


**Motor-protective circuit-breaker, 3p, Ir=10-16A, screw connection**


**Part no.** PKZM0-16  
**Catalog No.** 046938  
**Alternate Catalog No.** XTPR016BC1NL  
**EL-Nummer (Norway)** 4355147

**Delivery program**

|                                                                                                                                |          |    |                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-------------------------------------------------------------------------------------------------------------------------|
| Product range                                                                                                                  |          |    | PKZM0 motor protective circuit-breakers up to 32 A                                                                      |
| Basic function                                                                                                                 |          |    | Motor protection                                                                                                        |
|                                                                                                                                |          |    |                                                                                                                         |
| 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                                                                                                         |
| Contact sequence                                                                                                               |          |    |                                                                                                                         |
| <b>Max. motor rating</b>                                                                                                       |          |    |                                                                                                                         |
| AC-3                                                                                                                           |          |    |                                                                                                                         |
| 220 V 230 V 240 V                                                                                                              | P        | kW | 4                                                                                                                       |
| 380 V 400 V 415 V                                                                                                              | P        | kW | 7.5                                                                                                                     |
| 440 V                                                                                                                          | P        | kW | 9                                                                                                                       |
| 500 V                                                                                                                          | P        | kW | 9                                                                                                                       |
| 660 V 690 V                                                                                                                    | P        | kW | 12.5                                                                                                                    |
| Rated uninterrupted current                                                                                                    | $I_u$    | A  | 16                                                                                                                      |
| <b>Setting range</b>                                                                                                           |          |    |                                                                                                                         |
| Overload releases                                                                                                              | $I_r$    | A  | 10 - 16                                                                                                                 |
|                                                                                                                                |          |    |                                                                                                                         |
| short-circuit release                                                                                                          |          |    |                                                                                                                         |
|                                                                                                                                |          |    |                                                                                                                         |
| max.                                                                                                                           | $I_{rm}$ | A  | 248                                                                                                                     |
| Phase-failure sensitivity                                                                                                      |          |    | IEC/EN 60947-4-1, VDE 0660 Part 102                                                                                     |
| Explosion protection (according to ATEX 94/9/EC)                                                                               |          |    | PTB 10, ATEX 3013, Ex II(2) GD<br>Observe manual MN03402003Z-DE/EN.                                                     |
| <b>Notes</b> Overload trigger: tripping class 10 A<br>Can be snapped on to IEC/EN 60715 top-hat rail with 7.5 or 15 mm height. |          |    |                                                                                                                         |

**Technical data**

|                     |  |    |                                                                                |
|---------------------|--|----|--------------------------------------------------------------------------------|
| <b>General</b>      |  |    |                                                                                |
| Standards           |  |    | IEC/EN 60947, VDE 0660, UL, CSA                                                |
| Climatic proofing   |  |    | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |
| Ambient temperature |  |    |                                                                                |
| Storage             |  | °C | - 40 - 80                                                                      |
| Open                |  | °C | -25 - +55                                                                      |
| Enclosed            |  | °C | - 25 - 40                                                                      |

|                                                                           |  |                 |                                                                                   |
|---------------------------------------------------------------------------|--|-----------------|-----------------------------------------------------------------------------------|
| Mounting position                                                         |  |                 |  |
| Direction of incoming supply                                              |  |                 | as required                                                                       |
| Degree of protection                                                      |  |                 |                                                                                   |
| Device                                                                    |  |                 | IP20                                                                              |
| Terminations                                                              |  |                 | IP00                                                                              |
| Protection against direct contact when actuated from front (EN 50274)     |  |                 | Finger and back-of-hand proof                                                     |
| Mechanical shock resistance half-sinusoidal shock 10 ms to IEC 60068-2-27 |  | g               | 25                                                                                |
| Altitude                                                                  |  | m               | Max. 2000                                                                         |
| Terminal capacity main cable                                              |  |                 |                                                                                   |
| Screw terminals                                                           |  |                 |                                                                                   |
| Solid                                                                     |  | mm <sup>2</sup> | 1 x (1 - 6)<br>2 x (1 - 6)                                                        |
| Flexible with ferrule to DIN 46228                                        |  | mm <sup>2</sup> | 1 x (1 - 6)<br>2 x (1 - 6)                                                        |
| Solid or stranded                                                         |  | AWG             | 18 - 10                                                                           |
| Stripping length                                                          |  | mm              | 10                                                                                |
| Specified tightening torque for terminal screws                           |  |                 |                                                                                   |
| Main cable                                                                |  | Nm              | 1.7                                                                               |
| Control circuit cables                                                    |  | Nm              | 1                                                                                 |

