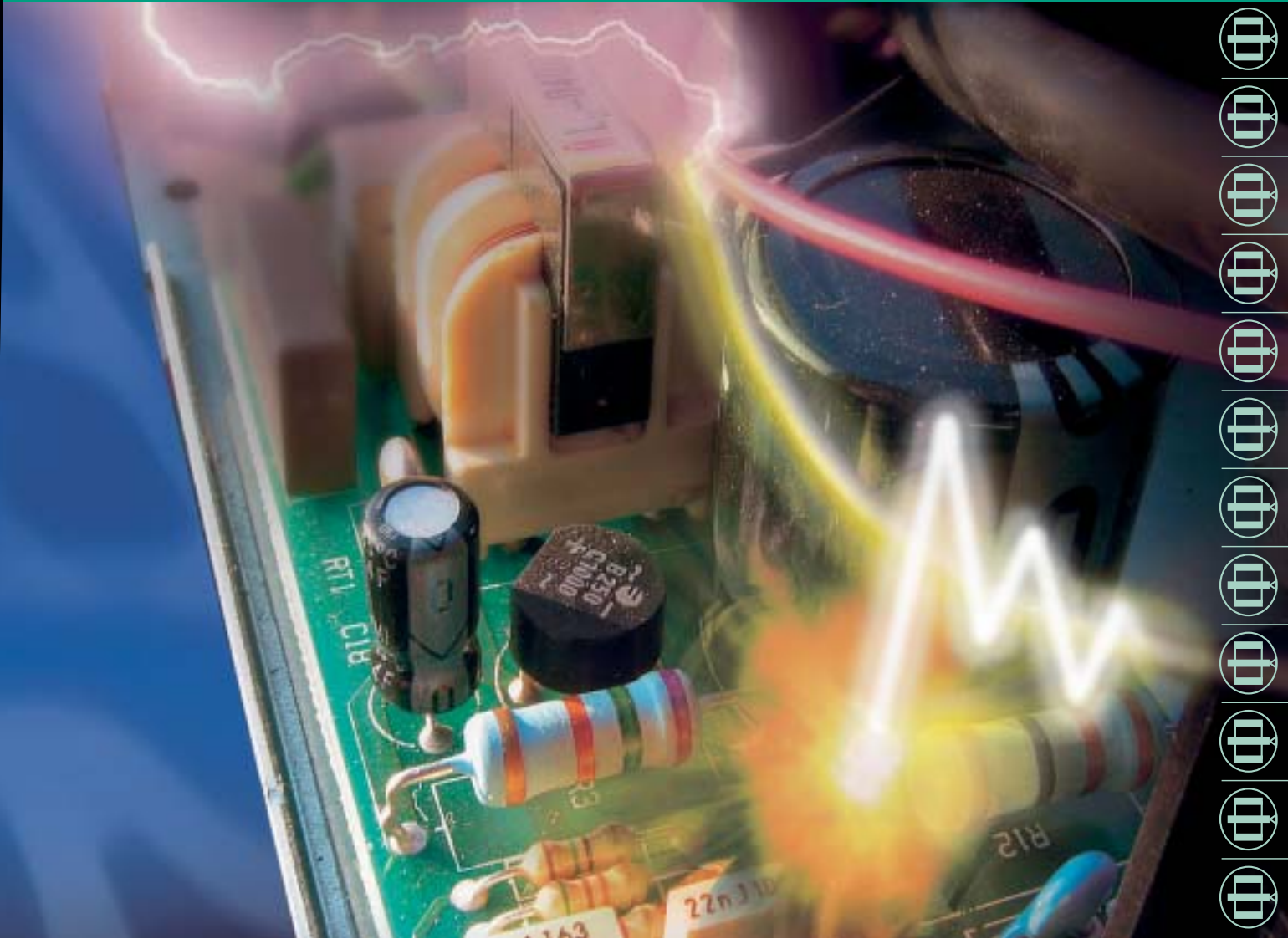




DEHN + SÖHNE

Surge Protection: Safety for your Measuring and Control System.



Surges are the most frequent Cause of Damage.



Surges - a Hot Thing!

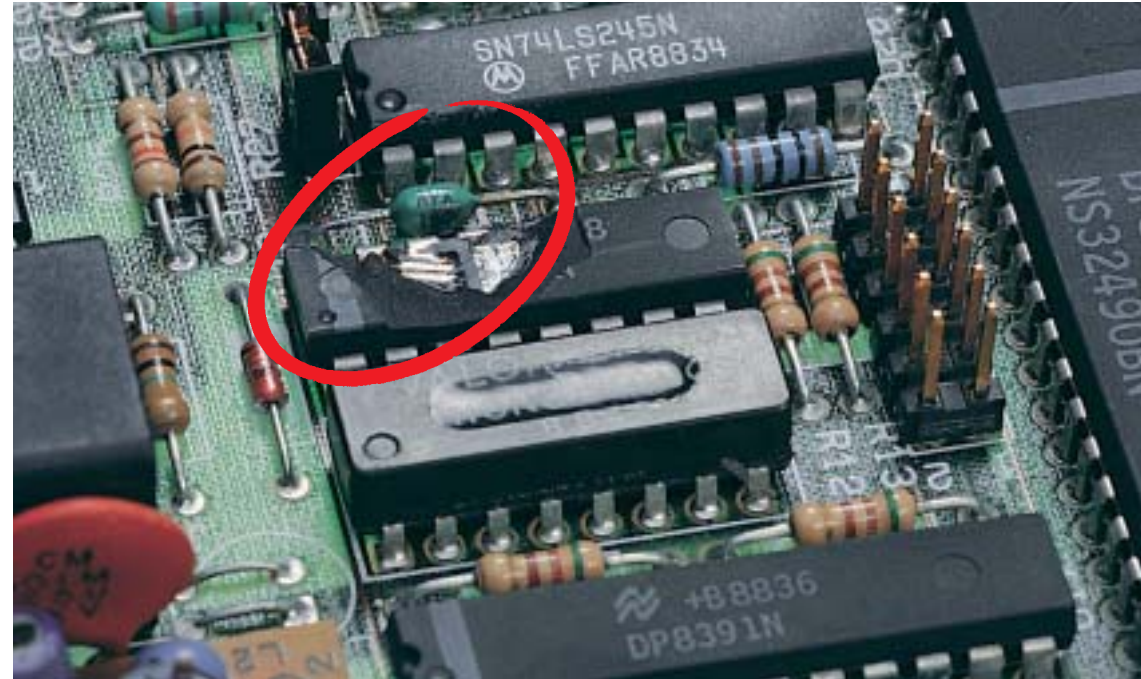
Approximately 24 out of 100 cases of damage to electronic equipment are caused by surges. Therefore, surges are by far the most frequent cause of damage as shown in a study of over 7,370 cases in Germany!

Anyone who has escaped that event by now, has either been lucky – seen from the statistic point of view - or has made provisions.

Automation - Flexibility - Dependence.

Groundbreaking changes in automation and control systems have become evident within the last few years. The increasing variety of industrial products as well as flexible utilisation of buildings and installations require the maximum level of automation in a line of processes depending on each other. Therefore, safe and fast communication among the processes is an indispensable factor.

A long chain of highly integrated micro-electronic components is responsible for transferring the enormous flood of process information. As everyone knows, a chain is as strong as its weakest link. But what happens if one link of the chain is broken?



Is it the designer, who intends to project a trendsetting installation based on the latest state of the art? Is it the installation engineer, who has promised to mount an efficient installation? Or is it the operator, who is responsible for the organisation of the process?

It does not matter who is responsible for a single case, all of them must bear the consequences: the designer who could have known it better, the installation engineer who will get no further orders and the operator for whom the damage is hardly repairable.

Things are not bound to happen this way...

Surges and their ways into measuring and control systems.

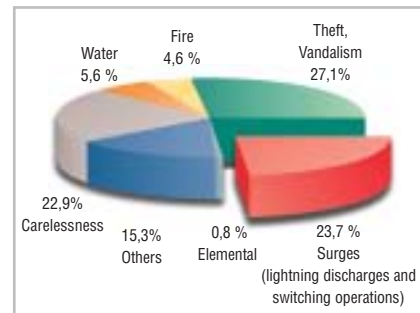
Surges are momentary peak voltages, so-called transient voltages, arising for only some milliseconds. They reach peak values of up to some 10,000 Volts.

These surges are caused by

- direct lightning strokes
- indirect lightning strokes within a distance of up to some kilometres
- switching operations within the power supply system
- interferences due to internal switching operations.

Electronic equipment can be destroyed by both powerful impulses out of atmospheric discharges and peak voltages out of switching operations.

The way of surges into installations is unpredictable: They interfere with or destroy equipment by entering the installation via signal and data lines or power supply lines.



Damage to electronic equipment.

23.7% of damage to electronic equipment is caused by surges. This shows an analysis of about 7,370 damage claims.

