

Note

This glossary contains short explanations of terms used in this catalogue. Definitions are given for these terms and, regulations relating to them.

A

Actuating force

Force (N) exerted on an operation part that is necessary for the execution of the required activation

Actuating point

Position of actuator at which contact operation occurs

Actuating torque

Torque (Nm) exerted on an Operation part that is necessary for the execution of the required activation

Actuating travel

Path travelled by Operation part in mm

Actuator

The part of a switch assembly used by the operator that causes switch contacts to engage or disengage. Actuators include pushbuttons, levers, slides, keylocks, toggles, emergency stop caps, etc.

Alternations

DIN EN 61058-1

Consequence of the changing of one switch position into another and back into the first, via all other switch positions, if such switch positions are present

Ambient temperature (enclosed)

Temperature (°C) at which a switchgear in a closed housing can be operated. The power loss of the switchgear (filament lamp operation also) has to be taken into consideration as it can lead to heating up in the interior of the housing ambient temperature, open

Ambient temperature (open)

Temperature (°C) of the space in which the switchgear is being operated. Ambient temperature, enclosed

Application class (climatic)

Specification in code letters for the climatic stress

AWG

Abbreviation for American Wire Gauge, a system of indicating wire sizes and dimensions

B

Behind panel depth

Distance from the rear surface of a panel to the far end of the switch mounted on the panel

Blind plug

For covering unused mounting holes

Bounce

Rebounding of contacts as they come together. Can prolong arcing or may open and close rapidly before stabilizing

Break

Interruption of a circuit. Double-break occurs when two contacts are opened simultaneously

Breakdown voltage

The voltage (V, kV), at which an insulating material fails electrically

Break-make contact

Contact made of a combination of NO (normally open) and NC (normally closed) contacts, with 3 connections (changeover switch contact)

Buzzer

Acoustic buzzer, piezo technology

Buzzer element

Acoustic indicator (Swisstac)

C

CE declaration

The CE declaration used on a product declares that it complies with the relevant fundamental requirements of all applicable guidelines and that the stipulated conformity evaluation procedure has been executed

Changeover contact

Contact made of a combination of NO (normally open) and NC (normally closed) contacts, with 3 connections (break-make contact)

Clearance

EN IEC 60947-1, EN IEC 61058-1

Shortest distance (mm) through the air between two electrically conducting parts or between an electrically conducting part and a metal foil on the touchable surface made of insulating material

Climatic resistance

Specifies the permissible temperature range and relative humidity of the switchgear

Contact gap

Open distance between contacts

Contact resistance

Resistance value (mostly in mΩ) between two connections, whose related contacts in the closed state compete a circuit

Contact resistance

Resistance value which arises in a switchgear between the contact parts of the circuit being switched

Contacts

A pair of devices that touch or come apart at the point where the switch throw makes or breaks the circuit. Silver contacts are common because of their low conductivity and low electrical resistance. Gold contacts are used for low level (signal level) switching

Contacts (of mechanical switchgear)

Conductive part that opens or closes a circuit by being activated

Conventional thermal current I_{th}

EN IEC 60947-5-1

highest current (A) that a switchgear can conduct for at least 8 hours without thermal overload, generally corresponds to the maximum rated higher current

CSA

Abbreviation for Canadian Standards Association, a Canadian rating organization

Current consumption

Current, expressed in mA, which flows in an illumination device subject to electric tension

Cycle of operation

Consequence of the changing of one switch position into another and back into the first, via all other switch positions, if such switch positions are present

D

Degree of pollution

EN IEC 60947-1

Reference number for the expected quantity of conductive dirt and air humidity which can lead to the reduction of the electric strength of a switchgear. The degree of pollution is described in 4 different grades

Diode element

Blocking diode for free connection e. g. for lamp testing in an element block

Double break

Contact, in which the two disconnection points of the circuit are present

Double break

A mechanism which breaks the circuit at two points simultaneously

Double pushbutton

Two independent pushbuttons in a single switchgear device

Double pushbutton actuator

Front part of a double pushbutton, without switching element

E

Electrical lifetime

Wear-resistant property of a switch under a specified electrical load, expressed in numbers of actuations. Expected cycle life when switch is operated at full rated load

Electrostatic breakdown value

Static electric strength (kV) between operation part and conducting material of the switchgear (contact, terminal)

Element block

Unit with integrated function parts e. g. lamp transformer

EMC

Abbreviation for electromagnetic compatibility

Emergency-stop pushbutton actuator

Front parts of an emergency stop button, without switching element

Emergency-stop pushbutton with key to unlock

For the switching off of current consumers, which could endanger persons, animals and property. Generally the activation surface is mushroom-shaped. Unlocking is effected by means of an insertable key into the operation part

Emergency-stop pushbutton with twist to unlock

For the switching off of current consumers, which could endanger persons, animals and property. Generally the activation surface is mushroom-shaped. Unlocking is effected by twisting the operation part. The contact must automatically open the circuit

