



According to the new IEC/EN standards  
**IEC 60364-4-44**  
**IEC 60364-5-53**  
surge protection has been  
mandatory since 2016.



# Protection against surge voltage

Guide for homeowners

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# The underestimated risk

## Damage from surge voltages

Those who consider damage from surge voltages to be caused only by direct lightning strikes with spectacular destruction forget that lightning strikes at distances of up to two kilometres can also cause devastating damage to electronic devices and systems. And even everyday switching operations in the power network, e.g. through major systems, can trigger dangerous surge voltages in the power network.

## Causes of damage



### Direct lightning strike

Direct lightning strikes hit buildings with maximum destructive energy. Around 80% of lightning strikes involve between 30,000 and 100,000 A and can generate surge voltages of several 100,000 V.



# 100,000 A

80% of lightning strikes lay in the area of between 30,000 and 100,000 A.



### Remote lightning strike

It is not only direct lightning strikes into a building that are dangerous, but also the more frequent strikes into the surrounding area of buildings. Here, brief voltage increases of millionths of seconds can occur.



# 450,000

More than 450,000 incidents of damage are reported to insurance companies each year.



### Switching operations

Switching operations such as switch-on and switch-off operations, the switching of inductive and capacitive loads and the interruption of short-circuit currents generate high surge voltages. Particularly when production plants, lighting systems or transformers are switched off, electrical equipment located in close proximity can be damaged.



# 31%

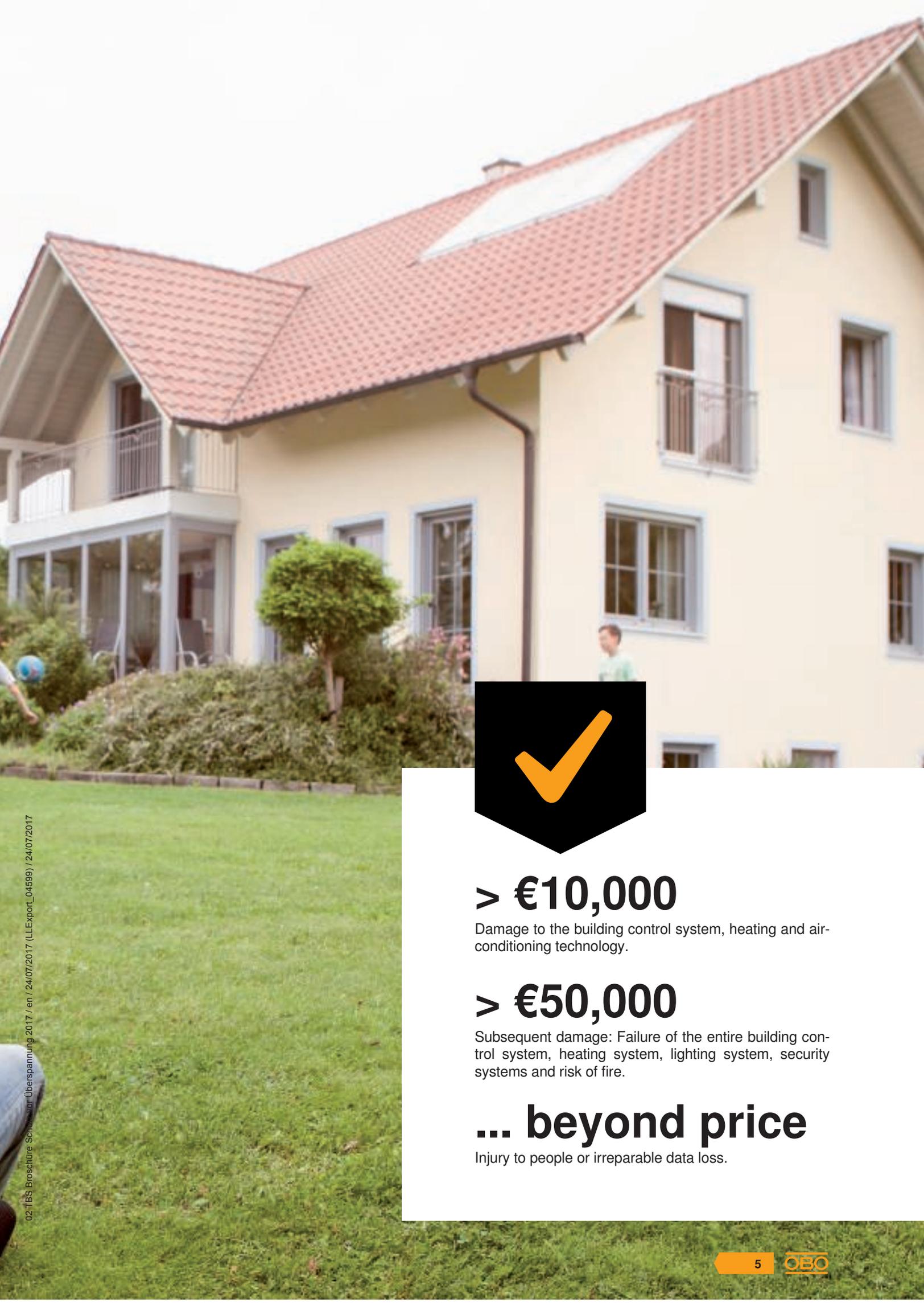
31% of all electronic damage is caused by direct or indirect lightning strikes.



# ***Worth protecting***



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**> €10,000**

Damage to the building control system, heating and air-conditioning technology.

**> €50,000**

Subsequent damage: Failure of the entire building control system, heating system, lighting system, security systems and risk of fire.