### Main conducting paths

|                                                         |             |               |                           |
|---------------------------------------------------------|-------------|---------------|---------------------------|
| Rated impulse withstand voltage                         | $U_{imp}$   | V AC          | 6000                      |
| Overvoltage category/pollution degree                   |             |               | III/3                     |
| Rated operational voltage                               | $U_e$       | V AC          | 690                       |
| Rated uninterrupted current = rated operational current | $I_u = I_e$ | A             | 16                        |
| Rated frequency                                         | f           | Hz            | 40 - 60                   |
| Current heat loss (3 pole at operating temperature)     |             | W             | 6.43                      |
| Impedance per pole                                      |             | mΩ            | 8                         |
| Lifespan, mechanical                                    | Operations  | $\times 10^6$ | 0.1                       |
| Lifespan, electrical (AC-3 at 400 V)                    |             |               |                           |
| Lifespan, electrical                                    | Operations  | $\times 10^6$ | 0.1                       |
| Max. operating frequency                                |             | Ops/h         | 40                        |
| Short-circuit rating                                    |             |               |                           |
| DC                                                      |             |               |                           |
| Short-circuit rating                                    |             | kA            | 60                        |
| Notes                                                   |             |               | up to 250 V               |
| Motor switching capacity                                |             |               |                           |
| AC-3 (up to 690V)                                       |             | A             | 16                        |
| DC-5 (up to 250V)                                       |             | A             | 16 (3 contacts in series) |

### Trip blocks

|                                                       |  |              |                                        |
|-------------------------------------------------------|--|--------------|----------------------------------------|
| Temperature compensation                              |  |              |                                        |
| to IEC/EN 60947, VDE 0660                             |  | °C           | - 5 ... 40                             |
| Operating range                                       |  | °C           | - 25 ... 55                            |
| Temperature compensation residual error for T > 40 °C |  |              | ≤ 0.25 %/K                             |
| Setting range of overload releases                    |  | $\times I_u$ | 0.6 - 1                                |
| short-circuit release                                 |  |              | Basic device, fixed: 15.5 $\times I_u$ |
| Short-circuit release tolerance                       |  |              | ± 20%                                  |
| Phase-failure sensitivity                             |  |              | IEC/EN 60947-4-1, VDE 0660 Part 102    |

### 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   | 5             |
| 460 V<br>480 V                                 | HP   | 10            |
| 575 V<br>600 V                                 | HP   | 10            |
| Single-phase                                   |      |               |
| 115 V<br>120 V                                 | HP   | 1             |
| 230 V<br>240 V                                 | HP   | 2             |
| Short Circuit Current Rating, type E           | SCCR |               |
| 240 V                                          | kA   | 42            |
| 480 Y / 277 V                                  | kA   | 42            |
| Accessories required                           |      | BK25/3-PKZ0-E |
| Short Circuit Current Rating, group protection | SCCR |               |
| 600 V High Fault                               |      |               |
| SCCR (fuse)                                    | kA   | 10            |
| max. Fuse                                      | A    | 150           |
| SCCR (CB)                                      | kA   | 10            |
| max. CB                                        | A    | 125           |
| SCCR with CL (fuse)                            | A    | 50            |
| max. Fuse (with CL)                            | A    | 600           |
| SCCR with CL (CB)                              | kA   | 50            |
| max. CB (with CL)                              | A    | 600           |

