Safety for modern buildings

Lightning and surge protection

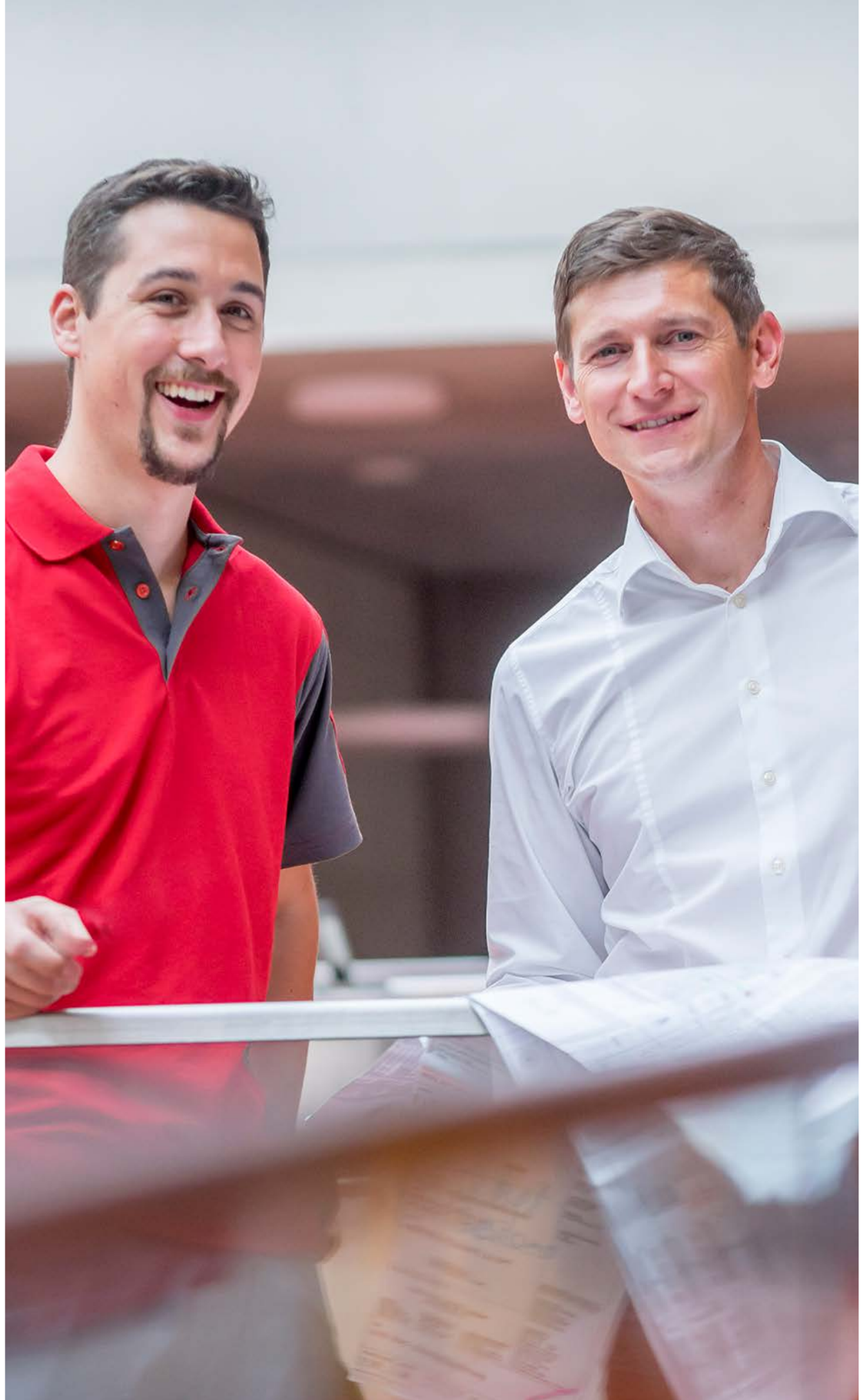
www.dehn-international.com

Enhanced safety

Lightning and surge protection from DEHN

Always a good feeling

DEHN is your partner for all aspects of lightning and surge protection. Whether planning support, technical consultation, risk analysis or product selection, DEHN is at your side – competent, reliable and “Made in Germany”.



DEHN protects.

Safety from a single source

The family-run company offers safety from a single source – as a full-range supplier of coordinated system solutions for earthing, lightning protection and surge protection.

Eliminating risks

Lightning and surge protection are essential components when it comes to preventing fire, guarding against the failure of important networked systems and protecting people. These protection measures are becoming more and more important, above all, in our modern work environment with Industry 4.0 and intelligent buildings.

