DEHN protects Safety Critical Systems

Ensure reliable operation of your safety systems

Be it fire protection, alarm and security systems or emergency and escape route lighting. Electrical safety systems are only safe if they are not susceptible to failure during thunderstorms or electrical surges.

If lightning strikes or surges destroy safety systems/safety-related functions and are no longer available, then human life may be at risk. Surges can also lead to false alarms, inconvenience for operators, disruption to production and high follow-up and repair costs.

Integrating safety systems into the lightning and surge protection design will protect them against damaging lightning strike and surges.

Lightning protection zones in buildings equipped with safety systems

Safety systems, Building management, telecommunication and control systems are increasingly used in all areas of residential, commercial and industrial buildings. These networked systems make the building intelligent and ensure its optimised use with building owners and operators making high demands on the availability and reliability of these systems.

An external lightning protection system protects persons and material assets in a building from fire, however, electrical and electronic systems are not protected against failure as a result of surges caused by a lightning discharge. The British Standard for lightning protection, BSEN 62305, shows that automated fire alarm systems should be protected against overvoltages if they have been selected as a risk component to reduce the level of tolerable risk during a risk assessment.

A lightning protection zone concept in accordance with the BSEN 62305-4 Lightning Protection standard provides effective protection against surges caused by a lightning electromagnetic impulse (LEMP). According to this principle, the structure to be protected must be subdivided into inner lightning protection zones with different LEMP threat values. It is advisable to match the lightning protection zones and their LEMP threat values with the withstand capability of the relevant electronic system.

Outer zones:
LPZ 0A: Zone in which the threat is due to direct lightning strikes and the undamped lightning electromagnetic field. Systems such as cables extending beyond the building may be subjected to the full lightning current.

LPZ 0B: Zone protected against direct lightning strikes, however, the undamped lightning electromagnetic field is still present. Systems such as alarm lights or sirens may be subjected to partial lightning currents.

Inner zones:
Inner zones are protected against direct lightning strikes and are subdivided into:

LPZ 1: Zone in which impulse currents are limited by current distribution and SPDs at the zone boundaries. Spatial shielding may attenuate the lightning electromagnetic field. Ring conductors with detectors are frequently installed in LPZ 1.

LPZ 2: Zone which, in comparison to LPZ 1, is additionally protected against impulse currents and the lightning electromagnetic field and is thus subjected to a lower interference.

LPZ 3: Zone which requires maximum protection against the effects of a lightning strike. Electronic systems such as fire control panels are frequently installed in LPZ 3. Surge arresters and shielding measures reduce impulse currents and electromagnetic fields to an acceptable level for the system technology.

The below illustration shows the lightning protection zones concept applied to a fire alarm system.
Surge protection for Safety, Security and Fire alarm Systems

Security, safety and alarm systems are all susceptible to surges, lightning discharges and over-voltages which can cause major problems to equipment resulting in physical damage and loss of service.

The compact BLITZDUCTOR® XT range of combined lightning current and surge arrester from DEHN is ideally suited for protecting information and signalling systems. With a wide range of voltage options, these flexible DIN rail mounted arresters are ideally suited for use in hazard alarm systems.

Since the interfaces of hazard alarm systems differ from manufacturer to manufacturer, surge protective devices often have a different design or different nominal data. The BLITZDUCTOR® XTU combined lightning current and surge arrester is ideally suited for protecting safety systems where the signal voltage is either unknown or could change. With its unique actiVsense technology, it automatically detects the operating voltage of the signal from 0 to 180V and optimally adjusts the voltage protection level to the operating voltage applied.

System availability can also be increased by the DEHNrecord® DRC MCM XT condition monitoring unit which allows for servicing and maintenance of the BLITZDUCTOR® XT type of surge protective devices. LifeCheck® with RFID technology is integrated into the BLITZDUCTOR® XT protection module as standard and in connection with the condition monitoring unit, forms the basis of one of the most powerful monitoring systems for surge protective devices on the market.

Power Supplies

The a.c. supply voltage of fire and burglar alarm systems also places especially high demands on surge protective devices. The DEHN RedLine range of SPD’s with their high discharge capacity and low voltage protection levels meet these demands. Remote monitoring is also available via volt free contacts allowing the status of the SPD to be constantly monitored and integrated into the building management system.

Square junction clamp competition winner announcement

To enable DEHN (UK) Ltd to meet the requirements for an ever better product, we asked our customers to tell us their preference as to the type of screw head for use on our Square Junction Clamps. We sent out a question sheet and would like to thank all who sent the sheet back.

The information was taken into consideration and we would like to announce the winner:

Mr Derek Wallis from Earthing Equipment Supplies.

Well done from DEHN (UK) Ltd and we hope the Square Junction Clamps won come in handy.
DEHNcombo YPV SCI
Type 1 + 2 combined arrester with SCI technology

Protect your photovoltaic system against lightning and surge damage by means of the DEHNcombo YPV SCI combined arrester

Be it roof-mounted or ground-mounted systems, central or string inverter systems: photovoltaic systems are frequently equipped with lightning and surge protection. The new lightning current carrying DEHNcombo YPV SCI combined arrester reliably protects the d.c. side of PV systems from lightning and surge damage without backup fuse up to 1000 A. Thanks to its SCI technology, this combined arrester fulfils personal and system protection requirements. The SCI technology also prevents switching arcs in case of an overload, thus ensuring fire protection. Arresters for system voltages \( U_{CPV} = 600 \text{ V}, 1000 \text{ V} \) and \( 1500 \text{ V} \) are available to achieve optimal coordination and thus efficient protection of terminal equipment. All these versions have a width of only 4 modules.

DEHNcombo YPV SCI

- Approved fault-resistant Y circuit prevents damage to surge protective devices in case of insulation faults in the generator circuit.
- Unique SCI technology
- Total discharge current \( (10/350) \text{ I}_{\text{total}} = 12.5 \text{ kA} \)
- Short-circuit withstand capability \( \text{I}_{\text{CPV}} = 1000 \text{ A} \)
- Narrow width of only 4 modules
- Touch-proof without additional cover
- Operating state/Fault indication by indicator flag in Inspection window
- Optional remote signalling contact (FM) for monitoring device (floating changeover contact)

Unique SCI technology

DEHN is the only company that offers surge arresters with innovative Short Circuit Interruption (SCI) technology - providing maximum safety and fire protection for photovoltaic systems. A fuse specifically dimensioned for PV systems in the bypass path ensures safe electrical isolation of the surge protective device at any time. This fuse is combined with a disconnection and short-circuiting device with Thermo Dynamic Control. Moreover, the Y circuit has proven its worth in practice. The interaction of these functions in a single device ensures maximum operational reliability and fail-safe performance.

Switching stages:

1. Original state
2. Response of the disconnection device
3. Active arc extinction
4. Safe electrical isolation

Three-step d.c. switching device – patented SCI principle

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<th>Type</th>
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<td>( \leq 600 \text{ V} )</td>
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<td>( \leq 1000 \text{ V} )</td>
<td>900 061 (900 066)</td>
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<td>DCB YPV SCI 1500 (FM)</td>
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Case study – Wiltshire Steeple Jacks

DEHN free standing air termination rods used by Wiltshire Steeple Jacks, to achieve the perfect separation distance on the new cinema complex in Trowbridge Town Centre.

The lightning protection system was designed by Mr Paul Silk, Managing Director and installed to comply with BSEN 62305 Level 4.

DEHN UK Ltd feedback form

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Please use this space to give us feedback in regard to products/topics and services you would like to see in our newsletters:

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DEHN (UK) Ltd would to wish everyone a Merry Christmas & a Happy New Year