Surge protection for ISDN and DSL installations

ISDN and DSL installations allow fast transfer of large amounts of data. The drawback is that surges can also rapidly reach the terminal device and damage computer equipment. The danger can be overcome by balanced use of basic and precision protection devices. Basic surge protectors where the data lines enter the building divert all harmful partial lightning currents. Precision surge protectors filter out capacitively and inductively coupled-in voltages directly at the terminal device. Surge protector RJ45-ISDN/4-C-G is especially well suited for use in ISDN installations, having gained certification of trouble-free operation in BAPT Test Report No. 1284/55551-3/96.

Example 1: In buildings without external lightning protection installation, a surge caused by a distant lightning strike, for example, is coupled-in via the ISDN or DSL line. Surge voltages may also be coupled inductively and capacitively on to internal wiring. However, since the partial lightning energy is likely to be low, it is sufficient to provide a surge protector for LPZ 1 → 3, installed at the terminal device.

Example 2: A building with an external lightning protection installation is also threatened by direct lightning strikes to the lightning protection installation. Partial lightning energies are reliably diverted by using a com-

bination device of type SC-Tele/4-C-G before the NT-S0 interface or a basic surge protector TKS-B (basic and precision protection LPZ 0 → 2). A precision surge protector installed directly at the terminal device, e.g. RJ45-ISDN/4-F or ASP-Tele/4 for ISDN installations and RJ45S-ATM/8F for DSL modems, additionally filters out surges that may be coupled-in inductively or capacitively. Check with the network operator concerned whether it is permissible to install a surge protector before the NT-S0 interface.

Example 3: Another way of protecting sensitive terminal devices from partial lightning currents is to use a combination protection device RJ45-ISDN/4-C-G (only for ISDN installations) (basic and precision protection device LPZ 0 → 3) at the terminal device. However, with this variant it is important to realise that partial lightning energy travels as far as just before the terminal device, and may therefore be coupled on to neighbouring wiring.
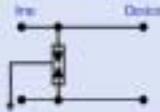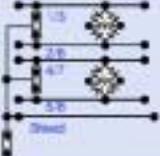
Example 4: This example shows combination surge protector RJ45-ISDN/4-C-G (only for ISDN installations), installed directly behind the NT-S0 interface. The precision surge protector RJ45-ISDN/4-F connected in series after it additionally filters out inductive and/or capacitive surges.
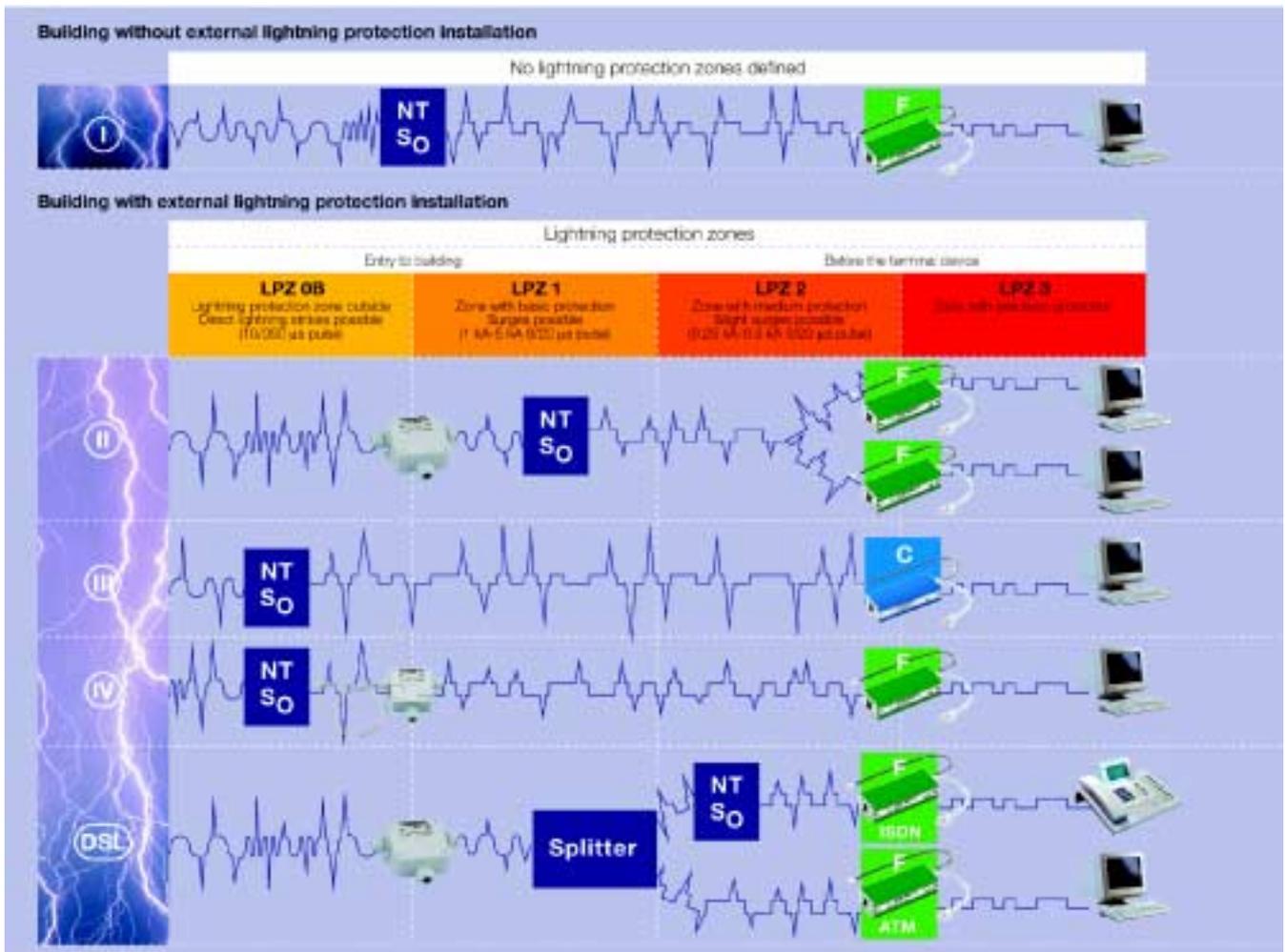
Technical data