Prevent unnecessary risks:

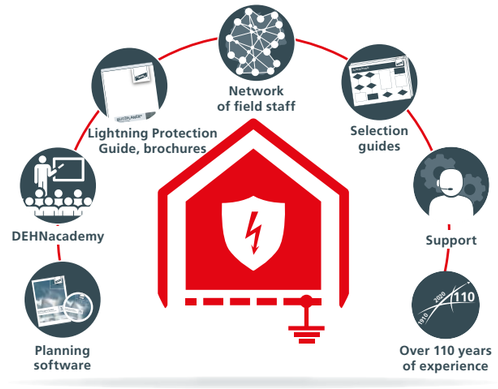
- **For people, buildings and sensitive technology –** with the help of an effective protection concept against lightning effects and dangerous surges
- **For your planning –** with support, consulting and know-how from the expert DEHN

Safety from a single source

Make use of the benefits and synergies presented by a wide range of products and services:

- **DEHN is competent:** The family-run company has over 110 years of experience in the field of earthing, lightning protection and surge protection
- **DEHN deals in safety:** The full-range supplier offers coordinated system solutions “Made in Germany”
- **DEHN provides service:** Special software, planning and risk analysis services, and prompt answers to your technical queries
- **DEHN supplies data:** EPLAN, Datanorm, product macros, multi- dimensional drawings, CAD, product specifications for tenders, etc.

DEHN makes you and your customers feel safe – with services which far exceed the standard:



Good reasons to act – Requirements and risks

Why do professional protection measures make sense? There are many good reasons: Technology must be permanently available, climatic conditions are changing, standards and risks must be considered.

Considering changes

Our climate is changing and extreme weather is becoming more common. The risk of lightning strikes and fire or damage due to surges is increasing. At the same time, living comfort and modern work and production processes are dependent on sensitive networked technology.

Profound changes in global power generation pose another special challenge. Network parameters have changed due to the decentralised supply from renewable energy sources. Isolated grids and storage systems are particularly susceptible to surges.

Dangerous mixture			
			
About two million lightning flashes per year	Damage radius of 2 km around the point of strike	Networked building technology	Permanent availability

Fulfilling requirements

Standards and building regulations call for lightning and surge protection measures. There are different requirements for buildings with and without an external lightning protection system. A detailed overview of the relevant standards and legal stipulations can be found in chapter 1 of our Lightning Protection Guide (www.de.hn/lpg).

Overview of the most important standards:

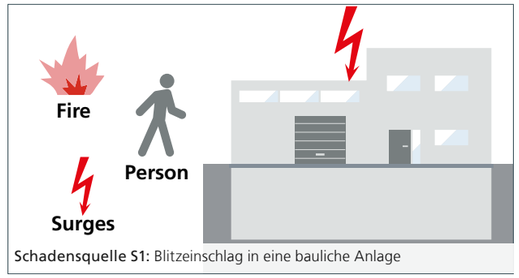
- **Lightning protection:** IEC 62305, 1-4
- **Surge protection:** IEC 60364-4-44, clause 443 and 444, IEC 60364-5-53, clause 534 and IEC 60364-5-54
- **Earthing:** DIN 18014, IEC 61936-1

Identification of risks and determination of the risk potential

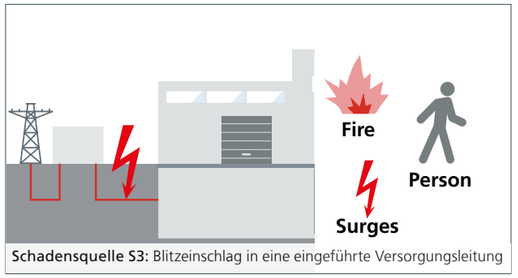
Risk management according to IEC 62305-2

A risk analysis allows you to assess and determine the risk potential for structures. This risk analysis forms the basis for specific measures to minimise the risks.

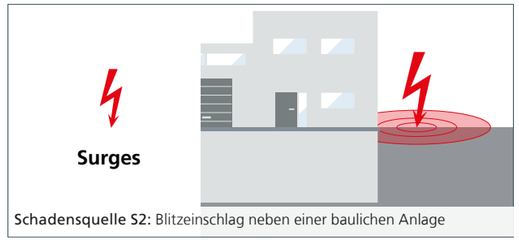
The aim of risk management is to define economically optimal protection measures – tailored to the building characteristics and use.



Schadensquelle S1: Blitzeinschlag in eine bauliche Anlage



Schadensquelle S3: Blitzeinschlag in eine eingeführte Versorgungsleitung



Schadensquelle S2: Blitzeinschlag neben einer baulichen Anlage

Schadensquelle S4: Blitzeinschlag neben einer Versorgungsleitung

Preventing danger

Lightning and surge protection are indispensable when it comes to protecting people, preventing fires and guarding important networked systems against failure.

Providing safety

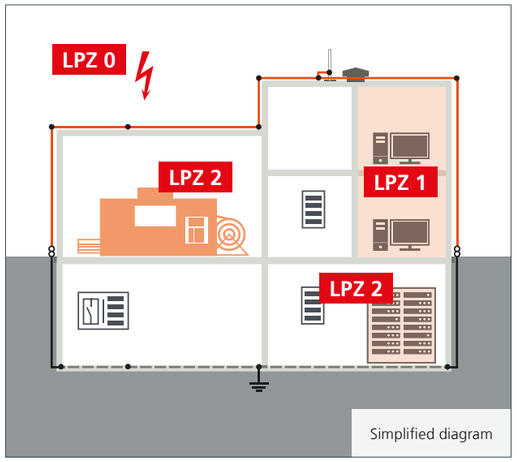
Failure to take proper lightning and surge protection precautions can, in the worst case, result in serious injury or even loss of life. Fires, malfunctions or lack of availability of important systems also have serious consequences – especially for intelligent building systems. Failure of individual networked components, e.g. due to surge damage, may cause entire systems to collapse, paralysing whole buildings or work and production processes. For companies, downtime is not just a matter of high costs and the effort involved in repairing the damage, it may threaten their very existence.

