



Motor-protective circuit-breaker, 660 V 690 V: 22 kW,  $I_r = 20 - 25$  A, IP20



Part no. PKZM01-25  
 Catalog No. 288893  
 Alternate Catalog No. XTPB025BC1  
 EL-Nummer (Norway) 4137529

## Delivery program

|                                                                                                                                |          |    |                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|----------|----|-------------------------------------------------------------------------------------------------------------------------|
| Product range                                                                                                                  |          |    | PKZM01 motor protective circuit-breakers up to 25 A with pushbutton actuation                                           |
| 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 | 5.5                                                                                                                     |
| 380 V 400 V 415 V                                                                                                              | P        | kW | 12.5                                                                                                                    |
| 440 V                                                                                                                          | P        | kW | 12.5                                                                                                                    |
| 500 V                                                                                                                          | P        | kW | 15                                                                                                                      |
| 660 V 690 V                                                                                                                    | P        | kW | 22                                                                                                                      |
| Rated uninterrupted current                                                                                                    | $I_u$    | A  | 25                                                                                                                      |
| <b>Setting range</b>                                                                                                           |          |    |                                                                                                                         |
| Overload releases                                                                                                              | $I_r$    | A  | 20 - 25                                                                                                                 |
|                                                                                                                                |          |    |                                                                                                                         |
| short-circuit release                                                                                                          |          |    |                                                                                                                         |
|                                                                                                                                |          |    |                                                                                                                         |
| max.                                                                                                                           | $I_{rm}$ | A  | 388                                                                                                                     |
| Phase-failure sensitivity                                                                                                      |          |    | IEC/EN 60947-4-1, VDE 0660 Part 102                                                                                     |
| <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

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

### Main conducting paths

|                                                         |                                 |                   |                           |
|---------------------------------------------------------|---------------------------------|-------------------|---------------------------|
| Rated impulse withstand voltage                         | U <sub>imp</sub>                | V AC              | 6000                      |
| Overvoltage category/pollution degree                   |                                 |                   | III/3                     |
| Rated operational voltage                               | U <sub>e</sub>                  | V AC              | 690                       |
| Rated uninterrupted current = rated operational current | I <sub>u</sub> = I <sub>e</sub> | A                 | 25                        |
| Rated frequency                                         | f                               | Hz                | 40 - 60                   |
| Current heat loss (3 pole at operating temperature)     |                                 | W                 | 7.04                      |
| Impedance per pole                                      |                                 | mΩ                | 4                         |
| Lifespan, mechanical                                    | Operations                      | x 10 <sup>6</sup> | 0.05                      |
| Lifespan, electrical (AC-3 at 400 V)                    |                                 |                   |                           |
| Lifespan, electrical                                    | Operations                      | x 10 <sup>6</sup> | 0.05                      |
| Max. operating frequency                                |                                 | Ops/h             | 25                        |
| Short-circuit rating                                    |                                 |                   |                           |
| DC                                                      |                                 |                   |                           |
| Short-circuit rating                                    |                                 | kA                | 60                        |
| Notes                                                   |                                 |                   | up to 250 V               |
| Motor switching capacity                                |                                 |                   |                           |
| AC-3 (up to 690V)                                       |                                 | A                 | 25                        |
| DC-5 (up to 250V)                                       |                                 | A                 | 25 (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                    |  | x I <sub>u</sub> | 0.6 - 1                                    |
| short-circuit release                                 |  |                  | Basic device, fixed: 15.5 x I <sub>u</sub> |
| 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          |  |    |     |
| 230 V<br>240 V       |  | HP | 7.5 |
| 460 V<br>480 V       |  | HP | 15  |
| 575 V<br>600 V       |  | HP | 20  |
| Single-phase         |  |    |     |
| 115 V<br>120 V       |  | HP | 2   |

|                                                |      |     |  |
|------------------------------------------------|------|-----|--|
| 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    | 18  |  |
| max. Fuse (with CL)                            | A    | 600 |  |
| SCCR with CL (CB)                              | kA   | 18  |  |
| 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  | 25                                                                                                                               |
| Heat dissipation per pole, current-dependent                                                                           | P <sub>vid</sub>  | W  | 2.35                                                                                                                             |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 7.04                                                                                                                             |
| 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