Surge protectors for ISDN and DSL telecommunications		TKS-B	SC-Tele/ 4-C-G	RJ45-ISDN/ 4-C-G	RJ45S-ISDN/ 4-C	RJ45S-ISDN/ 4-F	RJ45S-ATM/ 8-F
LPZ		0 → 2	0 → 3	0 → 3	0 → 3	1 → 3	1 → 3
Connector/protected cores		Terminals/ 2 cores	Terminals/ 4 cores	RJ45/ UTP 4 cores	RJ45/ STP 4 cores	RJ45/ STP 4 cores	RJ45/ STP 8 cores
Max. discharge current/core symmetrical asymmetrical	Basic protection 10/350	6 kA 6 kA	5 kA 5 kA	2 kA 2 kA	1.5 kA 1.5 kA	-/-	-/-
	Medium protection 8/20	20 kA/20 kA	15 kA/15 kA	10 kA/10 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	5 kA/ 0.25 kA
	Precision protection 8/20	20 kA/20 kA	15 kA/15 kA	10 kA/10 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	5 kA/ 0.25 kA
Nominal voltage	U_N	110 V	110 V	40 V/5 V	40 V/5 V	40 V/5 V	5 V
Residual voltage	U_{res}	180 V	180 V	80 V/7 V	80 V/7 V	80 V/7 V	6.2 V
Voltage protection level at I_N symmetrical/asymmetrical	U_p	<500/<500	<500/<300	<500/<50	<500/<50	<500/<50	<800/<50
Insertion loss at 144 kHz	dB	0.1	0.1	0.1	0.1	0.1	0.1
Cut-off frequency 3 dB	Hz	150M	>6M	>6M	>6M	>6M	>155M
Series resistance	Ω	-	8.2	8.2	2.2	2.2	-
Order no.		**5097 97 5**	**5081 68 8**	**5081 54 8**	**5081 83 1**	**5081 85 8**	**5081 79 3**

Protection devices for ISDN telecommunications

Basic protection
LPZ 0 > LPZ 2
TKS-B

Basic protection device. Installed directly at the point where the data line is fed in (LPZ 0 > 2).
Special features
• Can be mounted on 35 mm top-hat rail
• Screwless terminals

Combined protection
LPZ 0 > LPZ 3
SC-Tele/4-C-G
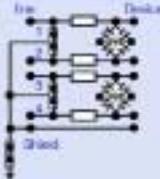
Combined protection device. Installed directly at the point where the incoming line is fed in (LPZ 0 > 3) before the NT-S0 or splitter interface.
Special features
• Housing of insulating material, IP54
• Screwless terminals
• NT also protected

Combined protection
LPZ 0 > LPZ 3
RJ45-ISDN/4-C-G
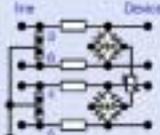
Combined protection device. Installed directly at the point where the incoming line is fed in (LPZ 0 > 3) after the NT-S0 interface or at the terminal device.
Special features
• Housing of insulating material, IP 54
• RJ45 modular connectors
• BAPT approved

Combined protection
LPZ 0 > LPZ 3
RJ45S-ISDN/4-C
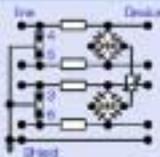
Combined protection device. Installed at the terminal device (LPZ 0 > 3).
Special features
• RJ45 modular connectors
• Simple to install
• Optional: fixing kit for wall or 35 mm top-hat rail (DLS-BS)

Precision protection
LPZ 2 > LPZ 3
RJ45S-ISDN/4-F
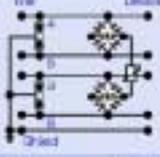
Medium and precision protection device. Installed directly at the terminal device (LPZ 1 > 3).
Special features
• RJ45 modular connectors • Simple to install
• Optional: fixing kit for wall or 35 mm top-hat rail (DLS-BS)

Medium/precision protection
LPZ 1 > LPZ 3
RJ45S-ATM/8-F

Medium and precision protection device. Installed at the terminal device (LPZ 1 > 3).
Special features
• RJ45 modular connectors
• Simple to install
• Optional: fixing kit for wall or 35 mm top-hat rail (DLS-BS)

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