Protection for technical building equipment

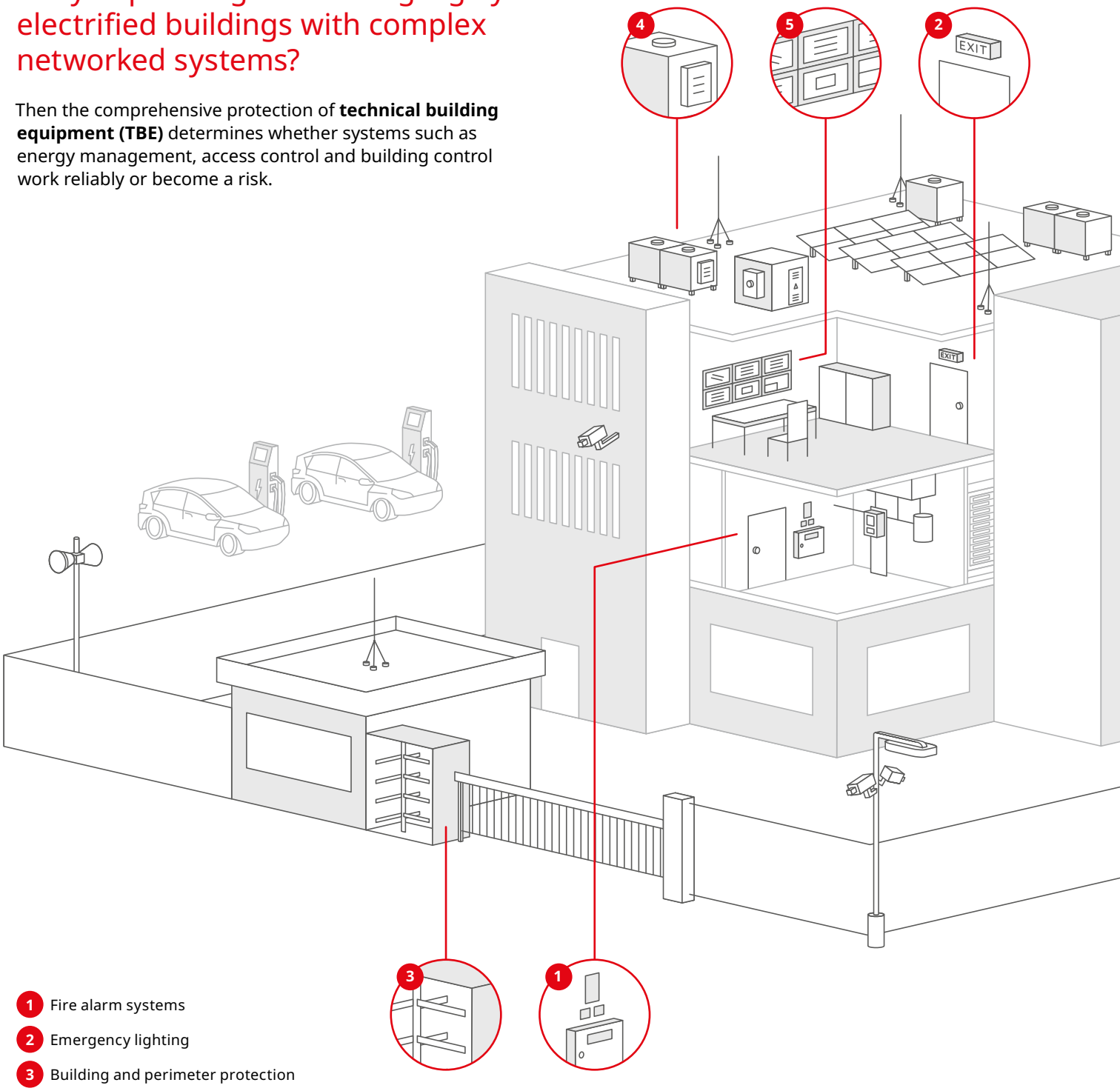
Plan holistically.
Operate reliably.



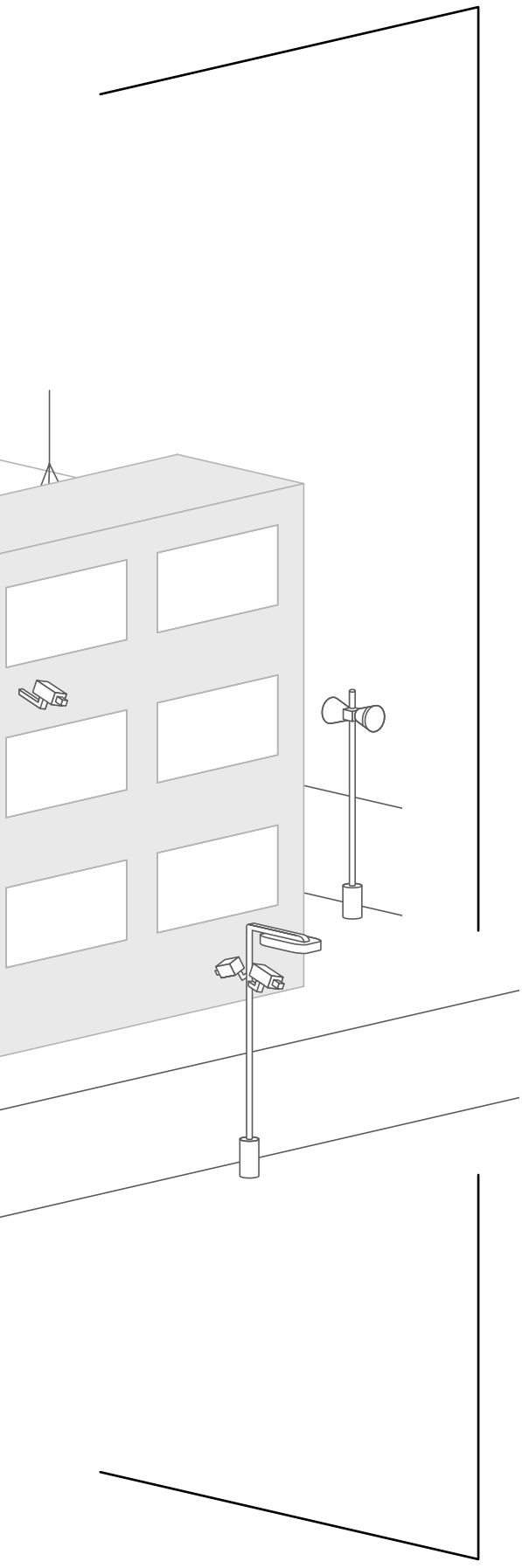
Networked systems. Comprehensive protection.

