



Dynamic Times

Relax: DEHN protects residential buildings

Relax

All you need to know in a nutshell



How do surges get into the house?

Page 3

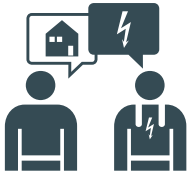
... They enter the building from the outside via electricity, data and telecommunication cables putting electrical systems and equipment at risk.



What are actual dangers and how can we combat them?

Page 4

... Damage caused by lightning and surges – DEHN solutions are preventive and provide safety.



Why is surge protection so important?

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... Comfort, safety, protection of investment and independence for the home – all arguments you can use with your customers.



What do the protection concepts for various buildings look like?

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... Safety for residential buildings – quickly select the appropriate products.



What are the benefits of a cooperation with DEHN?

Page 22-23

... Time saving, safety and prompt assistance with any questions – all the benefits at a glance







Dynamic challenges



Lightning and overvoltage, a threat to the home

Damage statistics are alarming: every year in Germany alone lightning and overvoltage cause total damage to residential buildings in the region of 340 million euros ¹⁾. The damage ranges from the failure of electric devices and controls to

structural damage to the house and even complete destruction by fire. The real total is much higher because not all cases are insured and therefore do not appear in the statistics.

Statistiken			
			
About 1.4 billion lightning flashes per year worldwide ¹⁾	2 km damage radius from the point of strike	About 340 mill. EUR total damage per year due to lightning and overvoltage in residential buildings ²⁾	80 % of claims were caused by surges ²⁾

How is damage caused?

Most of the damage is due to overvoltage cause by indirect lightning strikes or switching operations by the power utility.

When lightning strikes, a huge amount of energy is discharged in just a split second. The resulting overvoltage can damage the increasingly sensitive electronic devices as far away as two kilometres from the point of strike.

Replacement – if insured at all – costs time and money. Often there is immaterial damage in the form of irretrievably lost data, documents, photographs and videos. Loss of data can threaten the existence of anyone who is self-employed!

How do surges get into the house?

They enter the building from the outside via supply cables and other cables extending beyond the building.

Routes of entry include:

Power supply 

Telecommunication cable 

Data cable 



¹⁾ Source: www.geology.com

²⁾ Source: The German Insurance Association (GDV)

Relaxed protection

Decisive safety advantage with DEHN



As a full-service provider with more than 100 years of experience, DEHN offers all the solutions needed for a complete protection system – be it earthing, equipotential bonding, external lightning protection or surge protection. Coordinated solutions provide safety for you and your customers!

Good to know: A complete lightning protection system consists of external and internal lightning protection. Considering this means that there are no safety gaps.



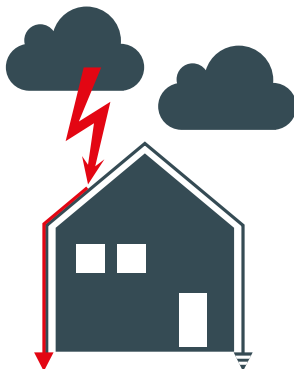
Be it a new construction, modernisation or retrofit ...

The modern home needs a comprehensive protection concept.

Because “pulling the plug” is not the answer!

... and often not even possible, just think about your heating, alarm system or fridge-freezer.

External lightning protection



External lightning protection protects buildings in case of a direct lightning strike. It intercepts the lightning with an air-termination system, discharges and distributes it to the earth via the earth-termination system and creates a protective sheath around the building which prevents it from catching fire and protects the people within.

Internal lightning protection / surge protection



Surge protection provides safety within the building. It keeps surges which might enter the house via power supply cables at bay, protecting devices which would otherwise be at risk via these routes. To provide complete protection it is important to consider all data and telecommunication cables, not just the power lines.

Relaxing: Good arguments for comprehensive protection

As an expert, you know how important it is to have a well thought out protection concept to make sure that everything functions smoothly in the modern home. Because for your customer it is about much more:

- Safeguarding comfort
- Providing safety
- Securing investments
- Establishing independence

Include surge protection in your project planning at an early stage and proactively approach your customers about it.

Find the most important arguments for discussions with your customers on the following pages.

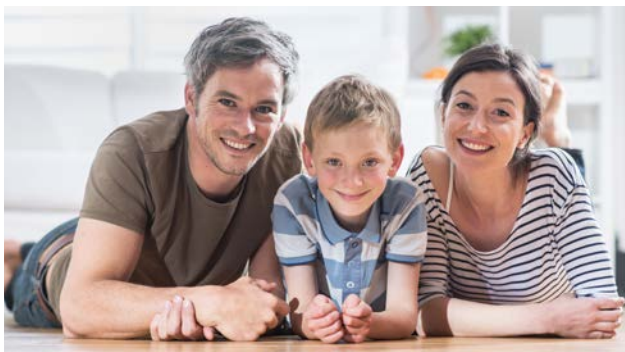


DEHN protects the modern home

Relax: A safety bonus for your customers



Make your customer's home safer – with coordinated components. Whether an earthtermination system, equipotential bonding, surge protection or external lightning protection: DEHN provides all the required components – from a single source.



