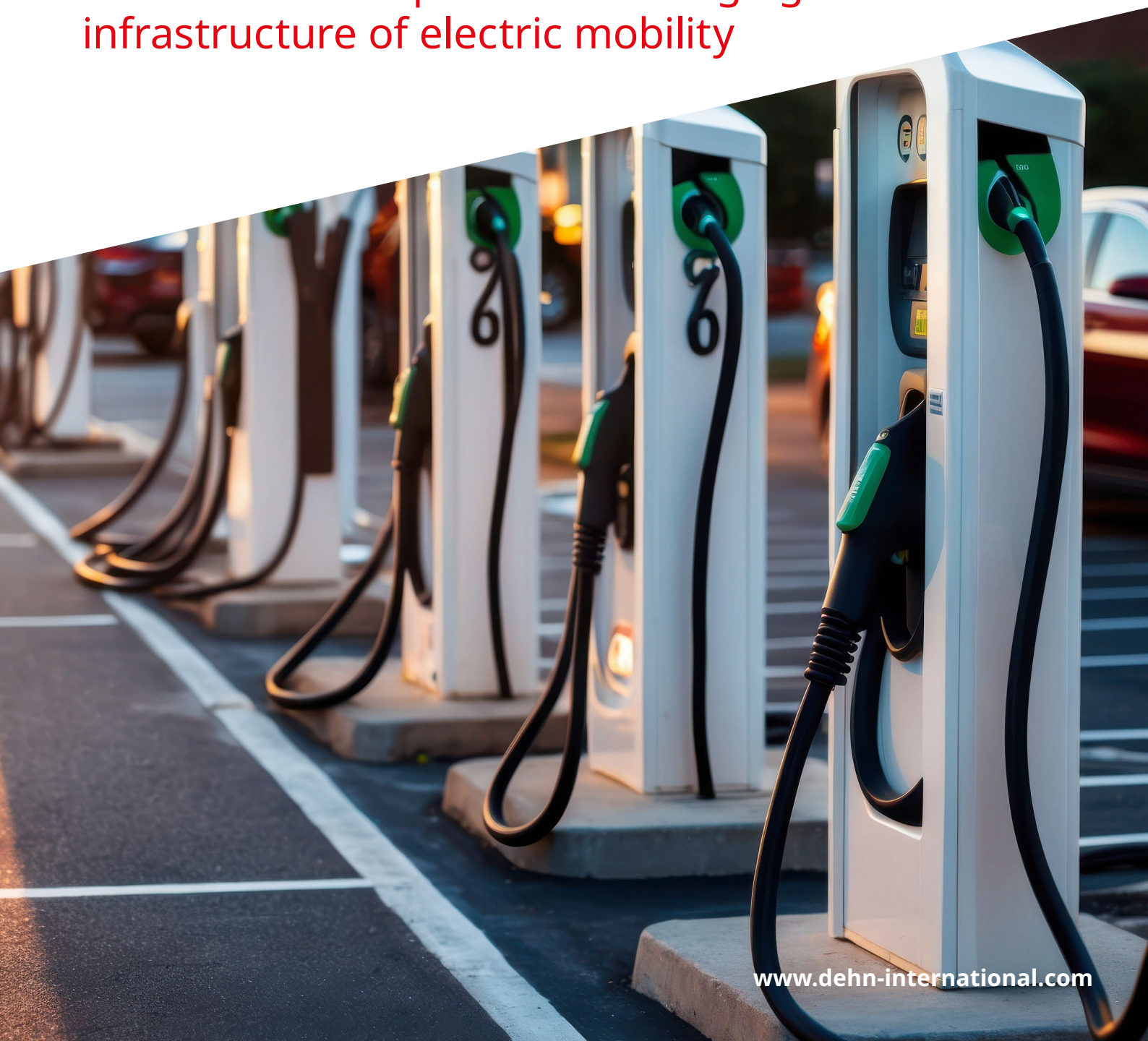
# Properly protected.
# Safe charging.

## Protection concepts for the charging infrastructure of electric mobility



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# Electric mobility on the right track

**The number of registered electric vehicles is growing substantially as more and more people recognise the benefits of environmentally friendly mobility. Through the connection of charging infrastructure with power grids, electric mobility is forming an important basis for the energy revolution. Given this background, it is not surprising that the expansion and further development of electric mobility are concerns for the future. However, the handling of electricity entails some danger.**

## Dangers posed by thunderstorms

If lightning strikes in close proximity, damage to buildings and infrastructure can occur. Not only direct lightning strikes but also those close by and even remote can cause fires or surge damage to electrical devices and systems. Switching operations in transformer stations or even the switching of electrical energy on a charging post can generate switching surges, which can also involve negative effects. Just a low amount of energy is often enough to cause damage.

## Damage during the charging process

Since charging installations are predominantly set up outdoors, a serious danger is posed to them by the effects of lightning discharges. The surges resulting from this exceed the dielectric strength of the installed electronic components inside the charging posts many times over.

Mains-related voltage peaks – that can arise due to switching operations, earth faults or short-circuits, for example – result in defective electronic components and malfunctioning charging posts. If these surges occur during a charging process, damage to the vehicle itself is even possible.

A holistically effective and reliable lightning and surge concept must therefore be ensured in all cases in order to prevent damage and thus the costs of repairs, as well as to ensure the constant reliability and satisfaction of both system operators and users.



# Safeguard investments – prevent damage!

With the integrated protection concepts from DEHN, you will always find the right solution for your application – From the wall box in residential buildings to AC/DC charging stations right through to high-power charging parks, bus charging stations, hydrogen filling stations, as well as industrial safety and protection against arc faults for the maintenance and servicing of charging infrastructure.

