Actuator with snap-action switching element

Switching system

Self-cleaning, double-break, snap action switching system (with contact gap 2 x 0.5 mm).
1 normally closed or 1 normally open contact per element.
Snap-action switching elements with soldering terminals at the sides: up to 4 switching element can be on a pushbutton (max. 4 normally closed and 4 normally open contacts).
Snap-action switching element with axial plug-in terminals 2.8 mm stackable, only 1 switching element can be on a pushbutton.

Material

Material of contact
Gold plated silver

Switch housing
Plug-in-/soldering terminal
Diallylphthalate DAP, Polyamide 66, Polysulfone, heat-resistant and self-extinguishing
Soldering terminal: PA 6.6 Ultramide

Actuator housing
Polyamide

Mechanical characteristics

Terminals
Snap-action switching element with tinned soldering terminals at the sides:
Max. wire diameter 2 wires à 1.2 mm
max. wire cross-section of stranded cable 1x 1 mm²

Snap-action switching element with axial plug-in terminals, which can also be used as soldering terminals: Plug-in terminal 2.8 x 0.5 mm

Soldering terminal:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm² or 1 x 1.0 mm²

Tightening torque
for fixing nut max. 25 Ncm

Actuating torque
Measured at the key or lever of the keylock- or selector switch 2.5 Ncm … 5.5 Ncm, depending on the number of switching elements

Actuating force
Maintain 5 N … 8 N
Momentary 3 N … 6 N
depending on the number of switching elements

Actuating travel
Illuminated pushbutton: 3 mm

Switch actuator 2 positions:
Momentary action 1 x ca. 42° deflection momentary action
Maintained action 1 x ca. 90° deflection maintained action

Rebound time
≤ 5 ms

Mechanical lifetime
Momentary action 2 million Cycles of operation
Maintained action 1 million Cycles of operation

Electrical characteristics

Standards
The devices comply with: EN IEC 61058-1

Rated voltage
250 VAC as per EN IEC 61058-1-15

Contact resistance
New state ≤ 50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)
Keylock switch 15 kV

Rated current
5 A

Conventional free air thermal current I_{th}
5 A
The maximum current in continuous operation and at ambient temperature not exceeding the quoted maximum values.

Switch rating
250 VAC, 5 A (cosΦ 1)
250 VAC, 3 A (cosΦ 0.3)

Switch rating AC (cosΦ 0.7)

Voltage	12 VAC	250 VAC
Current	3 A	2 A

Switch rating DC (inductive) L:R = 30 ms

Voltage	24 VDC	60 VDC	110 VDC	220 VDC
Current	2 A	0.7 A	0.2 A	0.1 A

Electric strength
3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Isolation resistance
> 7 MΩ between the opend contats at 500 VDC, as per EN IEC 61058-1-15 (reinforced insulation)

Protection class
II

Environmental conditions

Storage temperature
-40 °C … +85 °C

Service temperature
-25 °C … +55 °C
For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Actuator with snap-action switching element

Protection degree
as per EN IEC 60529
front side IP 67

Shock resistance
(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Vibration resistance
(sinusoidal)
max. 100 m/s² at 10 Hz … 500 Hz, as per EN IEC 60068-2-6

Climate resistance
Damp heat state as per EN IEC 60068-2-30
Damp heat cyclic as per EN IEC 60068-2-78

Approvals

Approbations
CB (IEC 61058)
CSA
CQC
ENEC (EN 61058)
Germanischer Lloyd
UL

Declaration of conformity
CE

Actuator with low level switching element

Switching system

This low level switching element was designed for switching low powers in electronic circuits. The mechanism assures reliable switching of loads ranging from a few µA/µV up to 100 mA/ 42 VAC/DC.
Single-break momentary contact, as normally open or normally closed with 4 independent points of contact. 2 momentary contacts per switching element; combination of normally open and normally closed is possible.
Special features are the long life, extremely short rebound time and stable contact resistance.

Material

Material of contact
Gold plated

Switch housing
Polysulfone, heat-resistant and self-extinguishing

Actuator housing
Polyamide

Mechanical characteristics

Terminals
The universal terminals permit these units to be mounted on printed circuit boards (PCB). These terminals can also be used as soldering or plug-in terminals.
For these terminals we can also supply a plug-in base which, when soldered on to the board, enables the switch to be plugged in.

Soldering terminal:
Max. wire diameter 2 wires of 1 mm
Max. wire cross-section of stranded cable 2 x 0.75 mm²
Plug-in terminal: 2.0 x 0.5 mm

Tightening torque
for fixing nut max. 25 Ncm

Actuating torque
Measured at the key or lever of the keylock- or selector switch 2.5 Ncm … 5.5 Ncm, depending on the number of switching elements

Actuating force
3 … 4 N, depending on the number of switching elements

Actuating travel
Illuminated pushbutton: 3 mm

Switch actuator 2 positions:
Momentary action 1 x ca. 42° deflection momentary action
Maintained action 1 x ca. 90° deflection maintained action

Rebound time
typical < 100 µs

Mechanical lifetime
Momentary action 5 million cycles of operation
Maintained action 1 million cycles of operation

Electrical characteristics

Contact resistance
New state ≤ 50 mΩ as per DIN IEC 60512-2-4

Electrostatic discharge (ESD)
Keylock switch 15 kV

Switch rating
10 µA, 100 µV to 100 mA at 42 VAC/VDC

Electric strength
3000 VAC, 50 Hz, 1 min. between all terminals and earth, as per EN IEC 61058-1-15

Protection class
II

Environmental conditions

Storage temperature
-40 °C … +85 °C

Service temperature
-25 °C … +55 °C
For indicators and illuminated pushbuttons mounted as a block, make sure the heat can escape freely.

Protection degree
as per EN IEC 60529
front side IP 67

Shock resistance
(semi-sinusoidal)
max. 150 m/s², pulse width 11 ms, 3-axis, as per EN IEC 60068-2-27

Buzzer

Buzzer system

System
Piezo disc

Material

Buzzer case
Polyamide

Front cap
Plastic Polyamide
Metal Nickel-plated brass (sea-water proof)

Mechanical characteristics

Terminals
Plug-in terminal 2.8 x 0.5 mm

Tightening torque
for fixing nut max. 25 Ncm

Electrical characteristics

Frequency (tone)
approx. 2.8 kHz continuous tone only

Sound pressure
95 db (A) ±8 dB at a distance of 0.1 m

Operation Voltage/Current
Operation Voltage 24 VDC ±10 %
Operation Current ≤ 25 mA

Environmental conditions

Storage temperature
-40 °C … +85 °C

Operating temperature
-25 °C … +55 °C

Protection degree
as per EN IEC 60529, frontside
IP 40, devices flush design
IP 65, devices raised design

Approvals

Approbations
CQC
EMC

Declaration of conformity
CE