

# Technical Data Series 84



## Auswahl

Series Overview

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**Switching system**

The double-break switching system can be supplied for the following switching functions :  
1 Normally closed, 2 Normally closed, 1 Normally closed + 1 Normally open.  
The Normally closed contacts have forced opening according to EN IEC 60947-5-1

Material

**Connection cable**

Polyvinylchloride (PVC), operating temperature up to +65 °C

**Mushroom-head cap**

Polybutylenterephthalate (PBT), as per UL 94 V0 (red items)

**Actuator housing**

Polyamide (PA 66), as per UL 94 V0, Flat ribbon cable-cover Polyamide (PA 6.6), as per UL 94 V0

**Material of contact**

Silver alloy gold plated

Mechanical characteristics

**Front panel thickness**

Standard 1 ... 4 mm

with E-stop protective shroud Typ-Nr. 84-902 1 ... 3 mm

**Mounting hole**

22.5 mm dia. as per EN IEC 60947-5-1 with anti-twist device

**Terminals**

Soldering terminals 2.8 x 0.5 mm (solderable), CuSn6 tin-plated

Flat ribbon cable 2-, 4-, or 6-poles 0.5 mm<sup>2</sup> (AWG 22)

**Tightening torque**

Fixing nut 80 Ncm

**Actuating force**

22 N ±4 N

**Actuating travel**

approx. 4 mm to release the internal operation part

**Mechanical lifetime**

≥50.000 cycles of operations

Electrical characteristics

Standards

The devices comply with : EN IEC 60947-5-1, EN IEC 60947-5-5 (Emergency-stop), EN 418, EN IEC 60204

#### Illumination

LED red with pole reversal, constant current source

Operation Voltage	5 VDC ... 30 VDC
Current consumption	9.7 mA ... 12.4 mA

#### Rated Operational Voltage $U_e$

250 VAC, as per EN IEC 60947-1

#### Rated Insulation Voltage $U_i$

250 V, as per EN IEC 60947-1

#### Rated Impulse Withstand Voltage $U_{imp}$

2.5 kV, as per EN IEC 60947-1

#### Contact resistance

New state  $\leq 50$  m $\Omega$ , as per DIN IEC 60512-2-3

#### Isolation resistance

$>10^{11}$   $\Omega$  between the open contacts at 500 VDC, as per DIN IEC 60512-2-10

#### Electrical life

$\geq 50$  000 cycles of operations (inductive  $\cos\phi$  0.4), as per EN IEC 60947-5-1

Voltage	120 VAC	240 VAC	125 VDC	250 VDC
Current	3 A	1.5 A	0.55 A	0.27 A

Reduced load  $\geq 50$ '000 cycles of operations (resistive)

Voltage	1 VAC/DC	42 VAC/DC
Current	100 mA	200 mA

#### Conventional free air thermal current $I_{th}$

5 A, as per EN IEC 60947-5-1

the maximum current in continuous operation and at ambient temperature must not exceed the quoted maximum values.

#### Switch rating

Switch rating AC with silver contact (gold plated), service category AC-15, as per EN IEC 60947-5-1

Voltage	120 VAC	240 VAC
Current	3 A	1.5 A

Switch rating DC for silver contact (gold plated), service category DC-13, as per EN IEC 60947-5-1 (inductive)

Voltage	12 VDC	24 VDC	48 VDC	60 VDC	125 VDC	250 VDC
Current	5 A	4 A	2.1 A	1.7 A	0.55 A	0.27 A

#### Recommended minimum operational data

Silver contacts (gold plated)

Voltage	1 VAC/DC
Current	1 mA

#### Electric strength

500 VAC, 50 Hz, 1 min, as per DIN IEC 60512-2

#### Rated conditional short-circuit current

1000 A, type of short-circuit unit 6 A gG, as per EN IEC 60947-5-1

#### Protection class

Class II, as per EN IEC 60947-5

#### Overvoltage category

II, as per EN IEC 60947-1

#### Degree of pollution

3, as per EN IEC 60947-1

#### Environmental conditions

##### Storage temperature

-25 °C ... +80 °C

##### Operating temperature

-25 °C ... +65 °C

#### Front protection

IP 65, as per EN IEC 60529

#### Shock resistance

(semi-sinusoidal)

max. 150 m/s<sup>2</sup>, pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

**Vibration resistance**

(sinusoidal)

max. 50 m/s<sup>2</sup> at 10 Hz ... 500 Hz, 10 cycles, 3-axis, as per EN IEC 60068-2-6