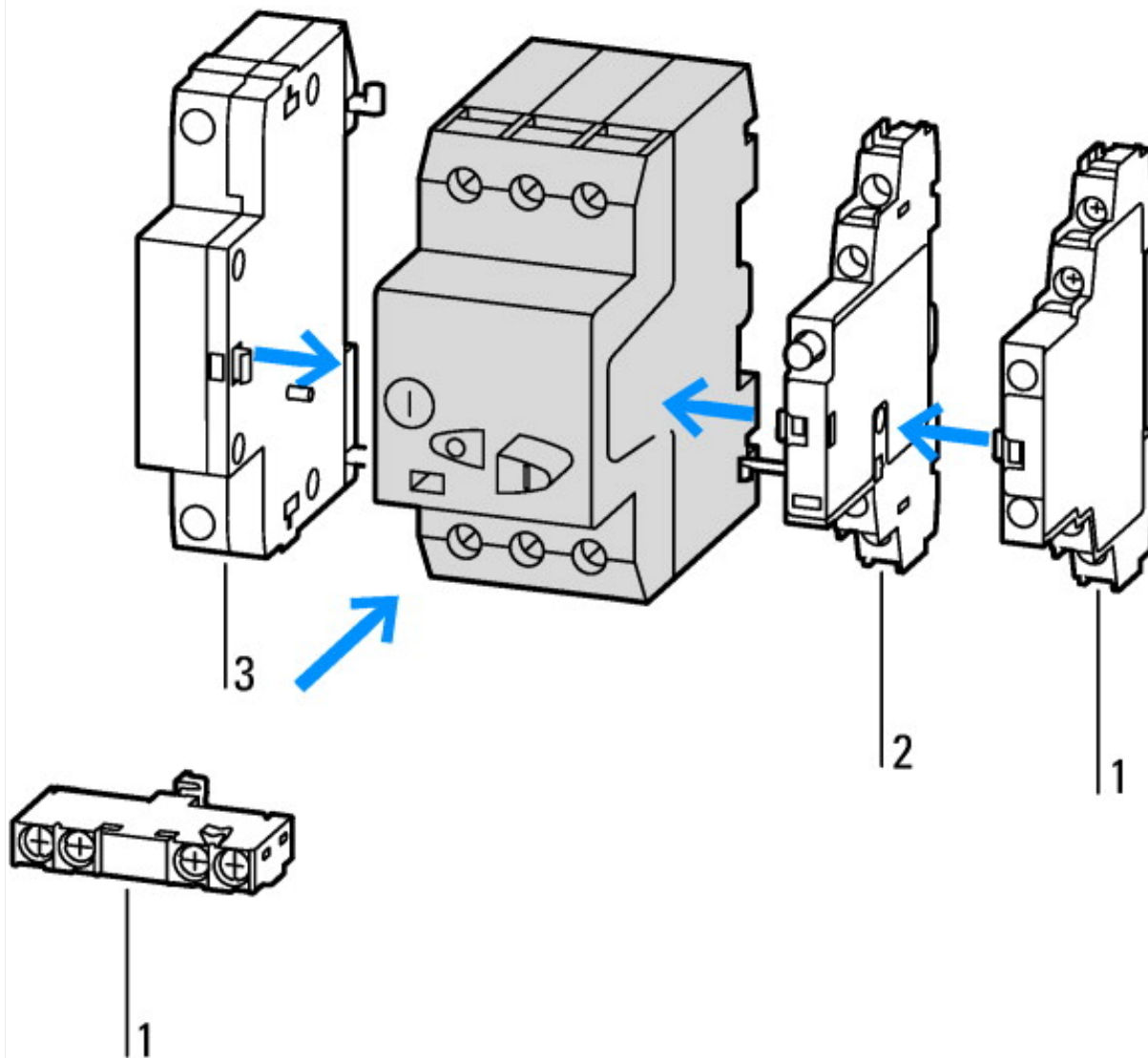
|                                                                                                                                                                                                       |   |           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|--|
| 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 | 20 - 25   |  |
| Adjustment range undelayed short-circuit release                                                                                                                                                      | A | 388 - 388 |  |
| With thermal protection                                                                                                                                                                               |   | Yes       |  |

|                                                        |    |                                          |
|--------------------------------------------------------|----|------------------------------------------|
| Phase failure sensitive                                |    | Yes                                      |
| Switch off technique                                   |    | Thermomagnetic                           |
| Rated operating voltage                                | V  | 690 - 690                                |
| Rated permanent current Iu                             | A  | 25                                       |
| Rated operation power at AC-3, 230 V                   | kW | 5.5                                      |
| Rated operation power at AC-3, 400 V                   | kW | 12.5                                     |
| Type of electrical connection of main circuit          |    | Screw connection                         |
| Type of control element                                |    | Push 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 Icu at 400 V, AC | kA | 50                                       |
| Degree of protection (IP)                              |    | IP20                                     |
| Height                                                 | mm | 93                                       |
| Width                                                  | mm | 45                                       |
| Depth                                                  | mm | 90.5                                     |