The following protection solutions for residential buildings help you to quickly select the right products:

- **Earth-termination system**
- **Single-family houses without external lightning protection**
- **Single-family houses with external lightning protection**
- **Multi-family dwellings without external lightning protection**
- **Multi-family dwellings with external lightning protection**

You can find a compact summary online:

Protection concepts and selection aids, also for office and industrial buildings.

 More info at:
de.hn/buildings

Surge protection in compliance with IEC 60364

Lightning and surge protection is of utmost importance for residential buildings. The revised IEC 60364-4-44, clause 443, -5-53, clause 534, -7-712¹⁾ and national standards picked up on this and made surge protection mandatory for newly planned residential buildings.

DEHN products protect your buildings in compliance with the standards.

The standards differentiate between mandatory and recommended surge protective measures for residential buildings.

- Surge protective measures for the power supply cable are **mandatory** and whilst IEC 60364-4-44, clause 443 does not make surge protective measures compulsory for internet, telephone and broadband cables, it does recommend them. Years of experience have taught us that effective and safe surge protection concepts can only be achieved if surge arresters are used for all incoming electrical cables, including communication lines. The surge protective devices should be installed as closely as possible to the entrance point to the building.
- Further protective devices are also **recommended** if the cable length between the surge protective device and the device to be protected exceeds 10 metres.

¹⁾ In compliance with IEC 60364-4-44 clause 443, if the risk assessment is not performed and the national annexes are considered; Recommended in IEC 60364-5-53 clause 534, if the building is supplied by low-voltage overhead line. If there is a surge arrester on the AC side in compliance with IEC 60364-4-44, clause 443; a surge protection on the DC side shall also be provided in compliance with IEC 60364-7-712 particularly to protect the inverter.



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Our homes are becoming increasingly digital

Our comfort rests on modern technology

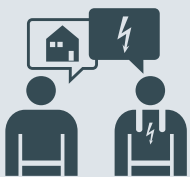
Our comfortable lifestyle relies on modern technology. Be it the temperature in a room, the alarm system, the blinds or the multimedia system – everything must be reliable and easy to control.

The digital components need a functioning infrastructure for electricity and telecommunications. It is precisely here that danger is lurking: Surges can enter the house via these supply cables and damage sensitive electric devices. The

upshot is no internet connection and important data and programming is lost. Room temperature, blinds – nothing can be controlled anymore and working in the home office is no longer possible.

Safeguard comfort!

Modern technology must be provided with the best possible protection. The more intensely we use the possibilities offered by digitalisation, the more important this becomes.



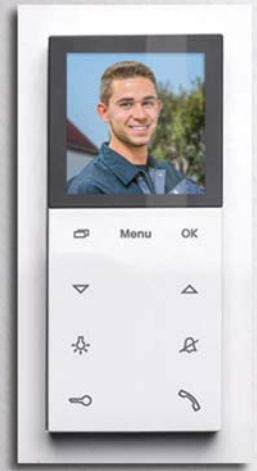
Surge protection is important because ...

- Technical devices are becoming more and more sensitive – i.e. they are easily damaged in case of surges.
- An increasing amount of expensive and high-quality technology is being used – i.e. replacement is costly.
- Instrument functions are becoming more dependent on online access – i.e. nothing works without a functioning infrastructure.

The benefit for your customer:

- **Constant comfort.**
- **Even during a thunderstorm, your customer can safely use all appliances.**





Dynamic

Our homes need to be safer

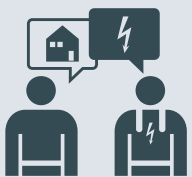
For reliable technology – play it safe

Burglary protection and emergency alarm systems only make sense if they function reliably all the time. Modern safety systems are complex. They are based on digital components which need a permanent power supply.

Be it an alarm, intercom, access control or emergency call system – it is connected to the power grid – and this is a potential path of entry for dangerous surges during a thunderstorm.

Provide safety!

It is important to protect your safety technology with surge protective devices by DEHN to ensure continuous and reliable operation.



Surge protection is important because ...

- Surveillance cameras, door opening systems and emergency call systems must always function reliably.
- The high-quality technology applied, particularly in the security sector, is expensive to replace.
- It is about much more than just functioning devices: protecting the family, rapid assistance in case of an emergency – these are key criteria for your customers.

The benefit for your customer:

- **A feeling of safety at all times.**
- **Your customer can always rely on his safety systems, even during a thunderstorm.**



Dynamic

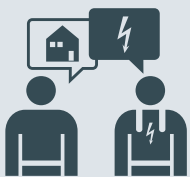
Our homes are becoming increasingly valuable

Investment in residential property – modern technology increases the value

Today, real estate is seen by many people as an investment and as a provision for the future or retirement. Therefore, it is important to maintain the value of the building in the long run. This involves keeping an eye on the building substance and making sure that the building technology is state-of-the-art and functions reliably. This increases the value of the property and secures the investment in the long term.

Secure investments!

Today, the value of the installations alone means that surge protection pays off more than ever before.



Surge protection is important because ...

- It protects sensitive devices, increasing their service life.
- It protects expensive home technology in case of storms with high voltage impulses.
- It spares your customer costly repairs. The financial freedom can be used for building maintenance.