**... beyond price**

Injury to people or irreparable data loss.



### What is surge voltage?

If the nominal voltage is exceeded within an electrical system, then this is termed a surge voltage. This is caused by electrical voltages occurring within a system. Depending on the size of the surge voltage, components of an existing system may be destroyed. surge protection devices make it possible to keep surge voltages away from vulnerable components.

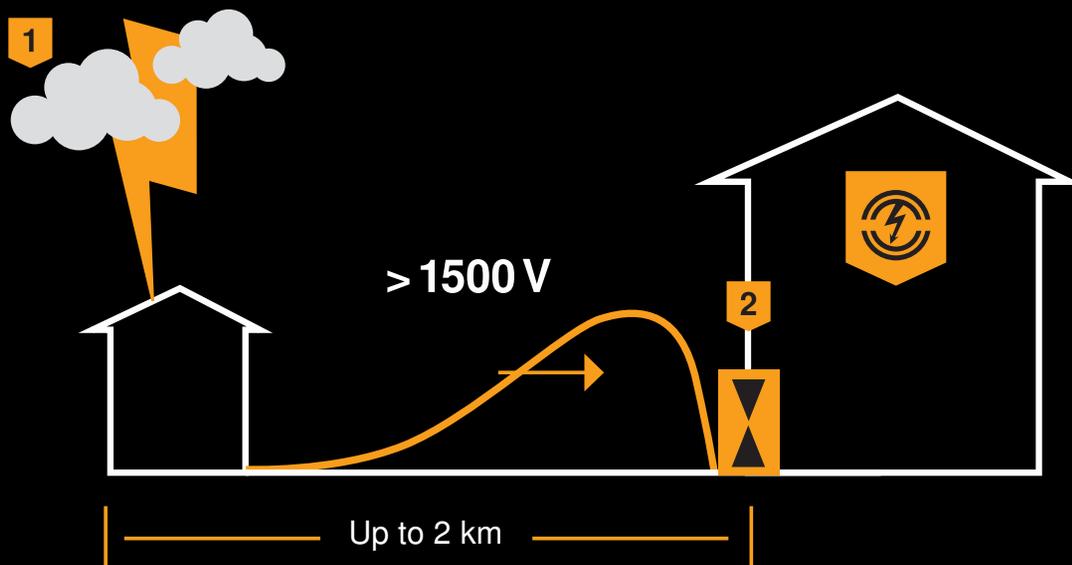


### Dangerous voltages over 1,500 V

Devices such as TV systems, PCs or heating and building control systems can survive brief surge voltages of up to 1,500 V.

Lightning impacts or switching operations can, however, quickly exceed this voltage value by a multiple of times. OBO surge protection devices limit the voltage to considerably below 1,500 V.

### What do I need surge protection for?



**1** A local lightning strike creates additional high magnetic fields, which in turn induce high voltage peaks in cable systems. Damage can be caused within a radius of up to 2 km around the lightning impact point.

**2** OBO surge protection devices secure electrical and electronic devices against excessively high electrical voltages and limit the voltage at the installation location to a harmless 1,500 V.



### Surge protection required

In modern electrical installations, the demand for ease of use and the exchange of information between electronic components is increasing. The increasing number of devices also increases the risk of surge voltage damage on all devices, operated via the power, telephone or data network.

OBO lightning and surge protection systems: Our comprehensive product range can offer you all-round protection.

### Effective protection is essential

For standard-conforming electrical installations the installation of surge protection devices is mandatory. The new DIN VDE 0100-443 specifies in which cases protective equipment must be installed. The supplementary installation standard DIN VDE 0100-534 specifies which surge protection device must be selected and how it has to be installed.





How can you protect your home?

- 1. Basic protection**
- 2. System protection**
- 3. Device protection**

**Damage caused by surges can be prevented.  
Your specialist electrical company will be happy to advise you!**



# 1

## Basic protection

- Surge protection devices at the building entry intercept surge voltages before the electronic installation.
- The surge voltage devices must be installed as close to the source of interference as possible as protection against switching surge voltages.
- In electrical distributors/supply systems, dangerous surge voltages are intercepted from outside by surge protection devices.

# 2

## System protection

- Any existing hazardous surge voltages must be intercepted on any other sensitive systems and in the sub-distributors.
- Sensitive systems include, amongst other things, heating systems, telecommunication, building control systems, alarm systems and photovoltaic systems.
- OBO surge protection devices limit the voltage to a harmless 1,500 V at the installation location.

# 3

## Device protection

- Supply cables from outside can couple in dangerous surge voltages.
- All cables being run in from outside should be protected with surge protection devices.
- Other sensitive devices, such as TVs, computers or kitchen appliances are protected through surge protection devices via the socket.

# Protect your home

Have you thought of everything? We have put together the overview on this page to give you an example of everything that has to be protected to prevent damage from surge voltages. Your electrician knows which devices are required to protect your property.

## Power supply

- 1 Supply
- 2 Photovoltaics

## Building / control technologies

- 3 KNX building controller
- 4 Gate control
- 5 Heating
- 6 Roller shutter controller

## TV reception

- 7 Satellite system
- 8 TV
- 9 Receiver / streaming player

## Telephone / communication technology

- 9 Telephone system
- 10 Telephones / routers / Wi-Fi
- 11 Intercom system

## Terminal devices

- 12 Personal computer system
- 13 Kitchen appliances, e.g. Thermomix
- 14 Household appliances (washing machine, dryer, refrigerator)



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**Building Connections**



**Correct surge protection advice:**