			
Protect human lives	Prevent fire	Avoid stop of production and data loss	Provide security

Lightning protection zone concept

The lightning protection zone concept according to IEC 62305-4 makes it easier to plan, implement and monitor surge protection measures. A building is divided into zones with different risk potential. Inner and outer lightning protection zones are defined according to IEC 62305-4 depending on the lightning threat. Based on these zones, it is determined where measures or arresters are required.

- LPZ 0: Zones outside the building subjected to direct lightning effects, no shielding against LEMP
- LPZ 1: Zone inside the building with a low risk of partial lightning energies
- LPZ 2 – LPZ n: Further zones inside the building with decreasing surge-related risks



Simplified diagram

More information at:
www.de.hn/lpg

Effective protection concept

Avoid taking unnecessary risks by way of an effective lightning and surge protection concept. This means including the following measures in your designs and planning right from the start:

- Earthing / equipotential bonding
- External lightning protection
- Surge protection

Earthing

Components of the earth-termination system

			Product examples	Part No.
1		High-quality earthing materials from DEHN provide a solid foundation for the building's earth-termination system. Depending on the type of building, a foundation earth electrode is installed in the foundation and, if required, an additional ring earth electrode outside the foundations		
		Foundation earth electrode:		
		Strip steel, hot-dip galvanised		**852 335**
		Round steel, hot-dip galvanised		**800 010**
		Rebar clamp DEHNclip	Rd 8-9 mm / Rd 10 mm	**308 131**
			Rd 8-9 mm / Fl 30 x 3-4 mm	**308 141**
		Ring earth electrode:		
		Round steel, StSt V4A		**860 010**
		Cross clamp		**319 209**
2		If a ring earth electrode is installed, it must be connected to the functional bonding conductor in the foundation. This ensures a professional earthtermination system.		
		Wall bushing		**478 540**
		Equipotential bonding bar		**563 200**
3		It is advisable to provide connections for an external lightning protection system when constructing a new building. If terminal lugs are already installed, an external protection system can be retrofitted more easily at lower cost.		
		Earth entry V4A		**860 130**
		Rod holder V4A		**274 160**
		Anti-corrosion tape		**556 125**
		MV clamp V4A		**390 079**

More information at:
de.hn/erdung

Laying the groundwork

Whether existing or new buildings: a functioning earth-termination system is the pre-requisite for the safe operation of electric systems in buildings and for protecting people from dangerous high voltages.

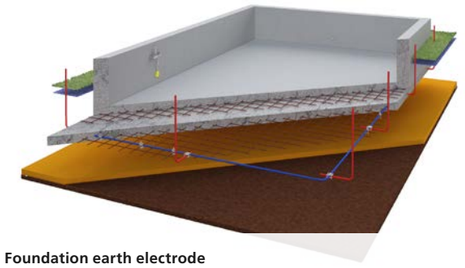
The design and implementation of the earth-termination system are of central importance. After the concrete has set, it is no longer possible to retrofit this vital component, e.g. in the form of a foundation earth electrode.

Omissions or errors during the construction phase cannot be corrected later or, at least, not without a great deal of effort and expense.

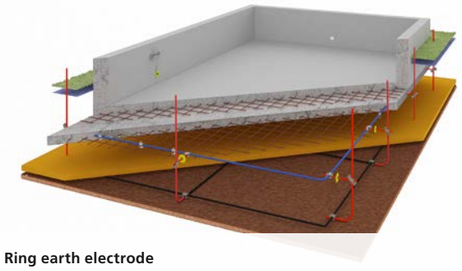
Foundation and ring earth electrodes

Foundation or ring earth electrodes are a safe and cost-effective earth-termination system – over the entire lifetime of the building.

The foundation earth electrode is installed in the concrete foundation and covered by at least 5 cm of concrete to ensure corrosion protection. However, in some cases this conductive earth connection may no longer be ensured (foundations with increased earth contact resistance) due to various building construction measures (e.g. when constructing a building made of waterproof concrete). A corrosion-resistant ring earth electrode must then be installed in the ground outside the building foundation and connected to a ring equipotential conductor in the foundation.



Foundation earth electrode
Conventional foundation in direct contact with earth according to DIN 18014



Ring earth electrode
Foundation with increased earth contact resistance Ring earth electrode with functional bonding conductor according to DIN 18014

Pad foundation

Buildings with pad foundations (e.g. for columns) must be connected to a foundation earth electrode with a length of at least 2.5 m in each foundation. To establish equipotential between the pad foundations, these pad foundations must be interconnected in such a way that they are electrically conductive and corrosion-resistant.