The benefit for your customer:

- **Value retention.**
- **Your customer secures the value of his property – an important aspect, especially in terms of retirement provisions.**





Dynamic

Our homes are getting smart and independent

Self-generated power – smart technology makes you independent

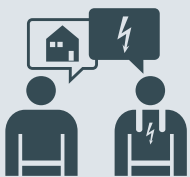
Future buildings will be power generating plants, producing and storing electricity for their own use or feeding it into the grid. Today, environmentally friendly heating solutions and mobility concepts already count on electricity as the primary energy.

Interaction between the digital components and their controls is becoming much more complex. At the same time, individual devices are increasingly sensitive. Functioning

technology is, therefore, the main requirement for the “power station home” and the consumption of self-generated current, e.g., for e-mobility.

Secure independence!

DEHN surge protection safeguards power generation and consumption for your customers.



Surge protection is important because ...

- All high-quality energy technology components are networked and must be reliable.
- It prevents the energy system from breaking down due to surges and thus secures financial returns.
- Smart devices are ever more prone to damage – their failure means hassle and loss of quality of life.

The benefit for your customer:

- **Independent at all times.**
- **Even in a thunderstorm. Your customers can protect their home power generation.**



Earth-termination systems

An earthing system is the prerequisite for the safe operation of an electrical system in a building.



Foundation/ring earth electrodes provide a safe and cost-effective earthing system for the entire service life of the building. The foundation earth electrode is also required by the standards and other regulations.¹⁾ The installation and testing of the foundation earth electrode must be documented.

Our tip: Stay flexible and save your customer a lot of time and money later. Install earth ports for external lightning protection at the corners of the building during the shell construction phase. These make it possible to simply and cost-effectively install a lightning protection system at a later date, should it be required.

¹⁾ DIN 18014 – Fundamental Earthing – Design, execution and documentation (German Standard) .
 TAB (Technical Arrangement Regulations / European Network Code “Requirements for generators”) published by Power Utilities companies in Germany.
 In compliance with IEC 60364-4-44 clause 443.
 Recommended in IEC 60364-5-53 clause 534, if the building is supplied by low-voltage overhead line.



Product	Application	Part No.	
Foundation earth electrode or functional equipotential bonding			
1	 Steel strip zinc-coated	DEHN's high quality earthing materials provide a solid foundation for the earthing system of the house. Depending on the construction project, a foundation earth electrode is placed in the building foundations and/or a ring earth electrode installed outside the foundations.	852 335
	 Steel wire zinc-coated		800 010
	 DEHNclip rebar clip Rd 10 mm / Rd 10 mm		308 132
	 DEHNclip rebar clip Rd 10 mm / Fl 30 x 3-4 mm		308 142
Ring earth electrode for buildings with, e.g., watertight concrete constructions, full perimeter protection or insulation made of foam glass ballast			
2	 Steel strip StSt V4A	If a ring earth electrode is installed, a functional equipotential bonding conductor must be laid in the foundations. Its design essentially corresponds to that of a foundation earth electrode.	860 335
	 Steel wire StSt V4A		860 010
Main earthing busbar / fixed earthing point			
3	 Equipotential bonding bar	Equipotential bonding bars are installed at the service connection and, e.g., at the heating system. For connection with the foundation/ ring earth electrode fixed earthing terminals are installed flush with the wall. Connection lugs are also possible.	563 200
	 Fixed earth terminals		478 011
	 Water pressure-tight wall bushing for white tank		478 530
Optional: Connections for projected lightning protection system			
4	 Test joint box with spacer	With a new building, it is advisable to provide connections for future installation of an external lightning protection system. Inexpensive connection lugs and test joints prepare your building for this purpose. Such preparations can also be made for external thermal insulation composite systems using test joint boxes.	476 055
	 UNI disconnection clamp		459 119
	 Variable number plate		490 110
	 Insert clip with embossed number		490 001



■ mandatory ■ recommended

Single-family houses **without** external lightning protection



DEHN arresters protect both electrical installations and valuable electrical devices from damage caused by overvoltages. With the coming into force of the revised IEC 60364-4-44, clause 443, -5-53, clause 534, -7-712 the installation of surge protective devices became mandatory¹⁾. These standards describe the minimum requirements on surge protection.

Our recommendation regarding the minimum requirements is to protect all conductors entering the building from the outside with the lightning current carrying DEHNshield Basic surge arrester. This arrester can discharge considerably higher quantities of energy than those required by the standard IEC 60364-5-56. DEHNshield Basic is durable and maintenance free. It is quick and simple to mount and can be installed upstream of the meter.

Modern households are equipped with an increasing number of electronic devices and systems designed to make our lives easier and more comfortable. Be it a computer or a tablet, a smart home or an LED-TV set, these electronic aids are particularly sensitive to overvoltages. This means that special attention needs to be paid to these devices and systems when it comes to surge protection.

A single surge protective device at the entrance point into the building is, therefore, often insufficient. Further protective devices close to the device to be protected are recommended for cable lengths of over 10 metres.

Trust in our motto: DEHN protects.

¹⁾ IEC 60364 Electrical installations of buildings – Part 4-44: Protection against voltage disturbances and electromagnetic disturbances.
