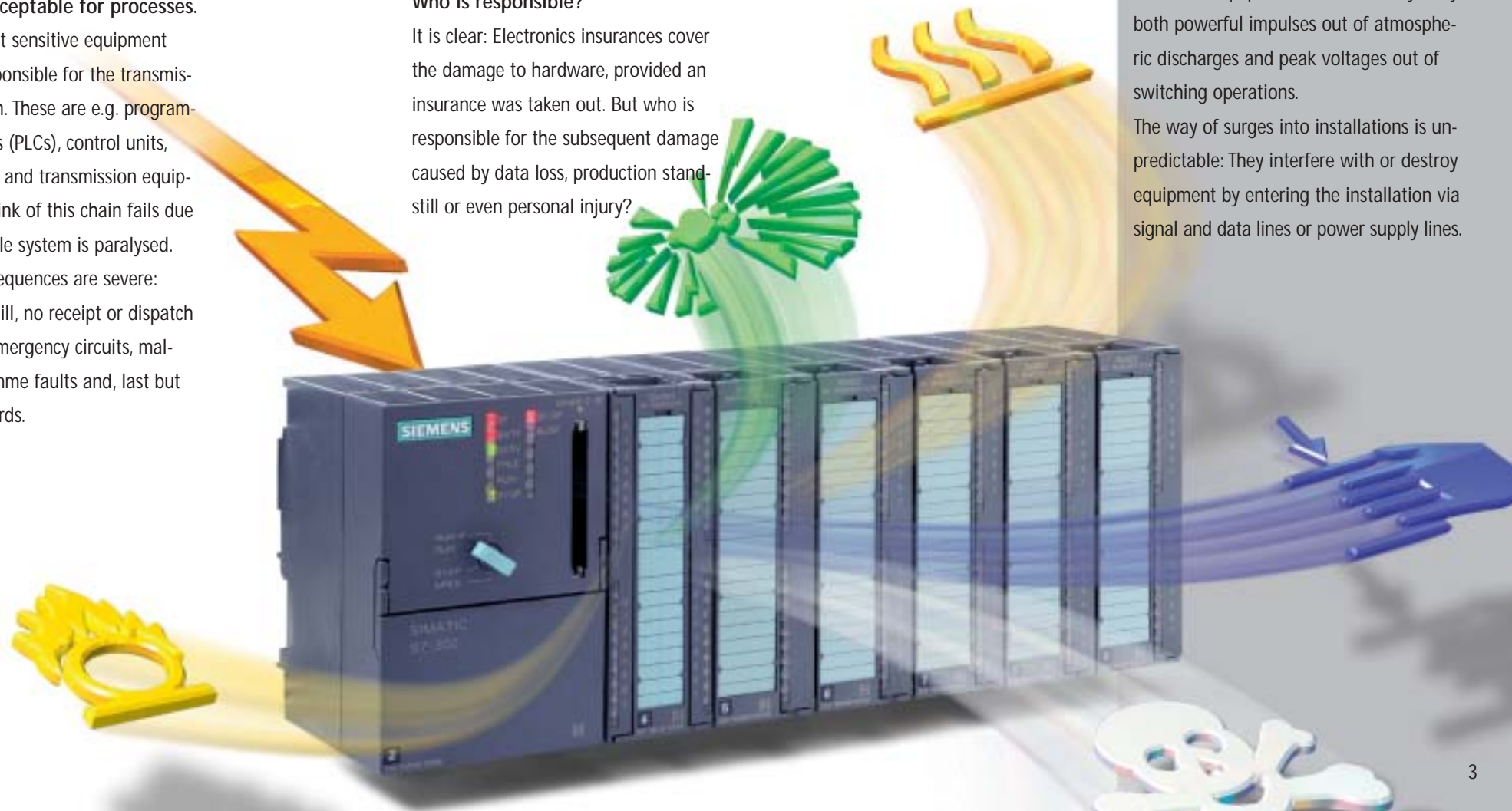
Ref: Württembergische Versicherung AG, 2001.

Failures are unacceptable for processes.

Surges hit the most sensitive equipment first, i.e. those responsible for the transmission of information. These are e.g. programming logic controls (PLCs), control units, measuring sensors and transmission equipment. If only one link of this chain fails due to surges, the whole system is paralysed. The resulting consequences are severe: production standstill, no receipt or dispatch of goods, failing emergency circuits, mal-operation, programme faults and, last but not least, life hazards.

Who is responsible?

It is clear: Electronics insurances cover the damage to hardware, provided an insurance was taken out. But who is responsible for the subsequent damage caused by data loss, production standstill or even personal injury?



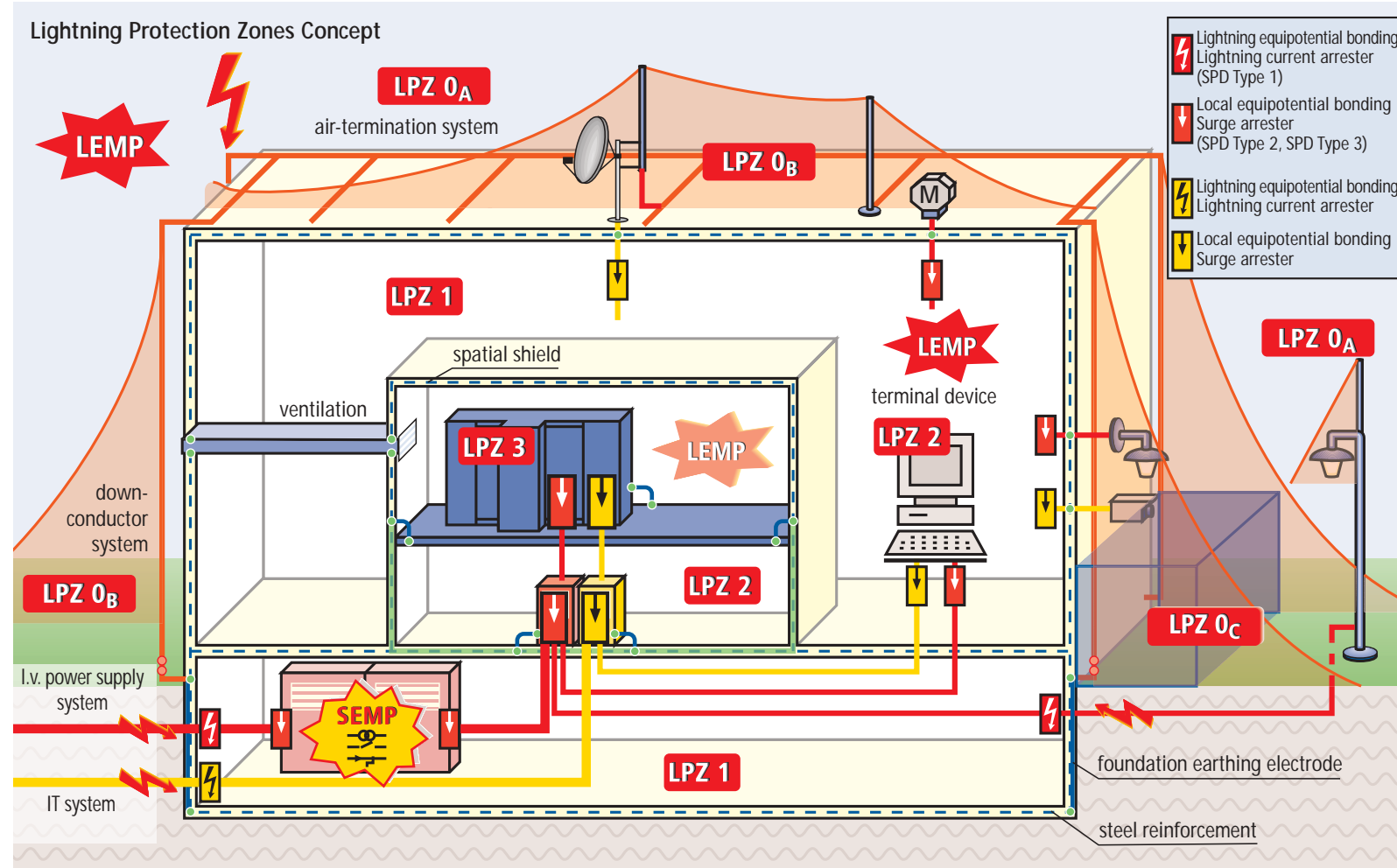
The most effective Protection Concept against Lightning Currents and Surges.



Safety in line with economic Efficiency.

To provide measuring and control systems with the necessary safety for operation, requires a protection concept withstanding all loads caused by lightning currents and surges. It must reduce both the conductively coupled as well as the inductively/capacitively coupled interferences to harmless values. For this purpose, the new internationally valid standard DIN IEC 62305-4 (DIN V VDE V 0185 Part 4)* recommends the lightning protection zones concept. Dividing an installation to be protected into different protection zones allows to provide a differentiated but adapted use of protective devices, even for great measuring and control installations. This helps to achieve maximum cost effectiveness. Even for reconstruction purposes, this protection concept is a safe guide.

*Title: "Protection against lightning electromagnetic impulse- Part 1: General principles"



Lightning Protection Zones Concept.