**External lightning protection, e.g. for roofed areas of a charging park**

The entire facility must be within the protected range of the external lightning protection system. The down conductors conduct the lightning current of a direct strike safely into the earthing system without dangerous sparking.

**Surge protection for power and data lines**

Protects sensitive components in charging stations, low-voltage main distribution boards, control and communication technology systems and connected vehicles.

**Earthing & equipotential bonding for the entire system**

An intermeshed, low-impedance interconnected earthing system distributes the lightning current over a large area. Overvoltages are reduced. Additional potential control measures prevent dangerous step and touch voltage in areas where people are present.

**Protection against arc faults for people and systems**

Maximum personal safety with arc-fault-tested, class 2 protective equipment and tested safety equipment as per EN 50110. Maximum protection in the low-voltage switchgear with an active arc fault protection system.

More information on standards:
**http://de.hn/aeNxn**

# Basic standards for the charging infrastructure of electric mobility

**IEC 61851-23:2023**

The standard describes the requirements for DC charging stations for supply voltages up to 1,500 V

- When and where should surge protection measures be provided?
- AC and DC input and communication lines
- Selection of surge protection: Protection level of 2.5 kV and requirements regarding temporary overvoltages (TOV)
- Important: Common earthing and equipotential bonding system

**IEC 60364-4-44, clause -443, IEC 60364-5-54, clause -534**

If the charging infrastructure is non-portable and connected via fixed cabling, it falls under the scope of the IEC 60364 series of standards. These standards must generally be applied to private, semi-public and public areas.

- Standard 60364-4-44, clause -443: states when surge protection is to be installed.
- Standard 60364-5-54, clause -534: states which surge protection is to be chosen and how this is to be installed.

**IEC 60364-7-722**

The IEC 60364-7-722 standard requires that surge protection be provided at publicly accessible connection points. The selection and installation of surge protective devices is governed by IEC 60364-4-44, clause -443 and IEC 60364-5-54, clause -534.

**VDE-AR-N 4100 (German standard)**

The standard VDE-AR-N 4100 must also be taken into account as a basic code in Germany when charging posts are directly connected to the low-voltage system. Amongst other things, this describes the requirements for the earthing system and the Type 1 arresters used in the main power supply system.

**IEC 62305**

The lightning protection standard IEC 62305 must also be observed if:

- the charging infrastructure is installed at installations with an existing external lightning protection system.
- a general risk of a direct lightning strike is to be expected.
- the charging infrastructure or facilities are supplied from buildings with an external lightning protection system.



## Reliably protect the wall box from surges

Modern mobility requires that electric vehicles are available at all times and charging equipment functions without disruption. For users to enjoy independence, charging must also be possible at home.

Learn more about the protection of wallboxes:
**http://de.hn/bxxFV**

The wallbox has therefore become a megatrend in residential buildings, and can be found more and more frequently in semi-public and public areas.

Overvoltages are a danger that needs to be taken seriously here. They can shut down the entire charging system and damage the connected vehicle. This is why surge protection is so important. Standards also stipulate surge protection to safeguard charging equipment.

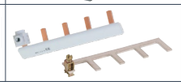
**The following should be taken into account:**

- In residential buildings, surge protection according to IEC 60364-4-44, clause -443 has been mandatory since 2016.
  This includes the Wall box.
- Protection measures must be taken in the main distribution board and as close as possible to the feeding point.
- Protection measures in the building's main distribution board conforming to VDE-AR-N 4100 (German standard) are important, as is protection for the data and communication technology.
- For cable lengths of <10 m to the building's main distribution board, the wall box is within the protected range as per IEC 60364-5-54, clause -534. For cable lengths of >10 m, the wall box and thus also the electric vehicle is outside the protected range. In this case, additional protection measures are required for the charging circuit – both for power and data lines – in order to protect the charging circuit and the electric vehicle.
- If a wall box is retrofitted into an existing building without surge protection in place, then at least one type 2 arrester must be introduced to the charging circuit to protect the wall box and the electric vehicle based on normative requirements. This can be installed in sub-distribution boards directly upstream or directly in the wall box. In practice, however, dimensioning protection concepts so that the entire building's electrical installation is protected, including the wall box, is always generally recommended.

Discover DEHNcube EMOB - our prewired system solution specifically designed to protect wallboxes and connected electric vehicles:
**http://de.hn/32gqT**



| Meter mounting board (for residential buildings WITH/WITHOUT external lightning protection) | | | | Part No. |
|---|---|---|---|---|
| 1 |  | DEHNshield Basic FM<br>for buildings WITHOUT an external lightning protection system | Combined arrester, Type 1 + 2, with RAC spark gap technology and remote signalling contact; for DIN rail up to 160 A; 230/400 V AC | **941 316 TT**<br>**941 406 TNS**<br>**941 306 TNC** |
| 1 |  | DEHNshield FM<br>for buildings WITH an external lightning protection system | | **941 315 TT**<br>**941 405 TNS**<br>**941 305 TNC** |
| 1 |  | DEHNbox TC B 180 | TYPE 1 combined arrester;<br>for protecting telecommunication interfaces | **922 220** |
| 2 |  | Equipotential bonding bar K12 | For connecting to the local earthing system | **563 200** |

