

Changeoverswitches, Contacts: 8, 20 A, 60 °, rear mounting, Basic switch



Part no. Article no.

T0-4-8213/XZ 013960

| Delivery program  |                  |                    |  |
|---|------------------|--------------------|--|
| Product range   |                  |                    | Control switches   |
| Part group reference  |                  |                    | ТО   |
| Basic function  |                  |                    | Changeoverswitches   |
| Contacts  |                  |                    | 8  |
| Design  |                  |                    | rear mounting<br>Basic switch  |
| Contact sequence  |                  |                    |  |
| Switching angle   |                  | 0                  | 60   |
| Front plate no.   |                  |                    | FS 684   |
| Motor rating AC-23A, 50 - 60 Hz                                       |                  |                    |  |
| 400 V   | Р                | kW                 | 5.5  |
| Rated uninterrupted current   | l <sub>u</sub>   | А                  | 20   |
| Number of contact units   |                  | contact<br>unit(s) | 4  |
| Technical data<br>General<br>Standards                                |                  |                    | IEC/EN 60947, VDE 0660, IEC/EN 60204   |
|   |                  |                    | 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                                 |                  |                    | 111/3  |
| Rated impulse withstand voltage                                       | U <sub>imp</sub> | V AC               | 6000   |
| Mechanical shock resistance   |                  | g                  | 15   |
| Mounting position   |                  |                    | As required  |
| Protection against direct contact when actuated from front (EN 50274) |                  |                    | Finger and back-of-hand proof  |
| Contacts Electrical characteristics                                   |                  |                    |  |
|   | 11               | V AC               | 690  |
| Rated operational voltage   | Ue               |                    |  |
| Rated uninterrupted current   | lu               | A                  | 20<br>Peter unintersected our set to be an affind for more service and the     |
| Note on rated uninterrupted current !u                                |                  |                    | Rated uninterrupted current lu is specified for max. cross-section.            |
| Load rating with intermittent operation, class 12                     |                  |                    |  |
| AB 25 % DF  |                  | x l <sub>e</sub>   | 2  |
| AB 40 % DF  |                  | x I <sub>e</sub>   | 1.6  |
| AB 60 % DF  |                  | x l <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 lcw

Current for a time of 1 second

| Rated conditional short-circuit current                                 | 1.             | L A               | c    |
|---|----------------|-------------------|------|
| Switching capacity  | lq             | kA                | 6    |
| 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  |
|   | Operationa     |                   | >0.4 |
| Lifespan, mechanical  | Operations     | x 10 <sup>6</sup> |      |
| Maximum operating frequency   | Operations/h   |                   | 1200 |
| AC  |                |                   |      |
| AC-3  |                |                   |      |
| Rating, motor load switch   | Р              | kW                |      |
| 220 V 230 V   | Р              | kW                | 3    |
| 230 V Star-delta  | Р              | kW                | 5.5  |
| 400 V 415 V   | Р              | kW                | 5.5  |
| 400 V Star-delta  | Р              | kW                | 7.5  |
| 500 V   | Р              | kW                | 5.5  |
| 500 V Star-delta  | Р              | kW                | 7.5  |
| 690 V   | Р              | kW                | 4    |
| 690 V Star-delta  | Р              | kW                | 5.5  |
| Rated operational current motor load switch                             |                |                   |      |
| 230 V   | ۱ <sub>e</sub> | A                 | 11.5 |
| 230 V star-delta  | ۱ <sub>e</sub> | А                 | 20   |
| 400V 415 V  | ۱ <sub>e</sub> | А                 | 11.5 |
| 400 V star-delta  | I <sub>e</sub> | A                 | 20   |
| 500 V   | l <sub>e</sub> | A                 | 9    |
| 500 V star-delta  | I <sub>e</sub> | A                 | 15.6 |
| 690 V   | l <sub>e</sub> | A                 | 4.9  |
| 690 V star-delta  | le             | A                 | 8.5  |
| AC-21A  | 'e             | ^                 |      |
| Rated operational current switch  |                |                   |      |
| 440 V   |                | ٨                 | 20   |
|   | l <sub>e</sub> | A                 | 20   |
| AC-23A  |                |                   |      |
| Motor rating AC-23A, 50 - 60 Hz   | P              | kW                |      |
| 230 V   | P              | kW                | 3    |
| 400 V 415 V   | Р              | kW                | 5.5  |
| 500 V   | P              | kW                | 7.5  |
| 690 V   | Р              | kW                | 5.5  |
| Rated operational current motor load switch                             |                |                   |      |
| 230 V   | l <sub>e</sub> | A                 | 13.3 |
| 400 V 415 V   | ۱ <sub>e</sub> | A                 | 13.3 |
| 500 V   | ۱ <sub>e</sub> | А                 | 13.3 |
| 690 V   | ۱ <sub>e</sub> | А                 | 7.6  |
| DC  |                |                   |      |
| DC-1, Load-break switches L/R = 1 ms                                    |                |                   |      |
| Rated operational current   | ۱ <sub>e</sub> | А                 | 10   |
| Voltage per contact pair in series                                      |                | V                 | 60   |
| DC-21A  | I <sub>e</sub> | A                 |      |
| Rated operational current   | l <sub>e</sub> | A                 | 1    |
|   | .е             |                   |      |