The first step is to define the different lightning protection zones (LPZ). The sensitive equipment like programming logic controls, alarm systems or measuring sensors shall be assigned lightning protection zone 2, at least. Mechanical distributors like terminal boards and terminal boxes can also withstand the loads of lightning protection zone 1. All electrically conductive parts crossing a lightning protection zone have to be protected.

For example, metal pipes and cable ducts as well as cable shields must be connected to the equipotential bonding directly at the boundaries of the protection zones. Live lines like external conductors of the electrical power supply or communication lines have to be furnished with surge protective devices that come up to the requirements at the installation site. When choosing the surge protective devices, both the potential impulse current loads and the electrical and mechanical requirements of the boundary have to be considered.

Earthing and shielding.

The interfering currents induced by a lightning stroke should be led in parallel via as many paths as possible to reduce the partial currents in the cables/shields. This can be achieved by building/spatial shielding and intermeshing all equipotential bonding conductors and earthing electrodes. It would be recommendable to take corresponding measures already in the designing phase, like connecting metal reinforcements in concrete walls as well

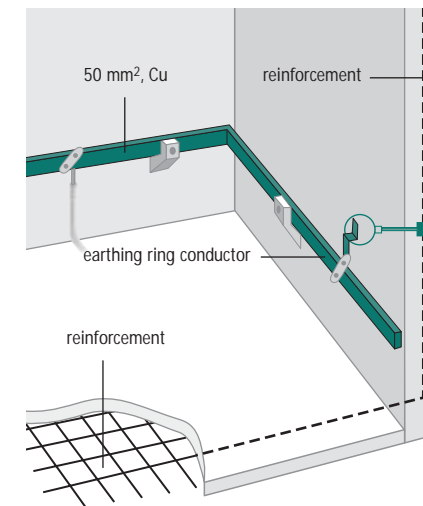
as ceilings and floors, combining the metal façades and connecting these parts with the down conductor systems of the external lightning protection system. The installation of equipotential bonding bars to be connected to all conductive parts is an obligatory measure. Installing copper circumferential earthing ring conductors in control rooms, e.g. within the false floor, would be a good solution. Adequate treatment of cable shields is an essential part of the protection concept. Basically, all shields shall be connected at both ends – at the control unit and at the terminal device/measuring sensor – directly or indirectly via SPDs. If they cross a boundary of a lightning protection zone, they have also to be connected to the equipotential bonding.

Surge protection in data and power supply systems

Almost every measuring and control device needs electrical power for working. In most cases it is supplied directly from the power network. Moreover there are many interfaces between measuring and control systems and data networks (LANs) or telecommunication networks (WANs). Effective protection for measuring and control equipment unifies the treatment of all system interfaces in one protection concept. Power supply and data networks can be protected by lightning current arresters, surge arresters and protective devices especially adapted to individual applications. Our documentation provides detailed information about the protection concepts and make the choice of the right SPD easier.

Do not hesitate to ask for our publications:

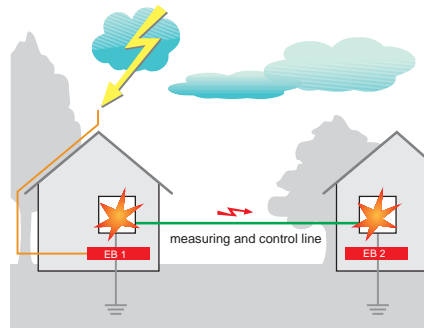
- DS 649 E "Surge Protection: Easy choice"
- DS 647 E "Surge Protection: Safety for Your Data Networks"



Know the Danger - Avert the Danger. How to eliminate Surges.

Conductive coupling

With a direct lightning stroke, impulse currents of up to 200,000 A enter the air-termination system. In this moment the electrical potential of the building rises enormously. The consequence are potential differences up to several 100,000 V on power supply lines, telecommunication lines and other measuring and control lines with external potential. Uncontrolled flashovers in electrical equipment allow destructive partial lightning currents to flow to earth. Electrical equipment connected to the lines within a distance of some kilometres from the point of strike can be affected. The risk for measuring and control systems as well as telecommunication systems installed between buildings is especially high.

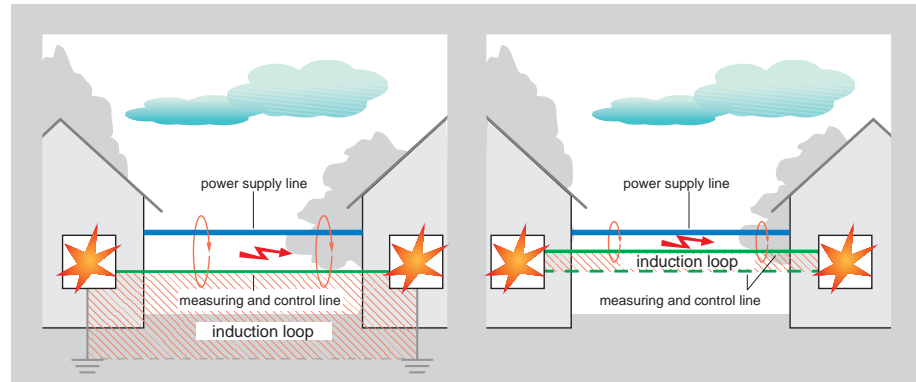


Protection measures

There is a way to control the effects of direct lightning strokes. Surge arresters capable of carrying lightning currents like BLITZDUCTOR® CT Type B safely discharge even partial lightning currents without problem and without damage to the equipment. In order to reduce interferences on systems within buildings, the lightning current arresters should be installed at the service entrance of the building (boundary from LPZ 0_A to 1). They are connected to the equipotential bonding at low impedance.

Inductive coupling

Both discharges of lightning strokes via the external lightning protection system and switching operations or short circuits in electrical power systems generate high interference fields. These fields can induce destructive impulse voltages up to some 10,000 V and impulse currents of up to some 1,000 A in signal lines.



Common-mode interferences

Earthed signal lines, as often used for measuring and control systems, form an induction loop. Also RS 485 bus systems and current loops (e.g. 0-20 mA) are threatened. Common-mode interferences are induced from line to earth and can be up to 10,000 V. Within milliseconds, the insulation of the terminal devices is stricken through and their inputs and outputs are destroyed. Common-mode interferences are the most frequently arising type of interference.

Protection measures

Induced common-mode and differential-mode interferences can arise anywhere, also within buildings. By using powerful surge arresters with a low voltage protection level, however, the coupled interferences can be safely controlled and damage can be avoided. The use of SPDs immediately upstream of the terminal devices (LPZ 1 or 2) would be recommendable. Furthermore, it should be ensured that the area of the induction loop is kept as small as possible. Parallel installation with an

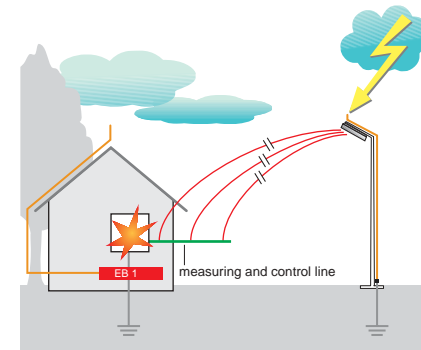
Differential-mode interferences

Two-core signal lines, mainly used in telecommunication systems, forms an induction loop. For reasons of line unbalance and different laying, different voltages are induced into the two lines. The consequence is a differential-mode interference (up to several 1,000 V) between the signal lines – strong enough to destroy connected terminal devices.

air-termination system or with power supply lines must be avoided. In addition, it is recommended to use shielded or twisted pair lines.

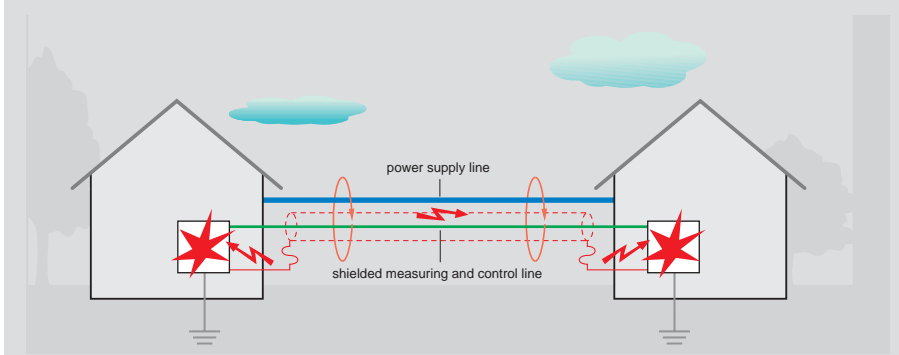
Capacitive coupling

If lightning hits a neighbouring object, the potential of the same can rise by several 100,000 V compared to its environment. The lightning channel has an effect like a giant capacitor via the air as dielectric element on adjacent electrically conductive components. Due to different coupling capacities, currents of up to several 10 A arise on the IT lines. The resulting surges strike through the insulation of the terminal equipment and let the currents flow to earth.