**Climate resistance**

Damp heat, cyclic

96 hours, +25 °C / 97 %, +55 °C / 93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, steady

56 days, +40 °C / 93 % relative humidity, as per EN IEC 60068-2-78

Dry heat

96 hours, +70 °C, as per EN IEC 60068-2-2

Low temperature

96 hours, -40 °C, as per EN IEC 60068-2-1

Saline mist

96 Stunden, +35 °C in chemical solution NaCl, as per EN IEC 60068-2-11

**Approvals**

**Approvals**

SEV

CE

UL

RoHS compliant

Switching system

Switching system

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**Switching system**

Short-travel switching system with 2 independent contact points and tactile operation.  
Guarantees reliable switching even of very light loads.  
Fitted with 1 normally open contact.

2 million	cycles of operation	42 VAC, 50 mA at 840 Ω
2 million	cycles of operation	42 VAC, 100 mA at 420 Ω
300 000	cycles of operation	42 VAC, 100 mA at $\cos\phi$ 0,4
250 000	cycles of operation	42 VAC, 200 mA at $\cos\phi$ 0,395

1 million	cycles of operation	12 VDC, 250 mA at 48 Ω
1 million	cycles of operation	24 VDC, 50 mA at 480 Ω
1 million	cycles of operation	24 VDC, 100 mA at 240 Ω
5 million	cycles of operation	42 VDC, 25 mA at 1680 Ω
1.5 million	cycles of operation	42 VDC, 50 mA at 840 Ω
100 000	cycles of operation	42 VDC, 100 mA at 420 Ω

500 000	cycles of operation	24 VDC, 200 mA at L/R=30 ms
300 000	cycles of operation	42 VDC, 100 mA at L/R=30 ms
100 000	cycles of operation	42 VDC, 200 mA at L/R=30 ms

#### Switch rating

Voltage	50 mVAC/DC ... 42 VAC/DC
Current	10 uA ... 100 mA
Power	max. 2 W

#### Electric strength

500 VAC, 50 Hz, 1 min, as per DIN IEC 60512-2

#### Environmental conditions

##### Storage temperature

-40 °C ... +85 °C

##### Operating temperature

-25 °C ... +70 °C

##### Protection degree

IP 67 or IP 40, as per EN IEC 60529

##### Shock resistance

(semi-sinusoidal)  
max. 100 m/s<sup>2</sup>, pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

##### Vibration resistance

(sinusoidal)  
max. 50 m/s<sup>2</sup> at 10 Hz ... 500 Hz, 10 cycles, 3-axis, as per EN IEC 60068-2-6

#### Material

#### Mechanical characteristics

#### Electrical characteristics

#### Environmental conditions

#### Material

##### Lens

Polycarbonate (PC), as per UL 94 V2 or Aluminium anodised

##### Actuator housing

Polyetherimid (PEI), as per UL 94 V0 or Aluminium anodised

#### Mechanical characteristics

##### Mounting hole

22.5 mm dia. and 30.5 mm dia.

##### Tightening torque

Fixing nut max. 80 Ncm

##### Actuating force

4.0 N ±0.2 N (measured at the lens)

##### Actuating travel

Total switching travel 1.2 mm

##### Mechanical lifetime

>1 million cycles of operations

#### Electrical characteristics

##### Electrostatic breakdown value

500 VDC, as per IEC 61000-4-2, mounted in plastic front panel

#### Environmental conditions

##### Storage temperature

-40 °C ... +85 °C

##### Operating temperature

**Operating temperature**

-25 °C ... +70 °C

**Front protection**

IP 67, IP 65 and IP40, as per EN IEC 60529

**Climate resistance**

Damp heat, cyclic

96 hours, +25 °C / 97 % , +55 °C / 93 % relative humidity, as per EN IEC 60068-2-30

Damp heat, static

56 days, +40 °C / 93 % relative humidity, as per EN IEC 60068-2-78

Rapid change of temperature

100 cycles, -40 °C ... +80 °C, as per EN IEC 60068-2-14



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