External lightning protection

Air-termination system	Product examples	Part No.
1 	Correctly dimensioned air-termination systems prevent direct lightning strikes to a building. They consist of rods, spanned wires / cables and intermeshed conductors and can be combined as needed.	
	Self-supporting airtermination rod	**105 530**
	Roof conductor holder	**253 050**
	Air-termination rod	**103 220**
	DEHNiso spacer	**106 115**
Down conductor	**Product examples**	**Part No.**
2 	A down conductor is a conductive connection between the air-termination system and the earth-termination system. It discharges the intercepted lightning current to the earthtermination system without damaging the building, e.g. as a result of excessive heat.	
	DEHNalu wire	**840 028**
	Conductor holder DEHNgrip with screw, plastic base and dowel	**207 109**
	Round wire	**860 115**
	Number plate	**490 110**
Connection components (clamps)	**Product examples**	**Part No.**
3 	Clamps interconnect conductors or connect them to the installation. They must be subjected to a lightning current test according to IEC 62561-1. DEHN components fully meet this requirement and are reliably tested.	
	MV clamp	**390 051**
	UNI disconnecting clamp, stainless steel	**459 129**
	Saddle clamp, aluminium	**365 031**
	Downpipe clamp	**423 019**

More information at:
de.hn/aeb

Coping with direct lightning strikes

Conventional and isolated lightning protection means fire protection and above all personal protection. Lightning protection systems form a safe shield around the building by intercepting direct lightning strikes and discharging them safely to the ground.

External lightning protection is set out in the IEC 62305 standard and protects buildings from the effects of a direct lightning strike.

A complete lightning protection system consists of the following elements: air-termination system, down conductor system, earthtermination system, lightning equipotential bonding, separation distances. The lightning current flows into the down conductors via the air-termination system and is conducted to the ground in a controlled manner. The important thing here is that the separation distances from conductive metal parts are maintained. Otherwise, dangerous flashover can occur which may cause sparking and start a fire. Lightning equipotential bonding reduces the potential differences caused by the lightning current. This is achieved by connecting all isolated conductive system parts directly by means of conductors or by means of surge protective devices (SPDs).

There are two types of external lightning protection system for a building:

Conventional lightning protection

If the separation distances from metal and/or earthed installations is maintained consistently, the air-termination and down-conductor systems – for example round wires or air-termination rods – can be installed on the surface of the building.

Please note: Special requirements must be observed for buildings with thatched roofs!

Product examples for conventional lightning protection can be found on page 8.

If separation distances cannot be maintained due to the properties of the building, consistent lightning equipotential bonding is required. As an alternative, an isolated lightning protection system can be installed.

HVI Lightning Protection

HVI Lightning Protection comprises a high-voltage-resistant insulated down conductor which, in combination with the relevant supporting tubes and air-terminations rods, forms the isolated lightning protection system. The special feature is that the lightning current carrying conductor is wrapped in semi-conductive insulating material so that the necessary separation distance – be it from other conductive parts of the building or electrical lines and pipes – can be easily maintained. Consequently, further meas- ures such as the additional connection of a braided shield are not required.

HVI Conductors also cater to the desire for a modern appearance and design. The conductors can be painted to match the colour of the building or even installed behind the façade. The system can thus be optimally adapted to the architecture of a building and offers entirely new design possibilities.

Isolated lightning protection

In case of an isolated lightning protection system, air-termination rods, air-termination masts or masts spanned with cables protect the entire building against the effects of a direct lightning strike. The separation distance **s** between the lightning protection system and the building, must be maintained.

Glass-fibre reinforced plastic (GRP)

As an alternative, air-termination and down-conductor systems made of electrically insulating material such as GRP can be mounted on the object to be protected.

Residential buildings

Example **WITHOUT** external lightning protection

Surge protection			
Main distribution board / service entrance box	Internet /telephone	Broadband	Photovoltaics
1 	2 	3 	4 
DEHNshield ZP B2 SG TT 255 Part No. 909 396	DEHNbox TC B 180 Part No. 922 220	DEHNgate FF TV Part No. 909 703	DEHNcube YPV SCI Part No. 900 910
Sub-distribution board	Protection of terminal equipment	Office/ home office	TV / SAT system
5 	6 	7 	8 
DEHNguard M TNS Part No. 952 400	DEHNflex M Part No. 924 396	DEHNprotector LAN100 Part No. 909 321	DEHNprotector 230 TV Part No. 909 300
Home automation / heating / air conditioning	Home automation / heating / air conditioning	Smart Home	Shutters
9 	10 	11 	12 
DEHNrail M 2P Part No. 953 200	BLITZDUCTORconnect ML2 BE Part No. 927 224	BUStector Part No. 925 001	DEHNcord R 3P Part No. 900 449

More information at:
de.hn/mfh

Conserving living comfort

Nowadays, smart technology forms the basis for modern living. It offers comfort, security and independence. Surge protection is instrumental in ensuring that this technology is reliable.