Protection measures

If lightning does not hit the installation directly, capacitively coupled currents can be discharged safely and without risk, e.g. via BLITZDUCTOR® CT M If no further measures are taken, the use of SPDs immediately upstream of the terminal equipment is recommendable. Furthermore, the capacitive coupling of interferences can be reduced by using a shielded cable.



Shielded cables and their effects

As a matter of fact, "well"-shielded cables can provide a certain protection against inductive and capacitive interferences and should therefore be used rather than unshielded cables. But when is a cable "well"-shielded in the sense of lightning and surge protection?

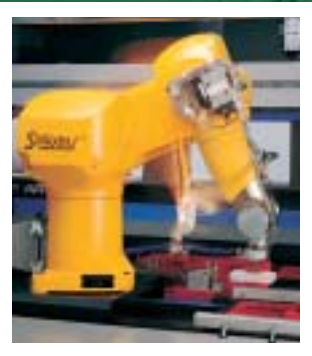
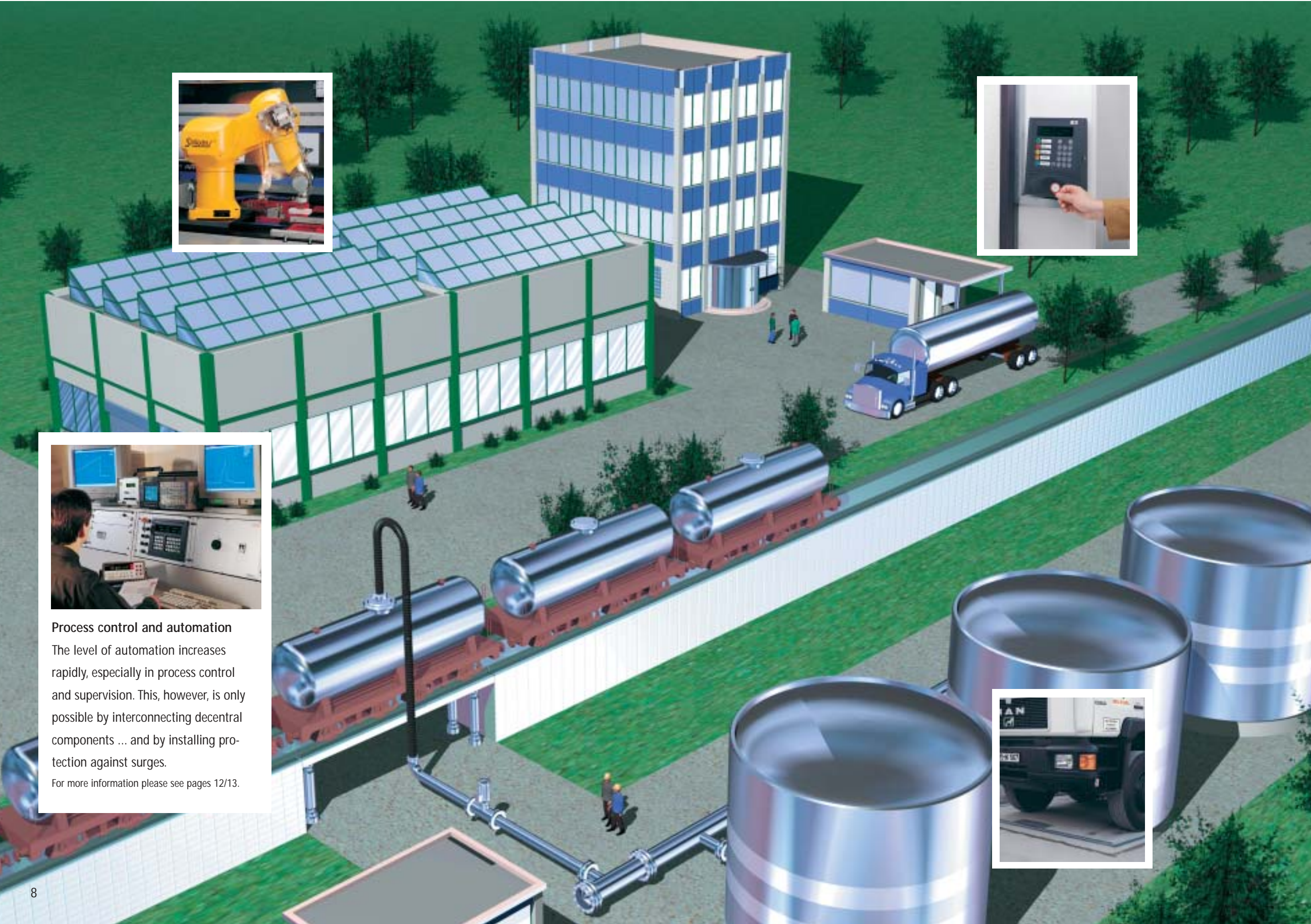
- The cable shield must be interconnected throughout the whole length and earthed at both ends at least. Only a shield connected at both ends can limit capacitive and inductive interferences.
- The shield earthing should be designed with low impedance. This prevents peak voltages of many 1,000 V from interfering with the terminal equipment due to inappropriate shield earthing. It is especially favourable to connect the cable shield to the equipotential bonding with special shield terminals, e.g. Type SAK.

- The shields of cables between buildings must be capable of conducting momentarily high impulse currents. This is only possible with a shield cross section with sufficient dimension.
- In practice, cables with incomplete shield cover are used for economic reasons. This results in residual interferences on the signal lines. This effect can be reduced by a multiply shielded cable.

Conclusion

Using shielded cable material in addition to lightning current and surge arresters helps to optimise the protection effect against surges. Shielded cables alone can reduce interferences or damage to terminal equipment but not prevent it. In most cases, the using SPDs is an indispensable measure.

Measuring and Control Systems require DEHN Surge Protection.



Process control and automation
 The level of automation increases rapidly, especially in process control and supervision. This, however, is only possible by interconnecting decentral components ... and by installing protection against surges.
 For more information please see pages 12/13.



Building services management systems
 In modern building installation, high-tech interconnected control and alarm signal systems are used. They allow flexible and supervised control of the technical processes within the building ... and require surge protection.
 For more information please see pages 10/11.

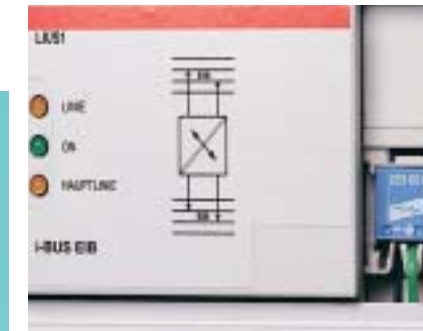


Analogue measuring
 Whether temperatures, weights or liquid levels – in all fields of industry these kinds of variables have to be controlled, mostly via analogue measuring sensors or transmitters ... which should be protected against surges.
 For more information please see pages 14/15.

DEHN Surge Protection for Building Services Management Systems.



Protection of fire alarm systems





Protection of EIB bus coupler

Building services management systems

optimise the lighting, communication and power distribution within buildings. Bus systems interconnect high-tech measuring sensors and control units. The lines are mostly laid in line-, tree- or star topology.

Protection:

If a bus line is installed between buildings, a lightning current arrester  BLITZDUCTOR® CT Type B (LPZ 0_A/1) or BLITZDUCTOR® CT Type B ... (LPZ 0_A/2) has to be installed at the service entrance and connected with each pair of lines. According to the system, the internal measuring and control units are protected by different SPDs.


For example, EIB bus couplers are furnished with BUSectors  instead of normal bus terminals (LPZ 1/2).



Please see also standard interface 6 on page 18.

Alarm systems

Control boards of alarm systems combine all signals of the connected fire and burglar alarm systems. Many detectors, which are widely spread over complex installations are interconnected. The control board releases the alarm when one of the detectors is activated.

Protection:

For protecting the control board and the detectors, combined lightning current and surge arresters  BLITZDUCTOR® CT Type BE are installed at each service entrance.

As the "combined SPD" controls lightning currents and surges, a direct transition from LPZ 0_A to 2 is possible with only one SPD. BLITZDUCTOR® CT is also suitable for protecting  the signal lines. If the control board is equipped with an automatic dialling system for calling via a direct exchange line, this must also be protected. 

Please see also application-specific interfaces on page 21.

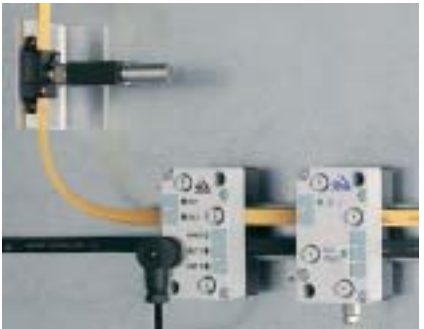
DEHN Surge Protective Devices for Process Control and Automation Systems.



Protection of PROFIBUS DP devices



Protection of PLC* in-/outputs*



Protection of AS interfaces



RS 485 - Field Bus interface

On the process control level, "high-tech" components are interconnected via twisted lines. The requirement for "real-time capability" on processes resulted in a development of especially fast and therefore sensitive field bus systems. The bus cabling structure can be extended over several kilometres.

