



015123

T0-2-8231/EZ

Overview

Specifications

Resources



Delivery program

Technical data

Design verification as per IEC/EN 61439

Technical data ETIM 7.0

Approvals

Dimensions

## DELIVERY PROGRAM

Product range  
Control switches

Part group reference  
T0

Basic function  
Step switches

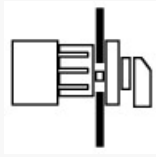
with black thumb grip and front plate

Contacts  
4

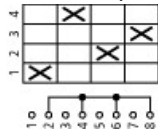
Number of steps  
4 steps, 60°

Degree of Protection  
Front IP65

Design  
centre mounting



Contact sequence

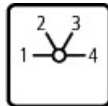


Switching angle  
60 °

Switching performance  
maintained  
Without 0 (Off) position

Design number  
8231

Front plate no.



FS 606

front plate  
1-4

**Motor rating AC-23A, 50 - 60 Hz [P]**

400 V [P]  
5.5 kW

Rated uninterrupted current [ $I_u$ ]  
20 A

Note on rated uninterrupted current  $I_u$   
Rated uninterrupted current  $I_u$  is specified for max.  
cross-section.

Number of contact units  
2 contact unit(s)

## TECHNICAL DATA

### General

Standards  
IEC/EN 60947, VDE 0660, IEC/EN 60204, CSA, UL  
Switch-disconnector according to IEC/EN 60947-3

Climatic proofing  
Damp heat, constant, to IEC 60068-2-78  
Damp heat, cyclic, to IEC 60068-2-30

Ambient temperature  
Open  
-25 - +50 °C

Ambient temperature  
Enclosed  
-25 - +40 °C

Overvoltage category/pollution degree  
III/3

Rated impulse withstand voltage [ $U_{imp}$ ]  
6000 V AC

Mechanical shock resistance  
15 g

Mounting position  
As required

### Contacts

Electrical characteristics  
Rated operational voltage [ $U_e$ ]  
690 V AC

Electrical characteristics

Rated uninterrupted current [ $I_u$ ]  
20 A

#### Electrical characteristics

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  
 $2 \times I_e$

Load rating with intermittent operation, class 12  
AB 40 % DF  
 $1.6 \times I_e$

Load rating with intermittent operation, class 12  
AB 60 % DF  
 $1.3 \times I_e$

Short-circuit rating  
Fuse  
20 A gG/gL

Rated short-time withstand current (1 s current)  
[ $I_{cw}$ ]  
 $320 A_{RMS}$

Note on rated short-time withstand current  $I_{cw}$   
Current for a time of 1 second

Rated conditional short-circuit current [ $I_k$ ]  
6 kA

### Switching capacity

$\cos \phi$  rated making capacity as per IEC 60947-3  
130 A

Rated breaking capacity  $\cos \phi$  to IEC 60947-3  
230 V  
100 A

Rated breaking capacity  $\cos \phi$  to IEC 60947-3  
400/415 V  
110 A

Rated breaking capacity  $\cos \phi$  to IEC 60947-3  
500 V  
80 A

Rated breaking capacity  $\cos \phi$  to IEC 60947-3  
690 V  
60 A

Safe isolation to EN 61140  
between the contacts  
440 V AC

Safe isolation to EN 61140  
Current heat loss per contact at  $I_e$   
0.6 W

Safe isolation to EN 61140  
Current heat loss per auxiliary circuit at  $I_e$  (AC-  
15/230 V)  
0.6 W

Lifespan, mechanical [Operations]  
> 0.4 x 10<sup>6</sup>

Maximum operating frequency [Operations/h]  
1200

AC  
AC-3  
Rating, motor load switch [P]  
220 V 230 V [P]  
3 kW

AC  
AC-3  
Rating, motor load switch [P]  
230 V Star-delta [P]  
5.5 kW

AC  
AC-3  
Rating, motor load switch [P]  
400 V 415 V [P]  
5.5 kW

AC  
AC-3  
Rating, motor load switch [P]  
400 V Star-delta [P]

