**Reversing starter, 380 V 400 V 415 V: 4 kW, I<sub>r</sub>= 6.3 - 10 A, 230 V 50 Hz, 240 V 60 Hz, AC voltage**

**Part no. MSC-R-10-M9(230V50HZ)/BBA**  
**Catalog No. 102990**  
**Alternate Catalog No. XTSR010B009BFNL-A**  
**EL-Nummer (Norway) 4315451**

**Delivery program**

|   |                |    |             |  |
|---|----------------|----|-------------|--|
| Basic function  |                |    |             | Reversing starters (complete devices)  |
| Basic device  |                |    |             | MSC  |
|   |                |    |             |                                    |
| Notes   |                |    |             | Also suitable for motors with efficiency class IE3. IE3-ready devices are identified by the logo on their packaging. |
| Connection to SmartWire-DT  |                |    |             | no   |
| <b>Motor ratings</b>  |                |    |             |  |
| Motor rating  |                |    |             |  |
| AC-3  |                |    |             |  |
| 380 V 400 V 415 V   | P              | kW |             | 4  |
| Rated operational current   |                |    |             |  |
| AC-3  |                |    |             |  |
| 380 V 400 V 415 V   | I <sub>e</sub> | A  |             | 8.5  |
| Rated short-circuit current 380 - 415 V   | I <sub>q</sub> | kA |             | 100  |
| <b>Setting range</b>  |                |    |             |  |
| Setting range of overload releases  | I <sub>r</sub> | A  |             | 6.3 - 10   |
|   |                |    |             |                                   |
| Coordination  |                |    |             | Type of coordination "1"   |
| Contact sequence  |                |    |             |                                  |
| Actuating voltage   |                |    |             | 230 V 50 Hz, 240 V 60 Hz<br>AC voltage   |
| <b>Motor-protective circuit-breakers PKZM0-10</b>   |                |    |             |  |
| Contactor DILM9-01(...)   |                |    |             |  |
| <b>DOL starter wiring set</b><br>Mechanical connection element and electrical electric contact module PKZM0-XRM12                                   |                |    |             |  |
| <b>Notes</b>  |                |    |             |  |
| The reversing starter (complete units) consists of a PKZM0 motor protective circuit breaker and two DILM contactors.                                |                |    |             |  |
| These combinations are mounted on the busbar adapters.  |                |    |             |  |
| The connection of the main circuit between the motor protective circuit breaker and the contactor is established with an electrical contact module. |                |    |             |  |
| Complete units with mechanical interlock, starters up to 12 A also feature electrical interlock.  |                |    |             |  |
| <b>Further information</b>  |                |    | <b>Page</b> |  |
| Technical data PKZM0  |                |    | → PKZM0     |  |
| Accessories PKZ   |                |    | → 072896    |  |
| Technical data DILM   |                |    | → DILM      |  |
| Accessories DIL   |                |    | → 281199    |  |

## Technical data

### General

|                     |  |   |   |
|---------------------|--|---|---|
| Standards           |  |   | UL 508 (on request)<br>CSA C 22.2 No. 14 (on request) |
| Altitude            |  | m | Max. 2000   |
| Ambient temperature |  |   | -25 - +55   |

### Main conducting paths

|                                       |           |      |           |
|---------------------------------------|-----------|------|-----------|
| Rated impulse withstand voltage       | $U_{imp}$ | V AC | 6000      |
| Overvoltage category/pollution degree |           |      | III/3     |
| Rated operational voltage             | $U_e$     | V    | 230 - 415 |
| Rated operational current             |           |      |           |
| Open, 3-pole: 50 – 60 Hz              |           |      |           |
| 380 V 400 V                           | $I_e$     | A    | 9         |

### Additional technical data

|  |         |   |   |
|--|---------|---|---|
| Motor protective circuit breaker PKZM0, PKE                        |         |   | PKZM0 motor-protective circuit-breakers, see motor-protective circuit-breakers/<br>PKZM0 product group<br>DILM contactors, see contactor product group<br>DILET timing relay, ETR, see contactors, electronic timing relays product group |
| DILM contactors  |         |   |   |
| Power consumption of the coil in a cold state and $1.0 \times U_S$ |         |   |   |
| Dual-voltage coil 50 Hz  | Sealing | W | 1.2   |

### Rating data for approved types

|                    |  |   |      |
|--------------------|--|---|------|
| Auxiliary contacts |  |   |      |
| Pilot Duty         |  |   |      |
| AC operated        |  |   | A600 |
| DC operated        |  |   | P300 |
| General Use        |  |   |      |
| AC                 |  | V | 600  |
| AC                 |  | A | 15   |
| DC                 |  | V | 250  |
| DC                 |  | A | 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  | 2.8  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 8.4  |
| 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 | 55   |
| 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 7.0