Protection:

Where a bus line enters the building, one lightning current arrester ⚡ e.g. BLITZ-DUCTOR® CT BD HF 5 (LPZ 0_A/2) has to be installed per pair of lines. Shield earthing at low impedance directly at the protective device is recommended. For fine protection of PROFIBUS-DP devices, surge protective adapter ⚡ FS 9E PB 6 (LPZ 2/3) is simply plugged in.

Please see also standard interface 1 on page 17.

Sensor-Actuator interface

Correct processing requires a lot of information and a number of actions. The sensors record process data and the actuators control the process.

Protection:

Just as the sensitive control units, also the production lines are divided into lightning protection zones. Suitable protective devices at the zone boundaries (LPZ 1 to 2) limit upcoming surges. For protecting multi-core cables, DEHNconnect RK surge protective terminal blocks ⚡ are especially suitable. AS interface, for example, requires an especially adapted surge protection module. ⚡

Please see also standard interface 5 on page 18.

*PLC = Programming Logic Controls

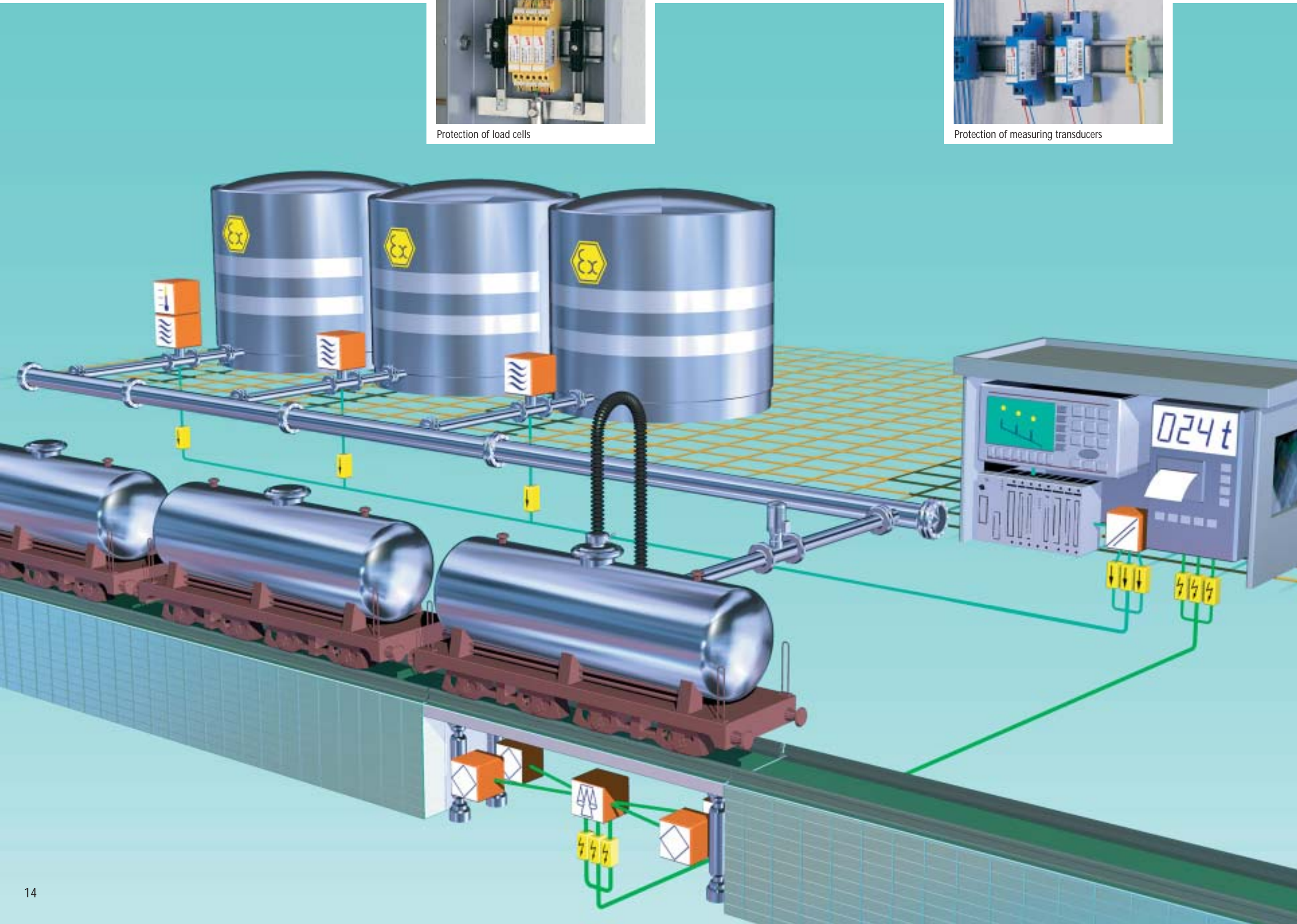
DEHN Surge Protective Devices for Analogue Measuring Equipment.



Protection of load cells



Protection of measuring transducers



Weighing Systems

Electromechanical weighing systems are often designed in 6-wire configurations. One pair of lines is used for the power supply, one for transmission of measuring values and one for compensation of the cable length.

Protection:

As weighing systems are located outdoors, they are exposed to direct lightning strokes. The load cells as well as the measuring sensors should be protected by lightning current proof SPDs ⚡-Type BLITZDUCTOR® (LPZ 0_A/2). In order to attenuate electromagnetic interferences, a low-impedant shield connection for multi-core lines is employed.

Please see also standard interface 12 on page 21.

Intrinsically safe circuits

Intrinsical safety as type of protection is based on power limitation in a measuring circuit. The measured values are often transmitted as injected currents. Additionally, remote supply for the measuring sensors can be performed via the signal lines.

Protection:

In the process engineering industry, very good equipotential bonding is provided between the individual installations (LPZ 1/2). Surge arresters ⚡ e.g. BLITZDUCTOR® MD EX, are therefore designed to provide protection of equipment not directly exposed to lightning. In addition, the self-inductance and -capacitance of the ATEX-certified SPD may be neglected for laying the measuring circuit.

Because of its design in accordance with FISCO, it can also be used in intrinsically safe bus circuits without problem.

Please see also standard interfaces 10 and 11 on page 20.

Selection Aid for Standard Interfaces with DEHN Surge Protective Devices.



Our advice:
The following standard interfaces show examples for arrester circuits to protect communication/signal interfaces. Please note that both information technology system and the power supply system must be integrated in the equipotential bonding system to provide efficient surge protection.



BLITZDUCTOR® CT
2-pole, universal lightning current/surge arrester in terminal block design.
① BLITZDUCTOR® CT BD HF 5V
Part No. 919 506 + 919 670
② BLITZDUCTOR® CT B 110V
Part No. 919 506 + 919 510
③ BLITZDUCTOR® CT MD HF 5V
Part No. 919 506 + 919 570



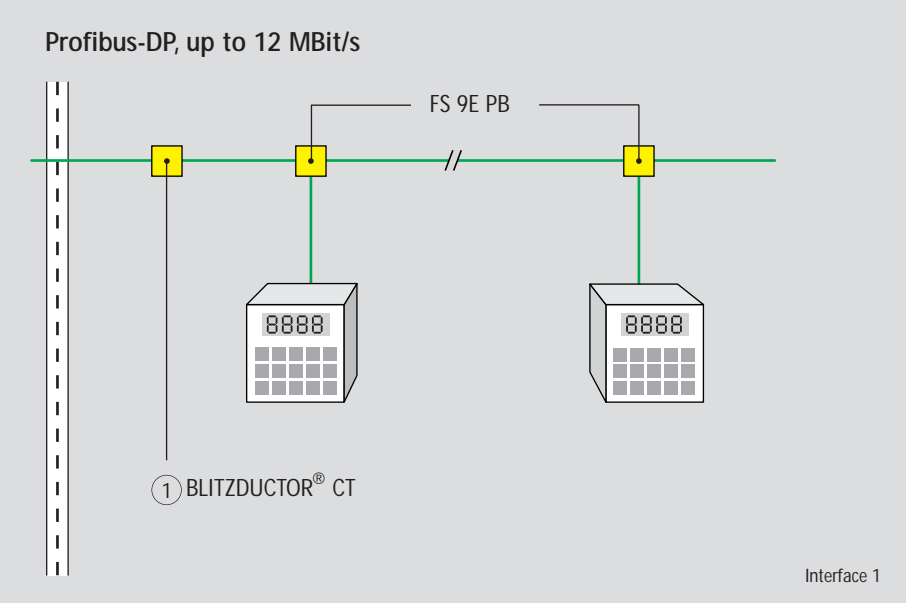
BLITZDUCTOR® VT RS485
Surge protective device for measuring and control systems and equipment with 4-wire data transmission.
Part No. 918 401