## Design verification as per IEC/EN 61439

|                                                                                                                        |                   |    |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------|
| Technical data for design verification                                                                                 |                   |    |                                                                                                                                  |
| Rated operational current for specified heat dissipation                                                               | I <sub>n</sub>    | A  | 16                                                                                                                               |
| Heat dissipation per pole, current-dependent                                                                           | P <sub>vid</sub>  | W  | 2.14                                                                                                                             |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 6.43                                                                                                                             |
| Static heat dissipation, non-current-dependent                                                                         | P <sub>vs</sub>   | W  | 0                                                                                                                                |
| Heat dissipation capacity                                                                                              | P <sub>diss</sub> | 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 protection circuit-breaker (EC000074)                                                                                                            |    |                                          |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016]) |    |                                          |
| Overload release current setting                                                                                                                                                                      | A  | 10 - 16                                  |
| Adjustment range undelayed short-circuit release                                                                                                                                                      | A  | 248 - 248                                |
| With thermal protection                                                                                                                                                                               |    | Yes                                      |
| Phase failure sensitive                                                                                                                                                                               |    | Yes                                      |
| Switch off technique                                                                                                                                                                                  |    | Thermomagnetic                           |
| Rated operating voltage                                                                                                                                                                               | V  | 690 - 690                                |
| Rated permanent current I <sub>u</sub>                                                                                                                                                                | A  | 16                                       |
| Rated operation power at AC-3, 230 V                                                                                                                                                                  | kW | 4                                        |
| Rated operation power at AC-3, 400 V                                                                                                                                                                  | kW | 7.5                                      |
| Type of electrical connection of main circuit                                                                                                                                                         |    | Screw connection                         |
| Type of control element                                                                                                                                                                               |    | Turn button                              |
| Device construction                                                                                                                                                                                   |    | Built-in device fixed built-in technique |
| With integrated auxiliary switch                                                                                                                                                                      |    | No                                       |
| With integrated under voltage release                                                                                                                                                                 |    | No                                       |
| Number of poles                                                                                                                                                                                       |    | 3                                        |
| Rated short-circuit breaking capacity I <sub>cu</sub> at 400 V, AC                                                                                                                                    | kA | 50                                       |
| Degree of protection (IP)                                                                                                                                                                             |    | IP20                                     |
| Height                                                                                                                                                                                                | mm | 93                                       |
| Width                                                                                                                                                                                                 | mm | 45                                       |
| Depth                                                                                                                                                                                                 | mm | 76                                       |

