

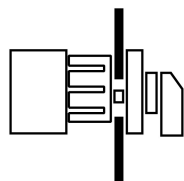
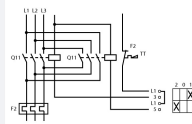
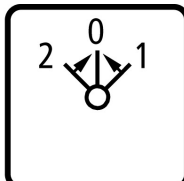


**Changeoverswitches, T0, 20 A, centre mounting, 1 contact unit(s),  
Contacts: 2, 45 °, momentary, With 0 (Off) position, with spring-return from  
both directions to 0, 2>0<1, Design number 9**

**Part no. T0-1-9/EZ**  
**Catalog No. 009847**

Similar to illustration

### Delivery program

|  |                |                 |   |
|--|----------------|-----------------|---|
| Product range                                      |                |                 | Control switches  |
| Part group reference                               |                |                 | T0  |
| Basic function                                     |                |                 | Changeoverswitches<br>with black thumb grip and front plate   |
| Contacts   |                |                 | 2   |
| Degree of Protection                               |                |                 | Front IP65  |
| Design   |                |                 | centre mounting<br> |
| Contact sequence                                   |                |                 |                    |
| Switching angle                                    |                | °               | 45  |
| Switching performance                              |                |                 | momentary<br>With 0 (Off) position<br>with spring-return from both directions to 0                    |
| Design number                                      |                |                 | 9   |
| Front plate no.                                    |                |                 | <br><b>FS 458</b> |
| front plate  |                |                 | 2>0<1   |
| <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) | 1   |

### 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 $\phi$ rated making capacity as per IEC 60947-3            |              | A             | 130   |
| Rated breaking capacity cos $\phi$ 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    |

|   |                   |                |  |
|---|-------------------|----------------|--|
| <b>AC-23A</b>                                 |                   |                |  |
| 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  |
| <b>DC</b>                                     |                   |                |  |
| 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  |                   |                |  |
| 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 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

|                                  |                |      |     |
|----------------------------------|----------------|------|-----|
| <b>Contacts</b>                  |                |      |     |
| Rated operational voltage        | U <sub>e</sub> | 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   | $I_n$      | A  | 20   |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0.6  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 0  |
| Heat dissipation capacity  | $P_{diss}$ | 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 (ec@ss10.0.1-27-37-14-14 [ACN998011]) |   |                 |
| Type of switch  |   | Reverser        |
| Number of poles   |   | 2               |
| Max. rated operation voltage Ue AC  | V | 690             |
| Rated permanent current Iu  | A | 20              |
| Number of switch positions  |   | 3               |
| With 0 (off) position   |   | Yes             |
| With retraction in 0-position   |   | Yes             |
| Device construction   |   | Built-in device |
| Width in number of modular spacings   |   | 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          |
| Front shield size   |   | 48x48 mm        |
| 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



② ZFS-... Label mount not included as standard

## Additional product information (links)

### IL03801020Z (AWA1150-0586) Cam switches: flush mounting

|  |   |
|--|---|
| IL03801020Z (AWA1150-0586) Cam switches: flush mounting      | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2018_05.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL03801020Z2018_05.pdf</a>                           |
| Display flip catalog page.                                   | <a href="http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=104">http://ecat.moeller.net/flip-cat/?edition=K115A&amp;startpage=104</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>             |