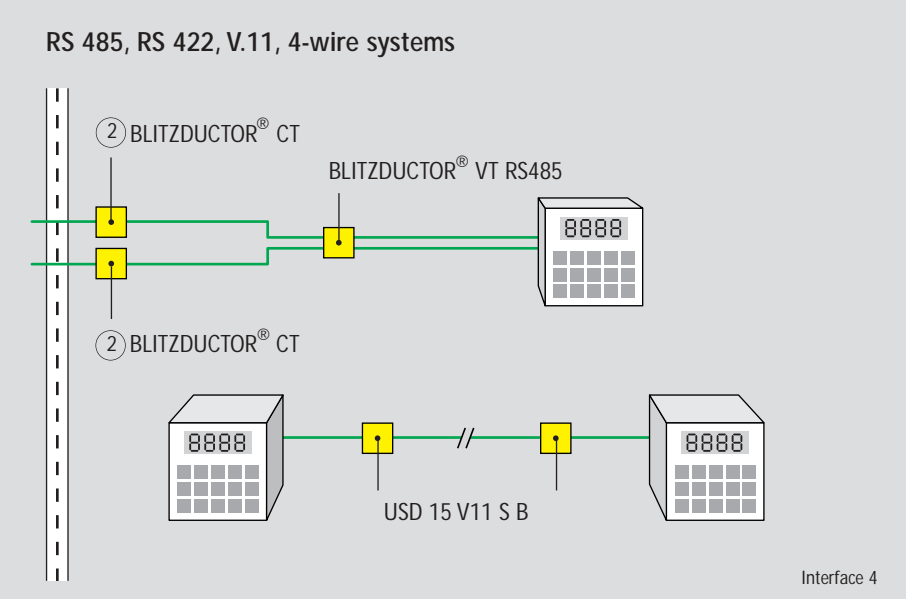
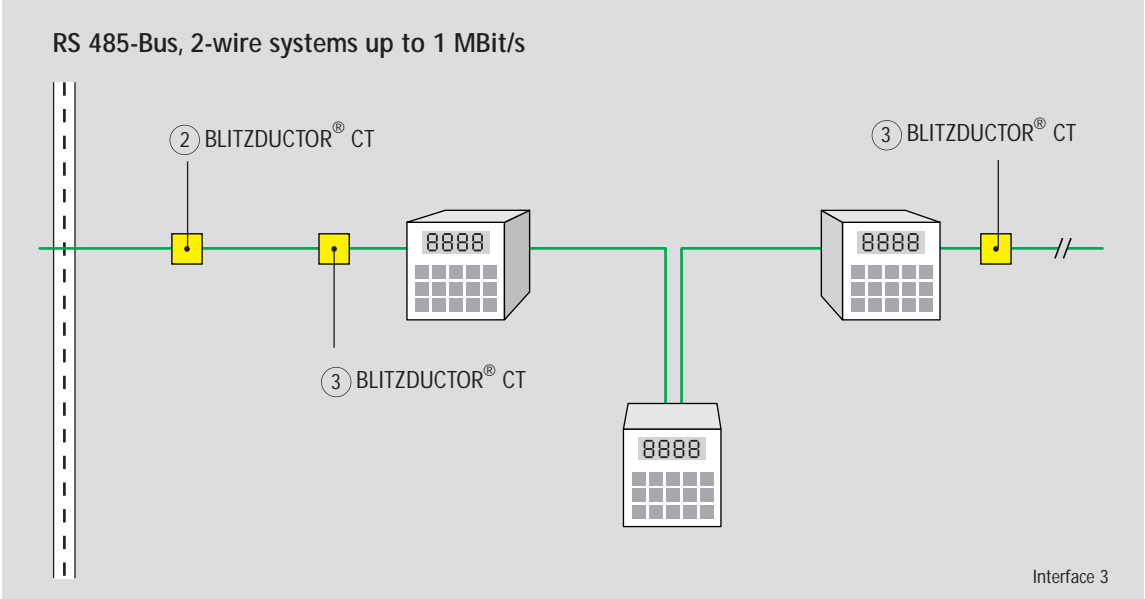
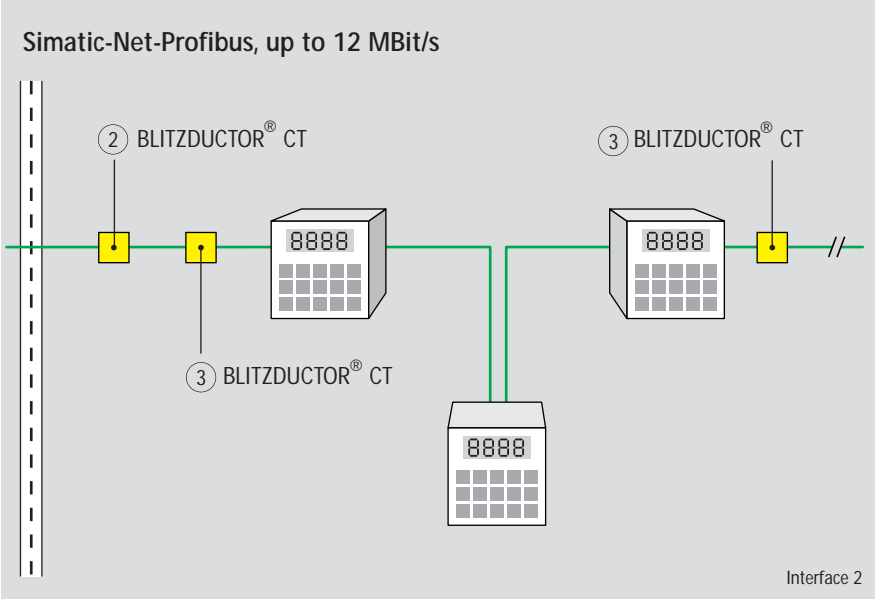
FS 9E PB
Plug-in surge protective adapter for fine protection at the interface of terminal equipment.
Part No. 924 017



USD 15 V11 S B
Plug-in surge protective adapter for protection at the interface of terminal equipment.
Part No. 924 051



The numbers refer to the exact description of the protective device and its corresponding part number. Please find them in the descriptions above.



Selection Aid for Standard Interfaces with DEHN Surge Protective Devices.



BLITZDUCTOR® CT

2-pole universal lightning current/surge arrester in terminal block design.

- ② BLITZDUCTOR® CT B 110V
Part No. 919 506 + 919 510
- ④ BLITZDUCTOR® CT BE C 24V
Part No. 919 506 + 919 662
- ⑤ BLITZDUCTOR® CT ME 30V
Part No. 919 506 + 919 524
- ⑥ BLITZDUCTOR® CT BE 30V
Part No. 919 506 + 919 624
- ⑦ BLITZDUCTOR® CT MD 48V
Part No. 919 506 + 919 545

BLITZDUCTOR® VT TTY

Surge protective device for measuring and control systems and equipment with 4-wire data transmission.

Part No. 918 400

DEHNconnect RK

2-pole surge protective terminal block

- ⑤ DCO RK ME 24V
Part No. 919 921
- ⑦ DCO RK MD 48V
Part No. 919 942

AS-i Surge Protection Module

Protection module for sections of systems and equipment in AS-i systems.