Are you planning or installing highly electrified buildings with complex networked systems?

Then the comprehensive protection of **technical building equipment (TBE)** determines whether systems such as energy management, access control and building control work reliably or become a risk.



1. Fire alarm systems
2. Emergency lighting
3. Building and perimeter protection
4. HVAC systems
5. Building automation & measuring and control systems



Safeguard TBE.
Protect assets.

High-capacity TBE.
Highly vulnerable.

Complex system architectures, sensitive electronics and increasing availability requirements make protecting technical building equipment (TBE) a key issue in planning and implementation. Particularly in critical infrastructure, an effective protection concept is crucial for safety and operational reliability.

Systemic risks.
Expensive consequences.

If no coordinated protection concept is in place, lightning events, surges and grid disturbances have a direct impact on safety technology, building automation and power electronics.
The consequences range from system failures and equipment damage to increased fire risk and costly downtimes.

Comprehensive.
From a single source.

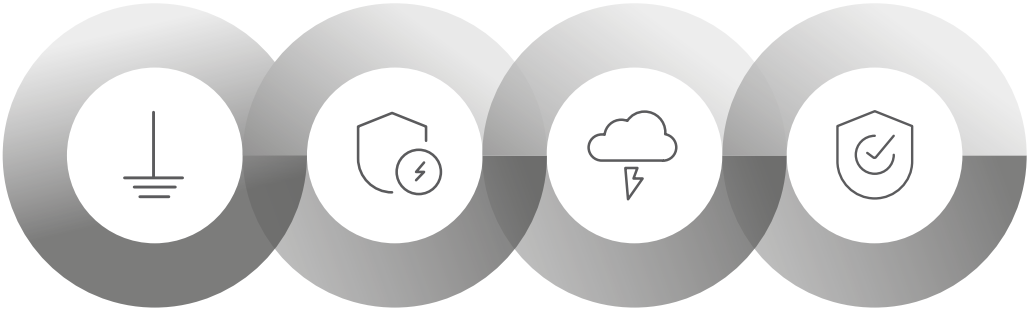
Modern buildings require integrated protection concepts for power distribution, safety and security, HVAC, building automation, photovoltaics and e-mobility. Safety can only be achieved if a practical and coordinated approach is taken to planning all components.

Plan early.
Save money.

Early planning lowers costs, reduces project risks and ensures system availability over the life cycle. DEHN offers advice, planning and standard-compliant solutions – both off-the-shelf and customised. Holistic concepts increase economic efficiency and ensure future stability.

Practical know-how

What planning engineers need to know to make protection concepts work



When planning protection concepts, you need to understand more than just individual standards. Effective protection does not come from individual measures; what makes the difference is flawless coordination of

- Earthing and equipotential bonding
- Surge protection
- Lightning protection zone concept
- Cable routing and shielding

These factors determine whether protective measures are effective in an emergency.

We make these connections transparent and translate normative requirements into practical planning and installation.

You benefit from protection solutions with

- High technical reliability
- Standard-compliance
- Economic feasibility

The lightning protection zone concept: by design, not by accident

The lightning protection zone concept according to IEC EN 62305-4 follows the principle of gradual energy reduction: the electromagnetic load decreases with each zone. Only when all transitions are taken into account can people, systems and data be reliably protected. In **new builds**, implementation will be easier if this is taken into account early on. In **existing buildings**, careful analysis of the cable routes and structural conditions is necessary.

More on lightning protection zone cocepts:
http://de.hn/cMoW9

Earthing and equipotential bonding: the basis for effective protection

Low-impedance earthing and equipotential bonding are essential for safety and electromagnetic compatibility (EMC). EN 50310 specifies that all conductive parts must be connected to each other, including power and data cables, cable trays and metal building structures. Key functions include protective equipotential bonding to prevent dangerous touch voltages and functional equipotential bonding to ensure EMC and signal quality.

Without a well-designed earthing structure, even correctly selected surge protective devices lose their effectiveness. That makes early, interdisciplinary planning important.

Separation distance in lightning protection

The separation distance s is the distance between two conductive parts at which no dangerous sparking occurs. An adequate separation distance protects various types of cables and systems from dangerous flashovers between the lightning protection system and building services. Calculation as per IEC EN 62305 is mandatory.

Important:
Maintaining the separation distance minimises the risk of flashovers and fires. If the separation distance cannot be maintained, Type 1 arresters and lightning equipotential bonding are required.



