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### Surge Protection For Crucial Telecommunications Connections

As With Power Supply Lines, Telecommunication Lines Are The Critical To Everyday Life. Permanently Functioning Interfaces To The “Outside World” Are Especially Vital For The Highly Technical Processes In Today’s Industrial Plants And Offices. Given That Telecommunication Line Networks Frequently Extend Over Several Kilometres<sup>2</sup>, It Is Quite Likely That Surges Will Be Injected Into Widespread Networks. The Safest Solution To Protect A Structure From The Negative Consequences Of Lightning Effects Is To Install A Complete Lightning Protection System Consisting Of Both An External And Internal Lightning Protection System.

#### Risks

Copper cables with a low shielding effect are used as connecting cables to the local exchange and in a company’s internal cabling system. High potential differences can occur between the building installation and the incoming lines as the lines extend beyond several buildings.

Potential rise of the cores caused by galvanic and inductive coupling must be expected. If high-power and low-power lines are routed in parallel, switching overvoltages in the power system can also cause failure which interferes with the low-power lines.



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### Surge protection for the ADSL connection

In addition to a conventional telephone connection, an ADSL connection requires a network or ATM card in the PC (depending on the type of access), a special ADSL modem and a splitter to separate the telephone and data traffic. The telephone connection can be an analogue or ISDN connection.

The splitter divides the analogue voice signal or the digital ISDN signal from the ADSL data, taking into account all important system parameters such as impedances, attenuation and level. It thus fulfils the function of a dividing network. The splitter is connected to the telephone socket on the input side. On the output side, it provides the high-frequency signals of the ADSL frequency band to the ADSL modem and controls communication with the NTBA or the analogue terminal device in the low frequency range. The ADSL modem is connected to the PC via an Ethernet (10 MBit/s), ATM25 or USB interface and requires a 230 V AC supply voltage.

### Surge protection for the ISDN connection

ISDN (Integrated Service Digital Network) offers different services in a common public network. Both voice and data can be transmitted via digital transmission. The transfer interface for the NTBA, which is also supplied with 230 V AC on the power supply side, is a network termination unit.



### Surge protection for the primary multiplex connection

The primary multiplex connection (NTPM) features 30 B-channels with 64 kBit/s each, a D-channel and a synchronisation channel with 64 kBit/s and allows data transfer rates up to 2 MBit/s. The NTPM is supplied by the  $U_{2m}$  interface. The device interface is referred to as  $S_{2m}$ . Large-scale interphone systems or data connections with high data volumes are connected to this interface. The NTPM is also supplied with 230 V AC on the power supply side.

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