| Low-voltage main distribution board (for use in semi-public and public areas) | | | | Part No. |
|---|---|---|---|---|
| 3 |  | DEHNvenCI 1 255 FM | Single-pole, spark-gap-based, Type 1 + 2 combined arrester with remote signalling contact and integrated arrester backup fuse; 230/400 V AC | **961 205** |
| 3 |  | Earthing clip for DEHNvenCI 1 255 FM | Single-phase, 4-pole with connection clamp up to 25 mm²<br>Single-phase, 4-pole with connection clamp up to 25 mm²<br>Single-phase, 3-pole with connection clamp up to 25 mm² | **900 849** TT<br>**900 417** TNS<br>**900 411** TNC |
| 3 |  | **Alternatively:**<br>DEHNventil M2 255 FM | Modular, type 1 + 2 + 3 combined arrester with RAC spark gap technology and remote signalling contact; 230/400 V AC | **956 315** TT<br>**956 405** TNS<br>**956 305** TNC |
| 3 |  | Equipotential bonding bar for industrial use | Equipotential bonding bar for protective and equipotential bonding as per IEC 60364-4-41 / 60364-5-54 and lightning equipotential bonding as per IEC 62305-3 | **472 207** |

| Wall box > 10-metre cable length to the meter mounting board / LVMDB | | | | Part No. |
|---|---|---|---|---|
| 4 |  | DEHNguard MP 275 FM | Modular, Type 2 + 3 surge arrester with remote signalling contact and push-in double terminal; 230/400 V AC | **942 315** TT<br>**942 405** TNS |
| 5 |  | DEHNcord 3P TT 275 FM | Compact, Type 2 + 3 surge arrester with remote signalling contact and push-in technology; maximum backup fuse 40 A; 230/400 V AC; installation optionally on DIN rail or using screw lugs | **900 439** TT |
| 5 |  | **Alternatively:**<br>Mains connection box DEHNcube EMOB | Prewired system solution in versions with an integrated Type 2 + 3 combined arrester or integrated Type 1 + 2 combined arrester to protect the wallbox from surges on the mains. Maintenance-free push-in technology enables quick and easy connection | **900 901** 2 16<br>**900 902** 2 25<br>**900 903** 2 25 C<br>**900 904** 1 32<br>**900 905** 2 32 |
| 5 |  | DEHNpatch Class $E_A$ | Universal surge arrester for protecting IP-based network applications in structured cabling in accordance with class $E_A$ up to 500 MHz | **929 161** |
| 6 |  | BLITZDUCTORconnect ML2 BD 24<br>BLITZDUCTORconnect ML2 BD HF 24 | Modular, TYPE 1 combined arrester with push-in connection system, e.g. for protecting RS485 bus systems or 24-V signals<br>Select additional interfaces easily with DEHNselect IT:<br>**http://de.hn/3EKmK** | **927 244**<br><br>**927 275** |


# Lightning and surge protection for AC/DC charging posts

Charging posts are needed where e-vehicles are parked for long periods of time, for example, at the workplace or in car parks, as well as in designated charging stations. Since more and more charging stations are currently being set up in private, semi-public and public areas, the need for comprehensive protection concepts is also increasing. This applies both to AC and DC charging facilities. This means that valuable vehicles will simply not be subjected to the risk of damage posed by lightning or surges.

## Lightning strikes – a risk to electronics

In addition to choosing suitable lightning current and surge arresters, connecting charging stations to an earthing system is also important so that no risk is posed to sensitive electronics in the event of a thunderstorm. Satellite systems with interconnected charging points can be destroyed by a single lightning strike.

## Damage caused by surges

Even a lightning strike close by often causes damage to infrastructure. Such surges during a charging process have a high probability of also damaging the vehicle, as they usually significantly exceed its normal voltage resistance of up to 2.5 kV.

Continue reading online:
**http://de.hn/5EjiE**

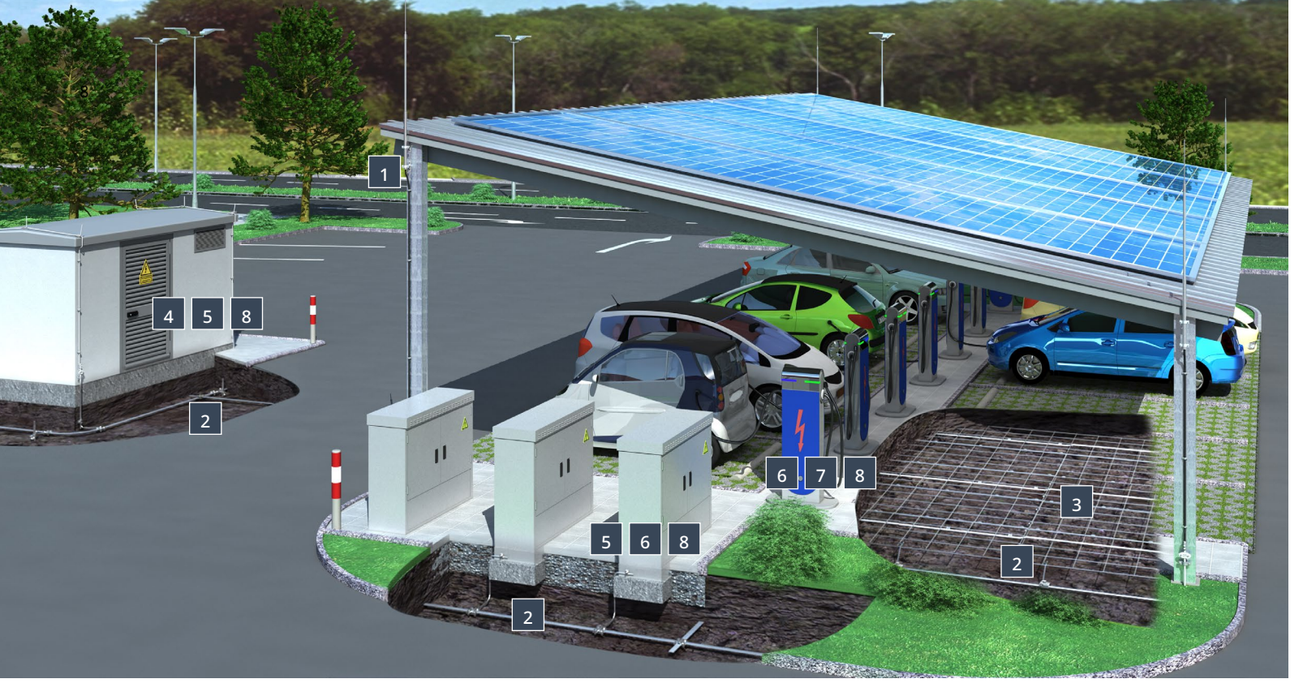
- Depending on the location and characteristics of the threat, a customised surge protection concept is required.
- Our products protect charging infrastructure and electric vehicles in accordance with IEC 61851-23: adapted protection level of 2.5 kV, Y circuit consisting of leak-current-free varistor gas discharge tube technology.
- The protective devices have been specially developed for systems up to 1000 V DC continuous voltage and non-response up to 1250 V DC.
- Universal use: in the dispenser, battery storage system and charging infrastructure – with and without external lightning protection. In addition, appropriate earthing and equipotential bonding measures are obligatory.