What this means for your planning

- → Classify and apply standards correctly
- → Combine protective measures optimally
- → Reduce project and liability risks
- → Deliver future-proof technical building equipment concepts

Lightning equipotential bonding and surge protection

Lightning currents and transient overvoltages enter the building via power, data, control and communication lines. To keep these out of the building, a surge protective device must be installed at the entrance point into the building.

Surge arresters have two roles to play: They conduct lightning surge currents and transient overvoltages to earth in a controlled manner. Combined arresters limit the residual voltage to a level that is compatible with downstream devices.

Shielding and cable routing: often underestimated, technically

EMC-compliant cable routing in accordance with EN 50174 is crucial for data integrity and system availability. Energy and data cables must be routed separately, minimum distances must be maintained and shields must be integrated into the equipotential bonding.

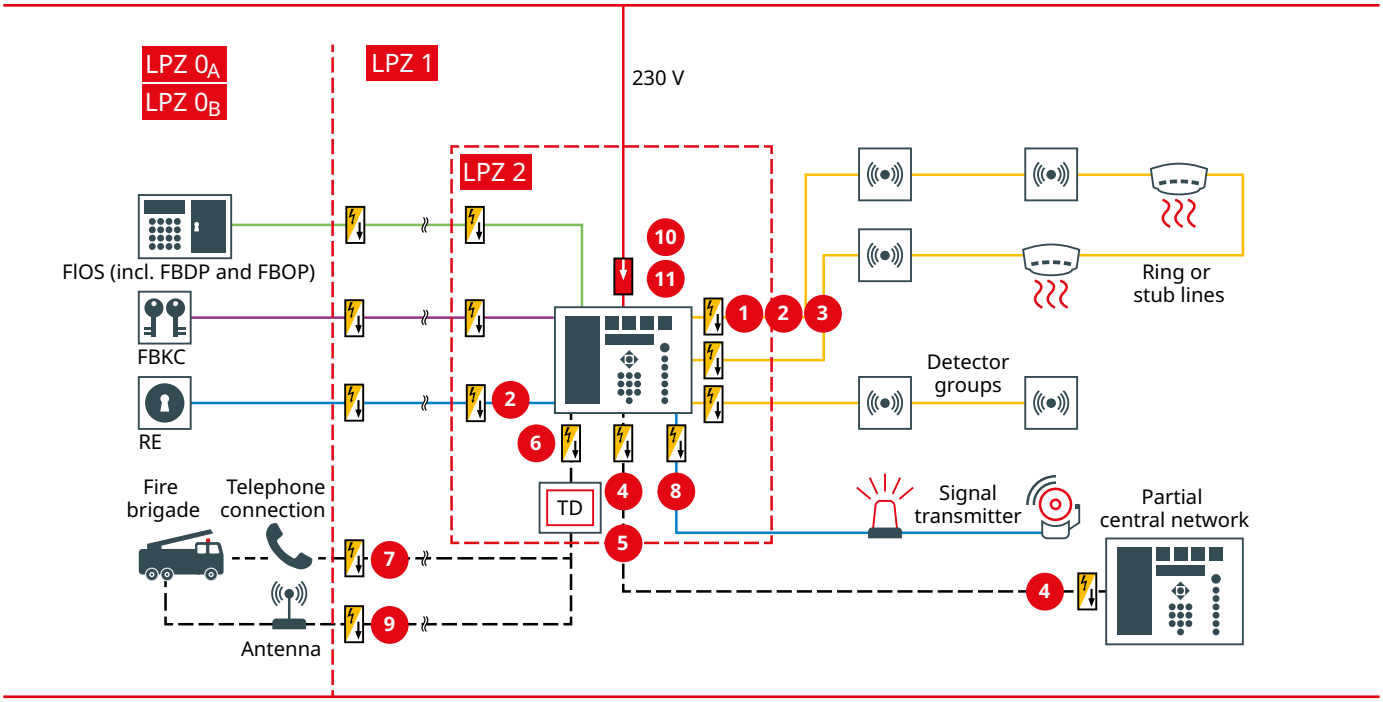
Unfavourable cable routing increases the need for protection. Particularly if there are cables running through multiple buildings and in sensitive areas such as data centres, the shielding strategy determines whether operation will be disrupted.

Practicalities: new and existing buildings

New builds:
Lightning protection zone concept, earthing and cable routing can be integrated at an early stage

Existing buildings:
Lack of space, established structures and lack of earthing require targeted retrofitting

Important:
Define the protection goal in advance – is it exclusively about fire protection or about ensuring long-term system availability?



FIOS = Fire brigade information and operating systems FBDP = Fire brigade display panel FBOP = Fire brigade operating panel RE = Release element

Protection concept

Fire alarm systems

→ The availability of fire alarm systems (FAS) affects the safety of people and equipment.

Fire alarm control panels are closely linked to the power supply, communication networks and external systems. It is crucial for building constructors and planning engineers to consider the protection of fire alarm systems at an early stage.

The risk: unprotected interfaces

Overvoltages can be coupled in via the power supply, fire alarm loops, communication and network interfaces, as well as antenna and telecommunication lines – with immediate effects on the functioning of the system. Even a single unprotected interface can put the entire system at risk.

These are the possible consequences:

- Alarm is delayed or fails to go off
- Restricted control of fire protection equipment, e.g. doors and smoke vents
- Expensive substitute measures such as permanent security guards
- Higher costs and additional organisational work for the operator

Our solution: fire alarm system protection from a single source

Our protection concept secures all relevant inputs and outputs of the fire alarm control panel in accordance with standards and manufacturer specifications:

- **Power supply**
  Coordinated Type 2 + 3 and Type 3 arresters protect the 230-V supply line.
- **Fire alarm loop and conventional (non-addressable) technology**
  BLITZDUCTOR XT modules protect sensitive fire alarm loops from leading fire alarm system manufacturers.
- **Networking and communication**
  Surge protection for RS-485, Ethernet and telecommunication lines – without compromising signal quality.
- **Antenna systems**
  Protection of external antennas against induced overvoltages.