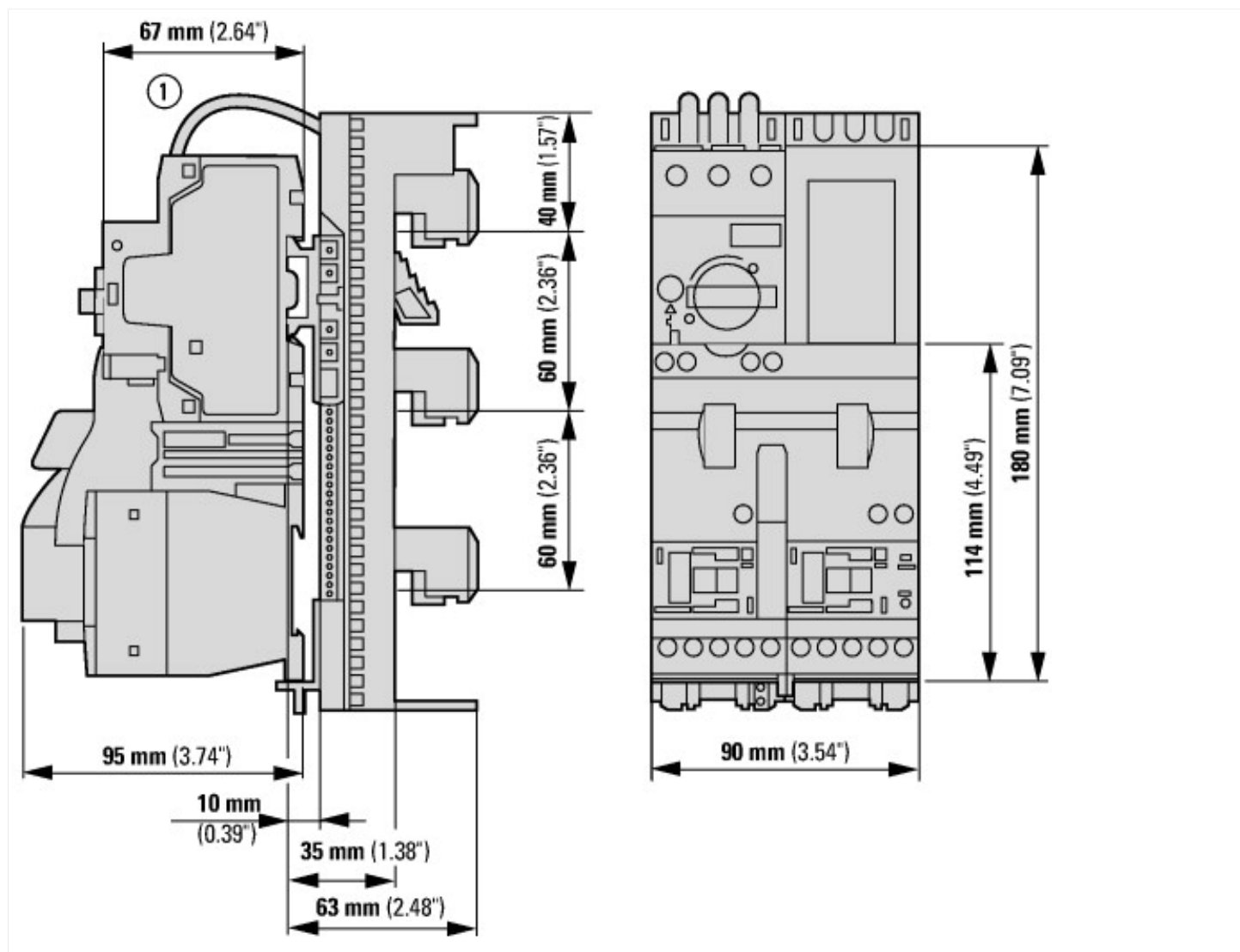
|  |    |                   |
|--|----|-------------------|
| Low-voltage industrial components (EG000017) / Motor starter/Motor starter combination (EC001037)  |    |                   |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Load breakout, motor breakout / Motor starter combination (ecl@ss10.0.1-27-37-09-05 [AJZ718013]) |    |                   |
| Kind of motor starter  |    | Reversing starter |
| With short-circuit release   |    | Yes               |
| Rated control supply voltage $U_s$ at AC 50HZ  | V  | 230 - 230         |
| Rated control supply voltage $U_s$ at AC 60HZ  | V  | 0 - 0             |
| Rated control supply voltage $U_s$ at DC   | V  | 0 - 0             |
| Voltage type for actuating   |    | AC                |
| Rated operation power at AC-3, 230 V, 3-phase  | kW | 2.2               |
| Rated operation power at AC-3, 400 V   | kW | 4                 |
| Rated power, 460 V, 60 Hz, 3-phase   | kW | 0                 |
| Rated power, 575 V, 60 Hz, 3-phase   | kW | 0                 |
| Rated operation current $I_e$  | A  | 8.5               |
| Rated operation current at AC-3, 400 V   | A  | 9                 |
| Overload release current setting   | A  | 6.3 - 10          |
| Rated conditional short-circuit current, type 1, 480 V/277 V   | A  | 0                 |
| Rated conditional short-circuit current, type 1, 600 V/347 V   | A  | 0                 |
| Rated conditional short-circuit current, type 2, 230 V   | A  | 0                 |
| Rated conditional short-circuit current, type 2, 400 V   | A  | 0                 |
| Number of auxiliary contacts as normally open contact  |    | 0                 |
| Number of auxiliary contacts as normally closed contact  |    | 0                 |
| Ambient temperature, upper operating limit   | °C | 60                |
| Temperature compensated overload protection  |    | Yes               |
| Release class  |    | CLASS 10          |
| Type of electrical connection of main circuit  |    | Screw connection  |
| Type of electrical connection for auxiliary- and control current circuit   |    | Screw connection  |
| Rail mounting possible   |    | Yes               |
| With transformer   |    | No                |
| Number of command positions  |    | 0                 |
| Suitable for emergency stop  |    | No                |
| Coordination class according to IEC 60947-4-3  |    | Class 1           |
| Number of indicator lights   |    | 0                 |
| External reset possible  |    | No                |
| With fuse  |    | No                |
| Degree of protection (IP)  |    | IP20              |
| Degree of protection (NEMA)  |    | Other             |
| Supporting protocol for TCP/IP   |    | No                |
| Supporting protocol for PROFIBUS   |    | No                |
| Supporting protocol for CAN  |    | No                |
| Supporting protocol for INTERBUS   |    | No                |
| Supporting protocol for ASI  |    | No                |