| DC charging station and battery storage system | | | | Part No. |
|---|---|---|---|---|
| 1 |  | DEHNguard ME DC Y 1000 FM | Type 1 + 2 combined arrester up to 1000 V DC with remote signalling contact; use e.g. in DC-supplied high-power charging stations, compliant with the IEC 61851-23 standard | **972 147** |
| 1 |  | DEHNguard M DC ACI 1250 FM | Type 2 arrester with ACI technology for DC charging equipment up to 1,250 V | **972 150** |
| 1 |  | DEHNcharge T1 BATT 1500 FM | Type 1 + 2 combined arrester, multipole, for battery storage systems. With combined disconnection and short-circuiting device. For the protection of battery storage systems. | **900 095** |

| AC charging station | | | | Part No. |
|---|---|---|---|---|
| 1 |  | DEHNvenCI 1 255 FM | Single-pole, spark-gap-based, Type 1 + 2 combined arrester with remote signalling contact and integrated arrester backup fuse; 230/400 V AC | **961 205** |
| 1 |  | DEHNvap EMOB M 3P 255 FM | Type 1 + 2 combined arrester with RAC spark gap technology and remote signalling contact; maximum backup fuse 250 A; 230/400 V AC; especially for use in supply systems of the charging infrastructure | **900 585** |
| 1 |  | DEHNcord 3P TT 275 FM | Compact, Type 2 + 3 surge arrester with remote signalling contact and push-in technology; maximum backup fuse 40 A; 230/400 V AC; installation optionally on DIN rail or using screw lugs | **900439** |

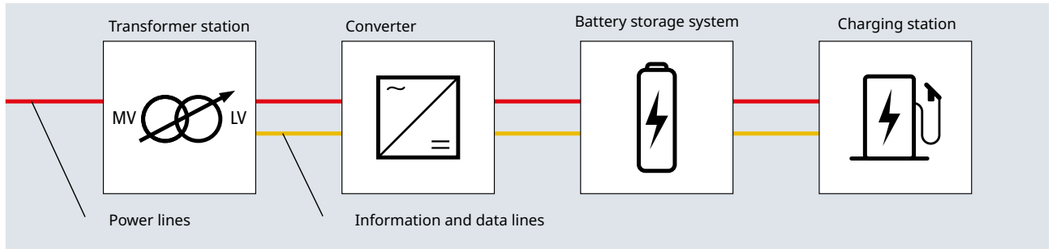
| Information and communication technology | | | | Part No. |
|---|---|---|---|---|
| 2 |  | DEHNpatch Class $E_A$ | Universal surge arrester for protecting IP-based network applications in structured cabling in accordance with class $E_A$ up to 500 MHz | **929 161** |
| 2 |  | BLITZDUCTORconnect ML2 BD 24<br>BLITZDUCTORconnect ML2 BD HF 24 | Modular, TYPE 1 combined arrester with push-in connection system, e.g. for protecting RS485 bus systems or 24-V signals<br>Select additional interfaces easily with DEHNselect IT: **http://de.hn/3EKmK** | **927 244**<br>**927 275** |

| Earthing and equipotential bonding | | | | Part No. |
|---|---|---|---|---|
| 3 |  | StSt earth rod (V4A) | Length: 1500 mm, diameter: 20 mm; for establishing local earthing | **620 902** |
| 3 |  | StSt connection clamp (V4A) | Clamping range Rd 8-10 mm; connection 4-50 mm² solid/stranded | **540 121** |
| 4 |  | StSt round steel (V4A) | 10 mm Rd; for establishing a local earthing system | **860 020** |
| 4 |  | Cross unit, StSt (V4A) | For clamp connections in the ground; Rd 8–10 mm / Fl 30 x 3.5 mm | **319 209** |




# Integrated EMC-orientated lightning protection zone concept for charging parks, lorry and bus charging stations in public transport

More and more towns and cities are developing new mobility concepts and are electrifying their bus fleets. In this scenario, lightning, surges and arc faults represent a wholly new challenge. It is therefore particularly important that the charging infrastructure of High Power Charging Parks, lorry and bus charging stations work reliably. Only then can providers ensure reliable operation, guarantee seamless workflows in this way and achieve maximum customer satisfaction.