BLITZDUCTOR XT base part

Part No. 920 300

Universal base parts for BLITZDUCTOR XT arrester modules



1 2 3

BLITZDUCTOR XT BD 48

Part No. 920 345

Fire alarm loop / conventional (non-addressable) technology
Note: refer to the manufacturer's specifications when making your selection.



4

BLITZDUCTOR XT XT ML4 BD HF 5

Part No. 920 371

RS-485 sub-panel networking



5

DEHNpatch CL8 EA 4PPOE

Part No. 929 161

Ethernet applications



6

BLITZDUCTOR XT ML2 BD S 24

Part No. 920 244

Transmission equipment



7

DEHNbox TC B 180

Part No. 922 220

Telecommunication interfaces



8

BLITZDUCTOR XT BD 24

Part No. 920 344

Transmission equipment, release element, fire brigade key



9

DEHNgate G SMA

Part No. 929 039

Antenna systems



10

DEHNguard MP TN 275 FM

Part No. 942 205

230-V power supply, Type 2 + 3



11

DEHNrail M 2P 255 FM

Part No. 953 205

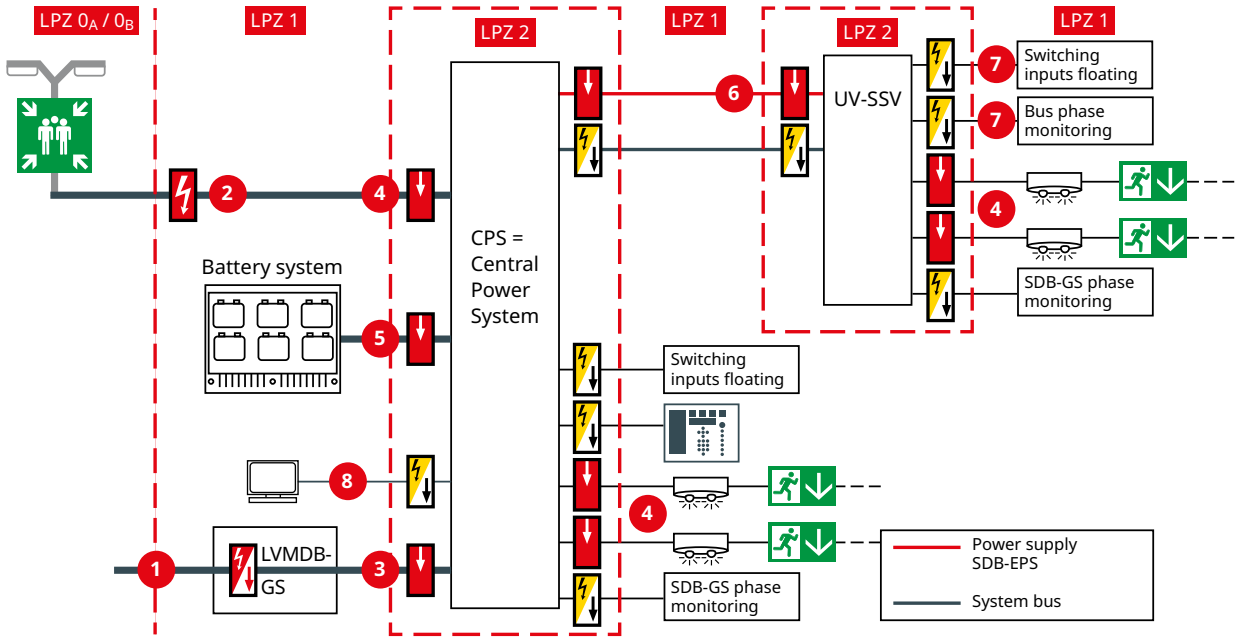
230-V power supply, Type 3

Added value for your planning

We make complex requirements understandable and translate them into practical protection concepts for safety-critical technical building equipment applications.

- Minimisation of downtime and liability risks
- Standard-compliant, comprehensible planning
- Protection of investments in safety systems
- Availability of fire alarm system even when extreme events occur

Protect your fire alarm system: Concept and products online at http://de.hn/aqK9P



LVMDB-GS = Low-voltage main distribution board general supply SDB-GS = Sub-distribution board general supply SDB-EPS = Sub-distribution board safety power supply

Protection concept

Emergency lighting

→ Emergency lighting is not merely there for convenience. Protecting it ensures its availability, reduces liability risks and protects people.

Standards such as **DIN VDE 0108 and EN 50172** therefore require permanent operational readiness, regardless of external influences. Lightning and surge events are among the most frequent causes of failure, as they impair control systems, backup batteries and communication interfaces.

The risk: unprotected paths

A single event is enough to put entire emergency lighting systems out of action.
Particularly critical are the energy infeed and general/central power supplies, the DC and AC sides of the battery systems, control and monitoring interfaces, and network and visualisation systems.

These are the possible consequences:

If the emergency lighting fails, escape and rescue routes are no longer visible. People lose their way, become uncertain and panicky, and the risk of accidents increases significantly – in short, people are in danger. For operators, this means organisational measures are required, potential liability issues arise, and in extreme cases, legal consequences may follow.