Emergency-stop switching element

Switching element with a guided NC contact

F

Filament lamp

Illumination part, where the light is produced by means of wire spiral

Fixing nut

For fastening the device in the front panel

Flasher with Indicator

Indicator with integrated flashing device

Flashing frequency

Pulses per time unit in Hz

Flush mounting

Almost flush installation of the pushbutton in a front panel

Foolproof (Emergency-stop pushbutton)

A triggering process which cannot be reversed. The switchgear locks into the "triggered position". Chance or intentional manipulation (inching operation) is impossible

Forced opening

EN IEC 60947-1

Opening movement which ensures that the contacts of a switchgear have reached the "open position" if the operation part is in the Off position

Frequency (sound)

Amplitude of oscillation of the sound of an acoustic signaller, expressed in Hz

Front bezel set, flush mounting

Accessory part for "flush mounting"

Front protective ring

Prevents the penetration of dust and liquids

G

Guided motion

Connection between operation part and contact, which has the effect of directly transmitting (without spring parts) the force exerted on the operation part on to the contact

I

Illuminated pushbutton actuator

Front part of an illuminated pushbutton, without contacts

Illuminated pushbutton maintained action

Pushbutton (maintained action) with integrated lampholder

Illumination

The illumination of an indicator area or of the operating part of an illuminated pushbutton by means of an illuminating device (filament lamp, LED)

Indicator

Light signal indicating a state by being illuminated or extinguished

Indicator actuator

Front part of an indicator without integrated lampholder

Indicator cap

Transparent, also coloured, cover for an indicator

Indicator element

Unit with integrated lampholder for mounting an illuminant

Insulating clearance

Distance between electrically active parts of opposite polarity or to ground

Insulation sleeve

Protection against contact of the live part of the blade flat receptacle

Interlocking pushbutton actuator

Pushbutton actuator (without contact), which is locked into a position by an additional pushing

Glossary

Interval frequency

Oscillations per time unit in Hz

Isolation resistance

DIN IEC 60512-2

Resistance ($k\Omega$, $M\Omega$) between the different poles of a switch (base insulation) and between all parts which are under electric tension and are associated with each other and a metal foil which is superimposed on the touchable metal parts which are in contact with the base insulation. Quality of non-conducting material to withstand a maximum voltage

K

Keylock switch

Switch with a key as operation part

Keylock switch actuator

Switch actuator (without contact) with a key as operation part

L

Lamp

Light source for the illumination of the lens or indicator cap e. g. filament lamp, LED

Lamp block (element)

Unit with integrated lampholder for the mounting of an illuminant

Lamp transformer

Voltage reduction e.g. of a control voltage to a lower voltage for the supply of an illuminant (generally 230 VAC to 24 VAC)

Leakage path

EN IEC 60947-1, DIN EN 61058-1

Shortest distance (mm) along the surface of the insulation material between conducting parts or between an electrically conducting part and metal foil on the touchable surface made of insulating material

LED

Illuminations, where the light is produced by current flow through a semiconductor element (substantially higher life than filament lamps)

Lens

Operation part for the activation of the electrical contact of a pushbutton

Lever

Operation part for the activation of the selector switch

Low level switching element

Four-fold contact (slow-make element) for the switching of low currents and voltages with very high certainty of switching

M

Maintained action

The circuit stays open or closed after switch actuation until the next time the switch is actuated

Mechanical lifetime

Wear-resistant property of a switch without electrical load, expressed in number of actuations

Membrane switching system

Switching system with one or more contacts under a common foil (also designated as membrane keyboard)

Momentary action

The circuit is opened or closed only as long as the switch is actuated

Mounting tool

For simple mounting of a switchgear or indicator

Mushroom-head cap

Mushroom-shaped operation part for the activation of an electrical contact

N

Normally closed / NC

Contact, which is closed in the non-activated position and opens a circuit on activation

Normally open / NO

Contact, which is open in the non-activated position and closes a circuit on activation

O

Opaque

Light-impervious, e.g. black or grey lens

Open circuit

Open circuit is contact lift-off or a result of low contact pressure

Operating part

EN IEC 61058-1

The part (lens, lever, etc.) of a hand-activated switchgear which is used for effecting the contact

Operating temperature

Permissible temperature range for the operation of a device

Overtravel

Distance from operating position (actuation point) to the end of the actuators travel

Overvoltage category

EN IEC 60947-1

Reference number for overvoltages, e. g. by lightning effects or switching processes which can occur at the installation site. There is a classification into four grades

P

Plug-in connection

Connection of the electrical circuit by means of a plugging-in device (flat receptacle)

Pretravel

Distance from free position to operating position

Protection class

EN IEC 61058-1

Designates a classification of switchgear, in which protection against electric shock is based on the base insulation (e. g. safety class 0)

Protection degree

EN IEC 60529

Measure for the protection of the electrical operating material against the penetration of solid bodies and of water, is expressed in IP and figures. The 1st figure defines the solid-body protection, the 2nd figure the water protection

Pushbutton

Switchgear, that is generally activated by the finger and which initiates a switching

Pushbutton actuator

Front part of a pushbutton without switching element

Pushbutton Maintained action

Switch with maintained action and spring resetting on renewed activation as well as a lens, which is generally activated with the finger