In public spaces, powerful charging parks (HPC: high-power charging) or whole bus and lorry depots are electrified. Therefore, additional transformer stations, converter units, battery storage systems and, ultimately, DC-supplied charging stations are set up. If just one part of the charging infrastructure is damaged by a surge, the availability of the entire charging park disappears.

This makes it all the more important to ensure an integrated, EMC-orientated lightning protection zone concept based on IEC 62305-4. This consists of an external lightning protection system (to safely manage separation distances, using an insulated lightning protection system, e.g. HVI, is recommended in practice), a corrosion-resistant, intermeshed, low-impedance, interconnected earthing system, equipotential bonding and surge protection for any component. In the event of danger posed by step and touch voltages in areas where people are located, additional measures are necessary, e.g. potential control using mesh mats tested with lightning currents. Furthermore, the risk of arc faults in low-voltage switchgear assemblies must be assessed. Achieve maximum availability with the DEHNshort active protection against arc faults.

| External lightning protection systems and earthing/equipotential bonding concepts | | | | |
|---|---|---|---|---|
| 1 |  | Insulated lightning protection system HVI | High-voltage-resistant, insulated down conductor for maintaining the separation distance from electrically conductive parts as per IEC 62305-3 **http://de.hn/45WVS** | |
| 2 |  | Earthing systems | Comprehensively intermeshed, low-impedance, interconnected earthing systems; tested with lightning currents and for 50 Hz requirements **http://de.hn/6eTmJ** | |
| 3 |  | Potential control | Potential control measures, e.g. through tested mesh mats; for preventing dangerous step and touch voltages **http://de.hn/cjQw6** | |

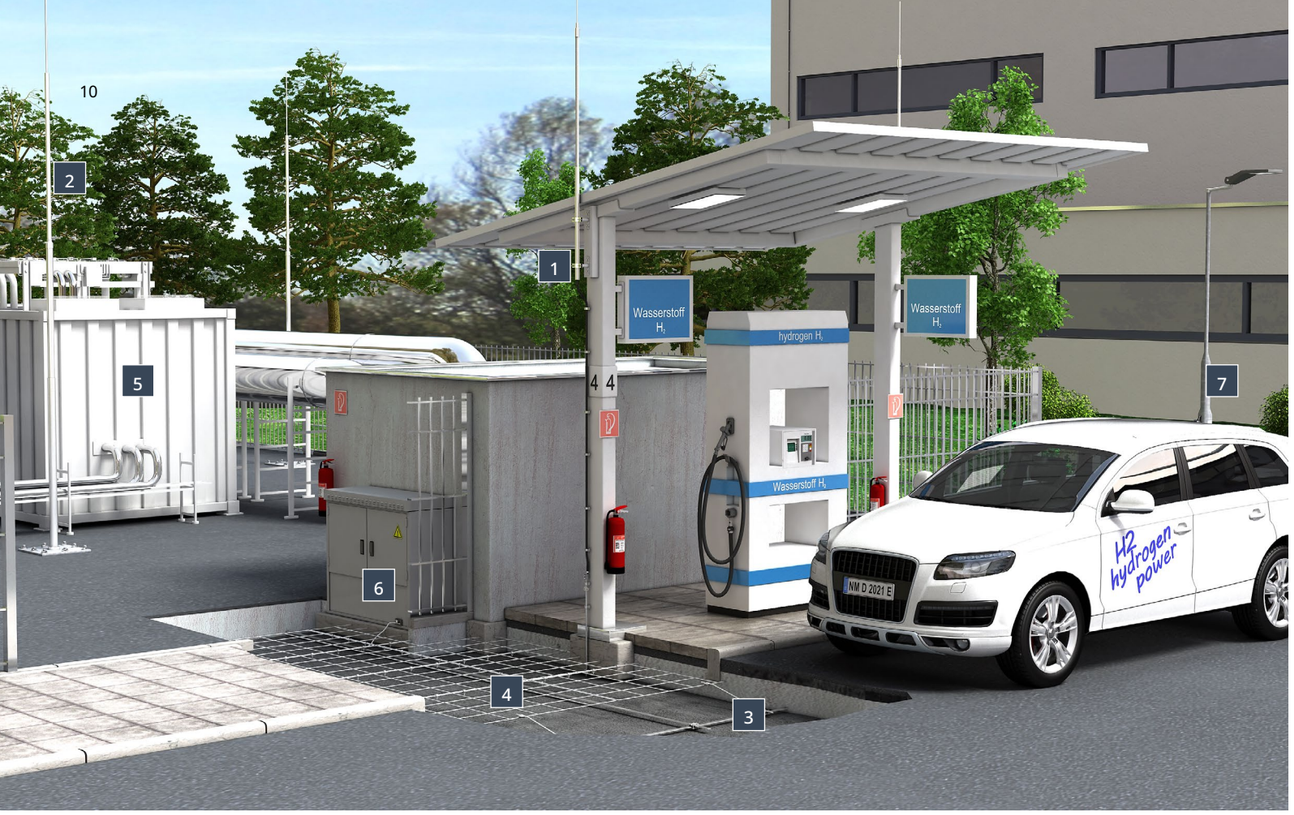
| AC interfaces | | | | Part No. |
|---|---|---|---|---|
| 4 |  | DEHNmid | Metal oxide arrester for medium-voltage systems up to 51 kV for protecting the medium-voltage side, e.g. in transformer stations | **990 410** |
| 5 |  | DEHNvenCI 1 255 FM | Single-pole, spark-gap-based, Type 1 + 2 combined arrester with remote signalling contact and integrated arrester backup fuse; 230/400 V AC | **961 205** |
| 5 |  | DEHNbloc Maxi 1 CI 440 / 760 FM | Single-pole, type 1 lightning current arrester for protecting low-voltage main distribution boards; with integrated arrester backup fuse und remote signalling contact | **961 146** **961 176** |

