



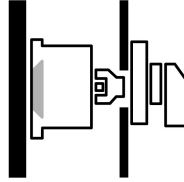
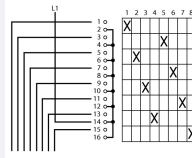
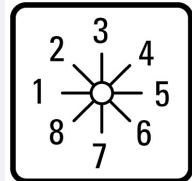
Step switches, T0, 20 A, rear mounting, 4 contact unit(s), Contacts: 8, 45 °, maintained, Without 0 (Off) position, 1-8, Design number 8235

Part no. **T0-4-8235/Z**  
 Catalog No. **083940**



Similar to illustration

## Delivery program

|  |                |                 |   |
|--|----------------|-----------------|---|
| Product range                                      |                |                 | Control switches  |
| Part group reference                               |                |                 | T0  |
| Basic function                                     |                |                 | Step switches<br>with black thumb grip and front plate  |
| Contacts   |                |                 | 8   |
| Degree of Protection                               |                |                 | Front IP65  |
| Design   |                |                 | rear mounting<br>   |
| Contact sequence                                   |                |                 |                    |
| Switching angle                                    |                | °               | 45  |
| Switching performance                              |                |                 | maintained<br>Without 0 (Off) position  |
| Design number                                      |                |                 | 8235  |
| Front plate no.                                    |                |                 | <br><b>FS 414</b> |
| front plate  |                |                 | 1-8   |
| <b>Motor rating AC-23A, 50 - 60 Hz</b>             |                |                 |   |
| 400 V  | P              | kW              | 5.5   |
| 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.                       |
| Number of contact units                            |                | contact unit(s) | 4   |

## Technical data

|                     |  |  |  |
|---------------------|--|--|--|
| <b>General</b>      |  |  |  |
| 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       | $U_{imp}$ | V AC | 6000        |
| Mechanical shock resistance           |           | g    | 15          |
| Mounting position                     |           |      | As required |

## Contacts

|   |          |              |  |
|---|----------|--------------|--|
| Electrical characteristics                          |          |              |  |
| Rated operational voltage                           | $U_e$    | V AC         | 690  |
| Rated uninterrupted current                         | $I_u$    | A            | 20   |
| Note on rated uninterrupted current $I_u$           |          |              | Rated uninterrupted current $I_u$ is specified for max. cross-section. |
| Load rating with intermittent operation, class 12   |          |              |  |
| AB 25 % DF  |          | $\times I_e$ | 2  |
| AB 40 % DF  |          | $\times I_e$ | 1.6  |
| AB 60 % DF  |          | $\times I_e$ | 1.3  |
| Short-circuit rating                                |          |              |  |
| Fuse  |          | A gG/gL      | 20   |
| Rated short-time withstand current (1 s current)    | $I_{cw}$ | $A_{rms}$    | 320  |
| Note on rated short-time withstand current $I_{cw}$ |          |              | Current for a time of 1 second   |
| Rated conditional short-circuit current             | $I_q$    | kA           | 6  |

## Switching capacity

|  |              |               |       |
|--|--------------|---------------|-------|
| cos $\varphi$ rated making capacity as per IEC 60947-3         |              | A             | 130   |
| Rated breaking capacity cos $\varphi$ 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 $I_e$                         |              | W             | 0.6   |
| Current heat loss per auxiliary circuit at $I_e$ (AC-15/230 V) |              | CO            | 0.6   |
| Lifespan, mechanical   | Operations   | $\times 10^6$ | > 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  | $I_e$        | A             | 11.5  |
| 230 V star-delta   | $I_e$        | A             | 20    |
| 400V 415 V   | $I_e$        | A             | 11.5  |
| 400 V star-delta   | $I_e$        | A             | 20    |
| 500 V  | $I_e$        | A             | 9     |
| 500 V star-delta   | $I_e$        | A             | 15.6  |
| 690 V  | $I_e$        | A             | 4.9   |
| 690 V star-delta   | $I_e$        | A             | 8.5   |
| AC-21A   |              |               |       |

