



**Changeoverswitches, Contacts: 4, 20 A, front plate: 1-0-2, 60 °, maintained, flush mounting**

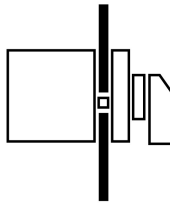
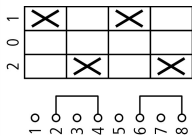
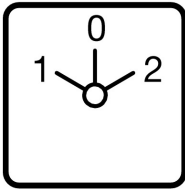
**Part no.  
Article no.**

**T0-2-8211/E  
022234**



Similar to illustration

## Delivery programme

|                                        |                |                 |                                                                                                       |
|----------------------------------------|----------------|-----------------|-------------------------------------------------------------------------------------------------------|
| Product range                          |                |                 | Control switches                                                                                      |
| Part group reference                   |                |                 | T0                                                                                                    |
| Basic function                         |                |                 | Changeoverswitches                                                                                    |
|                                        |                |                 | with black thumb grip and front plate                                                                 |
| Contacts                               |                |                 | 4                                                                                                     |
| Degree of Protection                   |                |                 | Front IP65                                                                                            |
| Design                                 |                |                 | flush mounting                                                                                        |
|                                        |                |                 |                     |
| Contact sequence                       |                |                 |                    |
| Switching angle                        |                | °               | 60                                                                                                    |
| Switching performance                  |                |                 | maintained<br>With 0 (Off) position                                                                   |
| Front plate no.                        |                |                 | <br><b>FS 684</b> |
| front plate                            |                |                 | 1-0-2                                                                                                 |
| <b>Motor rating AC-23A, 50 - 60 Hz</b> |                |                 |                                                                                                       |
| 400 V                                  | P              | kW              | 5.5                                                                                                   |
| Rated uninterrupted current            | I <sub>u</sub> | A               | 20                                                                                                    |
| Number of contact units                |                | contact unit(s) | 2                                                                                                     |

## Technical data

### General

|                                       |                  |      |                                                                                                  |
|---------------------------------------|------------------|------|--------------------------------------------------------------------------------------------------|
| Standards                             |                  |      | IEC/EN 60947, VDE 0660, IEC/EN 60204, CSA, UL<br>Switch-disconnector according to IEC/EN 60947-3 |
| Climatic proofing                     |                  |      | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30                   |
| Ambient temperature                   |                  |      |                                                                                                  |
| Open                                  |                  | °C   | -25 - +50                                                                                        |
| Enclosed                              |                  | °C   | -25 - +40                                                                                        |
| Overvoltage category/pollution degree |                  |      | III/3                                                                                            |
| Rated impulse withstand voltage       | U <sub>imp</sub> | V AC | 6000                                                                                             |

|                                                                       |  |   |                               |
|-----------------------------------------------------------------------|--|---|-------------------------------|
| Mechanical shock resistance                                           |  | g | 15                            |
| Mounting position                                                     |  |   | As required                   |
| Protection against direct contact when actuated from front (EN 50274) |  |   | Finger and back-of-hand proof |

## Contacts

|                                                            |                 |                  |                                                                                 |
|------------------------------------------------------------|-----------------|------------------|---------------------------------------------------------------------------------|
| Electrical characteristics                                 |                 |                  |                                                                                 |
| Rated operational voltage                                  | U <sub>e</sub>  | V AC             | 690                                                                             |
| Rated uninterrupted current                                | I <sub>u</sub>  | A                | 20                                                                              |
| Note on rated uninterrupted current I <sub>u</sub>         |                 |                  | Rated uninterrupted current I <sub>u</sub> is specified for max. cross-section. |
| Load rating with intermittent operation, class 12          |                 |                  |                                                                                 |
| AB 25 % DF                                                 |                 | x I <sub>e</sub> | 2                                                                               |
| AB 40 % DF                                                 |                 | x I <sub>e</sub> | 1.6                                                                             |
| AB 60 % DF                                                 |                 | x I <sub>e</sub> | 1.3                                                                             |
| Short-circuit rating                                       |                 |                  |                                                                                 |
| Fuse                                                       |                 | A gG/gL          | 20                                                                              |
| Rated short-time withstand current (1 s current)           | I <sub>cw</sub> | A <sub>rms</sub> | 320                                                                             |
| Note on rated short-time withstand current I <sub>cw</sub> |                 |                  | Current for a time of 1 second                                                  |
| Rated conditional short-circuit current                    | I <sub>q</sub>  | kA               | 6                                                                               |