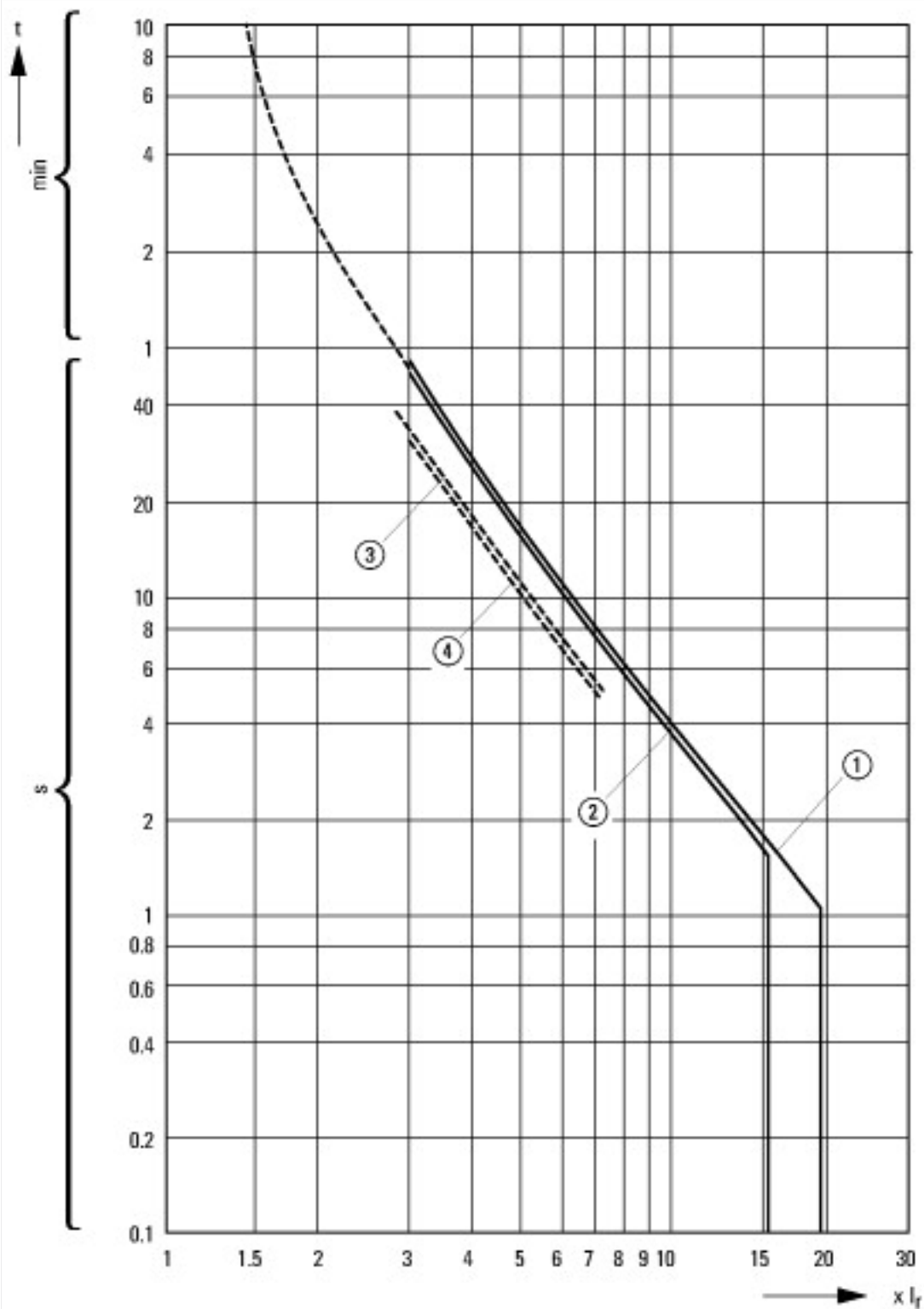
## Approvals

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

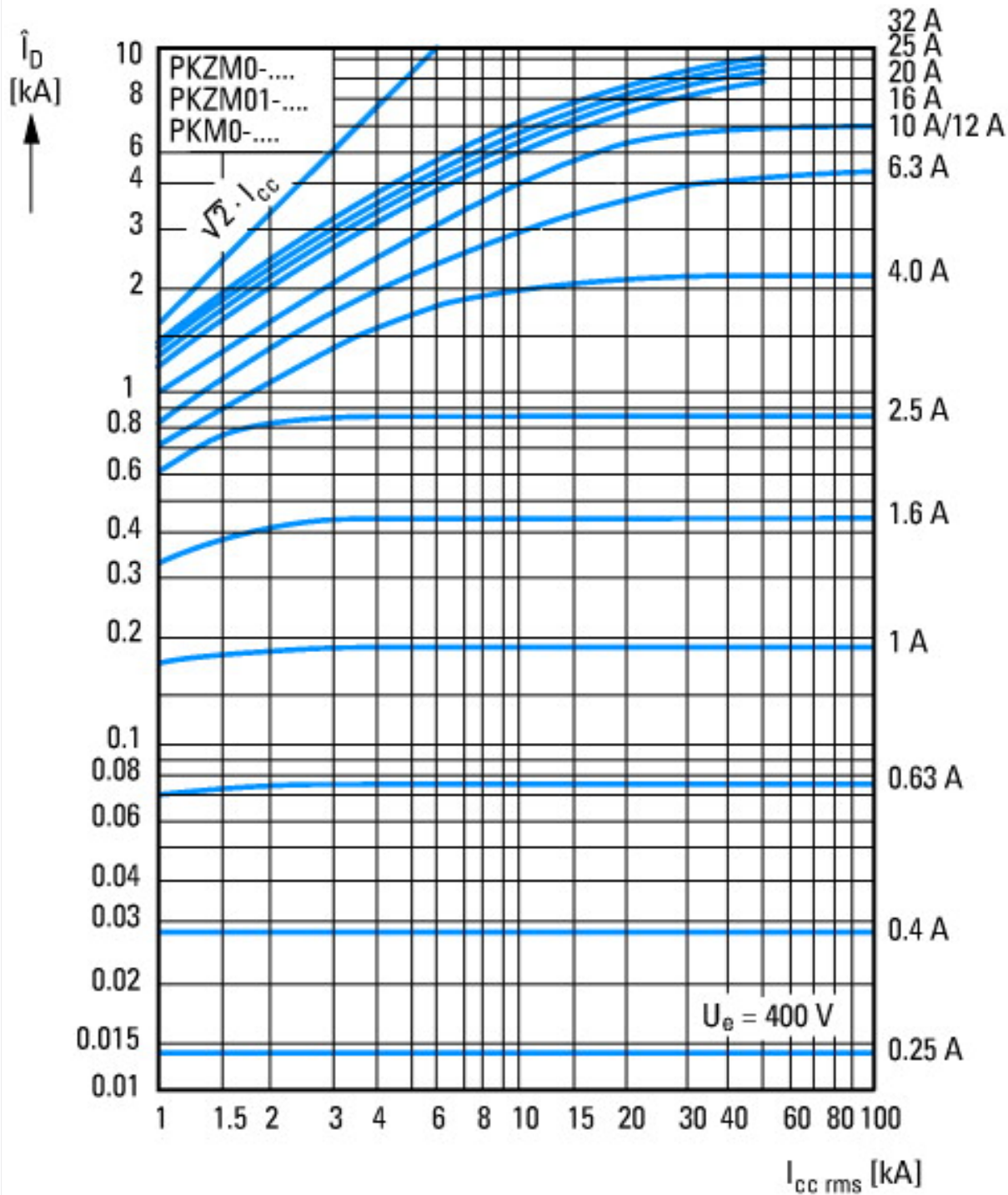


- 1: Standard auxiliary contact
- 2: Trip-indicating auxiliary contact
- 3: Shunt releases, undervoltage releases