| Charging stations (AC and DC side) | | | | Part No. |
|---|---|---|---|---|
| 6 |  | DEHNguard ME DC Y 1000 FM | Type 1 + 2 combined arrester up to 1000 V DC with remote signalling contact; use e.g. in DC-supplied high-power charging stations, compliant with the IEC 61851-23 standard | **972 147** |
| 6 |  | DEHNguard M DC ACI 1250 FM | Type 2 arrester with ACI technology for DC charging equipment up to 1,250 V | **972 150** |
| 7 |  | DEHNvap EMOB M 3P 255 FM | Type 1 + 2 combined arrester with RAC spark gap technology and remote signalling contact; maximum backup fuse 250 A; 230/400 V AC; especially for use in supply systems of the charging infrastructure | **900 585** |

| Information and communication technology | | | | |
|---|---|---|---|---|
| 8 |  | DEHNpatch Class $E_A$ | Universal surge arrester for protecting IP-based network applications in structured cabling in accordance with class $E_A$ up to 500 MHz | **929 161** |
| 8 |  | BLITZDUCTORconnect ML2 BD 24 | Modular, TYPE 1 combined arrester with push-in connection system, e.g. for protecting RS485 bus systems or 24-V signals<br>Select additional interfaces easily with DEHNselect IT: **http://de.hn/3EKmK** | **927 244** |

Protect HPC parks:
**http://de.hn/aVCLm**

Protect bus charging stations:
**http://de.hn/7fsxD**




# Protection concept for hydrogen filling stations

Hydrogen is an invisible, odourless and harmless gas. Since it does not appear in this form in nature, it must be produced. For example, during electrolysis, water is broken down into its constituents oxygen and hydrogen with the aid of electric current.

An engine that uses hydrogen as a fuel is more efficient than conventional combustion engines; i.e. further distances can be covered with less fuel. Additional advantages: during movement, only water is generated as a by-product. Hydrogen-powered vehicles produce neither $CO_2$ nor other harmful gases.

However, the use and processing of hydrogen is not harmless because it is more highly flammable than conventional gases. As a result, an elevated explosion hazard arises. In practical terms, all rooms and areas are at risk in which gases, vapours, mists and dusts can accumulate; this can form explosive mixtures with air. If explosions occur, this endangers people and equipment in equal measure. System operators are therefore obliged to ensure protection.

View protection solution online:
**http://de.hn/7Bxo5**



| External lightning protection | | | | |
|---|---|---|---|---|
| 1 |  | Insulated lightning protection system HVI | High-voltage-resistant, insulated, down conductor for maintaining the separation distance from electrically conductive parts as per IEC 62305-3 **http://de.hn/45WVS** | |
| 2 |  | Telescopic lightning protection mast | Air-termination mast for protecting systems from direct lightning strike **http://de.hn/7uvkY** | |

| Earthing and equipotential bonding | | | | |
|---|---|---|---|---|
| 3 |  | Earthing systems | Comprehensively intermeshed, low-impedance, interconnected earthing systems; for the entire charging park; tested with lightning currents and for 50 Hz requirements **http://de.hn/6eTmJ** | |
| 4 |  | Potential control | Potential control measures, e.g. through tested mesh mats; for preventing dangerous step and touch voltages **http://de.hn/cjQw6** | |
| 5 |  | Equipotential bonding in hazardous areas | Equipotential bonding measures specially for areas at risk of explosion, e.g. equipotential bonding bars, pipe clamps and clamps Non-sparking and secured against self-loosening. **http://de.hn/3U1Sf** | |
| 5 |  | Connection clamps for steel girders | Connection clamps in heavy-duty design. Especially suitable for connection to steel structures **http://de.hn/7DSPW** | |
| 5 |  | Isolating spark gap EXFS 100 | Isolating spark gaps for the indirect earthing and connection of functionally isolated system parts; above-ground and underground installation **http://de.hn/5yQRd** | |
| 5 |  | Pipe clamp for hazardous areas EX BRS 90 | For electrical contacting of pipes in potentially explosive areas (Zone 1/21, 2/22) and realisation of lightning equipotential bonding. | **540 801** |

| Power supply | | | | Part No. |
|---|---|---|---|---|
| 6 |  | DEHNventil M2 255 FM | Modular, type 1 + 2 + 3 combined arrester with RAC spark gap technology and remote signalling contact; 230/400 V AC | **956 315** TT<br>**956 405** TNS<br>**956 305** TNC |
| 7 |  | DEHNcord L 2P 275 SO IP | Universal type 2 surge arrester in IP65 design for retrofitting; for protecting mast LED lighting | **900 448** |

| Information and communication technology | | | | Part No. |
|---|---|---|---|---|
| 5 |  | BLITZDUCTORconnect ML2 BD 24<br>BLITZDUCTORconnect ML2 BD HF 24 | Modular, TYPE 1 combined arrester with push-in connection system, e.g. for protecting RS485 bus systems or 24-V signals<br>Select additional interfaces easily with DEHNselect IT: **http://de.hn/3EKmK** | **927 244**<br>**927 275** |
| 5 |  | DEHNpatch Class $E_A$ | Universal surge arrester, approved for use in hazardous areas, for protecting IP-based network applications in structured cabling in accordance with class EA up to 500 MHz. | **929 161** |

## Safe working during the maintenance of charging posts

Personal safety is always the top priority and therefore also plays a key role in the field of electric mobility. Due to the increasing expansion of AC and DC charging infrastructure, the demand for maintenance and servicing work is increasing. The safety of the installers is always the main focus here. Without safety equipment, work on and in electrical systems – such as charging posts – can be potentially fatal. Therefore, in addition to wearing the correct protective clothing, follow the five safety rules from the EN 50110 series of standards and implement these rules using tested products. In this way, you will protect your workers from electrical accidents and arc faults.