Our solution: all-round protection for all interfaces

Our protection concept secures all critical interfaces in accordance with standards:

- **Power supply**
  Type 1 and Type 2 arresters protect the infeed and general/central power supplies in the TN-S system.
- **Emergency lights and battery systems**
  Protection of DC and AC supply, including backup batteries against transient overvoltages.
- **Assembly point lighting**
  Robust protection for DC and AC applications with increased availability requirements.
- **Communication and control systems**
  Protection of phase monitors, indicator panels, and KNX and LON systems.
- **Network and display**
  Protection of Ethernet interfaces for web-based monitoring and diagnostics.



1

DEHNvenCI 255 FM

Part No. 4 x 961 205

General voltage supply infeed



2

DEHNsecure M 1 242 FM

Part No. 2 x 971 127

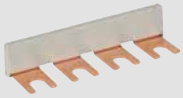
Assembly point lighting



STAK type 3x16 pin-shaped terminal

Part No. 3 x 900 588

Assembly point lighting



MVS 1 4 busbar

Part No. 900 610

Assembly point lighting



3

DEHNguard M TNS 275 FM

Part No. 2 x 952 405

General/central power supplies



4

DEHNguard SE DC 242 FM

Part No. 2 x 972 125

Emergency lights



STAK type 3x16 pin-shaped terminal

Part No. 3 x 900 588

Emergency lights



EB 1 2 1.5 earthing clip

Part No. 900 460

Emergency lights



5

DEHNguard SE DC 550 FM

Part No. 972 135

Battery system



6

DEHNguard SE DC 242 FM

Part No. 972 125

Voltage supply between central power supply and sub-distribution board safety power supply



7

BLITZDUCTORconnect ML2 BD 24

Part No. 927 244

Phase monitor, switching inputs, indicator panel



8

DEHNpatch CL8 EA 4PPOE

Part No. 929 161

Web, display, monitoring

Added value for your planning

We view emergency lighting as part of the overall technical building equipment and help planning engineers and installers ensure long-term availability in accordance with standards.

- Clear protective structure for new and existing buildings
- Reduced downtime and liability risks
- Standard-compliant planning with no subsequent improvements necessary
- Reliable operation even in the event of electrical faults

Protection of emergency lighting: Concept and products online at http://de.hn/aNBh5



Protection concept

Building and perimeter protection

→ Perimeter and building protection forms the first safety level of a building.

Cameras, access control systems, alarm technology and the control centre decide whether unauthorised access is detected, assessed and stopped. As these systems operate in a network, the failure of individual components can weaken the entire safety chain. For technical building equipment planning engineers, protecting these systems, and in particular their interfaces, is a technical, legal and economic necessity.

Where the risk arises

One of the biggest weaknesses lies in the electronics: overvoltages caused by lightning events or switching operations are coupled in via power, data and control lines.

These are the possible consequences:

- False alarms or undetected events
- Blocked or uncontrolled access points
- Failure of central monitoring and alarm structures
- Disruption of building operations and increased risk to people
- Organisational and legal pressure on the operator

Perimeter and building protection should not be viewed in isolation: With our protection concept, you can secure all relevant inputs and outputs of the systems in a coordinated and practical manner.

Our solution: seamlessly integrating safety and security

- **Camera systems**
  Protection for cameras mounted on buildings and free-standing cameras without compromising signal quality – with a comprehensive system from the air-termination rod to the earthing.
- **Free-standing cameras and masts**
  Maintained separation distances and safe discharge paths for lightning currents with HVI light plus.
- **Alarm and signalling systems**
  Protection of sensitive control and signal lines against transient overvoltages.
- **Access control and transfer points**
  Protection of critical interfaces between outdoor and indoor areas: turnstiles, barriers, gatehouses.
- **Power supply and monitoring**
  Power supply surge protection and status monitoring for transparent availability.