## Switching capacity

|                                                                         |                |                   |       |
|-------------------------------------------------------------------------|----------------|-------------------|-------|
| cos φ rated making capacity as per IEC 60947-3                          |                | A                 | 130   |
| Rated breaking capacity cos φ to IEC 60947-3                            |                | A                 |       |
| 230 V                                                                   |                | A                 | 100   |
| 400/415 V                                                               |                | A                 | 110   |
| 500 V                                                                   |                | A                 | 80    |
| 690 V                                                                   |                | A                 | 60    |
| Safe isolation to EN 61140                                              |                |                   |       |
| between the contacts                                                    |                | V AC              | 440   |
| Current heat loss per contact at I <sub>e</sub>                         |                | W                 | 0.6   |
| Current heat loss per auxiliary circuit at I <sub>e</sub> (AC-15/230 V) |                | CO                | 0.6   |
| Lifespan, mechanical                                                    | Operations     | x 10 <sup>6</sup> | > 0.4 |
| Maximum operating frequency                                             | Operations/h   |                   | 1200  |
| AC                                                                      |                |                   |       |
| AC-3                                                                    |                |                   |       |
| Rating, motor load switch                                               | P              | kW                |       |
| 220 V 230 V                                                             | P              | kW                | 3     |
| 230 V Star-delta                                                        | P              | kW                | 5.5   |
| 400 V 415 V                                                             | P              | kW                | 5.5   |
| 400 V Star-delta                                                        | P              | kW                | 7.5   |
| 500 V                                                                   | P              | kW                | 5.5   |
| 500 V Star-delta                                                        | P              | kW                | 7.5   |
| 690 V                                                                   | P              | kW                | 4     |
| 690 V Star-delta                                                        | P              | kW                | 5.5   |
| Rated operational current motor load switch                             |                |                   |       |
| 230 V                                                                   | I <sub>e</sub> | A                 | 11.5  |
| 230 V star-delta                                                        | I <sub>e</sub> | A                 | 20    |
| 400V 415 V                                                              | I <sub>e</sub> | A                 | 11.5  |
| 400 V star-delta                                                        | I <sub>e</sub> | A                 | 20    |
| 500 V                                                                   | I <sub>e</sub> | A                 | 9     |
| 500 V star-delta                                                        | I <sub>e</sub> | A                 | 15.6  |
| 690 V                                                                   | I <sub>e</sub> | A                 | 4.9   |
| 690 V star-delta                                                        | I <sub>e</sub> | A                 | 8.5   |
| AC-21A                                                                  |                |                   |       |
| Rated operational current switch                                        |                |                   |       |
| 440 V                                                                   | I <sub>e</sub> | A                 | 20    |
| AC-23A                                                                  |                |                   |       |

|                                               |                   |                |                                                     |
|-----------------------------------------------|-------------------|----------------|-----------------------------------------------------|
| Motor rating AC-23A, 50 - 60 Hz               | P                 | kW             |                                                     |
| 230 V                                         | P                 | kW             | 3                                                   |
| 400 V 415 V                                   | P                 | kW             | 5.5                                                 |
| 500 V                                         | P                 | kW             | 7.5                                                 |
| 690 V                                         | P                 | kW             | 5.5                                                 |
| Rated operational current motor load switch   |                   |                |                                                     |
| 230 V                                         | I <sub>e</sub>    | A              | 13.3                                                |
| 400 V 415 V                                   | I <sub>e</sub>    | A              | 13.3                                                |
| 500 V                                         | I <sub>e</sub>    | A              | 13.3                                                |
| 690 V                                         | I <sub>e</sub>    | A              | 7.6                                                 |
| DC                                            |                   |                |                                                     |
| DC-1, Load-break switches L/R = 1 ms          |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 10                                                  |
| Voltage per contact pair in series            |                   | V              | 60                                                  |
| DC-21A                                        | I <sub>e</sub>    | A              |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 1                                                   |
| Contacts                                      |                   | Quantity       | 1                                                   |
| DC-23A, motor load switch L/R = 15 ms         |                   |                |                                                     |
| 24 V                                          |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 10                                                  |
| Contacts                                      |                   | Quantity       | 1                                                   |
| 48 V                                          |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 10                                                  |
| Contacts                                      |                   | Quantity       | 2                                                   |
| 60 V                                          |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 10                                                  |
| Contacts                                      |                   | Quantity       | 3                                                   |
| 120 V                                         |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 5                                                   |
| Contacts                                      |                   | Quantity       | 3                                                   |
| 240 V                                         |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 5                                                   |
| Contacts                                      |                   | Quantity       | 5                                                   |
| DC-13, Control switches L/R = 50 ms           |                   |                |                                                     |
| Rated operational current                     | I <sub>e</sub>    | A              | 10                                                  |
| Voltage per contact pair in series            |                   | V              | 32                                                  |
| Control circuit reliability at 24 V DC, 10 mA | Fault probability | H <sub>F</sub> | < 10 <sup>-5</sup> , < 1 fault in 100000 operations |

