# DATASHEET - T0-4-146/IVS

**Step switches, T0, 20 A, service distribution board mounting, 4 contact unit(s), Contacts: 7, 45 °, maintained, With 0 (Off) position, 0-7, Design number 146**

**Part no.** **T0-4-146/IVS**
**013554**

| | |
|---|---|
| Product name | Eaton Moeller® series T0 Step switch |
| Part no. | T0-4-146/IVS |
| EAN | 4015080135548 |
| Product Length/Depth | 111 millimetre |
| Product height | 55 millimetre |
| Product width | 54 millimetre |
| Product weight | 0.179 kilogram |
| Certifications | CSA Class No.: 3211-05<br>VDE 0660<br>CSA<br>UL 60947-4-1<br>IEC/EN 60204<br>CE<br>CSA File No.: 012528<br>CSA-C22.2 No. 60947-4-1-14<br>CSA-C22.2 No. 94<br>UL<br>IEC/EN 60947<br>IEC/EN 60947-3<br>UL Category Control No.: NLRV<br>UL File No.: E36332 |
| Product Tradename | T0 |
| Product Type | Step switch |
| Product Sub Type | None |
| Catalog Notes | Rated Short-time Withstand Current (Icw) for a time of 1 second |
| | |
| Fitted with: | Black thumb grip and front plate<br>0 (off) position |
| Inscription | 0-7 |
| Number of poles | Single-pole |
| | |
| Degree of protection | IP30 |
| Degree of protection (front side) | IP30<br>NEMA 2 |
| Lifespan, mechanical | 400,000 Operations |
| Mounting method | Service distribution board mounting |
| Mounting position | As required |
| Number of contact units | 4 |
| Operating frequency | 1200 Operations/h |
| Overvoltage category | III |
| Pollution degree | 3 |
| Product category | Control switches |
| Rated impulse withstand voltage (Uimp) | 6000 V AC |
| Safe isolation | 440 V AC, Between the contacts, According to EN 61140 |
| Safety parameter (EN ISO 13849-1) | B10d values as per EN ISO 13849-1, table C.1 |
| Shock resistance | 15 g, Mechanical, According to IEC/EN 60068-2-27, Half-sinusoidal shock 20 ms |
| Suitable for | Ground mounting<br>Distribution board installation<br>Branch circuits, suitable as motor disconnect, (UL/CSA) |
| Switching angle | 45 ° |
| Type | Step switch |
| | |
| Ambient operating temperature - min | -25 °C |

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| Ambient operating temperature - max | 50 °C |
| Ambient operating temperature (enclosed) - min | -25 °C |
| Ambient operating temperature (enclosed) - max | 40 °C |
| Climatic proofing | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30 |
| | |
| Terminal capacity (flexible with ferrule) | 2 x (0.75 - 2.5) $mm^2$, ferrules to DIN 46228<br>1 x (0.75 - 2.5) $mm^2$, ferrules to DIN 46228 |
| Terminal capacity (solid/flexible with ferrule AWG) | 18 - 14 |
| Terminal capacity (solid/stranded) | 2 x (1 - 2.5) $mm^2$<br>1 x (1 - 2.5) $mm^2$ |
| Screw size | M3.5, Terminal screw |
| Tightening torque | 8.8 lb-in, Screw terminals<br>1 Nm, Screw terminals |
| | |
| Rated breaking capacity at 220/230 V (cos phi to IEC 60947-3) | 100 A |
| Rated breaking capacity at 400/415 V (cos phi to IEC 60947-3) | 110 A |
| Rated breaking capacity at 500 V (cos phi to IEC 60947-3) | 80 A |
| Rated breaking capacity at 660/690 V (cos phi to IEC 60947-3) | 60 A |
| Rated operating voltage (Ue) at AC - max | 690 V |
| Rated operational current (Ie) at AC-3, 220 V, 230 V, 240 V | 11.5 A |
| Rated operational current (Ie) at AC-3, 380 V, 400 V, 415 V | 11.5 A |
| Rated operational current (Ie) at AC-3, 500 V | 9 A |
| Rated operational current (Ie) at AC-3, 660 V, 690 V | 4.9 A |
| Rated operational current (Ie) at AC-21, 440 V | 20 A |
| Rated operational current (Ie) at AC-23A, 230 V | 13.3 A |
| Rated operational current (Ie) at AC-23A, 400 V, 415 V | 13.3 A |
| Rated operational current (Ie) at AC-23A, 500 V | 13.3 A |
| Rated operational current (Ie) at AC-23A, 690 V | 7.6 A |
| Rated operational current (Ie) at DC-1, load-break switches l/r = 1 ms | 10 A |
| Rated operational current (Ie) at DC-13, control switches L/R = 50 ms | 10 A |
| Rated operational current (Ie) at DC-21, 240 V | 1 A |
| Rated operational current (Ie) at DC-23A, 24 V | 10 A |
| Rated operational current (Ie) at DC-23A, 48 V | 10 A |
| Rated operational current (Ie) at DC-23A, 60 V | 10 A |
| Rated operational current (Ie) at DC-23A, 120 V | 5 A |
| Rated operational current (Ie) at DC-23A, 240 V | 5 A |
| Rated operational current (Ie) star-delta at AC-3, 230 V | 20 A |
| Rated operational current (Ie) star-delta at AC-3, 400 V | 20 A |
| Rated operational current (Ie) star-delta at AC-3, 500 V | 15.6 A |
| Rated operational current (Ie) star-delta at AC-3, 690 V | 8.5 A |
| Rated operational power at AC-3, 415 V, 50 Hz | 5.5 kW |
| Rated operational power at AC-3, 500 V, 50 Hz | 5.5 kW |
| Rated operational power at AC-3, 690 V, 50 Hz | 4 kW |
| Rated operational power at AC-23A, 220/230 V, 50 Hz | 3 kW |
| Rated operational power at AC-23A, 400 V, 50 Hz | 5.5 kW |
| Rated operational power at AC-23A, 500 V, 50 Hz | 7.5 kW |
| Rated operational power at AC-23A, 690 V, 50 Hz | 5.5 kW |
| Rated operational power star-delta at 220/230 V, 50 Hz | 5.5 kW |
| Rated operational power star-delta at 380/400 V, 50 Hz | 7.5 kW |
| Rated operational power star-delta at 500 V, 50 Hz | 7.5 kW |
| Rated operational power star-delta at 690 V, 50 Hz | 5.5 kW |
| Rated uninterrupted current (Iu) | 20 A |
| Uninterrupted current | Rated uninterrupted current Iu is specified for max. cross-section. |
| | |
| Rated conditional short-circuit current (Iq) | 6 kA |
| Rated short-time withstand current (Icw) | 320 A, Contacts, 1 second |