Pushbutton Momentary action

Switch with spring resetting and a lens, which is generally activated with the finger

Push-Pull pushbutton

Switch with an operation part, which is activated by pressing and returns to its initial position by pulling, or vice-versa

R

Rated impuls withstand voltage (U_i)

EN IEC 60947-1

Measurement for the strength in the interior of switchgear with regard to rated surge voltage resistance (kV)

Rated insulation voltage (U_i)

EN IEC 60947-1

The voltage, (V, kV), to which insulation tests and leakage paths are related. The highest rated higher voltage may not be greater than the rated insulation voltage

Rated operational current (I_e)

EN IEC 60947-1

The current (A) which a switchgear can conduct, taking into consideration rated higher voltage, operating period, service category and ambient temperature

Rated operational voltage (U_e)

EN IEC 60947-1

Voltage (V) to which the characteristic value of a switchgear is associated. The highest rated higher voltage may not be higher than the rated insulation voltage

Rated uninterrupted current (I_u)

EN IEC 60947-1

Current (A) which a device can conduct in continuous operation (weeks, months, years)

Rebound time

The rebound time for a contact, which closes (opens) its circuit, is the time interval between the first closing (opening) and the final closing (opening)

Regulations

Components of a standard

Resistance to heat of soldering

Time and temperature unit for the connection of conductors to a solder connection of the switchgear

Resistor block

Ohmic resistor in an element block

Resistor-diode block

Combination of blocking diodes and resistor in an element block

S

Screw terminal

Connection of the electrical circuit by means of a screw device

Selector switch

Switch with a lever as operation part

Selector switch actuator

Front part of a selector switch, without contacts

Selector switch long lever

Switch with a long lever as operation part

Service category

EN IEC 60947-1

Combination of fixed requirements which have been chosen, when taking into consideration the operating conditions of a switchgear, in order to meet the needs of a fundamental group of practical cases of application (e.g. AC 15)

Shock resistance

Property of a switchgear to withstand impetus-type movements without change of operational state and without damage

Short-circuit protection

Current value (A) of the fuse to be installed on the switchgear to protect it from short-circuit damage

Short-travel switch

Pushbutton with small actuating travel (mm)

Single-break

Contact, in which a disconnection of the circuit is present. Mechanism that transfers one contact

Slow-make switching element

Switching element, in which the speed of the moving contacts is dependent on the activation speed

Slow-make/break contact

Usually used with AC circuits, especially emergency-stop pushbuttons

Small contact opening width

EN IEC 61058-1

Minimum contact opening that is sufficient for reliable operation

SMD / SMT

Abbreviations for Surface Mount Device and Surface Mount Technology

Snap-action switching element

The rapid transfer of contacts from one position to another. This action is essentially independent of actuator speed. Switching element, in which the speed of the moving contacts is essentially independent of the activation speed

Soldering terminal (and similar)

EN IEC 61058-1

Electrically conducting part of a switch, which has been provided to make a connection with the help of solder

Soldering-/plug-in terminal (and similar)

Electrical connection of a circuit by means of soldered or plug-in terminals

Sound pressure

Measure (dBA) for the volume, in relation to the distance of an acoustic signaller

Spacer

For uniform clearance between front panel and PCB (Series 92)

Spacing cap

For expansion of the clearance between switching element (on PCBs) and front panel (Series 70)

Standard

Contains a number of stipulations for the definition e.g. of a regulation such as IEC

Storage temperature

Permissible temperature range (°C) for the storage of a device

Glossary

Switch

Device for the closing and opening of one or more circuits by activation of contacts

Switch rating

Specification regarding rated higher currents in dependency on a rated higher voltage

Switchgear

Generic term for all pushbuttons and switches

Switching element

Contains one or more contacts, which are necessary for the opening or closing of a circuit

Switching element and diodes

Combination of switching element and diode element

Switch-on current

Loads that require more current when first turned on than needed to continue operation. Light bulbs exhibit high resistive inrush and may draw up to 10 times or more the normal operating current when first turned on. Motors may show high inductive inrush currents when started

T

Tactile feel

An indication, usually by touch, that indicates the operating position (actuation point) has been reached

Tactile point

Feature that indicates actuation point has been reached. Also referred to as tactile feel because of construction element in a switch which provides a tactile response to the activation

Terminal (Connection method)

Electrical connection to the external circuit e.g. soldering-/plug-in terminal, screw terminal

Tightening torque

Measurement (Nm) for the turning effect of a force (N) being applied to a turnable body

Tool

Aid for assembling, disassembly of switchgear or indicators and their individual parts or accessories

Translucent

Light-transmitting, diffuse material structure for uniform illumination by means of filament lamps

Transparent

Light-transmitting, transparent clear structure, e.g. recommended for the use of a film insert in a lens or for illumination by means of a LED

Travel

Travel path of the operation part until activation of the contact, expressed in mm

U

UL

Abbreviation for Underwriters Laboratories, a US rating organization

V

VDE

Abbreviation for the German Testing Agency, a German rating organization

Vibration resistance

Property of a switchgear to withstand undulating movements without a change of operating state and without damage