### Terminal capacities

|                                     |  |                 |                                      |
|-------------------------------------|--|-----------------|--------------------------------------|
| Solid or stranded                   |  | mm <sup>2</sup> | 1 x (1 - 2,5)<br>2 x (1 - 2,5)       |
| Flexible with ferrules to DIN 46228 |  | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Terminal screw                      |  |                 | M3.5                                 |
| Max. tightening torque              |  | Nm              | 1                                    |

### Technical safety parameters:

|       |  |  |                                                         |
|-------|--|--|---------------------------------------------------------|
| Notes |  |  | B10 <sub>d</sub> values as per EN ISO 13849-1, table C1 |
|-------|--|--|---------------------------------------------------------|

### Approbierte Leistungsdaten

|                   |  |       |      |
|-------------------|--|-------|------|
| Terminal capacity |  |       |      |
| Terminal screw    |  |       | M3.5 |
| Tightening torque |  | lb-in | 8.83 |

## Design verification as per IEC/EN 61439

|                                                          |                  |   |     |
|----------------------------------------------------------|------------------|---|-----|
| Technical data for design verification                   |                  |   |     |
| Rated operational current for specified heat dissipation | I <sub>n</sub>   | A | 20  |
| Heat dissipation per pole, current-dependent             | P <sub>vid</sub> | W | 0.6 |

|                                                                                                                        |                   |    |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------|
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 0                                                                                                                                |
| 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 | 50                                                                                                                               |
| 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                                                                       |                   |    | Please enquire                                                                                                                   |
| 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.                         |