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| Short-circuit current rating (basic rating) | 50A, max. Fuse, SCCR (UL/CSA)<br>5 kA, SCCR (UL/CSA) |
| Short-circuit current rating (high fault) | 10 kA, SCCR (UL/CSA)<br>20 A, Class J, max. Fuse, SCCR (UL/CSA) |
| Short-circuit protection rating | 20 A gG/gL, Fuse, Contacts |
| | |
| Load rating | 1.3 x I# (with intermittent operation class 12, 60 % duty factor)<br>1.6 x I# (with intermittent operation class 12, 40 % duty factor)<br>2 x I# (with intermittent operation class 12, 25 % duty factor) |
| Number of contacts in series at DC-21A, 240 V | 1 |
| Number of contacts in series at DC-23A, 24 V | 1 |
| Number of contacts in series at DC-23A, 48 V | 2 |
| Number of contacts in series at DC-23A, 60 V | 3 |
| Number of contacts in series at DC-23A, 120 V | 3 |
| Number of contacts in series at DC-23A, 240 V | 5 |
| Switching capacity (main contacts, general use) | 16 A, Rated uninterrupted current max. (UL/CSA) |
| Switching capacity (auxiliary contacts, general use) | 10A, IU, (UL/CSA) |
| Switching capacity (auxiliary contacts, pilot duty) | A600 (UL/CSA)<br>P300 (UL/CSA) |
| Rated making capacity up to 690 V (cos phi to IEC/EN 60947-3) | 130 A |
| Voltage per contact pair in series | 60 V |
| | |
| Assigned motor power at 115/120 V, 60 Hz, 1-phase | 0.5 HP |
| Assigned motor power at 200/208 V, 60 Hz, 1-phase | 1 HP |
| Assigned motor power at 200/208 V, 60 Hz, 3-phase | 3 HP |
| Assigned motor power at 230/240 V, 60 Hz, 1-phase | 1.5 HP |
| Assigned motor power at 230/240 V, 60 Hz, 3-phase | 3 HP |
| Assigned motor power at 460/480 V, 60 Hz, 3-phase | 7.5 HP |
| Assigned motor power at 575/600 V, 60 Hz, 3-phase | 7.5 HP |
| | |
| Control circuit reliability | 1 failure per 100,000 switching operations statistically determined, at 24 V DC, 10 mA) |
| Number of contacts | 7 |
| | |
| Actuator function | Maintained<br>With 0 (Off) position |
| Actuator type | Toggle |
| Number of switch positions | 8 |
| | |
| Equipment heat dissipation, current-dependent Pvid | 0 W |
| Heat dissipation capacity Pdiss | 0 W |
| Heat dissipation per pole, current-dependent Pvid | 0.6 W |
| Rated operational current for specified heat dissipation (In) | 20 A |
| Static heat dissipation, non-current-dependent Pvs | 0 W |
| 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 Resist. of insul. mat. to abnormal heat/fire by internal elect. 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. |

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|---|---|---|---|
| 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 8.0

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])

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|---|---|---|---|
| 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 zero (off) position | | | Yes |
| With retraction in 0-position | | | No |
| Device construction | | | Built-in device |
| Width in number of modular spacings | | | 4 |
| Suitable for floor mounting | | | Yes |
| Suitable for front mounting | | | No |
| Suitable for distribution board installation | | | Yes |
| 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 | | | IP30 |
| Degree of protection (NEMA), front side | | | 2 |


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