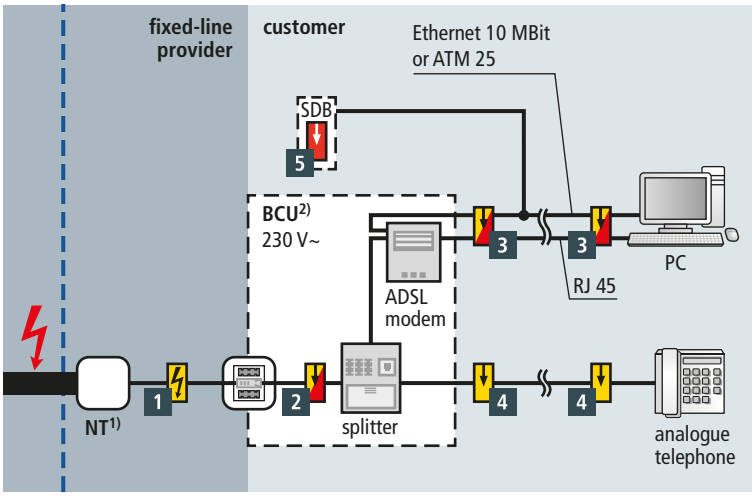
Surge protection for telecommunication connections

In addition to power supply lines, telecommunication lines are the most important lines. Permanently functioning interfaces to the "outside world" are vital for the highly technical processes in today's industrial plants and offices.
Telecommunication line networks frequently extend over some km^2. Therefore, it is quite likely that surges are injected into such 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 an external and internal lightning protection system.

Risks

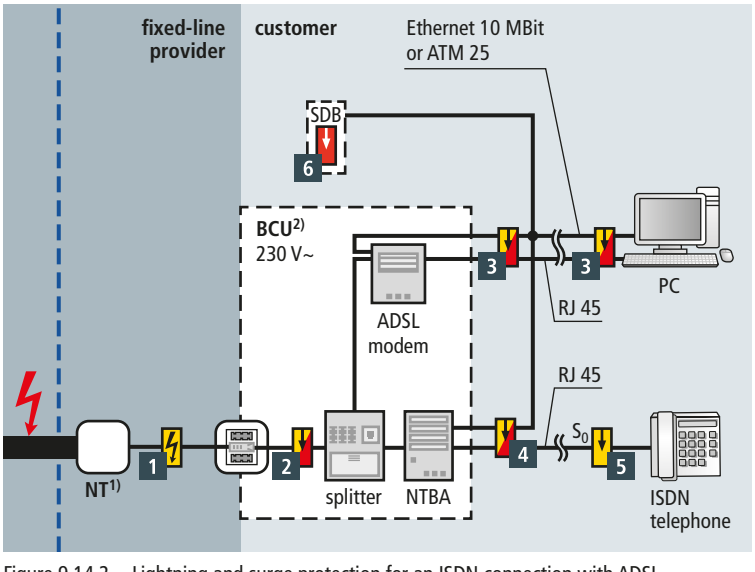
Copper cables with a low shielding effect are used as connecting cables to the local exchange and in a company's internal cabling system. High potential differences can occur between the building installation and the incoming lines since the incoming lines extend beyond several buildings. Potential rise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



	Type	Part No.
1	BXT ML2 BD 180 + BXT BAS	920 247 + 920 300
	DRL 10 B 180 FSD + EF 10 DRL + DRL PD 180	907 401 + 907 498 + 907 430
2	DPRO 230 NT	909 310
3	DPRO 230 LAN100	909 321
4	DLI TC 2 I	929 028
	DSM TC 2 SK	924 272
5	DG M TNS 275	952 400

1) Network Termination
2) Broadband Connection Unit

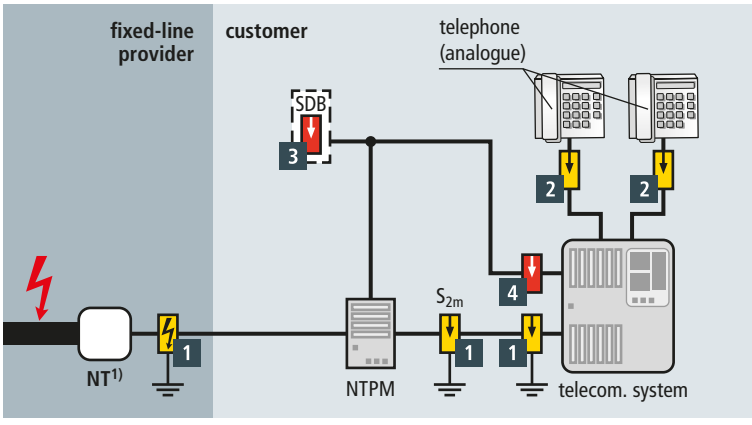
Figure 9.14.1 Lightning and surge protection for an analogue connection with ADSL



	Type	Part No.
1	BXT ML2 BD 180 + BXT BAS	920 247 + 920 300
	DRL 10 B 180 FSD + EF 10 DRL + DRL PD 180	907 401 + 907 498 + 907 430
2	DPRO 230 NT	909 310
3	DPRO 230 LAN100	909 321
4	DPRO 230 ISDN	909 320
5	DLI ISDN I	929 024
	DSM ISDN SK	924 270
6	DG M TNS 275	952 400

1) Network Termination
2) Broadband Connection Unit

Figure 9.14.2 Lightning and surge protection for an ISDN connection with ADSL



	Type	Part No.
1	BXT ML4 BD HF 24 + BXT BAS	920 375 + 920 300
	DRL 10 B 180 FSD + EF 10 DRL + DRL HD 24	907 401 + 907 498 + 907 470
2	DLI TC 2 I	929 028
	DSM TC 2 SK	924 272
3	DG M TNS 275	952 400
4	SFL PRO 6X	912 250

[1)] Network Termination

Figure 9.14.3 Surge protection for telecommunication systems with "ISDN primary multiplex connection"

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 a.c. supply voltage (**Figures 9.14.1 and 9.14.2**).

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 a.c. on the power supply side, is a network termination unit.
Figure 9.14.2 shows surge protective devices for an ISDN connection.

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. **Figure 9.14.3** shows surge protective devices for such a connection. The NTPM is also supplied with 230 V a.c. on the power supply side.