Safeguarding living comfort in smart homes

Modern lifestyle is increasingly defined by digital devices: Smart TV, intelligent home automation, burglary protection systems, home office or electromobility to name but a few. A lot of us already take the comfort of smart homes for granted. The downside of smart is that devices are becoming increasingly sensitive and more susceptible to interference. Surges can cause serious interference and damage or even destroy important networked technology. This may cause the entire smart system to collapse vleading to a drop in the accustomed standard of living.

Observing surge protection requirements

Vital technology is becoming more and more sensitive and requires greater protection. For this reason, the IEC 60634-4-44 clause 443 and IEC 60364-5-53 clause 534 standards were revised and adapted accordingly. IEC 60634-4-44 clause 443 describes when surge protection measures need be taken in systems and buildings – IEC 60364-5-53 clause 534 explains how to select arresters and install them in the electrical installation. Upon the issue of the new edition of IEC 60364-4-44 clause 443, surge protection became mandatory for new residential buildings.

To ensure comprehensive protection, dangerous surges must be prevented from entering the building. Therefore, measures must be taken for incoming lines such as:

- Power supply lines
- Internet and telephone lines
- Broadband cables
- Lines extending beyond the building

Surge protection is important to ensure that all the devices in modern homes work reliably since there is more at stake than just functioning devices: It is about protecting families, preserving a modern way of life and, for the self-employed, securing their home office and their livelihood.

Find out about further protection measures:

Earthing Page 6-7	External lightning protection Page 8-9	Photovoltaics / E-mobility Page 18-19

Titelbild englisch

TIP

Protection proposals for single-family houses can be found in our brochure „Thrilling Times – Relax: DEHN protects residential buildings."

More information at:
de.hn/ds614

Functional buildings

Example **WITH** external lightning protection

External lightning protection			
Air-termination system	Roof conductor holder for flat roofs	Down conductor	Terminal lug
1 	2 	3 	4 
Tripod with concrete base and air-termination rod Part Nos. 105 351 / 102 010 / 105 170	Conductor holder with concrete base Part No. 253 050	Round wire, Alu, 8 mm Part No. 840 028	Round wire, stainless steel, (V4A), 10 mm Part No. 860 115
Surge protection – Power supply (Red/Line)			
Main distribution board	Sub-distribution board	Protection of terminal devices	Photovoltaics
5 	6 	7 	8 
DEHNventil M TNS 255 FM Part No. 951 405	DEHNguard M TNS ACI 275 FM Part No. 952 440	DEHNflex Part No. 924 396	DEHNcube YPV SCI Part No. 900 910
Surge protection – Data and information technology (Yellow/Line)			
Data technology	Telecommunic ation system	Ethernet, IP camera	KNX / EIB bus
9 	10 	11 	12 
BLITZDUCTORconnect ML2 BD 24 Part No. 927 244	DEHNrapid LSA Part No. 907 401 / ... 498 / ... 430	DEHNpatch outdoor Part No. 929 221	BUStector Part No. 925 001

More information at:
de.hn/zweckbau

Keeping working environments up and running

Modern workplaces, office or commercial buildings require reliably functioning technical components to be able to fulfil their function. Lightning and surge protection protect you from disruptions.

Modern work environments are becoming increasingly sensitive

Buildings are becoming smart. They are based on networked technical components which require a permanent supply of power and data. Today modern commercial buildings such as hotels, medical facilities or office buildings are defined by smart building equipment. Here, intelligent systems automatically control and optimise the energy requirement, arrange for the cleaning of only those areas which have really been used and control access via sensitive security technology.

Failure of individual components, e.g., following lightning strikes and surges, may cause the collapse of all networked systems, bringing entire buildings and work environments to a standstill and disabling access control – such horror scenarios can be avoided! Lightning and surge protection precautions ensure that important technology always works safely and reliably.

Regulations call for protection measures

The surge protection requirements of the IEC 60364-4-44 clause 443 and IEC 60364-5-53 clause 534 standards mentioned before also apply to office and commercial buildings. As far as the protection of people is concerned, further building regulations must be observed, e.g., fire protection regulations. Here, lightning and surge protection also makes a significant contribution towards preventing people from sustaining serious injuries and buildings from catching fire.

If medical premises such as diagnosis rooms with MRT or X-ray devices, dental surgeries or day surgery centres are located in commercial buildings, IEC 60364-7-710 also applies. The focus here is on the safety of patients and medical staff. The standard specifies requirements for electrical safety and the uninterrupted power supply in these areas.