### Compiled into a set. So everything's in easy reach.

With the quality products from DEHN, you can provide your workers with reliable protection during the maintenance of charging infrastructure. Ideally, you should use the Electrician Set from DEHN. In this way, you have everything that is vital – from eye and face protection to certified protective clothing – and within easy, immediate reach.


Check out the DEHN electrician set: **http://de.hn/6VHa6**

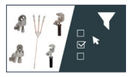
Here you will find our entire portfolio of DEHNcare protective equipment against the thermal effects of arc faults: **http://de.hn/d41By**



| 1. Isolation: the electrical installation must be disconnected from live parts on all poles | | | Part No. |
|---|---|---|---|
|  | Switching stick | For switching disconnectors and earthing switches or for handling insulating protective shutters. With plastic plug-in coupling for extension. | **763 100** |
|  | APG XT | Arc-fault-tested protective gloves with long gauntlet. Schutzklasse APC 2 150. | **785 843** |
|  | APG insulated | Insulating gloves 1000 V AC (1500 V DC). Category RC, protection class APC 2. | **787 485** |

| 2. Secure against re-connection: Prevent the accidental activation of the system. | | | Part No. |
|---|---|---|---|
|  | Lock-out system | Re-powering must be reliably prevented. In the low-voltage installations of the charging infrastructure, replace the removed fuses with closing lock-out systems. Appropriate insulating blades are used in the fuse holders of NH fuses. | **785 637** |
|  | Insulating plugs for screw inserts | | **785 640** |
|  | Insulating blade for NH fuse holders and distribution blocks | | **785 641**<br>**785 642** |

| 3. Verify that the installation is dead: determine a dead condition on all poles with a voltage detector. This task is considered to be live working! | | | Part No. |
|---|---|---|---|
|  | Two-pole SPN voltage detector | Two-pole SPN voltage detector for determining a dead condition at the infeed point to the charging station for low-voltage AC/DC installations; can be used for system voltages of up to 1,000 V! | **766 665**<br>**700 100**<br>**700 102** |
|  | Installation test device | Can be used for low-impedance, loop impedance and insulation measurement. For testing the continuity of steel reinforcements in reinforced concrete with 10 A test current. | **578 323** |

| 4. Earthing and short circuiting: connecting conductors and earthing system with short-circuit-proof earthing and short-circuiting devices. Important: First earth, then short circuit! | | | Part No. |
|---|---|---|---|
|  | Earthing and short-circuit set (partially insulated) for low-voltage cable distributors with a sheet metal case | Earthing and short circuiting electrical systems, e.g. of the integrated service entrance box of a charging station or the upstream low-voltage distribution board; complete set for low-voltage cable distributors (cable distribution cabinets); version no. of the EaS device: VUKMT58. | **745 500** |
|  | EaS configurator | **INFO:** You can make longer cable lengths or a tailored configuration of the EaS devices according to the requirements of the charging infrastructure at any time using our online EaS configurator: **http://de.hn/4o8JL** | |

| 5. Cover or enclose adjacent live parts: In the case of parts that are located inside the vicinity zone – meaning close to the work location – and that cannot be disconnected, you must take additional safety precautions (enclosing or covering) prior to starting work. | | | Part No. |
|---|---|---|---|
|  | Insulating mat | In the switchgear installations of bus charging stations, for example, use insulating protective shutters or insulating cloths to protect against accidentally touching live parts. | **785 458** |
|  | Plastic insulating blanket | | **785 465** |
|  | Insulating cap with collar | Insulating caps with collar for various cross-sections for insulating the bare ends of electrical conductors up to 1000 V | **700 120**<br>**700 121**<br>**700 122** |
|  | Chain post set | For sealing off the workplace<br>(6 posts, 10-m chain, 10 links, 10 hooks) | **700 110** red<br>**700 111** yellow |
| | Warning sign | "Warning – voltage! Unauthorised access and contact prohibited" incl. attachment contour for plastic posts. | **700 059** |
|  | Rescue rod | For permanent storage in the service vehicle.<br>For rescuing people from a danger zone following electrical accidents. | **766 040** |

# Excellent service for safe charging infrastructure

**Reliable technology and comprehensive services – all from one source. As your partner, we are not only at your side in terms of protection solutions, but also with supplementary offers and boundless know-how in the field of e-mobility.**

## Reliable testing

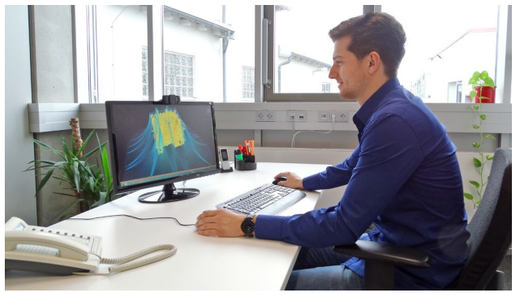
Our test centre covers an area of 800 m² and provides state-of-the-art devices and technologies for testing products, installations and systems using lightning currents. Find out if your charging equipment, such as wall boxes and charging stations, are reliably protected against lightning currents and surges, so that electric vehicles can also charge safely during thunderstorms.

**More information: http://de.hn/amQ9R**

## Make planning easy

Planning the charging infrastructure for electric mobility is generally very complex. The issue of lightning protection is just one of many aspects. Save yourself time and make use of the DEHN Engineering Services.
In terms of the scope, you can decide whether to have the risk analyses performed to IEC 62305-2 or the entire protection concept created as a module. This makes the planning of an integrated earthing and external lightning protection system for charging parks and bus charging stations easier for you.