|   |                   |          |   |
|---|-------------------|----------|---|
| Rated operational current switch              |                   |          |   |
| 440 V   | $I_e$             | A        | 20  |
| AC-23A  |                   |          |   |
| Motor rating AC-23A, 50 - 60 Hz               |                   |          |   |
| 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   | $I_e$             | A        | 13.3  |
| 400 V 415 V                                   | $I_e$             | A        | 13.3  |
| 500 V   | $I_e$             | A        | 13.3  |
| 690 V   | $I_e$             | A        | 7.6   |
| DC  |                   |          |   |
| DC-1, Load-break switches L/R = 1 ms          |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 10  |
| Voltage per contact pair in series            |                   | V        | 60  |
| DC-21A  |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 1   |
| Contacts                                      |                   | Quantity | 1   |
| DC-23A, motor load switch L/R = 15 ms         |                   |          |   |
| 24 V  |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 10  |
| Contacts                                      |                   | Quantity | 1   |
| 48 V  |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 10  |
| Contacts                                      |                   | Quantity | 2   |
| 60 V  |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 10  |
| Contacts                                      |                   | Quantity | 3   |
| 120 V   |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 5   |
| Contacts                                      |                   | Quantity | 3   |
| 240 V   |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 5   |
| Contacts                                      |                   | Quantity | 5   |
| DC-13, Control switches L/R = 50 ms           |                   |          |   |
| Rated operational current                     | $I_e$             | A        | 10  |
| Voltage per contact pair in series            |                   | V        | 32  |
| Control circuit reliability at 24 V DC, 10 mA | Fault probability | $H_F$    | $< 10^{-5}$ , < 1 failure in 100,000 switching 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                                 |
| Tightening torque for terminal screw |  | Nm              | 1                                    |

### Technical safety parameters:

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

### Rating data for approved types

|                                  |       |      |     |
|----------------------------------|-------|------|-----|
| Contacts                         |       |      |     |
| Rated operational voltage        | $U_e$ | V AC | 600 |
| Rated uninterrupted current max. |       |      |     |
| Main conducting paths            |       |      |     |
| General use                      |       | A    | 16  |

|  |                |       |                |
|--|----------------|-------|----------------|
| Auxiliary contacts                       |                |       |                |
| General Use                              | I <sub>U</sub> | A     | 10             |
| Pilot Duty                               |                |       | A 600<br>P 300 |
| Switching capacity                       |                |       |                |
| Maximum motor rating                     |                |       |                |
| Single-phase                             |                |       |                |
| 120 V AC                                 |                | HP    | 0.5            |
| 200 V AC                                 |                | HP    | 1              |
| 240 V AC                                 |                | HP    | 1.5            |
| Three-phase                              |                |       |                |
| 200 V AC                                 |                | HP    | 3              |
| 240 V AC                                 |                | HP    | 3              |
| 480 V AC                                 |                | HP    | 7.5            |
| 600 V AC                                 |                | HP    | 7.5            |
| Short Circuit Current Rating             |                |       |                |
|  |                | SCCR  |                |
| Basic Rating                             |                | kA    | 5              |
| max. Fuse                                |                | A     | 50             |
| High fault rating                        |                | kA    | 10             |
| max. Fuse                                |                | A     | 20, Class J    |
| Terminal capacity                        |                |       |                |
| Solid or flexible conductor with ferrule |                | AWG   | 18 - 14        |
| Terminal screw                           |                |       | M3.5           |
| Tightening torque                        |                | lb-in | 8.8            |

## 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   |                   |    |  |
|  |                   |    | UV resistance only in connection with protective shield.           |
| 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.                         |