7.5 kW

AC  
AC-3  
Rating, motor load switch [P]  
500 V [P]  
5.5 kW

AC  
AC-3  
Rating, motor load switch [P]  
500 V Star-delta [P]  
7.5 kW

AC  
AC-3  
Rating, motor load switch [P]  
690 V [P]  
4 kW

AC  
AC-3  
Rating, motor load switch [P]  
690 V Star-delta [P]  
5.5 kW

AC  
AC-3  
Rated operational current motor load switch  
230 V [I<sub>e</sub>]  
11.5 A

AC  
AC-3  
Rated operational current motor load switch  
230 V star-delta [I<sub>e</sub>]  
20 A

AC  
AC-3  
Rated operational current motor load switch  
400V 415 V [I<sub>e</sub>]  
11.5 A

AC  
AC-3  
Rated operational current motor load switch  
400 V star-delta [I<sub>e</sub>]  
20 A

AC  
AC-3

Rated operational current motor load switch  
500 V [I<sub>e</sub>]  
9 A

AC  
AC-3  
Rated operational current motor load switch  
500 V star-delta [I<sub>e</sub>]  
15.6 A

AC  
AC-3  
Rated operational current motor load switch  
690 V [I<sub>e</sub>]  
4.9 A

AC  
AC-3  
Rated operational current motor load switch  
690 V star-delta [I<sub>e</sub>]  
8.5 A

AC  
AC-23A  
MOTOR rating AC-23A, 50 - 60 Hz [P]  
230 V [P]  
3 kW

AC  
AC-23A  
MOTOR rating AC-23A, 50 - 60 Hz [P]  
400 V 415 V [P]  
5.5 kW

AC  
AC-23A  
MOTOR rating AC-23A, 50 - 60 Hz [P]  
500 V [P]  
7.5 kW

AC  
AC-23A  
MOTOR rating AC-23A, 50 - 60 Hz [P]  
690 V [P]  
5.5 kW

AC  
AC-23A  
Rated operational current motor load switch  
230 V [I<sub>e</sub>]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
400 V 415 V [I<sub>e</sub>]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
500 V [I<sub>e</sub>]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
690 V [I<sub>e</sub>]  
7.6 A

DC  
DC-1, Load-break switches L/R = 1 ms  
Rated operational current [I<sub>e</sub>]  
10 A

DC  
DC-1, Load-break switches L/R = 1 ms  
Voltage per contact pair in series  
60 V

DC  
DC-21A [I<sub>e</sub>]  
Rated operational current [I<sub>e</sub>]  
1 A

DC  
DC-21A [I<sub>e</sub>]  
Contacts  
1 Quantity

DC  
DC-23A, motor load switch L/R = 15 ms  
24 V  
Rated operational current [I<sub>e</sub>]  
10 A

DC  
DC-23A, motor load switch L/R = 15 ms  
24 V  
Contacts  
1 Quantity

DC



DC-23A, motor load switch L/R = 15 ms  
48 V  
Rated operational current [ $I_e$ ]  
10 A

DC  
DC-23A, motor load switch L/R = 15 ms  
48 V  
Contacts  
2 Quantity

DC  
DC-23A, motor load switch L/R = 15 ms  
60 V  
Rated operational current [ $I_e$ ]  
10 A

DC  
DC-23A, motor load switch L/R = 15 ms  
60 V  
Contacts  
3 Quantity

DC  
DC-23A, motor load switch L/R = 15 ms  
120 V  
Rated operational current [ $I_e$ ]  
5 A

DC  
DC-23A, motor load switch L/R = 15 ms  
120 V  
Contacts  
3 Quantity

DC  
DC-23A, motor load switch L/R = 15 ms  
240 V  
Rated operational current [ $I_e$ ]  
5 A

DC  
DC-23A, motor load switch L/R = 15 ms  
240 V  
Contacts  
5 Quantity

DC  
DC-13, Control switches L/R = 50 ms  
Rated operational current [ $I_e$ ]  
10 A