Clause 443: Protection against transient overvoltages of atmospheric origin or due to switching.

IEC 60364 Electrical installation of buildings- Part 5-53: Selection and erection of electrical equipment – insulation, switching and control.

Clause 534: Devices for protection against transient overvoltages.

IEC 60364 Electrical installation of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems.



Products	Application	Part No.	
Main distribution board / SEB ¹⁾			
1 	DEHNshield Basic (depending on the system configuration)	The combined arrester is mounted directly at the entrance point into the building. It protects the electrical installations in the immediate vicinity. If national installation regulations allow the installation in front of the meter, it protects Smart Meter / Smart Meter Gateway upstream of the meter.	941 316 TT 941 406 TNS 941 306 TNC 941 116 TT2P 941 206 TN2P
	alternatively: DEHNguard (depending on the system configuration)	This surge arrester protects against overvoltages from inductive couplings by distant lightning strikes and from switching overvoltages. It must be installed downstream of the electricity meter which means that it does not protect the Smart Meter and Smart Meter Gateway.	952 381 TT 952 400 TNS 952 110 TT2P 952 200 TN2P
Internet / Telephone / Broadband ²⁾			
2 	DEHNbox TC B 180	Combined arrester to protect the telecommunications connection at the entrance point into the building.	922 220
	DEHNgate FF TV	The type 2 arrester DEHNgate FF TV protects broadband connections to the PC.	909 703
Photovoltaic systems ^{3), 4)}			
3A 3B 	DEHNCube YPV SCI 1000 FM	Type 2 arrester DEHNCube YPV SCI provides comprehensive protection for a PV system in an enclosure. It is mounted directly upstream of the inverter. If there is more than 10 metres of cable between the PV system and the inverter, a further arrester is necessary in the roof area.	900 910
Sub-distribution board or terminal devices > 10 m ⁴⁾			
4 	DEHNguard (depending on the system configuration)	The surge arrester protects downstream sub-distribution boards against overvoltages from inductive couplings by distant lightning strikes and from switching overvoltages. Also suitable for protecting e-mobility in charging posts and wall boxes.	952 310 TT 952 400 TNS 952 110 TT2P 952 200 TN2P
	DEHNCord 3P TT 275FM	The type 2 + type 3 surge arrester provides optimum protection for three-phase terminal equipment.	900 439
	DEHNCord R	The type 2 arrester protects sensitive electric blinds. Simple installation as a plug & play adapter solution.	900 449
	DEHNflex M	Type 3 arrester DEHNflex M is used directly at the terminal device. It is particularly suitable for installation in cable ducts and flush-mounted boxes. Further installations are possible.	924 396
Office / home office / ethernet ⁴⁾			
5 	DEHNprotector LAN100	DEHNprotector LAN100 simultaneously protects both the power and data sides against overvoltages. It is used for DSL routers and computer work stations.	909 321
TV / Satellite systems ⁴⁾			
6 	DEHNgate FF5 TV	Surge arrester with F sockets. Five channel protection for antenna splitters and multi-switches.	909 706
	DEHNprotector TV	DEHNprotector TV protects both the power side and antenna input of TV sets and satellite systems.	909 300
Home automation / heating / air conditioning / ventilation ⁴⁾			
7 	DEHNrail M 2P	Type 3 arrester DEHNrail is used with especially sensitive equipment, e.g., heating and air conditioning controllers.	953 200
	BLITZDUCTORconnect CL2 BE 24	BLITZDUCTORconnect protects communication and measuring lines / outdoor sensors of the building services. It is installed directly at the electronic components of the air conditioning systems, heat pumps, etc. to be protected.	927 924
Smart Home ⁴⁾			
8 	BUSector BT 24	This type 2 arrester is designed for use in the Smart Home. It can simply be mounted in the bus terminal slot of the KNX components.	925 001

■ mandatory ■ recommended

¹⁾ In compliance with IEC 60364-4-44 clause 443 if risk assessment is not performed and national annexes are considered.

²⁾ In compliance with IEC 60364-4-44 clause 443 surge arresters should also be installed for data lines entering from the outside (mandatory according to the lightning protection concept as in IEC 62305-4, refer also to page 20).

³⁾ If there is a surge arrester on the AC side in compliance with IEC 60364-4-44, clause 443; a surge protection on the DC side shall also be provided in compliance with IEC 60364-7-712 particularly to protect the inverter.

⁴⁾ Recommended in IEC 60364-5-53 clause 534.



■ mandatory

Single-family houses **with** external lightning protection



External lightning protection protects your home from damage and destruction, e.g. by fire, caused by a direct lightning strike.

The lightning protection system basically consists of an air-termination system installed on the roof which is connected to the earth termination system via down conductors. The lightning current is transported to the down conductors via air-termination rods and discharged to the ground in a controlled manner. A solidly built earthing system with appropriate connection points is the basic prerequisite for the installation and safe functioning of a lightning protection system.








In connection with the external lightning protection system, an internal lightning protection system (lightning equipotential bonding) must also be set up ¹⁾. Products intended for the lightning equipotential bonding of lines entering the building must be dimensioned to withstand high partial lightning currents. This is why, for example, the high-performance type 1 combined arrester DEHNshield is required to protect the power supply. Particular attention should be paid to the protection of terminal devices. For solutions please refer to page 12/13.