Part No. 925 010

BUSector

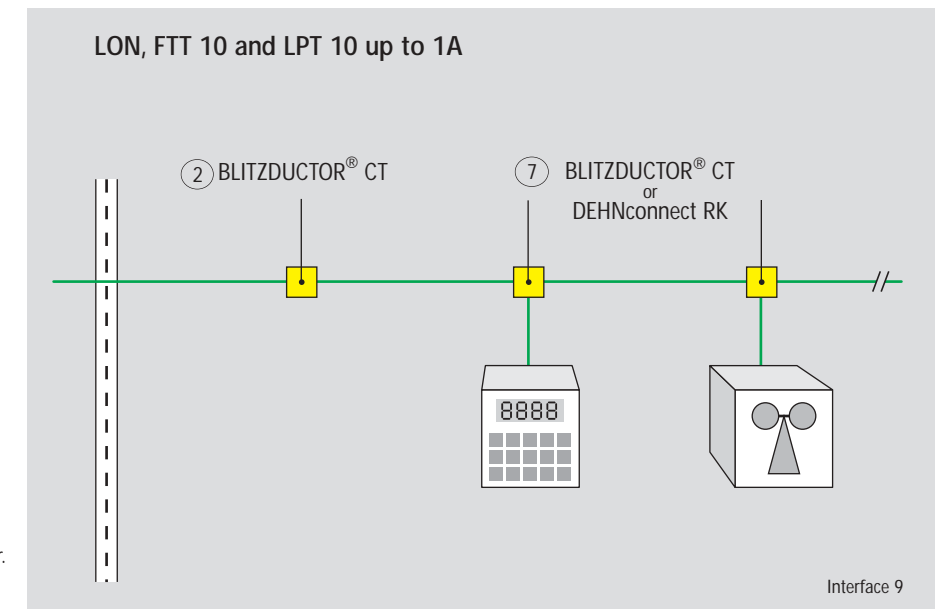
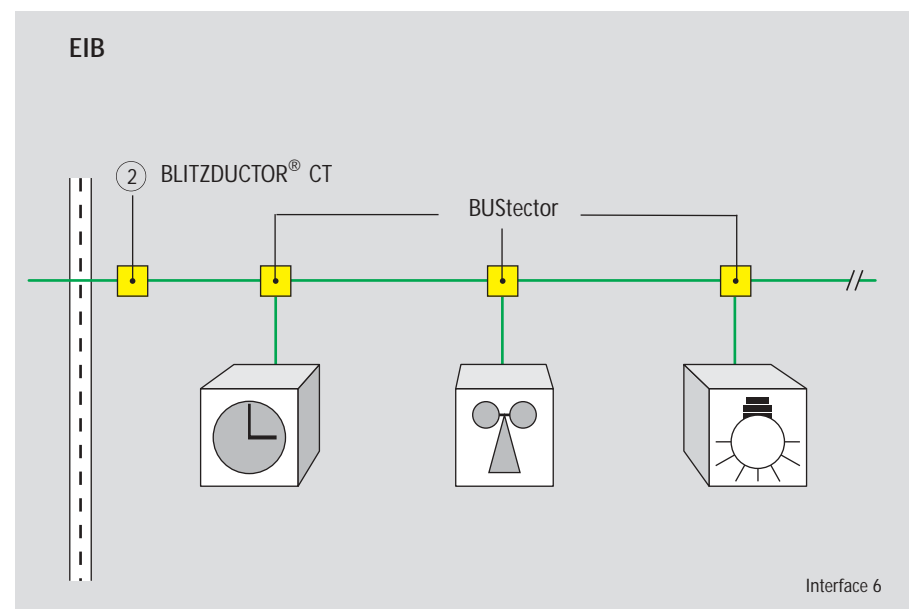
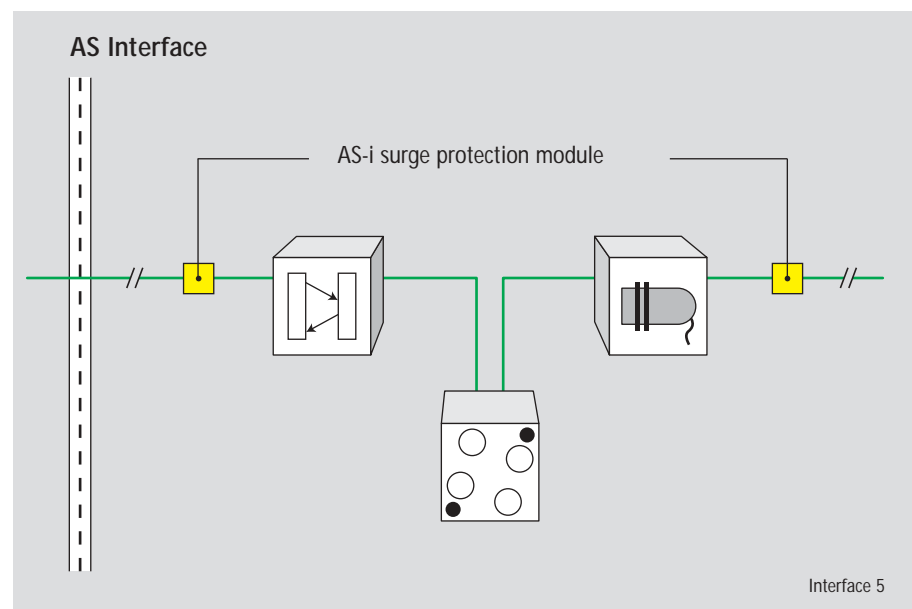
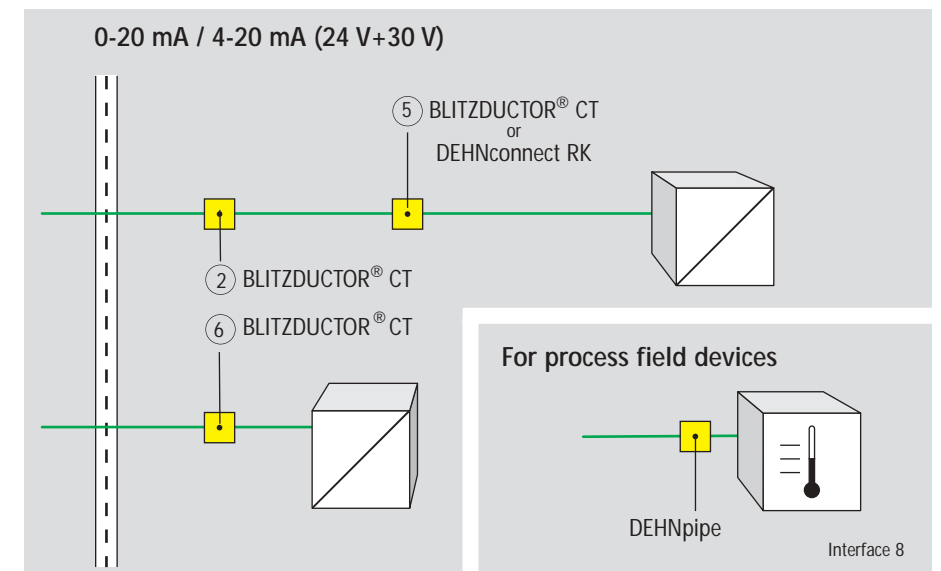
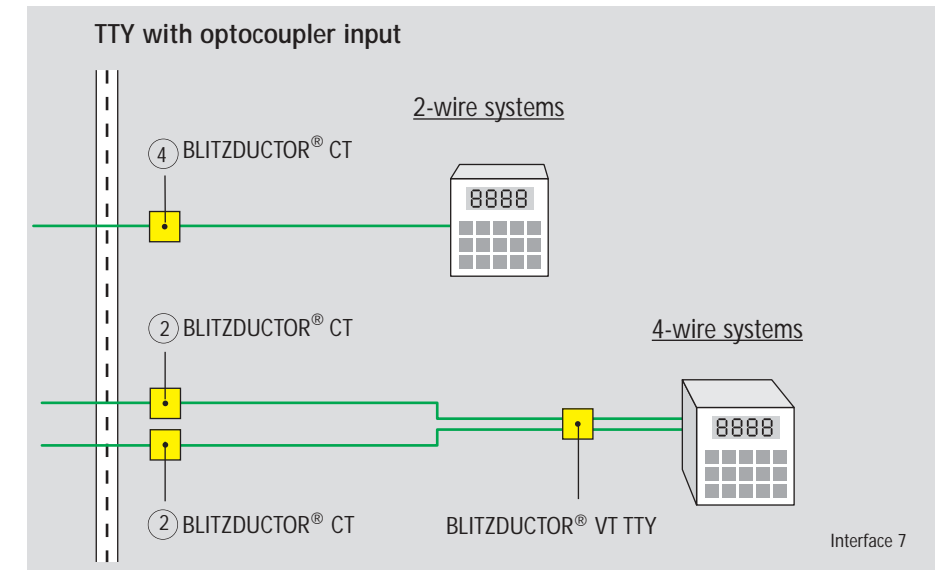
Surge protective bus terminal in accordance with EIBA requirements.

Part No. 925 001



DEHNpipe

Surge arrester for screwing into process field devices, M20 x 1.5
DPI MD 24 M 2S
Part No. 929 941



The numbers refer to the exact description of the protective device and its corresponding part number. Please find them in the descriptions beside.

Selection Aid for Standard Interfaces with DEHN Surge Protective Devices.



BLITZDUCTOR® CT

2-pole universal lightning current/surge arrester in terminal block design.
BLITZDUCTOR® CT BE 12V
Part No. 919 506 + 919 621

BLITZDUCTOR® CT MD EX 30V

2-pole surge arrester in terminal block design for intrinsically safe circuits and bus systems. Designed according to FISCO.
⑧ BLITZDUCTOR® CT MD EX 30
Part No. 919 507 + 919 581
⑨ BLITZDUCTOR® CT MD EX HFD 6
Part No. 919 507 + 919 583

DEHNconnect RK MD EX 24V

2-pole surge protective terminal block for intrinsically safe circuits. Designed according to FISCO.
Part No. 919 960



DEHNpipe

Surge arrester for screwing into process field devices, M20 x 1.5. For intrinsically safe circuits according to FISCO.
DPI MD EX 24 M 2
Part No. 929 960

The numbers refer to the exact description of the protective device and its corresponding part number. Please find them in the descriptions above.

Application-specific interfaces

DEHN provides a documentation of application-specific interfaces for the customers. This documentation is amplified and updated at regular intervals. It comprises information about surge protection measures for power supply and information technology systems as well as equipotential bonding measures. The latest overview can be downloaded from our website www.dehn.de

Seminar about Surge Protection Systems

"Lightning and Surge Protection for Measuring and Control Systems"

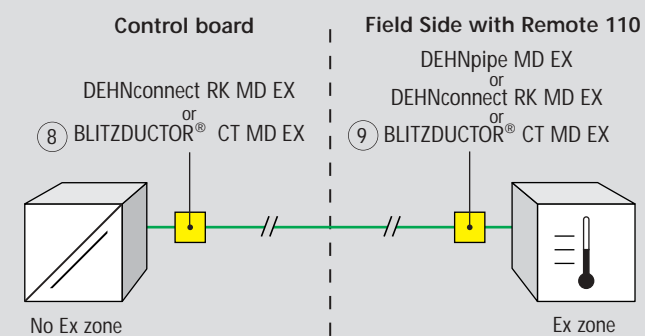


The seminar is to enhance your knowledge of lightning and surge protection. Protection concepts according to the current state of standardisation are discussed for electrical and electronic systems. The main topics are lightning equipotential bonding and surge protection. The parameters for the choice of protective devices are explained and possible concepts are worked out.