DC  
DC-13, Control switches L/R = 50 ms  
Voltage per contact pair in series  
32 V

Control circuit reliability at 24 V DC, 10 mA [Fault probability]  
< 10<sup>-5</sup>, < 1 failure in 100,000 switching operations  
H<sub>F</sub>

## Terminal capacities

Solid or stranded  
1 x (1 - 2,5)  
2 x (1 - 2,5) mm<sup>2</sup>

Flexible with ferrules to DIN 46228  
1 x (0.75 - 2.5)  
2 x (0.75 - 2.5) mm<sup>2</sup>

Terminal screw  
M3.5

Tightening torque for terminal screw  
1 Nm

## 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>d</sub>]  
600 V AC

Contacts  
Rated uninterrupted current max.  
Main conducting paths  
General use  
16 A

Contacts  
Rated uninterrupted current max.  
Auxiliary contacts  
General Use [I<sub>U</sub>]

10 A

Contacts

Rated uninterrupted current max.

Auxiliary contacts

Flot Duty

A 600

P 300

Switching capacity

Maximum motor rating

Single-phase

120 V AC

0.5 HP

Switching capacity

Maximum motor rating

Single-phase

200 V AC

1 HP

Switching capacity

Maximum motor rating

Single-phase

240 V AC

1.5 HP

Switching capacity

Maximum motor rating

Three-phase

200 V AC

3 HP

Switching capacity

Maximum motor rating

Three-phase

240 V AC

3 HP

Switching capacity

Maximum motor rating

Three-phase

480 V AC

7.5 HP

Switching capacity

Maximum motor rating

Three-phase

600 V AC

7.5 HP

Basic Rating  
5 kA

Short Circuit Current Rating  
max. Fuse  
50 A

Short Circuit Current Rating  
High fault rating  
10 kA

Short Circuit Current Rating  
max. Fuse  
20, Class J A

Terminal capacity  
Solid or flexible conductor with ferrule  
18 - 14 AWG

Terminal capacity  
Terminal screw  
M3.5

Terminal capacity  
Tightening torque  
8.8 lb-in

## DESIGN VERIFICATION AS PER IEC/EN 61439

### Technical data for design verification

Rated operational current for specified heat  
dissipation [ $I_r$ ]  
20 A

Heat dissipation per pole, current-dependent [ $P_{id}$ ]  
0.6 W

Equipment heat dissipation, current-dependent  
[ $P_{id}$ ]  
0 W

Static heat dissipation, non-current-dependent [ $P_{is}$ ]  
0 W

Heat dissipation capacity [ $P_{\text{diss}}$ ]  
0 W

Operating ambient temperature min.  
-25 °C

Operating ambient temperature max.  
+50 °C

## 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 Strength of materials and parts  
10.2.3.1 Verification of thermal stability of enclosures  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
10.2.3.2 Verification of resistance of insulating materials to normal heat  
Meets the product standard's requirements.

10.2 Strength of materials and parts  
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 Strength of materials and parts  
10.2.4 Resistance to ultra-violet (UV) radiation  
UV resistance only in connection with protective shield.

10.2 Strength of materials and parts  
10.2.5 Lifting  
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts  
10.2.6 Mechanical impact  
Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts  
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 Insulation properties  
10.9.3 Impulse withstand voltage  
Is the panel builder's responsibility.

10.9 Insulation properties  
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 (ecI@ss10.0.1-27-37-14-14 [ACN998011])

Type of switch  
Level switch

Number of poles  
1

Max. rated operation voltage  $U_e$  AC  
690 V

Rated permanent current  $I_u$   
20 A

Number of switch positions  
4

With 0 (off) position  
No

With retraction in 0-position  
No

Device construction  
Built-in device

Width in number of modular spacings  
0

Suitable for ground mounting  
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

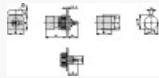
CSA Class No.  
3211-05

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



ZFS... Label mount not included as standard





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