Detailed information on the installation and design of external lightning protection can be found on our website or at the seminars offered by our DEHNacademy.

Trust in our motto: DEHN protects.


¹⁾ IEC 62305-3: Protection against lightning – Part 3 Physical Damage To Structures And Life Hazard





Air-Termination System / Down Conductor / Isolated Lightning Protection			Application
1		Conductor and earthing material	With high-quality DEHN conductor and earthing materials you lay the basis for a solidly built, state-of-the-art earth termination and lightning protection system. Further information: www.de.hn/en/h/307
2		Ridge and roof conductor holders	Ridge and roof conductor holders are easy to attach to the roof structure. The conductor is securely fixed to the surface of the roof and keeps its shape. Further information: www.de.hn/en/h/363
3		Structural and gutter clamps	Connections, ridges, snow guards and other structural elements can be safely connected to and integrated in the lightning protection system using our clamps. Further information: www.de.hn/en/h/367
4		Down conductor holders	Thanks to our wall holders, fixing conductors to the walls of a building is a simple matter. We also offer special systems for buildings with external insulation and perimeter protection. Further information: www.de.hn/en/h/362
5		Lightning protection test joints	We have the right solution for all kinds of insulation and every type of wall. It is easy to integrate our lightning protection test joints in the external building insulation or attach them to the façade. The test joint is the point at which measurements are taken to check the functionality of the lightning protection system. Further information: www.de.hn/en/h/3513
6		Air-termination rods	The air-termination rod safely discharges direct lightning strikes. It is particularly good for protecting antennas, satellite systems and ventilation pipes. Further information: www.de.hn/en/h/359
7		Spacer with rod holder	Keeping the separation distance is simple thanks to our universal spacer bars made of glass-fibre reinforced plastic. We have a wide range of fixing clamps and rod holders. Further information: www.de.hn/en/h/360

Surge Protection	Application	Part No.
Main distribution board / SEB ¹⁾		

Our recommendation

8		DEHNshield (depending on the system configuration)	The combined arrester is mounted directly at the entrance point into the building. It protects the electrical installations in the immediate vicinity. If national installation regulations allow the installation in front of the meter, it protects the Smart Meter/Smart Meter Gateway upstream of the meter.	941 310 TT 941 400 TNS 941 300 TNC 941 110 TT 2P 941 200 TN 2P
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Internet / telephone / broadband cable / TV or satellite systems ¹⁾		
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9		DEHNbox TC B 180	Combined arrester to protect the telecommunications connection at the entrance point into the building.	922 220
		DEHNgate GFF TV	The type 2 arrester DEHNgate GFF TV protects the broadband connection at the building entrance.	909 705

■ mandatory

¹⁾ Necessary for the lightning equipotential bonding. Additional protective devices maybe required and can be found in the application proposals at page 13.



Multi-family dwellings **without** external lightning protection


















Flat owners and tenants alike rely upon the safe operation of their household devices and infotainment systems. The new installation standards IEC 60364-4-44, clause 443, -5-53, clause 534 and -7-712 on surge protection also require landlords and flat owners to take due care ¹⁾. What is mandatory for new buildings is of course advisable for existing structures.

The meter and general area can be protected by a central DEHNshield Basic mounted on the busbar system. If the service connection is larger than 160 A, DEHNventil can be installed. DEHNbox / DEHNrapid LSA is suitable for the telecommunications connections. DEHNgate FF TV can be used with coaxial connections. DEHNguard surge arresters can be mounted in the sub-distribution boards for the individual flats. The installation of further protective devices directly upstream of the terminal devices is recommended when cables are longer than 10 metres.

Trust in our motto: DEHN protects.

¹⁾ In compliance with IEC 60364-4-44 clause 443, if the risk assessment is not performed and the national annexes are considered; Recommended in IEC 60364-5-53 clause 534, if the building is supplied by low-voltage overhead line. If there is a surge arrester on the AC side in compliance with IEC 60364-4-44, clause 443; a surge protection on the DC side shall also be provided in compliance with IEC 60364-7-712 particularly to protect the inverter. Verify national validity and transition periods!