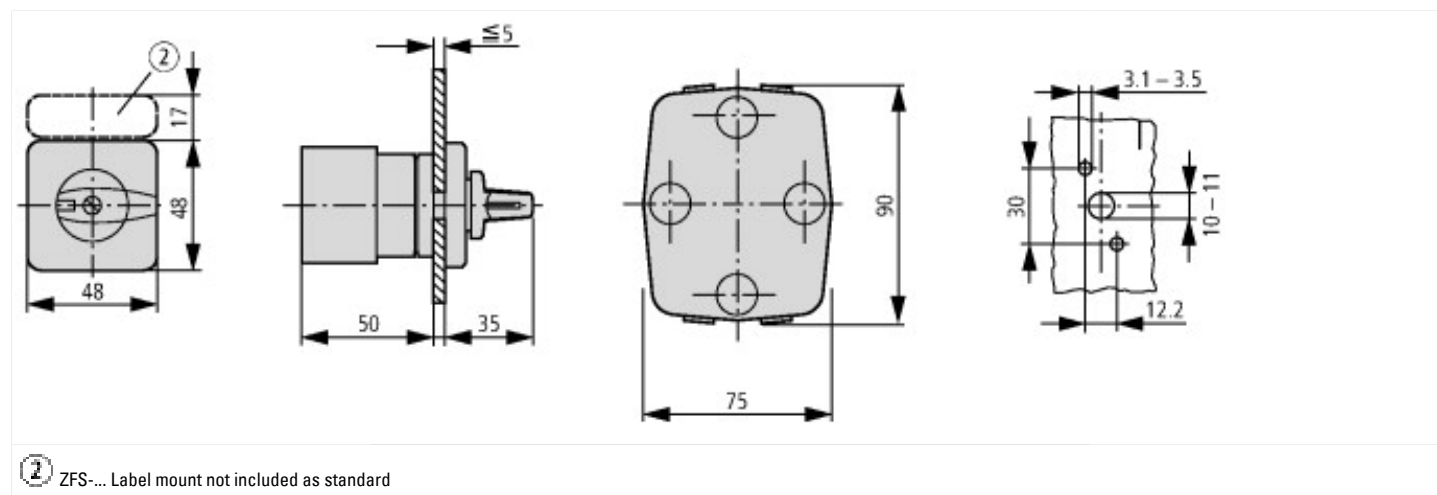
## Technical data ETIM 6.0

|                                                                                                                                                                                                          |  |    |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|------------------|
| Low-voltage industrial components (EG000017) / Off-load switch (EC001105)                                                                                                                                |  |    |                  |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Changeover switch (ecl@ss8.1-27-37-14-05 [AKF062010]) |  |    |                  |
| Model                                                                                                                                                                                                    |  |    | Reverser         |
| Number of poles                                                                                                                                                                                          |  |    | 2                |
| With 0 (off) position                                                                                                                                                                                    |  |    | Yes              |
| With retraction in 0-position                                                                                                                                                                            |  |    | No               |
| Rated permanent current I <sub>u</sub>                                                                                                                                                                   |  | A  | 20               |
| Rated operation current I <sub>e</sub> at AC-3, 400 V                                                                                                                                                    |  | A  | 11.5             |
| Rated operation power at AC-3, 400 V                                                                                                                                                                     |  | kW | 4                |
| Degree of protection (IP), front side                                                                                                                                                                    |  |    | IP65             |
| Number of auxiliary contacts as normally closed contact                                                                                                                                                  |  |    | 0                |
| Number of auxiliary contacts as normally open contact                                                                                                                                                    |  |    | 0                |
| Number of auxiliary contacts as change-over contact                                                                                                                                                      |  |    | 0                |
| Suitable for ground mounting                                                                                                                                                                             |  |    | No               |
| Suitable for front mounting 4-hole                                                                                                                                                                       |  |    | Yes              |
| Suitable for distribution board installation                                                                                                                                                             |  |    | No               |
| Suitable for intermediate mounting                                                                                                                                                                       |  |    | No               |
| Complete device in housing                                                                                                                                                                               |  |    | No               |
| Type of control element                                                                                                                                                                                  |  |    | Toggle           |
| Type of electrical connection of main circuit                                                                                                                                                            |  |    | Screw connection |

## Approvals

|  |  |                                                                           |
|--|--|---------------------------------------------------------------------------|
|  |  | UL 508; CSA-C22.2 No. 14-05; CSA-C22.2 No. 94; IEC/EN 60947-3; CE marking |
|  |  | E36332                                                                    |
|  |  | NLRV                                                                      |
|  |  | 12528                                                                     |
|  |  | 3211-05                                                                   |
|  |  | UL listed, CSA certified                                                  |
|  |  | Yes, in combination with "+NA" (105864)                                   |
|  |  | IEC: IP65; UL/CSA Type 1, 12                                              |

## Dimensions



## Additional product information (links)

### IL03801020Z (AWA1150-0586) Cam switch: Mounting

|                                                    |                                                                                                                                                                                                 |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IL03801020Z (AWA1150-0586) Cam switch: Mounting    | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2015_08.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2015_08.pdf</a>                           |
| Form for ordering non-standard front plates        | <a href="http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=4.87">http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=4.87</a>                                             |
| Display flip catalog page.                         | <a href="http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=44">http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=44</a>                                                 |
| Technical overview cam switch, switch-disconnector | <a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.2">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.2</a>                                     |
| System overview cam switch T                       | <a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.4">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.4</a>                                     |
| System overview switch-disconnector P              | <a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.6">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.6</a>                                     |
| Key to part numbers Cam switch                     | <a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8</a>                                     |
| Key to part numbers Switch-disconnector            | <a href="http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8">http://de.ecat.moeller.net/flip-cat/?edition=HPLTEv1&amp;startpage=4.8</a>                                     |
| Switches for ATEX                                  | <a href="http://www.coopercrouse-hinds.eu/en/products/25-ex-safety-and-main-current-switches.html">http://www.coopercrouse-hinds.eu/en/products/25-ex-safety-and-main-current-switches.html</a> |
| UL/CSA: Rating data for approved types             | <a href="http://ecat.moeller.net/flip-cat/?edition=HPLTF&amp;startpage=4.98">http://ecat.moeller.net/flip-cat/?edition=HPLTF&amp;startpage=4.98</a>                                             |