

Step switches, T0, 20 A, centre mounting, 5 contact unit(s), Contacts: 9, 45 °, maintained, With 0 (Off) position, 0-3, design no. 8281

Part no. T0-5-8281/EZ  
Catalog No. 050717

Similar to illustration

## Delivery program

|                                                    |                |                 |                                                                                 |
|----------------------------------------------------|----------------|-----------------|---------------------------------------------------------------------------------|
| Product range                                      |                |                 | Control switches                                                                |
| Part group reference                               |                |                 | T0                                                                              |
| Basic function                                     |                |                 | Step switches                                                                   |
|                                                    |                |                 | with black thumb grip and front plate                                           |
| Contacts                                           |                |                 | 9                                                                               |
| Number of steps                                    |                |                 | 3 steps, 45°                                                                    |
| Degree of Protection                               |                |                 | Front IP65                                                                      |
| Design                                             |                |                 | centre mounting                                                                 |
| Switching angle                                    |                | °               | 45                                                                              |
| Switching performance                              |                |                 | maintained<br>With 0 (Off) position                                             |
| Design number                                      |                |                 | 8281                                                                            |
| front plate                                        |                |                 | 0-3                                                                             |
| <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) | 5                                                                               |

## 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                                                                                      |

### 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>cs</sub>              |                |                   | Current for a time of 1 second |
| Rated conditional short-circuit current                                 | I <sub>q</sub> | kA                | 6                              |
| <b>Switching capacity</b>                                               |                |                   |                                |
| 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                           |
| <b>AC</b>                                                               |                |                   |                                |
| <b>AC-3</b>                                                             |                |                   |                                |
| 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                            |
| <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>                                                               |                |                   |                                |
| <b>DC-1, Load-break switches L/R = 1 ms</b>                             |                |                   |                                |
| Rated operational current                                               | I <sub>e</sub> | A                 | 10                             |
| Voltage per contact pair in series                                      |                | V                 | 60                             |
| <b>DC-21A</b>                                                           |                |                   |                                |
| Rated operational current                                               | I <sub>e</sub> | A                 | 1                              |
| Contacts                                                                |                | Quantity          | 1                              |
| <b>DC-23A, motor load switch L/R = 15 ms</b>                            |                |                   |                                |

|                                               |                   |                |                                                                  |
|-----------------------------------------------|-------------------|----------------|------------------------------------------------------------------|
| 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:

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

### Rating data for approved types

|                                          |                |      |                |
|------------------------------------------|----------------|------|----------------|
| Contacts                                 |                |      |                |
| 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 <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 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]) |  |   |                 |
| Type of switch                                                                                                                                                                                           |  |   | Level switch    |
| Number of poles                                                                                                                                                                                          |  |   | 3               |
| Max. rated operation voltage U <sub>e</sub> AC                                                                                                                                                           |  | V | 690             |
| Rated permanent current I <sub>u</sub>                                                                                                                                                                   |  | A | 20              |
| Number of switch positions                                                                                                                                                                               |  |   | 4               |
| With zero (off) position                                                                                                                                                                                 |  |   | Yes             |
| With retraction in 0-position                                                                                                                                                                            |  |   | No              |
| Device construction                                                                                                                                                                                      |  |   | Built-in device |
| Width in number of modular spacings                                                                                                                                                                      |  |   | 0               |
| Suitable for floor mounting                                                                                                                                                                              |  |   | No              |
| Suitable for front mounting                                                                                                                                                                              |  |   | 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       |