|   |  |    |     |
|---|--|----|-----|
| Supporting protocol for MODBUS                      |  |    | No  |
| Supporting protocol for Data-Highway                |  |    | No  |
| Supporting protocol for DeviceNet                   |  |    | No  |
| Supporting protocol for SUCONET                     |  |    | No  |
| Supporting protocol for LON                         |  |    | No  |
| Supporting protocol for PROFINET IO                 |  |    | No  |
| Supporting protocol for PROFINET CBA                |  |    | No  |
| Supporting protocol for SERCOS                      |  |    | No  |
| Supporting protocol for Foundation Fieldbus         |  |    | No  |
| Supporting protocol for EtherNet/IP                 |  |    | No  |
| Supporting protocol for AS-Interface Safety at Work |  |    | No  |
| Supporting protocol for DeviceNet Safety            |  |    | No  |
| Supporting protocol for INTERBUS-Safety             |  |    | No  |
| Supporting protocol for PROFIsafe                   |  |    | No  |
| Supporting protocol for SafetyBUS p                 |  |    | No  |
| Supporting protocol for other bus systems           |  |    | No  |
| Width   |  | mm | 90  |
| Height  |  | mm | 200 |
| Depth   |  | mm | 154 |

## Approvals

|                                      |  |  |   |
|--------------------------------------|--|--|---|
| Product Standards                    |  |  | UL60947-4-1A; CSA-C22.2 No. 14-10; IEC60947-4-1; CE marking |
| UL File No.                          |  |  | E123500   |
| UL Category Control No.              |  |  | NKJH  |
| CSA File No.                         |  |  | 12528   |
| CSA Class No.                        |  |  | 3211-04   |
| North America Certification          |  |  | UL listed, CSA certified                                    |
| Specially designed for North America |  |  | No  |

## Dimensions



① l = 73 mm

MSC-R-...-M7[...12]BBA...

## Assets (links)

### Declaration of CE Conformity

00002885

### Instruction Leaflets

IL03402006Z2018\_04

## Additional product information (links)

### IL03402006Z (AWA1210-2248) Reversing starter to 12 A

IL03402006Z (AWA1210-2248) Reversing starter to 12 A [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03402006Z2018\\_04.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03402006Z2018_04.pdf)

### IL03402015Z (AWA1210-2324) Busbar adapter

IL03402015Z (AWA1210-2324) Busbar adapter [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03402015Z2018\\_05.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03402015Z2018_05.pdf)

Motor starters and "Special Purpose Ratings" for the North American market [http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct\\_3258146.pdf](http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf)

Busbar Component Adapters for modern Industrial control panels [http://www.moeller.net/binary/ver\\_techpapers/ver960en.pdf](http://www.moeller.net/binary/ver_techpapers/ver960en.pdf)