Products	Application	Part No.	
Main distribution board / SEB ¹⁾			
1 	DEHNshield Basic (depending on the system configuration)	The combined arrester is mounted directly at the entrance point into the building. It protects the electrical installations in the immediate vicinity. If national installation regulations allow the installation in front of the meter, it protects the Smart Meter/Smart Meter Gateway upstream of the meter.	941 316 TT 941 406 TNS 941 306 TNC 941 116 TT2P 941 206 TN2P
	alternatively: DEHNguard (depending on the system configuration)	This surge arrester protects against overvoltages from inductive couplings by distant lightning strikes and from switching overvoltages. It must be installed downstream of the electricity meter which means that it does not protect the Smart Meter and Smart Meter Gateway.	952 381 TT 952 400 TNS 952 181 TT2P 952 200 TN2P
Internet / Telephone / Broadband ²⁾			
2 	DEHNbox TC B 180	Combined arrester to protect the telecommunications connection at the entrance point into the building.	922 220
	DEHNrapid LSA	The arrester family is a modular system comprising lightning current and surge arresters as well as combined arresters. The arresters can be plugged into series 2 LSA disconnection blocks. The lightning current carrying plug-in SPD block for 10 pairs is equipped with gas discharge tubes (optionally with optical fault indicator) and disconnection block contacts.	907 991 907 401 907 498 907 430
	DEHNgate FF TV	Type 2 arrester DEHNgate FF TV protects the broadband connection to the PC.	909 703
Photovoltaic systems ^{3), 4)}			
3A 3B 	DEHNcube YPV SCI 1000 FM	Type 2 arrester DEHNcube YPV SCI provides comprehensive protection for a PV system – in an enclosure. It is mounted directly upstream of the inverter. If there is more than 10 metres of cable between the PV system and the inverter, a further arrester is necessary in the roof area.	900 910
Sub-distribution board or terminal devices > 10 m ⁴⁾			
4 	DEHNguard (depending on the system configuration)	The surge arrester protects downstream sub-distribution boards against overvoltages from inductive couplings by distant lightning strikes and from switching overvoltages.	952 310 TT 952 400 TNS 952 110 TT2P 952 200 TN2P
	DEHNcord 3P TT 275FM	The type 2 + type 3 surge arrester provides optimum protection for three-phase terminal equipment.	900 439
	DEHNflex M	Type 3 arrester DEHNflex M is used directly at the terminal device. It is particularly suitable for installation in cable ducts and flush-mounted boxes. Further installations are possible.	924 396
Office / Home office / Ethernet ⁴⁾			
5 	DEHNprotector LAN100	DEHNprotector LAN100 simultaneously protects the network and data side from surges. It is used on computers or media servers.	909 321
TV / SAT-Anlage ⁴⁾			
6 	DEHNgate FF5 TV	Surge arrester with F sockets. Five channel protection for antenna splitters and multi-switches.	909 706
	DEHNprotector TV	DEHNprotector TV protects both the power side and antenna input of TV sets and satellite systems.	909 300
Home automation / heating / air conditioning / ventilation ⁴⁾			
7 	DEHNrail M 2P	Type 3 arrester DEHNrail is used with especially sensitive equipment, e.g., heating and air conditioning controllers.	953 200
	BLITZDUCTORconnect CL2 BE 24	BLITZDUCTORconnect protects communication and measuring lines / outdoor sensors of the building services. It is installed directly at the electronic components of the air conditioning systems, heat pumps, etc. to be protected.	927 924
Smart Home ⁴⁾			
8 	BUSector BT 24	This type 2 arrester is designed for use in the Smart Home. It can simply be mounted in the bus terminal slot of the KNX components.	925 001

■ mandatory ■ recommended

¹⁾ In compliance with IEC 60364-4-44 clause 443, if the risk assessment is not performed and the national annexes are considered.

²⁾ In compliance with IEC 60364-4-44 clause 443 surge arresters should also be installed for data lines entering from the outside (mandatory according to the lightning protection concept as in IEC 62305-4, refer also to page 20).

³⁾ If there is a surge arrester on the AC side in compliance with IEC 60364-4-44 clause 443, a surge protection on the DC side shall also be provided in compliance with IEC 60364-7-712 particularly to protect the inverter.

⁴⁾ Recommended in IEC 60364-5-53 clause 534.



Multi-family dwellings **with** external lightning protection



External lightning protection protects houses from damage and destruction, e. g. by fire, caused by a direct lightning strike.

The lightning protection system basically consists of an air-termination system installed on the roof which is connected to the earth termination system via down conductors. The lightning current intercepted by the air termination rods is discharged via the down conductors to the ground in a controlled manner. A solidly built earthing system with appropriate connection points is the basic prerequisite for the installation and safe functioning of a lightning protection system.













In connection with the external lightning protection system, an internal lightning protection system (lightning equipotential bonding) must also be set up ¹⁾. For solutions please refer to page 19 and 21.

Detailed information on the installation and design of external lightning protection can be found e.g. on our website.

Trust in our motto: DEHN protects.

¹⁾ IEC 62305 Protection against lightning – Part 3 Physical Damage To Structures And Life Hazard.