1

DEHNpatch CL8 EA 4PPOE

Part No. 929 161

Camera on building



2

HVI light plus

Part No. 819 609

Free-standing camera



DEHNpatch CLE IP66

Part No. 929 221

Free-standing camera

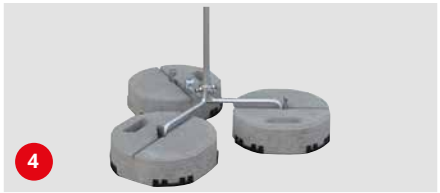


3

DEHNvario 2 BY S 150 FM

Part No. 928 430

Alarm and notification system



4

Self-supporting air-termination rod

Part No. 105 530

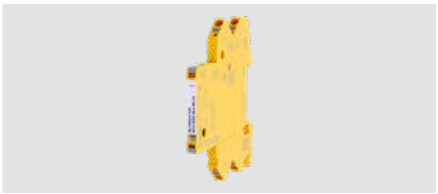
Access control



DEHNshield TT 2P 255 FM

Part No. 941 115

Access control



BLITZDUCTORconnect ML2 BD 24

Part No. 927 244

Access control



DEHNpatch CL8 EA 4PPOE

Part No. 929 161

Access control



DEHNrecord IRCM

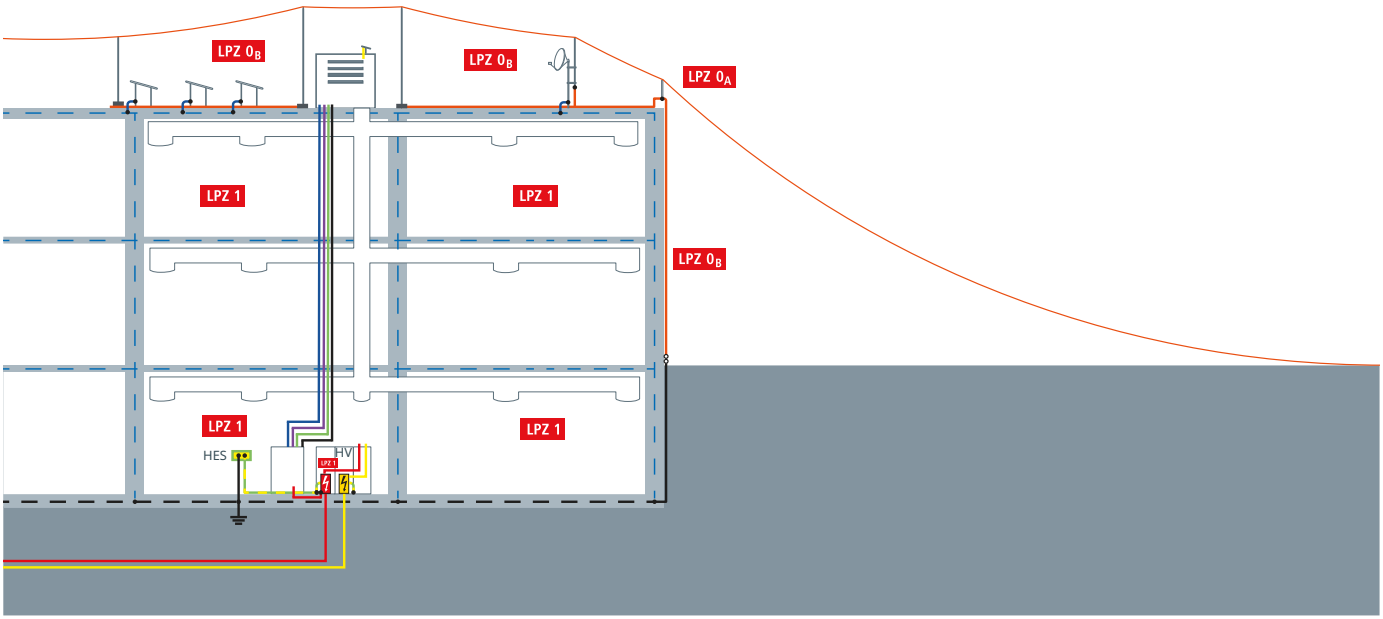
Part No. 910 710

Access control

Added value for your planning

Our expertise can help you take a systematic approach to planning safety and security. The only way to provide secure interfaces is by fully understanding the security architecture. We help you close skills gaps, assess risks at all interfaces and implement protection concepts reliably and in accordance with standards.

Building and perimeter protection: Concept and products online at http://de.hn/3zhs8



HV = Main distribution board HES = Main earthing busbar

Protection concept

Heating, ventilation and air-conditioning systems

→ Heating, ventilation and air-conditioning (HVAC) systems are the heart of a building's functionality.

HVAC systems keep buildings functional in terms of comfort, the health of the people inside, energy efficiency and economical operation. If the HVAC technology fails, the effects on operation, hygiene and asset preservation are immediate.

Where the risk arises:

HVAC systems consist of widely distributed, networked components, from heat exchangers, fans and sensors in outdoor areas to control systems, refrigeration systems and distribution cabinets inside buildings. Overvoltages can enter the system via control and communication lines and power supply cables.

These are the possible consequences:

- Room temperatures can no longer be regulated
- Air quality declines
- Technical equipment overheats and processes stall

Our solution:
tailored protection for HVAC technology

Individual protective devices do not solve the problem. Devices are safely protected when steps are taken to secure power supply and information technology.

Our protection concept ensures precisely that:

- Power supply systems: graduated protection concept consisting of coordinated surge arresters.
- Information technology: protection of control, regulation and communication interfaces.
- Equipotential bonding: integrated earthing and EB structures stabilise the entire system.



DEHNguard S WE 600

Part No. 2 x 952 077

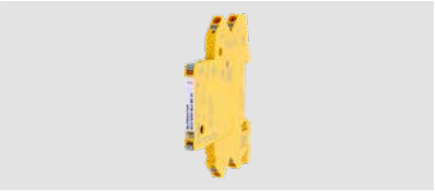
Frequency converter for ventilation



DEHNrail M 2P 255

Part No. 953 200

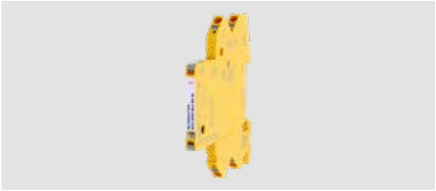
Power supply for terminal equipment



BLITZDUCTORconnect ML2 BE 24

Part No. 927 224

Measurement:
heating system flow temperature (4–20 mA) / gas consumption, gas supply (0–10 V)



BLITZDUCTORconnect ML2 BD 48

Part No. 927 245

Measurement:
Water consumption, water supply (M-Bus)