Find out about further protection measures:			
External lightning protection Page 8-9	Photovoltaics Page 18	E-mobility Page 19	Technical building services equipment Page 21

Industry

Examples with HVI Lightning Protection

External lightning protection – HVI Lightning Protection			
Air-termination system	Air-termination system	Down conductor	Down conductor
1 	2 	3 	4 
Tripod with concrete base Part No. 105 351/102 010	Supporting tube Part No. 105 325	HVI long Conductor Part No. 819 131	Conductor holder with tensioning strap Part No. 275 320
Surge protection – power supply (Red/Line)			
Transformer substation	Low-voltage main distribution board	Sub-distribution board	Protection of terminal devices
5 	6 	7 	8 
DEHNvenCI 1 255 FM Part No. 961 205	DEHNventil M TNS 255 FM Part No. 951 405	DEHNguard M TNS ACI 275 FM Part No. 952 440	DEHNflex Part No. 924 396
Surge protection – data and information technology (Yellow/Line)			
Data technology	Public address	Ethernet, PoE++	KNX / EIB bus
9 	10 	11 	12 
BLITZDUCTORconnect ML2 BE 24 Part No. 927 224	DEHNvario 2 BY S 150 FM Part No. 928 430	DEHNpatch RJ45B 48 Part No. 929 121	BUStector Part No. 925 001

More information at:
de.hn/industrie

Keeping production rolling

Lightning and surge protection concepts ensure that the sensitive networked automation systems of Industry 4.0 are protected, and that plants and production processes are permanently available.

Keeping production rolling

Trouble-free communication of machines and plants in modern production environments requires the consistent flow of both power and information.

Machines must run reliably and work processes function smoothly – even in case of thunderstorms and surges. A production outage can have severe, sometimes even existential, financial consequences. There may also be environmental issues. All these risks can be easily avoided by a carefully planned lightning protection concept.

Considering power and data technology

For industrial companies, it is advisable to install an isolated external lightning protection system. Separation distances are reliably maintained, and lightning energies safely discharged along the outside of the building. This prevents sensitive electric components inside the building from disturbance and destruction.

Combining external lightning protection with internal protection provides additional protection. Protective devices such as ACI or CI arresters secure the power supply and, at the same time, save valuable space. Since these arresters do not require a backup fuse, errors when dimensioning an upstream fuse are automatically excluded. It is also easier to keep connecting cables within the prescribed lengths.

In addition to the power supply, data lines are an important lifeline of modern production plants. Data exchange and networked communication structures are the core components of Industry 4.0. Therefore, all data networks must be protected against dangerous surges. The main issue here is to choose adequate data and information technology arresters for the relevant system – i.e. ones which are compatible with bus systems such as KNX, DALI.

Find out about further protection measures:			
External lightning protection Page 8-9	Alarm / security systems Page 16-17	LED lights Page 20	Technical building services equipment Page 21

More information at:
de.hn/security

Ensuring security

So that security systems always work: Electric security systems are only truly reliable if they do not fail during thunderstorms. Surge protection prevents damage and failure.

Ensuring availability

Whether fire precautions, burglary protection or emergency and escape route lighting – security systems must be permanently available. If lightning strikes and surges destroy security systems or safety systems no longer work, lives are at risk.

An important economic aspect: Surges can cause incorrect signals or false alarms, resulting in high follow-up costs. Make sure you integrate all these sensitive safety and security systems in your lightning and surge protection concept to ensure that they always function perfectly.

Meeting requirements

Fulfilling legal and normative requirements is a must for manufacturers, planners and installers. At the same time, requirements for protecting security systems are often complex. One must observe all applicable rules and regulations in the relevant countries and states, e.g. the legal duty to maintain safety, normative requirements, the technical building regulations law and construction product directives, as well as generally accepted rules of technology and insurance company requirements.

Surge protection for power supply and lighting systems			
Voltage supply for the central fire alarm system	Safety lighting	Safety lighting	LED lights
			
DEHNrail M 2P 255 FM Part No. 953 205	DEHNsecure M 1 242 Part No. 971 122	DEHNguard SE DC Part No. 972 110	DEHNcord L 3P Part No. 900 447
Surge protection for BUS, signalling and data technology			
Voice alarm / Video	Ethernet, LAN connection, IP camera, PoE++	Input and output of the fire alarm system	Information technology for RS 485 interface
			
DEHNvario Part No. 928 430 / 928 440	DEHNpatch Part No. 929 121 / 929 221	BLITZDUCTORconnect ML2 BE 24 Part No. 927 224	BLITZDUCTORconnect ML2 BD HF Part No. 927 271

Ensuring power generation

Surge damage due to thunderstorms is one of the most frequent causes of damage to photovoltaic systems. Protection measures increase the availability of your system and secure the yield in the long term.

Protection of rooftop systems

One of the most common forms of PV system is the rooftop system. Due to its exposed position, it is particularly prone to damage caused by direct and indirect lightning effects. Comprehensive protection is therefore required and consists of:

- **External lightning protection** including airtermination and down-conductor system
- **Internal lightning protection** for lightning equipotential bonding using type 1 arresters for electrical systems

Tip: For economic reasons lightning and surge protection should be incorporated at the design stage of PV systems – subsequent installation is much more expensive and time-consuming.

Preventing surge damage

Surges resulting from thunderstorms frequently destroy system parts such as modules, inverters and the monitoring system. The resulting financial loss and costs are considerable, e.g. replacement of a faulty inverter, new installation or loss of revenue during downtime. This can easily be prevented by a lightning protection concept.