Air-Termination System / Down Conductor / Isolated Lightning Protection			Application
1		Conductor and earthing material	With high quality DEHN conductor and earthing material you lay the basis for a solidly built, state-of-the-art earth termination and lightning protection system. Available in different dimensions, geometries and material. Further information: de.hn/en/h/3516
2		Ridge and conductor holders	Ridge and roof conductor holders are easy to attach to the roof structure. The conductor is securely fixed to the surface of the roof and keeps its shape. Some allow fixing by tension spring with conductor holder DEHNgrip, loose conductor leading, laterally adjustable. Further information: de.hn/en/h/363
3		Structural and gutter clamps	Conductors, ridges, snow guards and other structural elements can be safely connected and integrated in the lightning protection system using our clamps. Further information: de.hn/en/f/4368
4		Metal roof conductor holders, also for corrugated sheet roofing	For fixing additional air-termination systems on metal roofs. Also for roofing with standing seam or with clamping seam. Further information: de.hn/en/h/3512
5		Bridging brackets and braids and Expansion pieces	Bridging brackets for the connection and bonding of metal claddings, for riveting or screwing. Bridging may be used also as expansion compensation piece for round wires; connection e.g. by KS connector Part. No. 301 019. Further information: de.hn/en/f/4534
6		Conductor holder and clamps for down pipes	Conductor holders and clamps for the installation of the down conductors at down/rain pipes. Material as CU, Alu, StSt or ST/tZn are available. Further information: de.hn/en/f/3762
7		Gutter clamps	Gutter clamp according to EN 62561-1, for connecting round conductors with the gutter bead. In single-screw technique with double cleat, lengthwise conductor leading. Further information: de.hn/en/f/4368
8		Down conductor holders	Thanks to our wall holders, fixing conductors to the wall of a building is a simple matter. We also offer special systems for building with external insulation and perimeter protection. Further information: de.hn/en/h/362
9		Lightning protection test points, inspection doors and accessories	We have the right solution for all kinds of insulation and every type of wall. It is easy to integrate our lightning protection test points in the external building insulation and attach them to the façade. The test point is the point at which measurements are taken to check the functionality of the lightning protection system. Variable number plates for round/flat conductors, consisting of a number plate with slot are available as text joint boxes and inspection doors. Further information: de.hn/en/h/3513
10		Disconnection clamp	UNI disconnecting clamp according to EN 62561-1, for connecting down conductors with earth entries, with intermediate plate for two round conductors. Further information: de.hn/en/f/4602
11		Connection lugs and earth entry rods	Round wire according to IEC 6256-2, as a terminal lug, made of corrosion resistant stainless steel for the connection of down conductors to the earth-termination system. Also available: Earth entry rod- Kit with disconnecting sleeve and KS screws. Further information: de.hn/en/f/4774
12		Air-termination rods	The air-termination rod safely discharges the direct lightning strikes. It is particularly good for protecting antennas, satellite systems, ventilation pipes and other super exposed structures on the roof. Further information: de.hn/en/f/2467

¹⁾ According to IEC 60364-4-44, clause 443.

²⁾ In compliance with IEC 60364-4-44, clause 443 surge arresters should also be installed for data lines entering from the outside (mandatory according to the lightning protection concept as in IEC 62305-4 – refer also to page 20).

³⁾ Necessary for the lightning equipotential bonding. Additional protective devices maybe required and can be found in the application proposals at page 17.



Multi-family dwellings **with** external lightning protection



Products intended for the lightning equipotential bonding of lines entering the building must be dimensioned to withstand high partial lightning currents. This is why, for example, the high-performance type 1 combined arrester DEHNshield is required to protect the power supply. If the service connection is larger than 160 A, DEHNventil can be installed.

Flat owners and tenants alike rely upon the safe operation of their household devices and infotainment systems. The installation standards IEC 62305-3, IEC 60364-5-53, clause 534 and -7-712 on surge protection also mean that landlords and flat owners are required to take due care ¹⁾. What is mandatory for new buildings is of course advisable for existing structures. Particular attention should be paid to the protection of terminal devices.

DEHNbox / DEHNrapid LSA is suitable for the telecommunications connections. DEHNgate GFF TV can be used with coaxial connections. DEHNguard surge arresters can be mounted in the sub-distribution boards for the individual flats.

The installation of further protective devices directly upstream of the terminal devices is recommended when cables are longer than 10 metres. For solutions please refer to page 21.











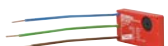



Detailed information on the installation and design of external lightning protection can be found e.g. on our website.

Trust in our motto: DEHN protects.

¹⁾ IEC 62305 Protection against lightning - Part 4: Equipotential bonding.