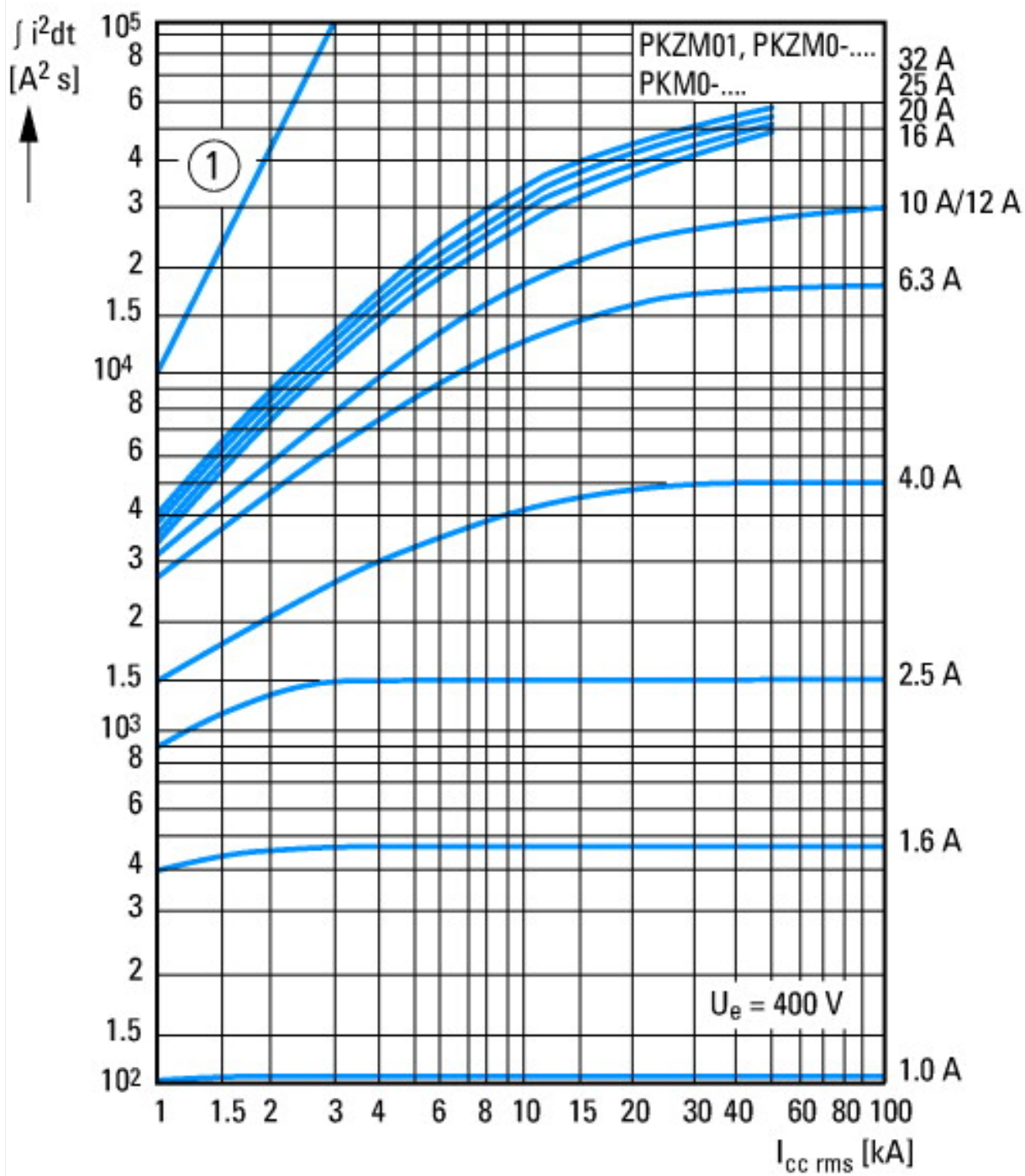


Tripping characteristics motor circuit breaker PKZM0-..., PKZM01

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

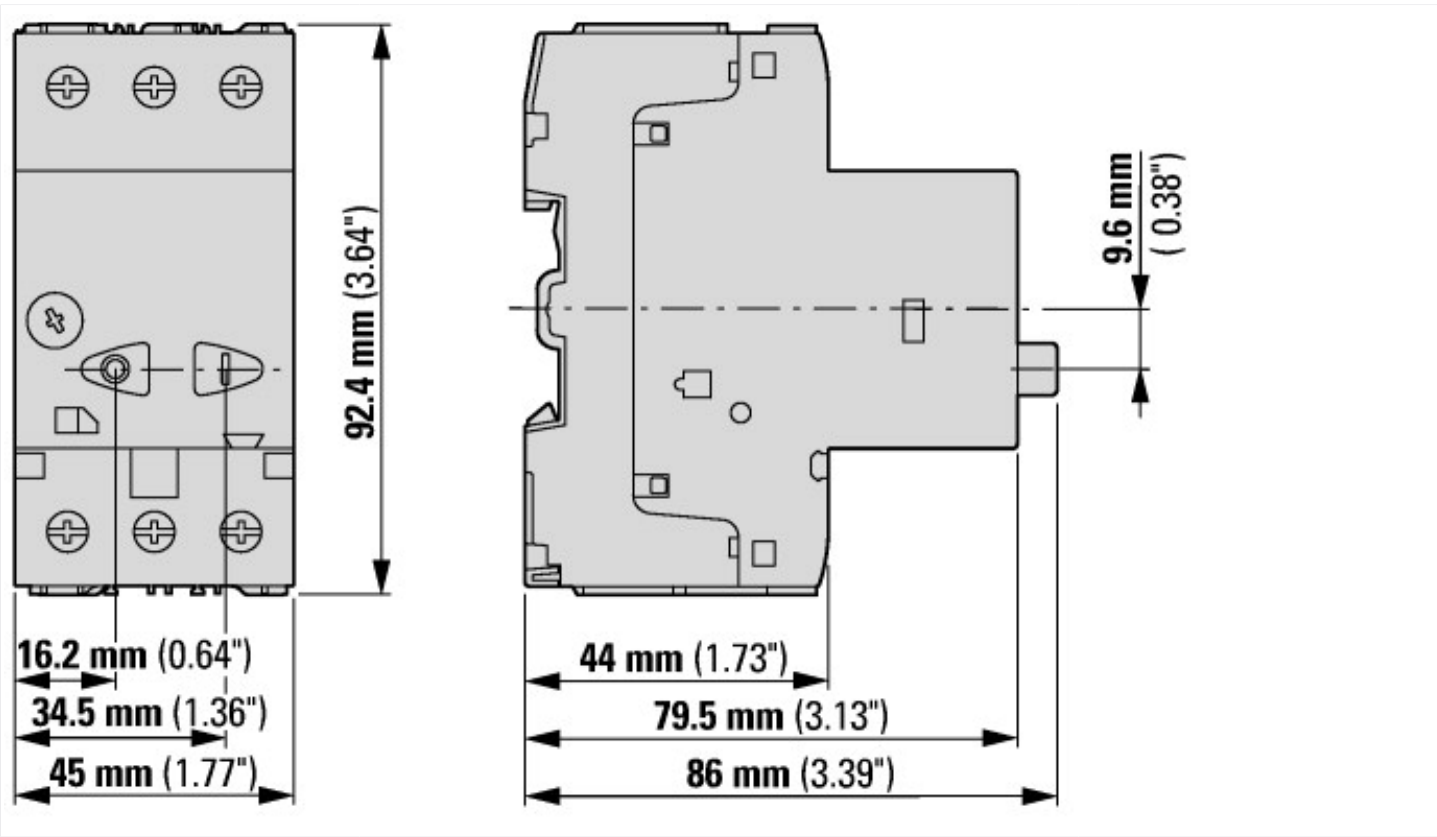


Let-through current



① 1 half-cycle  
Let-through energy

Dimensions



Additional product information (links)

|                                                                             |                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IL03407011Z (AWA1210-1925) Motor-protective circuit-breaker</b>          |                                                                                                                                                                                                                 |
| IL03407011Z (AWA1210-1925) Motor-protective circuit-breaker                 | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407011Z2018_04.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407011Z2018_04.pdf</a>                               |
| <b>'IL03402034Z (AWA121-1945) Motor-protective circuit-breaker, Starter</b> |                                                                                                                                                                                                                 |
| 'IL03402034Z (AWA121-1945) Motor-protective circuit-breaker, Starter        | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03402034Z2018_06.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03402034Z2018_06.pdf</a>                               |
| Schaltvermögen                                                              | <a href="https://de.ecat.eaton.com/flip-cat/?edition=MOTCONT1_DE#page_3/45">https://de.ecat.eaton.com/flip-cat/?edition=MOTCONT1_DE#page_3/45</a>                                                               |
| Motor starters and "Special Purpose Ratings" for the North American market  | <a href="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</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>                                                                               |