DEHNpatch CL8 EA 4PPOE

Part No. 929 161

BACnet data line



DEHNrecord ICRM

Part No. 910 710

IRCM LifeCheck



Equipotential bonding bar R15

Part No. 563 010

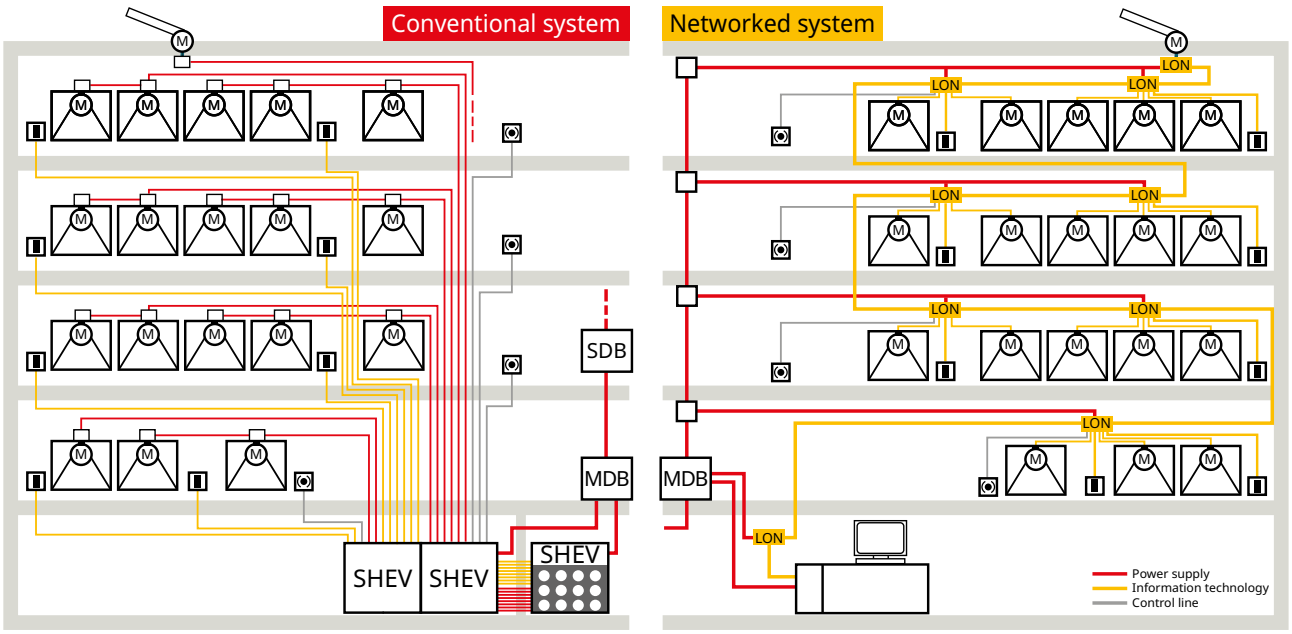
Equipotential bonding



Advantages for your project:

- Prevention of downtimes and consequential damage
- Stable regulation of air-conditioning, air quality and energy flows
- Clear protective structure for new and existing buildings
- Sound basis for decision-making for sustainable building operation

Protection of HVAC systems:
Concept and products online at
http://de.hn/9UhQr



SDB = Sub-distribution board MDB = Main distribution board SHEV = Smoke and heat extraction system LON = Local Operating Network M = Motor

Protection concept

Building automation & measuring and control

→ Building automation is the nervous system of a building. If it fails, safety and operation are at risk.

Building automation and measuring and control equipment are used to control, regulate, monitor and optimise all processes in modern buildings – from heating, ventilation and air conditioning to security and communication systems.

Interconnected systems create risks

Measuring and control systems consist mainly of sensitive electronics distributed across control cabinets, field devices and sensors – all connected via a wide variety of interfaces. That means a disruptive event rarely remains localised, and surges have an immediate effect across the entire system. The effects affect not only the energy supply, but also data and bus lines.

These are the possible consequences:

- Simultaneous failure of multiple functions
- Malfunctions of control systems and control loops
- High repair costs and long restart times
- Potential risk to people

Our solution:
Surge protection as a system component

Adopting a robust protection concept from the start and you will avoid having to add individual components later on. We do not view building automation as the sum of individual components, but rather as a networked system with clearly defined interfaces.

Our protection concept includes:

- Securing the power supply and the control level
- Protecting the bus, signal and communication lines
- Coordinated protective devices within a system family
- Integration into existing and new automation concepts

Added value for your planning:

- Prevention of system failures; no reactive repairs
- Clear protective structure for measuring and control systems
- High availability of safety functions
- Well-founded basis for decision-making and protection of long-term investment



DEHNguard MD TNS 275 FM

Part No. 943 405

Power supply, sub-distribution board



DEHNcord R 3P 275

Part No. 900 449

Terminal equipment protection, shutter



DEHNcord DALI

Part No. 900 438

Lighting control



DEHNpatch CL8 EA 4PPOE

Part No. 929 161

Ethernet IP



DEHNrecord IRCM

Part No. 910 710

IRCM LifeCheck



BLITZDUCTORconnect ML2 BE 24

Part No. 927 224

External control contacts



BLITZDUCTORconnect CL2 BD HC10A 24

Part No. 927 408

Actuators



BLITZDUCTORconnect ML2 BD HF 24

Part No. 927 275

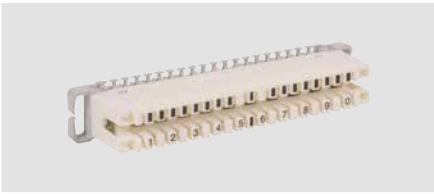
Measuring and control system interfaces



BUStector

Part No. 925 001

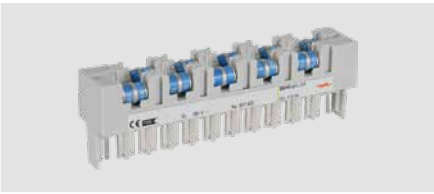
KNX / EIB systems



Disconnection block

Part No. 907 996

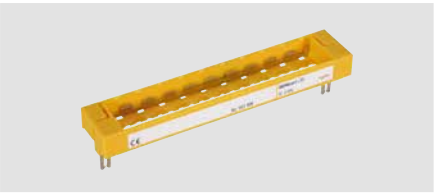
Telecommunication interfaces



DEHNrapid plug-in module

Part No. 907 400

Telecommunication interfaces



Earthing frame

Part No. 907 498

Telecommunication interfaces



DEHNrapid protective plug 1 pair

Part No. 907 421

Telecommunication interfaces

Protection of building automation: Concept and products online at http://de.hn/bnpsX

Key products

Specific solutions for technical protection requirements

Protecting modern technical building equipment poses different requirements depending on the application, environment and technical design. It is crucial that protection solutions are effective where risks actually arise and can be seamlessly integrated into existing systems.