Our recommendation

Surge Protection		Application	Part No.
Main distribution board / SEB ¹⁾			
1		DEHNshield (depending on the system configuration)	The combined arrester is mounted directly at the entrance point into the building. It protects the electrical installations in the immediate vicinity. If national installation regulations allow the installation in front of the meter, it protects Smart Meter/Smart Meter Gateway upstream of the meter. Backup fuse < 160 A.
		Alternative: DEHNventil (depending on the system configuration)	The modular combined lightning current and surge arrester for TN-C systems with a nominal voltage of 230/400 V (3+0 configuration). Other arresters for TT or TNS system configurations are available, too. DEHNventil can be used for all LPL levels (I – IV). If the back up fuse value is > 160 A the DEHNventil must be used.
Internet / Telephone / Broadband / TV / Satellite systems ²⁾			
2		DEHNbox TC B 180	Combined arrester to protect the telecommunications connection at the entrance point into the building.
		DEHNrapid LSA	The arrester family is a modular system comprising lightning current and surge arresters as well as combined arresters. The arresters can be plugged into series 2 LSA disconnection blocks. The lightning current carrying plug-in SPD block for 10 pairs is equipped with gas discharge tubes (optionally with optical fault indicator) and disconnection block contacts.
		DEHNgate GFF TV	The type 2 arrester DEHNgate GFF TV protects the broadband connection at the building entrance.
Photovoltaic systems ^{3) 4)}			
3A 3B		DEHNcube YPV SCI 1000 FM	Type 2 arrester DEHNcube YPV SCI provides comprehensive protection for a PV system – in an enclosure. It is mounted directly upstream of the inverter. If there is more than 10 metres of cable between the PV system and the inverter, a further arrester is necessary in the roof area.
Sub-distribution board or terminal devices > 10 m ⁴⁾			
4		DEHNguard (depending on the system configuration)	The surge arrester protects downstream sub-distribution boards against overvoltages from inductive couplings by distant lightning strikes and from switching overvoltages
		DEHNflex M	Type 3 arrester DEHNflex M is used directly at the terminal device. It is particularly suitable for installation in cable ducts and flush-mounted boxes. Further installations are possible.
TV / Satellite systems ⁴⁾			
5		DEHNgate FF TV	Surge arrester with F sockets. Five channel protection for antenna splitters and multi-switches.
		DEHNprotector TV	DEHNprotector TV protects both the power side and antenna input of TV sets and satellite systems.
		DEHNflex M	Type 3 arrester DEHNflex M is used directly at the terminal device. It is particularly suitable for installation in cable ducts and flush-mounted boxes. Further installations are possible.
Home automation / heating / air conditioning / ventilation			
6		DEHNrail M 2P	Type 3 arrester DEHNrail is used with especially sensitive equipment, e.g., heating and air conditioning controllers.
		BLITZDUCTORconnect CL2 BE 24	BLITZDUCTORconnect protects communication and measuring lines / outdoor sensors of the building services. It is installed directly at the electronic components of the air conditioning systems, heat pumps, etc. to be protected.
Smart home			
7		BUSsector BT 24	This type 2 arrester is designed for use in the Smart Home. It can simply be mounted in the bus terminal slot of the KNX components.

■ mandatory ■ recommended

¹⁾ In compliance with IEC 60364-4-44 clause 443.

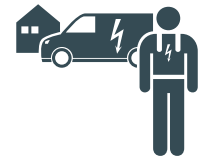
²⁾ In compliance with IEC 60364-4-44 clause 443 surge arresters should also be installed for data lines entering from the outside (mandatory according to the lightning protection concept as in IEC 62305-4, refer also to page 20).

³⁾ If there is a surge arrester on the AC side in compliance with IEC 60364-4-44 clause 443, a surge protection on the DC side shall also be provided in compliance with IEC 60364-7-712 particularly to protect the inverter.

⁴⁾ Recommended in IEC 60364-5-53 clause 534.

Relaxing for you

Your benefits with DEHN



Over 110 years of experience in the field of lightning and surge protection is offered by our family-run company.

Profit from this competence – for your own safety and that of your customers!

DEHN – The right partner to ...

... be safe

- You install products and quality “Made in Germany”.
- You benefit from a having a full-service provider with coordinated protection solutions for lightning and surge protection.
- You capitalise on long-standing expertise and safe technologies (spark gap technology).



... generate know-how

- You participate in one of the DEHNacademy seminars.
- You refer to the Lightning Protection Guide – a compact font of knowledge.
- You design with DEHNselect – the software tool for your complete overvoltage protection concept.



... save time

- You get products which are quick and easy to install such as DEHNshield Basic, BUSector BT 24 or DEHNclip.
- You receive direct assistance from the support team in case of any technical questions.
- You fall back on selection tools, online configurators and protection concepts, to quickly guide you to the appropriate product.



... enable flexibility

- You benefit from a wide range of products: flexible to your requirements you find exactly the right protection concepts for different types of buildings or sectors.
- You choose your preferred supplier from a wide network of electrical wholesale partners.
- You find the appropriate mounting system – flexible to your need for DIN rail or other installation requirements.



End customer marketing aids available free of charge

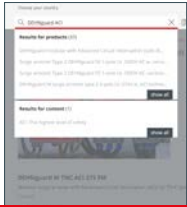
- You use the marketing aid “Thrilling times need surge protection” to put together sales arguments as quickly as possible
- You use the end customer flyer “Surge protection” to concisely illustrate the product solutions

- You receive video material with a clear explanation of surge protection
- You benefit from the extensive website content for communication with end customers. Further information can be obtained at our website www.dehn-international.com/en/downloads



Services and further information

Whether you need support with planning or answers to your questions – take advantage of our DEHN services.



Online product database

Further information, data sheets and planning documents concerning CI or ACI arresters can be found in our online product database.

Simply enter the Part No. or description in the search field.



More information at:
www.dehn-international.com



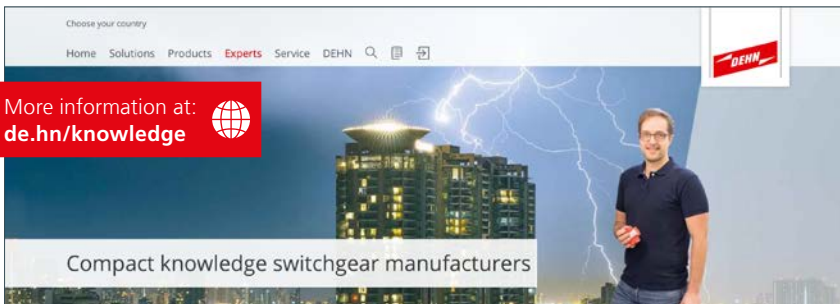
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Answering questions

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:



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