**More information: http://de.hn/4LLJe**



## Take advantage of our offers

Are you a fleet operator and want to delve deeper into the topic? We are here to help you! On our website, in addition to protection concepts, you will also find appropriate services, e-learning opportunities and information about events.

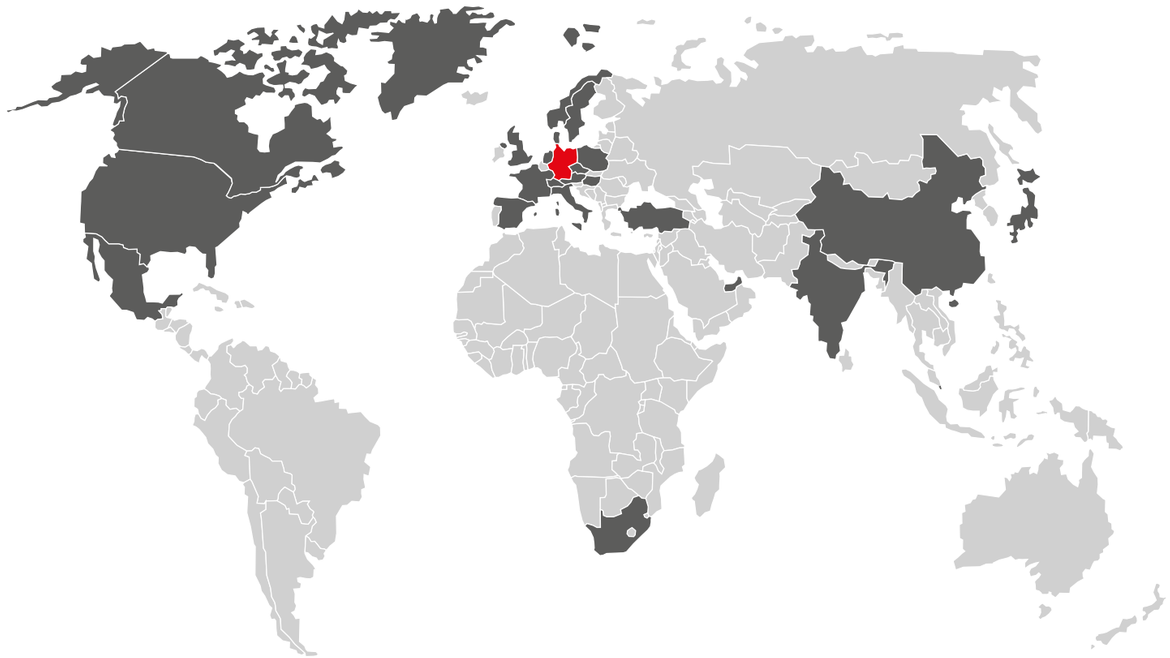
**More information: http://de.hn/4sP48**

## Learn more

Want to learn more? No problem. You will find all the important information on the topic of e-mobility clearly compiled on our website.

**More information: http://de.hn/9wqan**





DEHN international
If you want to protect the world's electrical systems, you have to act globally. That's why you'll find DEHN branches and partners in over 70 countries.

## Technical Support

Need advice? The experts at DEHN's Technical Support team will be happy to answer your questions about:

- Products
- Planning services
- Software

Get support here. Free, and from experts.

**Get in touch with us**
itss@dehn.de

**All DEHN locations and partners**
http://de.hn/5qg5H

## Selection of our locations and representative offices

| | | |
|---|---|---|
| Austria | DEHN AUSTRIA GmbH | www.dehn.at |
| China | DEHN Surge Protection (Shanghai) Co. Ltd. | www.dehn.cn |
| Czech Republic | DEHN s.r.o. | www.dehn.cz |
| Denmark | DESITEK A/S | www.desitek.dk |
| France | DEHN FRANCE S.à.r.l. | www.dehn.fr |
| Germany | DEHN SE | www.dehn.de |
| Great Britain | DEHN (U.K.) LTD. | www.dehn.co.uk |
| Hungary | DEHN HUNGARY Kft. | www.dehn.hu |
| India | DEHN INDIA Pvt. Ltd. | www.dehn.in |
| Italy | DEHN ITALIA S.p.A. | www.dehn.it |
| Japan | DEHN JAPAN K.K. | www.dehn.jp/ja |
| Mexico | DEHN PROTECTION MÉXICO, S.A. de C.V. | www.dehn.mx |
| Netherlands | DEHN NEDERLAND B.V. | www.dehn.nl |
| Norway | DEHN NORGE AS | www.dehnas.no/nb |
| Poland | DEHN POLSKA Sp. z o.o. | www.dehn.pl |
| Singapore | DEHN (SEA) PTE. LTD. | www.dehn.sg |
| South Africa | DEHN AFRICA (Pty) Ltd. | www.dehn-africa.com |
| Spain | DEHN IBÉRICA Protecciones Eléctricas, S.A. Unipersonal | www.dehn.es |
| Sweden | DEHN SVERIGE AB | www.dehnab.se |
| Switzerland | ELVATEC AG | www.elvatec.ch |
| Turkey | DEHN SE Türkiye | www.dehn.com.tr |
| United Arab Emirates | DEHN MIDDLE EAST FZE | www.dehn.ae |
| USA | DEHN, Inc. | www.dehn-usa.com |

http://de.hn/b5dXC

**Surge protection**
**Lightning Protection / Earthing**
**Safety Equipment**

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