|   |                      | •               | -   |
|---|----------------------|-----------------|---|
| Contacts                                      |                      | Quantity        |   |
| DC-23A, motor load switch L/R = 15 ms         |                      |                 |   |
| 24 V  |                      |                 |   |
| Rated operational current                     | l <sub>e</sub>       | А               | 10  |
| Contacts                                      |                      | Quantity        | 1   |
| 48 V  |                      |                 |   |
| Rated operational current                     | I <sub>e</sub>       | А               | 10  |
| Contacts                                      |                      | Quantity        | 2   |
| 60 V  |                      |                 |   |
| Rated operational current                     | I <sub>e</sub>       | А               | 10  |
| Contacts                                      |                      | Quantity        | 3   |
| 120 V   |                      |                 |   |
| Rated operational current                     | le                   | А               | 5   |
| Contacts                                      |                      | Quantity        | 3   |
| 240 V   |                      |                 |   |
| Rated operational current                     | le                   | А               | 5   |
| Contacts                                      |                      | Quantity        | 5   |
| DC-13, Control switches L/R = 50 ms           |                      |                 |   |
| Rated operational current                     | I <sub>e</sub>       | А               | 10  |
| Voltage per contact pair in series            |                      | V               | 32  |
| Control circuit reliability at 24 V DC, 10 mA | Fault<br>probability | H <sub>F</sub>  | < 10 $^{-5}$ , < 1 fault in 100000 operations           |
| Terminal capacities                           |                      |                 |   |
| Solid or stranded                             |                      | mm <sup>2</sup> | 1 x (1 - 2,5)<br>2 x (1 - 2,5)                          |
| Flexible with ferrules to DIN 46228           |                      | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5)                    |
| Terminal screw                                |                      |                 | M3.5  |
| Max. tightening torque                        |                      | Nm              | 1   |
| Technical safety parameters:                  |                      |                 |   |
| Notes   |                      |                 | B10 <sub>d</sub> values as per EN ISO 13849-1, table C1 |
| Rating data for approved types                |                      |                 |   |
| Terminal capacity                             |                      |                 |   |
| Terminal screw                                |                      |                 | M3.5  |
|   |                      |                 |   |