By the way: With the publication of the amended IEC 60364-4-44 clause 443, IEC 60364-5-53 clause 534 and IEC 60364-7-712, the installation of overvoltage protection measures becomes mandatory – even if there is no external lightning protection system.

Surge protection for buildings with external lightning protection			
Main distribution board	Photovoltaic system – separation distance is kept	Photovoltaic system – separation distance is not kept	AC side of the inverter
			
DEHNventil TNS Part No. 951 405	DEHNguard M YPV Part No. 952 565	DEHNcombo YPV SCI ... FM Part No. 900 066	DEHNguard M TNS FM Part No. 952 405

Staying mobile

Mobility is changing rapidly. In the future, charging posts for electric vehicles will be an integral part of the transport infrastructure. These charging posts need to be protected to ensure that electric vehicles are fit for use, even after a thunderstorm.

Protecting charging posts and vehicles

Charging posts are required wherever electric vehicles are parked for a prolonged period of time, e.g. in car parks for residents, customers, patients or employees. Lightning effects and surges pose a risk for the sensitive electronics of the charging post and the vehicle itself.

In case of a thunderstorm, the sensitive electronic circuitry for the controller, counter and communication system is particularly at risk. Satellite systems with interconnected charging points can be completely destroyed by a single lightning strike. Surges during the charging process frequently not only damage the charging post, but also the electric vehicle connected to it.

Electric vehicles generally have an electric strength protection level of up to 2,500 V. However, the voltage occurring during a lightning strike may be 20 times higher. Therefore, prevent damage and meet the normative requirements according to IEC 60364-4-44 clause 443, IEC 60364-5-53 clause 534 and IEC 60364-7-722.

Protect charging systems and electric vehicles from costly damage:

- To the **charge controller** and **Batterie**
- To the control, meter and communication **electronics** of the charging system.

Surge protection for charging systems and electric vehicles			
Charging post: Power supply	Charging post: Information technology Universal cabling	Charging post: Information technology for RS 485	Wall box in the protected volume
			
DEHNshield TNS FM Part No. 941 405	DEHNpatch Class E Part No. 929 121	BLITZDUCTORconnect ML2 BD HF Part No. 927 271	DEHNguard M TNS FM Part No. 952 405

Protection of lighting systems

Surge arresters protect sensitive LED technology from damage, thus preventing costintensive failure, time-consuming repair and expensive replacement of LED lights.

Damage caused by surges

Although LED lights have many advantages, their shortcomings over traditional luminaires are that they are more susceptible to surge damage and that the cost of replacement is higher. Such unnecessary costs are easily avoided!

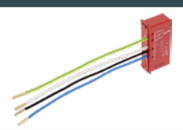
It is not only direct lightning strikes that cause damage. Indirect lightning effects often cause surges which exceed the immunity of sensitive LED lights many times over. This results in partial or complete failure of the LED modules and destruction of the LED drivers. Another risk factor for LED lights is network-generated surges caused by, for example, switching operations which lead to premature ageing of the LED light.

Protective devices prevent failure

Powerful surge arresters protect sensitive LED technology, preventing damage and ensuring the long service life of LED lights. This reduces replacement costs and avoids time-consuming and costly maintenance work. Another advantage: reliable LED lighting ensures uninterrupted work and production processes and, therefore, satisfied users.

Prevent damage and implement a comprehensive surge protection concept:

- Directly at the LED light / light strip.
- In the upstream sub-distribution board.

Surge protection			
Distribution box Power supply	At the light strip Power supply	Sub-distribution board Power supply	Protection of the DALI control
			
DEHNshield TNS FM Part No. 941 405	DEHNcord L 2P SN1860 Part No. 999 937	DEHNguard M TNS 275 FM Part No. 952 405	BUStector Part No. 925 001

Upholding the infrastructure

Surge protection for technical building services ensures that the basic supply structures of technical building services are stable and reliable

Closing security gaps

Technical building services include heating, ventilation, sanitary engineering, air-conditioning and electrical engineering, as well as measuring, control and regulation technology. All these services access the power and data systems of the building. However, this also means that operators rely on the protection measures for the electric devices in these systems. But what happens if there are gaps? Central components of the technical building services are then vulnerable to, e.g., dangerous surges. As a result, the heating or ventilation system might no longer work after a thunderstorm and important measuring technology could be destroyed.

Observing framework conditions

IEC 60364-5-53 clause 534 calls for separate surge arresters directly at the consumer (e.g. air-conditioning containers or heating sensor) if the cable length from the upstream electrical connection exceeds 10 m. This is an important aspect which is often neglected in technical building services equipment.

Technical building services equipment in modern buildings is interconnected and interdependent. Many components interact, for example, in the power system, to optimise consumption and save resources. Shading and heating systems or air-conditioning and ventilation processes are controlled by specified temperatures or solar radiation. If a single component fails, the function of the entire system is affected.