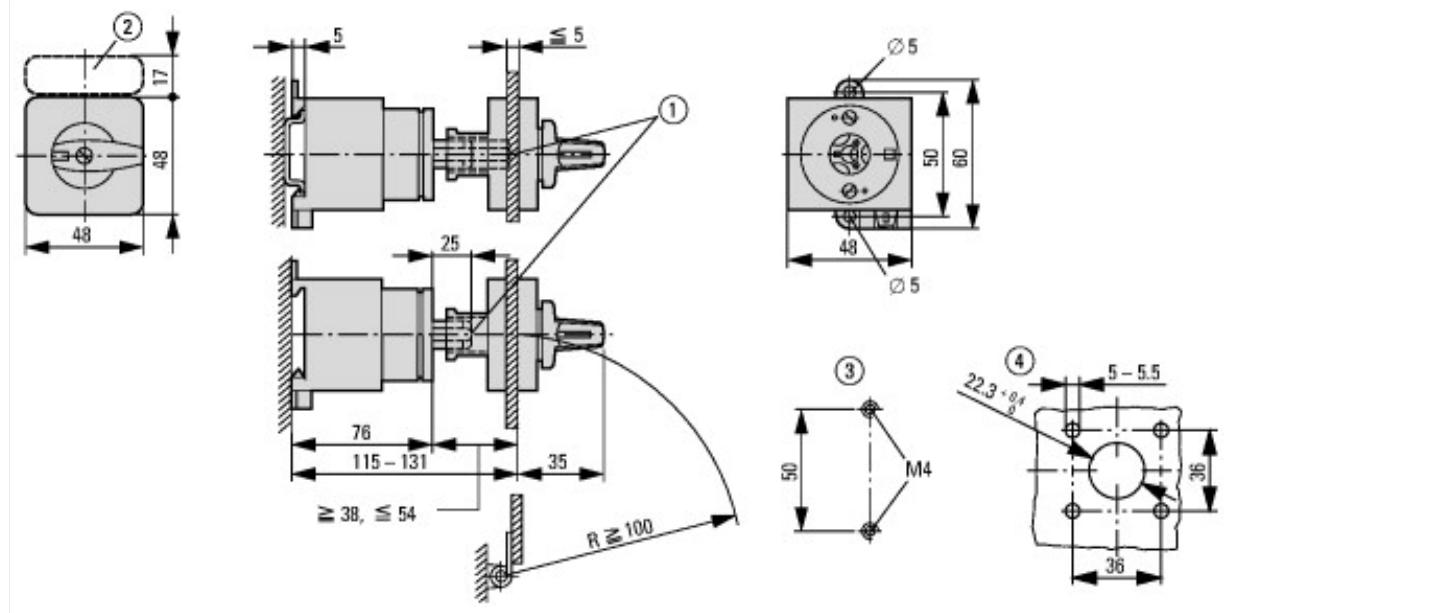
## Technical data ETIM 7.0

|  |  |   |                 |
|--|--|---|-----------------|
| Low-voltage industrial components (EG000017) / Control switch (EC002611)   |  |   |                 |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Control switch (ecl@ss10.0.1-27-37-14-14 [ACN998011]) |  |   |                 |
| Type of switch   |  |   | Level switch    |
| Number of poles  |  |   | 1               |
| Max. rated operation voltage Ue AC   |  | V | 690             |
| Rated permanent current Iu   |  | A | 20              |
| Number of switch positions   |  |   | 8               |
| With 0 (off) position  |  |   | No              |
| With retraction in 0-position  |  |   | No              |
| Device construction  |  |   | Built-in device |
| Width in number of modular spacings  |  |   | 0               |
| Suitable for ground mounting   |  |   | Yes             |
| Suitable for front mounting 4-hole   |  |   | No              |
| Suitable for distribution board installation   |  |   | No              |
| Suitable for intermediate mounting   |  |   | Yes             |
| Complete device in housing   |  |   | No              |
| Type of control element  |  |   | Toggle          |
| Front shield size  |  |   | Other           |
| Degree of protection (IP), front side  |  |   | IP65            |
| Degree of protection (NEMA), front side  |  |   | 12              |

## Approvals

|                             |  |  |  |
|-----------------------------|--|--|--|
| Product Standards           |  |  | UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CSA-C22.2 No. 94; IEC/EN 60947-3; CE marking |
| UL File No.                 |  |  | E36332   |
| UL Category Control No.     |  |  | NLRV   |
| CSA File No.                |  |  | 12528  |
| CSA Class No.               |  |  | 3211-05  |
| North America Certification |  |  | UL listed, CSA certified   |
| Suitable for                |  |  | Branch circuits, suitable as motor disconnect  |
| Degree of Protection        |  |  | IEC: IP65; UL/CSA Type 1, 12   |

## Dimensions



- ① Shaft extension with ZAV-T0 possible, max. 4 x 25 = 100 mm
- ② ZFS-... Label mount not included as standard
- ③ Drilling dimensions base
- ④ Drilling dimensions door

## Assets (links)

### Declaration of CE Conformity

00003075

### Instruction Leaflets

IL03801021Z2018\_05

## Additional product information (links)

### IL03801021Z (AWA1150-0587) Cam switches: rear mounting

|  |   |
|--|---|
| IL03801021Z (AWA1150-0587) Cam switches: rear mounting       | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801021Z2018_05.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801021Z2018_05.pdf</a>                           |
| Display flip catalog page.                                   | <a href="http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=76">http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=76</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> |
| Ordering form for SOND switches and SOND front plates(DE_EN) | <a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008005ZU_Orderform_Customized_Switch.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008005ZU_Orderform_Customized_Switch.pdf</a>             |
| Ordering form for SOND switches and SOND front plates(DE_EN) | <a href="ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008006ZU_Orderform_Customized_Switch.pdf">ftp://ftp.moeller.net/DOCUMENTATION/PDF/MZ008006ZU_Orderform_Customized_Switch.pdf</a>             |