## **Design verification as per IEC/EN 61439**

| Rated operational current for specified heat dissipationInA20Heat dissipation per pole, current-dependentPvidWa0.6Equipment heat dissipation, current-dependentPvidWa0.6Static heat dissipation, non-current-dependentPvsWa0.6Heat dissipation capacityPvsWa0.6Operating ambient temperature min.PdissWa0.6Operating ambient temperature max.MaxMax0.6   | Design vernication as per 120/214 01455                                    |                   |    |  |
|--|--|-------------------|----|--|
| Heat dissipation per pole, current-dependent       Pvid       Wo       06         Equipment heat dissipation, current-dependent       Pvid       Wo       0         Static heat dissipation, non-current-dependent       Pvid       Wo       0         Itel dissipation capacity       Pvid       Wo       0         Operating ambient temperature min.       °C       -5         Operating ambient temperature max.       °C       -5         Itel Zebreight of materials and parts       °C       -5         10.2.3 Uverification       Mets the product standard's requirements.       Mets the product standard's requirements.         10.2.3.1 Verification of resistance of insulating materials to normal heat and free due to internal electric effects       Mets the product standard's requirements.         10.2.3.2 Verification of resistance of insulating materials to abnormal heat and free due to internal electric effects       Mets the product standard's requirements.         10.2.3.3 Verification of resistance of insulating materials to abnormal heat and free due to internal electric effects       Mets the product standard's requirements.         10.2.4. Resistance to ultra-violet (UV) radiation       Mets the product standard's requirements.         10.2.5. Lifting       Ges not apply, since the entire switchgear needs to be evaluated.         10.2.7. Inscriptions       Ges not apply, since the entif's requirements.   | Technical data for design verification                                     |                   |    |  |
| Equipment heat dissipation, current-dependent         Pvid         We           Static heat dissipation, conrent-dependent         Pvs         We         0           Heat dissipation capacity         Pdiss         We         0           Operating ambient temperature min.         Pdiss         C         25           Operating ambient temperature max.         S         S         5           ID2 Strength of materials and parts         Kets the product standard's requirements.         Kets the product standard's requirements.           ID2.32.1 Verification of termsal stability of enclosures         Mets the product standard's requirements.         Kets the product standard's requirements.           ID2.3.2 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects         Mets the product standard's requirements.           ID2.5 Lifting         Des not apply, since the entire switchgear needs to be evaluated.           ID2.7 Inscriptions         Tots the product standard's requirements.  | Rated operational current for specified heat dissipation                   | In                | А  | 20   |
| Number of the definition | Heat dissipation per pole, current-dependent                               | P <sub>vid</sub>  | W  | 0.6  |
| Heat dissipation capacity       Pdiss       W       0         Operating ambient temperature min.       -25         Operating ambient temperature max.       F       60         EC/EN 61439 design verification       -       50         102.5 trength of materials and parts       Meets the product standard's requirements.       Meets the product standard's requirements.         102.2.3 Verification of thermal stability of enclosures       Meets the product standard's requirements.       Meets the product standard's requirements.         102.3.3 Verification of resistance of insulating materials to normal heat and fire due to internal electric effects       Meets the product standard's requirements.         102.4 Resistance to ultra-violet (UV) radiation       Personal product standard's requirements.         102.5 Lifting       Does not apply, since the entire switchgear needs to be evaluated.         102.7 Inscriptions       Meets the product standard's requirements.         103.2 Begree of protection of ASSEMBLES       Meets the product standard's requirements.  | Equipment heat dissipation, current-dependent                              | P <sub>vid</sub>  | W  | 0  |
| Operating ambient temperature min.         ocs         <   | Static heat dissipation, non-current-dependent                             | P <sub>vs</sub>   | W  | 0  |
| Operating ambient temperature max.CSoID2 Strength of materials and partsID2 Strength of materials and partsID2 Strength of materials and partsID2 Strength of materials and partsMeets the product standard's requirements.ID2.3.1 Verification of thermal stability of enclosuresID2.3.1 Verification of resistance of insulating materials to normal heatID2 Strength of materials and partsMeets the product standard's requirements.ID2.3.3 Verification of resistance of insulating materials to abnormal heat<br>and fire due to internal electric effectsID2 Strength of materials to abnormal heat<br>and fire due to internal electric effectsMeets the product standard's requirements.ID2.4 Resistance to ultra-violet (UV) radiationID2 Strength of materials to be evaluated.Pease enquireID2.5 LiftingDes not apply, since the entire switchgear needs to be evaluated.Dees not apply, since the entire switchgear needs to be evaluated.ID2.7 InscriptionsID2 Strength of ASSEMBLIESID2 Strength of ASSEMBLIESID2 Strength of ASSEMBLIES  | Heat dissipation capacity  | P <sub>diss</sub> | W  | 0  |
| EEC/EN 61439 design verificationImage: Constraint of the second of the seco  | Operating ambient temperature min.   |                   | °C | -25  |