Surge protection			
Sub-distribution board Power supply	Information technology for RS 485	Bus systems KNX / EIB Power supply	Industrial Ethernet / PoE++ Data technology
			
DEHNguard M TT ACI 275 FM Part No. 952 341	BLITZDUCTORconnect ML2 BD HF Part No. 927 271	BUStector Part No. 925 001	DEHNpatch Class E Part No. 929 121

Easy planning

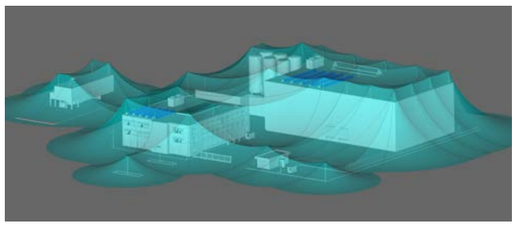
Make your work easier and save time.

Planning support

You require professional planning and implementation of a comprehensive lightning and surge protection concept? This is a complex task, particularly if it is not your day-to-day business. So, make your work easier and fall back on DEHN services:

DEHNconcept – Have your lightning protection systems designed for you

Our DEHNconcept team will be happy to plan a comprehensive lightning protection and earth-termination system for you. This saves you the time you would otherwise spend on complex designs and clarifying details and, at the same time, gives you peace of mind. The planned concept is available in an open format (dxf/dwg) and as a 3D model (nwd format). This allows you to integrate the concept in your documentation.



Our portfolio includes, e.g.

- Complete planning of the lightning protection and earthing concept according to IEC 62305
- Risk analysis according to IEC 62305-2: Protection against lightning – Part 2: Risk management.
- Surge protection concepts
- Dimensioning of earth-termination systems at transformer substations
- Digitalisation of existing buildings via laser scanning

DEHNsupport toolbox – Digital planning of lightning protection systems

Whether risk management, calculation of air-termination rod and earth electrode lengths or determination of separation distances – this software helps you to plan your lightning protection concept. Five modules allow you to assess the risk potential of structures.

You can create a risk analysis and calculate air-termination rod lengths, earth electrode lengths and separation distances. For your project you will receive a clear plan with the appropriate protective devices.

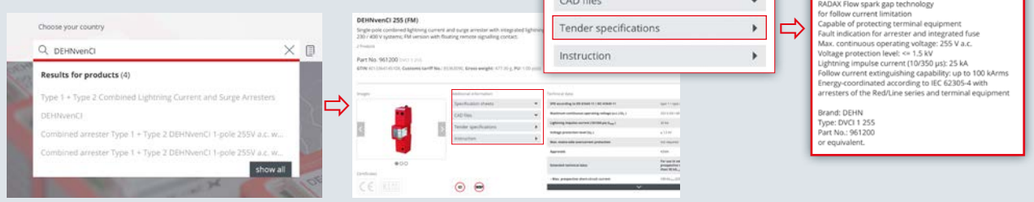
Finding planning data

CAD data, tender specifications or data sheets – planning data for our entire product portfolio can be found in our online product database – with a single click directly on the product.

1 Enter the Part No. or product name in the search box

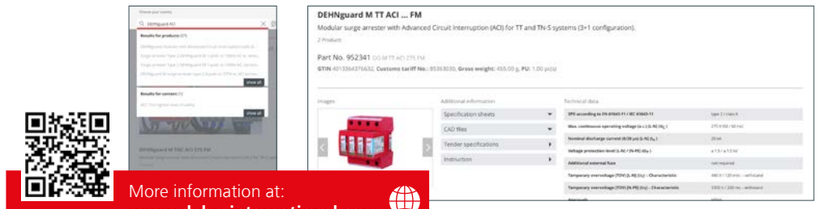
2 Product information including e.g. CAD/design data and tender specifications

TIP



Services and information

Whether support with planning or specific help with a query – take advantages of DEHN's range of services.



Online product data base and configurators

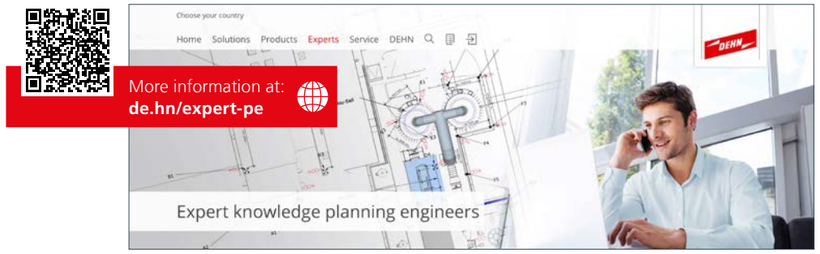
You will find further information, data sheets, planning documents for our products online.

Simply enter the part number or description in the search field.

More detailed information

Specific concepts can be found in numerous white papers alongside industry and practical solutions.

Or, in our LIGHTNING PROTECTION GUIDE, a lightning and surge protection planning manual. This means that you quickly have all relevant information and solutions at your fingertips.



Expert pages

Have you already seen our expert pages?

Concisely compiled for you, you will find current and relevant information at a click.

Answering questions

If you have commercial or specific technical questions, please contact our commercial customer services or our experts for lightning protection, earthing, surge protection, safety equipment and arc fault protection:

Commercial Customer Service

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Fax +49 9181 906-1444

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Surge Protection
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