



012244

T0-2-96/IVS

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

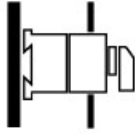
Basic function  
step switch for heating

with black thumb grip and front plate

Contacts  
3

Degree of Protection  
Front IP30

Design  
service distribution board mounting



#### Contact sequence

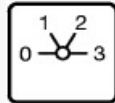


Switching angle  
60°

Switching performance  
maintained  
With 0 (Off) position

Design number  
96

Front plate no.



FS 616

front plate  
0-3

### 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  $[I_c]$   
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 EN61140  
between the contacts  
440 V AC

Safe isolation to EN61140  
Current heat loss per contact at  $I_e$   
0.6 W

Safe isolation to EN61140  
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 [ $I_e$ ]  
15.6 A

AC  
AC-3  
Rated operational current motor load switch  
690 V [ $I_e$ ]  
4.9 A

AC  
AC-3  
Rated operational current motor load switch  
690 V star-delta [ $I_e$ ]  
8.5 A

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

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

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

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

AC  
AC-23A  
Rated operational current motor load switch  
230 V [ $I_e$ ]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
400 V 415 V [ $I_e$ ]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
500 V [ $I_e$ ]  
13.3 A

AC  
AC-23A  
Rated operational current motor load switch  
690 V [ $I_e$ ]  
7.6 A

DC  
DC-1, Load-break switches L/R = 1 ms  
Rated operational current [ $I_e$ ]  
10 A

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

DC  
DC-21A [ $I_e$ ]  
Rated operational current [ $I_e$ ]  
1 A

DC  
DC-21A [ $I_e$ ]  
Contacts  
1 Quantity

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

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

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>e</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

Short Circuit Current Rating  
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 [ $P_{diss}$ ]  
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  
Meets the product standard's requirements.

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) / Off-load switch (EC001105)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Changeover switch (ecl@ss10.0.1-27-37-14-05 [AKF062013])

Model  
On/Off switch

Number of poles  
1

With 0 (off) position  
Yes

With retraction in 0-position  
No

Rated permanent current  $I_u$   
20 A

Rated operation current  $I_e$  at AC-3, 400 V  
11.5 A

Rated operation power at AC-3, 400 V  
4 kW

Degree of protection (IP), front side  
IP30

Degree of protection (NEMA), front side  
Other

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  
Yes

Suitable for intermediate mounting  
No

Complete device in housing  
No

Material housing  
Plastic

Type of control element  
Toggle

Type of electrical connection of main circuit  
Screw connection

## 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: IP30; UL/CSA Type: –

## DIMENSIONS





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