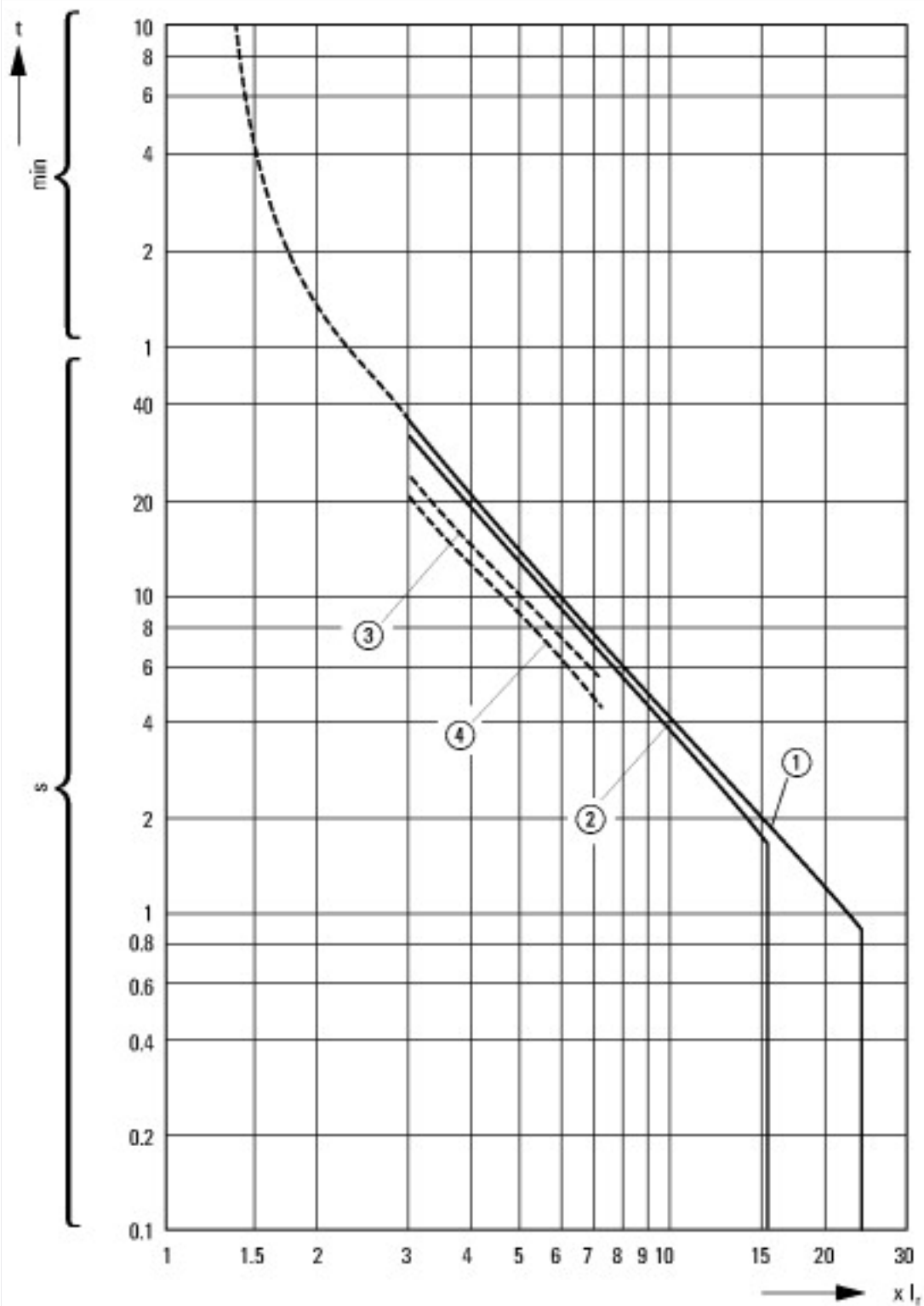
## Approvals

|                                      |  |                                                                                          |
|--------------------------------------|--|------------------------------------------------------------------------------------------|
| Product Standards                    |  | IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking                 |
| UL File No.                          |  | E36332                                                                                   |
| UL Category Control No.              |  | NLRV                                                                                     |
| CSA File No.                         |  | 165628                                                                                   |
| CSA Class No.                        |  | 3211-05                                                                                  |
| North America Certification          |  | UL listed, CSA certified                                                                 |
| Specially designed for North America |  | No                                                                                       |
| Suitable for                         |  | Branch circuit: Manual type E if used with terminal, or suitable for group installations |

## Characteristics



- 1: Standard auxiliary contact
- 2: Trip-indicating auxiliary contact
- 3: Shunt releases, undervoltage releases



Tripping characteristics motor circuit breaker PKZM0-..., PKZM01

- 1: Minimum level, 3-phase
- 2: Maximum level, 3-phase
- 3: Minimum marker, 2-phase
- 4: Highest marker, 2-phase



Let-through current



① 1 half-cycle  
 Let-through energy

Dimensions



Motor-protective circuit-breaker with standard auxiliary contact  
PKZM0-...(+NHI-E-...-PKZ0)  
PKZM0-...-T(+NHI-E-...-PKZ0)  
PKM0-...(+NHI-E-...-PKZ0)



Motor-protective circuit-breakers with lockable rotary handles  
PKZM0-...+AK-PKZ0



Motor-protective circuit-breakers with early-make auxiliary contacts  
PKZM0-...+VHI-...-PKZ0

### Assets (links)

#### Declaration of CE Conformity

00003248

#### Instruction Leaflets

IL03407011Z2018\_04

#### Manuals

MN03402003Z\_DE\_EN (English)

### Additional product information (links)

#### IL03407011Z (AWA1210-1925) Motor-protective circuit-breaker

IL03407011Z (AWA1210-1925) Motor-protective circuit-breaker [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03407011Z2018\\_04.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407011Z2018_04.pdf)

#### 'IL03402034Z (AWA121-1945) Motor-protective circuit-breaker, Starter

'IL03402034Z (AWA121-1945) Motor-protective circuit-breaker, Starter [ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03402034Z2018\\_06.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03402034Z2018_06.pdf)

#### MN03402003Z (AWB1210-1458) PKZM0 motor-protective circuit-breakers, overload monitoring of Ex e motors

MN03402003Z (AWB1210-1458) PKZM0 motor-protective circuit-breakers, overload monitoring of Ex e motors - Deutsch / English [ftp://ftp.moeller.net/DOCUMENTATION/AWB\\_MANUALS/MN03402003Z\\_DE\\_EN.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN03402003Z_DE_EN.pdf)

EC prototype test certification PTB (German National Institute of Natural and Engineering Sciences) 10 ATEX 3013 [http://intranet.moeller.net/technik\\_daten/file/produkt\\_deklarationen/file/approbationen/00001731.pdf](http://intranet.moeller.net/technik_daten/file/produkt_deklarationen/file/approbationen/00001731.pdf)

Schaltvermögen [https://de.ecat.eaton.com/flip-cat/?edition=MOTCONT1\\_DE#page\\_3/44](https://de.ecat.eaton.com/flip-cat/?edition=MOTCONT1_DE#page_3/44)

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)