For more information about our seminars, topics, dates and locations please contact the responsible representative in your country. They shall be pleased to provide you with the requested information.

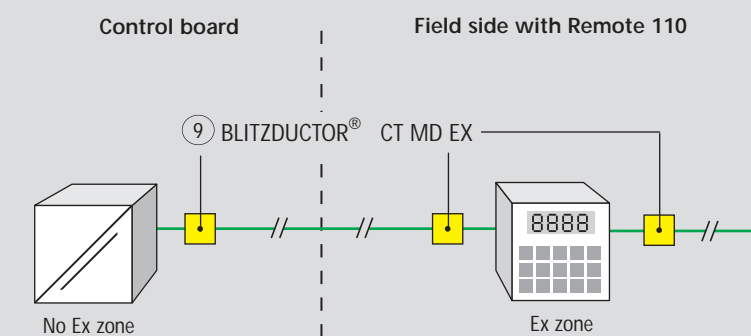


Intrinsically safe circuits with tightly intermeshed equipotential bonding



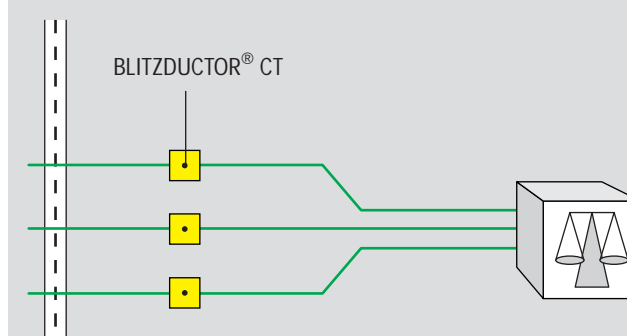
Interface 10

Intrinsically safe RS 485 bus system with tightly intermeshed equipotential bonding



Interface 11

Weighing system in 6-wire configuration



Interface 12

Surge Protection with DEHN Equipment. Safety for your Measuring and Control Systems.



DEHN Surge Protection is a complete system ...

....a system for performing complex lightning protection zones concepts as well as protection concepts for local protection requirements. Moreover, the SPDs of our Yellow/Line product family provide energy-coordinated protection with protective effects adapted to the requirements of your terminal equipment.



Suitable Protection Modules for Lightning Currents

B	Part No. 919 510
BE 12V	Part No. 919 621
BE 30V	Part No. 919 624
BE C 24V	Part No. 919 662
BD HF 5V	Part No. 919 670

Suitable Protection Modules for Surges

ME 30V	Part No. 919 524
MD 48V	Part No. 919 545
MD HF 5V	Part No. 919 570
MD EX 30V (blue)	Part No. 919 581
MD EX HFD 6V (blue)	Part No. 919 583

BLITZDUCTOR® CT

Lightning current/Surge arrester
2-pole universal surge protective device of the Yellow/Line family in terminal block design. Pluggable, coordinated protective devices:

Lightning current arrester, combined lightning current and surge arrester (w = 12 mm, h = 58 mm).

Universal Base Part

- For use as feed-through terminal for supporting the protection modules
- No signal interruption during installation of the module
- Integrated shield terminal with direct or indirect shield earthing (accessories)
- Safe earthing and quick installation with snap-on foot

Standard unit (yellow)

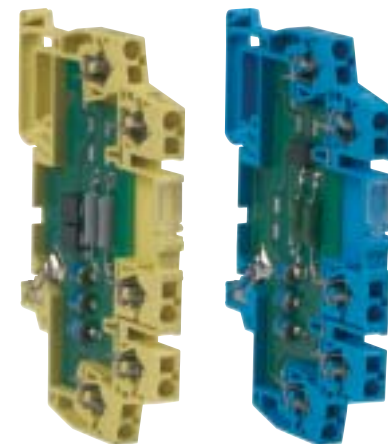
Part No. 919 506

For intrinsically safe circuits (blue)

Part No. 919 507

Adapted Protection Modules

- Cascaded use of SPDs without requiring additional cable lengths
- Protection module for intrinsically safe circuits, ATEX certification: EEx ia IIC T6



DEHNconnect RK

Surge protective terminal block
2-pole terminal with integrated two-stage surge protection.

- WAGO Cage Clamp
- Slim design (w = 6 mm)
- Safe earthing via snap-on foot

DCO RK ME 24	Part No. 919 921
DCO RK MD 48V	Part No. 919 942
DCO RK MD EX 24V	Part No. 919 960
Cover	
AD DCO RK GE (yellow)	Part No. 919 979
AD DCO RK BL (blue)	Part No. 919 978



DEHNpipe

Surge Arrester
Water-proof and corrosion-resistant protective device for outside areas to be screwed into process field devices with 2-conductor measuring (e.g. 4-20 mA). Also suitable for retrofitting as it is installed between the process field device and the cable gland (not included in delivery).

DPI MD 24 M 2S	Part No. 929 941
DPI MD EX 24 M 2	Part No. 929 960



FS

Plug-in surge protective adapter designed for installation directly upstream of the terminal equipment.

- Specific protective circuit for D-Sub interface, 9-, 15-, or 25-pole unit
 - For high transmission rates
- | | |
|------------------------|------------------|
| FS 9E PB | Part No. 924 017 |
| FS 15 E | |
| (for RS 485/422, V.11) | Part No. 924 016 |



USD

Plug-in surge protective adapter, available with D-Sub plug and socket connector or with data cable and plug.

- Specific protective circuit for D-Sub interface, 9-, 15, or 25-pole version
- For high transmission rates

Examples:

USD 15 V11 S B	Part No. 924 051
USD 25 TTY B S (for TTY)	Part No. 924 048



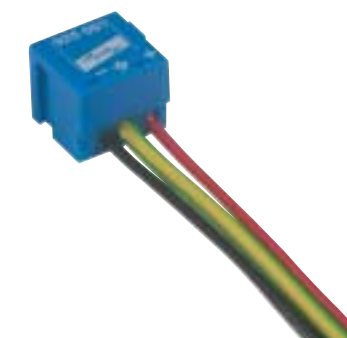
AS-i Surge Protection Module

Surge Arrester
Protection module according to AS-i standard for devices or single installation sections in AS-i systems.

Protection of AS-i transmission lines and power supply lines.

- 2 LEDs indicate the readiness for operation of the device.
- For mounting on FK-E- or PG-E-coupling modules
- No bus address required

Part No. 925 010



BUStector

Surge Arrester
Protective device for EIB in bus terminal design according to the requirements of EIBA

- Small design (approx. 11 mm x 11 mm x 11 mm)
- European Patent

Part No. 925 001



BLITZDUCTOR® VT

Surge Arrester
Compact surge protective device of the Yellow/Line family for installation into engineering systems and equipment with 4-wire data transmission (h = 58 mm).

BLITZDUCTOR® VT TTY

- Protection for current interfaces
 - Decoupling resistors at the output allow a direct use of optocouplers
- Part No. 918 400

BLITZDUCTOR® VT RS485

- Protection for RS 485/422- and V.11 interfaces
 - Shield earthing directly or indirectly via integrated gas discharge tube
- Part No. 918 401

...your safety is our concern.



DEHN + SÖHNE

DEHN + SÖHNE provides only high-quality devices – as safety is always a matter of confidence.

Because of our quality-related thinking, closeness to customers and a diversified service programme, DEHN + SÖHNE is your reliable partner for safety. This is confirmed by our leading cooperation with numerous national and international standardization committees. Due to innovative practical developments in all fields of Lightning and Surge Protection, we offer solutions for the EMC-orientated Lightning Protection Zones Concept.

DEHN + SÖHNE always brings in the latest results of scientific research in order to come up to the customers' requirements.

More Information

I would like to have more information about the following topics:

- Main Catalogue "Surge Protection"
- DS 614 E: "DEHN stops Surges"
- DS 649 E: "RedLine: ... Easy Choice"
- DS 647 E: "Safety for your data networks"

Please arrange for a visit of one of your Sales Engineers (by appointment)

Name

Company

Address

Country

Phone / Fax

eMail

Please fill in and send to us!

DEHN + SÖHNE is certified in accordance with ISO 9001 so that you can rely on the quality of our products.

DEHN + SÖHNE offers a wide range of services:

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- Sample specifications for tenders on disc
- Trainings, seminars and practical training for designers, engineers and master tradesmen
- A wide network of foreign agencies

**Lightning Protection
Surge Protection
Safety Equipment**

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