| 10.2 Strength of materials and partsImage: Control of materials and parts10.2.3 Corrosion resistanceMeets the product standard's requirements.10.2.3.1 Verification of thermal stability of enclosuresMeets the product standard's requirements.10.2.3.2 Verification of resistance of insulating materials to normal heat<br>and fire due to internal electric effectsMeets the product standard's requirements.10.2.4 Resistance to ultra-violet (UV) radiationPlease enquire10.2.5 LiftingDoes not apply, since the entire switchgear needs to be evaluated.10.2.6 Mechanical impactDoes not apply, since the entire switchgear needs to be evaluated.10.2.7 InscriptionsMeets the product standard's requirements.10.3 Degree of protection of ASSEMBLIESImage: Control of ASSEMBLIES  | Operating ambient temperature max.   |                   | °C | 50   |
| 10.2.2 Corrosion resistanceMeets the product standard's requirements.10.2.3.1 Verification of thermal stability of enclosuresMeets the product standard's requirements.10.2.3.2 Verification of resistance of insulating materials to normal heatMeets the product standard's requirements.10.2.3.3 Verification of resistance of insulating materials to abnormal heatMeets the product standard's requirements.10.2.4 Resistance to ultra-violet (UV) radiationMeets the product standard's requirements.10.2.5 LiftingPlease enquire10.2.6 Mechanical impactMeets the product standard's requirements.10.2.7 InscriptionsMeets the product standard's requirements.10.3 Degree of protection of ASSEMBLIESGeos not apply, since the entire switchgear needs to be evaluated.10.3 Degree of protection of ASSEMBLIESGeos not apply, since the entire switchgear needs to be evaluated.   | IEC/EN 61439 design verification   |                   |    |  |
| 10.2.3.1 Verification of thermal stability of enclosuresMeets the product standard's requirements.10.2.3.2 Verification of resistance of insulating materials to normal heat<br>and fire due to internal electric effectsMeets the product standard's requirements.10.2.3.3 Verification of resistance of insulating materials to abnormal heat<br>and fire due to internal electric effectsMeets the product standard's requirements.10.2.4 Resistance to ultra-violet (UV) radiationPlease enquire10.2.5 LiftingDoes not apply, since the entire switchgear needs to be evaluated.10.2.6 Mechanical impactMeets the product standard's requirements.10.2.7 InscriptionsMeets the product standard's requirements.10.3 Degree of protection of ASSEMBLIESMeets the product standard's nequirements.   | 10.2 Strength of materials and parts                                       |                   |    |  |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat and fire due to internal electric effects       Meets the product standard's requirements.         10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects       Meets the product standard's requirements.         10.2.4 Resistance to ultra-violet (UV) radiation       Please enquire         10.2.5 Lifting       Does not apply, since the entire switchgear needs to be evaluated.         10.2.6 Mechanical impact       Does not apply, since the entire switchgear needs to be evaluated.         10.2.7 Inscriptions       Meets the product standard's requirements.         10.3 Degree of protection of ASSEMBLIES       Goes not apply, since the entire switchgear needs to be evaluated.  | 10.2.2 Corrosion resistance  |                   |    | Meets the product standard's requirements.                         |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects       Meets the product standard's requirements.         10.2.4 Resistance to ultra-violet (UV) radiation       Please enquire         10.2.5 Lifting       Does not apply, since the entire switchgear needs to be evaluated.         10.2.6 Mechanical impact       Does not apply, since the entire switchgear needs to be evaluated.         10.2.7 Inscriptions       Meets the product standard's requirements.         10.3 Degree of protection of ASSEMBLIES       Ooes not apply, since the entire switchgear needs to be evaluated.  | 10.2.3.1 Verification of thermal stability of enclosures                   |                   |    | Meets the product standard's requirements.                         |
| and fire due to internal electric effectsand fire due to internal electric effectsand fire due to internal electric effects10.2.4 Resistance to ultra-violet (UV) radiationPlease enquire10.2.5 LiftingDoes not apply, since the entire switchgear needs to be evaluated.10.2.6 Mechanical impactDoes not apply, since the entire switchgear needs to be evaluated.10.2.7 InscriptionsMeets the product standard's requirements.10.3 Degree of protection of ASSEMBLIESOes not apply, since the entire switchgear needs to be evaluated.   | 10.2.3.2 Verification of resistance of insulating materials to normal heat |                   |    | 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.  |  |                   |    | Meets the product standard's requirements.                         |
| 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.  | 10.2.4 Resistance to ultra-violet (UV) radiation                           |                   |    | Please enquire   |
| 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.  | 10.2.5 Lifting   |                   |    | Does not apply, since the entire switchgear needs to be evaluated. |
| 10.3 Degree of protection of ASSEMBLIES       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.                         |
| 10.4 Clearances and creepage distances Meets the product standard's requirements.  | 10.3 Degree of protection of ASSEMBLIES                                    |                   |    | Does not apply, since the entire switchgear needs to be evaluated. |
|  | 10.4 Clearances and creepage distances                                     |                   |    | Meets the product standard's requirements.                         |