Using selected key products, we show you how solutions that meet specific technical protection requirements can be reliably implemented. We use our expertise and tried-and-tested products to combine individual protective functions into comprehensive protection concepts.



Protect building technology and measuring and control systems

BLITZDUCTORconnect

Space-saving, universal combined arrester with a width of 6 mm and push-in connection terminal with status indication. With a high lightning current discharge capacity of 3 kA and low voltage protection levels, the BLITZDUCTORconnect protects measuring and control, bus and telecommunications systems from damage caused by lightning and surges. The integrated signal disconnection facilitates maintenance.



Protect signal circuits with higher operating currents

BLITZDUCTORconnect 24 V up to 10 A

The compact combined arrester protects signal circuits in measuring and control systems against damage caused by lightning and surge events. It provides specific protection for applications of up to 10 A of nominal current. Easy installation using push-in connection terminals and the integrated status indication with optional remote monitoring simplify installation, operation and maintenance.

- Compact version with a width of only 12 mm (10 A)
- Modular version only 6 mm in width (5 A)



Protect the power supply

DEHNshield und DEHNguard

If the separation distance is not maintained and lightning currents are conducted into the interior via interbuilding lines, dangerous flashovers may occur. The DEHNshield combined arrester provides lightning equipotential bonding in the main distribution board. A Type 2 + 3 DEHNguard arrester reliably reduces downstream surges and protects voltage-sensitive TBE components.

Protection of power supply systems:
More online at
http://de.hn/cjR4V



Protect Gigabit Ethernet

DEHNpatch Class EA

Space-saving combined arrester of 19 mm in width with status indication and optional remote signalling with the DRC IRCM accessories. DEHNpatch protects Ethernet applications up to 10 Gbit/s and Power over Ethernet (up to 4PPoE), providing surge protection for almost all LAN applications.



Monitor the system

DEHNrecord Condition Monitoring

The set for DIN-rail-mounted devices with integrated visual transmitter/receiver and visual reverse unit handles condition monitoring of the BLITZDUCTOR-connect system range with LifeCheck. It enables quick and simple installation and commissioning (plug & play). The visual arrester status indication via LED group display is combined with a remote signalling (break) contact.

Protection of information technology:
More online at
http://de.hn/aCsvh

Always at your side

DEHN Services



Expert planning – with DEHN Engineering Services

We offer a comprehensive range of services, whether it's project consultation, planning protection concepts and calculations, or delivering the finished protection solution. Commission our engineers worldwide – we develop plans customised to your location in accordance with IEC, UL, EN or DIN standards.

Discover DEHN Engineering Services online:
http://de.hn/bKgAc



DEHNrisk – the future of lightning protection analysis

With DEHNrisk, you can determine the lightning risk for structures comprehensively, quickly and precisely. The Web-based application provides support in determining the lightning protection class and other necessary measures.

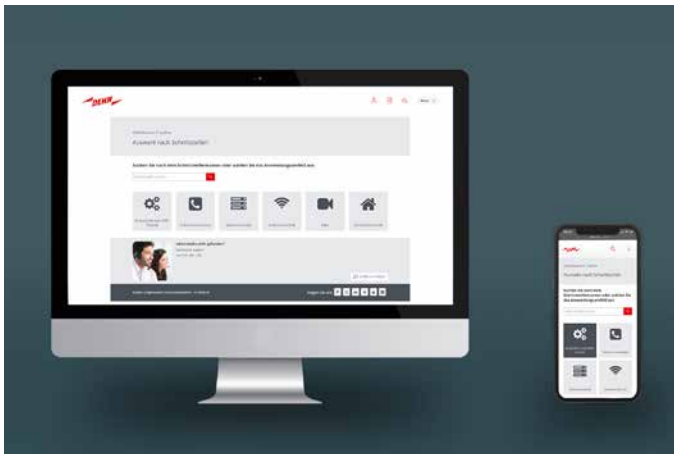
More information about DEHNrisk:
http://de.hn/d1ESg



DEHNplan – design your own lightning protection

With DEHNplan, you can easily plan standard-compliant external lightning protection for your project. The BIM-enabled software facilitates your planning with a visual representation of the protected volume and separation distances. Practical: the programme automatically creates a bill of materials.

More information about DEHNplan:
http://de.hn/2wRf5



DEHNselect IT – find protection for IT interfaces

DEHNselect IT helps you find the right surge protection for your IT system interfaces. The application uses a comprehensive range of interfaces from all IT application areas and is easy to use on a smartphone, tablet or desktop.

Start DEHNselect IT:
http://de.hn/b1jCw



DEHNacademy – learn from the experts

Want to learn more about surge protection and cable routing in safety technology, explore specific topics or expand your existing knowledge? Take advantage of the DEHNacademy. Register online and log in.

View the course:
http://de.hn/9mgWo



How to reach us – get in touch with us

As a global partner in lightning and surge protection, we support you from individual product insights to complete protection solutions. Use our international country overview to find the right contact for your region.

More information:
http://de.hn/9WCH1

http://de.hn/9qXF9

Surge Protection
Lightning Protection / Earthing
Safety Equipment

DEHN SE
Hans-Dehn-Straße 1
92318 Neumarkt
Germany

Telefon +49 9181 906-0
info@dehn.de

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DS197/EN/0326
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