| 10.5 Protection against electric shock                   | Does not apply, since the entire switchgear needs to be evaluated.   |
|--|--|
| 10.6 Incorporation of switching devices and components   | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.7 Internal electrical circuits and connections        | Is the panel builder's responsibility.   |
| 10.8 Connections for external conductors                 | Is the panel builder's responsibility.   |
| 10.9 Insulation properties                               |  |
| 10.9.2 Power-frequency electric strength                 | Is the panel builder's responsibility.   |
| 10.9.3 Impulse withstand voltage                         | Is the panel builder's responsibility.   |
| 10.9.4 Testing of enclosures made of insulating material | Is the panel builder's responsibility.   |
| 10.10 Temperature rise                                   | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating                               | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.12 Electromagnetic compatibility                      | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.13 Mechanical function                                | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

## **Technical data ETIM 6.0**

Low-voltage industrial components (EG000017) / Off-load switch (EC001105)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Changeover switch (ecl@ss8.1-27-37-14-05 [AKF062010])

| Model   |    | Reverser         |
|---|----|------------------|
| Number of poles   |    | 4                |
| With 0 (off) position                                   |    | Yes              |
| With retraction in 0-position                           |    | No               |
| Rated permanent current lu                              | А  | 20               |
| Rated operation current le at AC-3, 400 V               | А  | 11.5             |
| Rated operation power at AC-3, 400 V                    | kW | 4                |
| Degree of protection (IP), front side                   |    | IP65             |
| Number of auxiliary contacts as normally closed contact |    | 0                |
| Number of auxiliary contacts as normally open contact   |    | 0                |
| Number of auxiliary contacts as change-over contact     |    | 0                |
| Suitable for ground mounting                            |    | 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                                 |    | •                |
| Type of electrical connection of main circuit           |    | Screw connection |
|   |    |                  |

## Additional product information (links)

Display flip catalog page.

http://ecat.moeller.net/flip-cat/?edition=K115A&startpage=44