

Surge protection for analog telecommunication lines

Connection to the Internet via 56k modems means that analog telecommunication installations are also more prone to damage due to partial lightning currents. Several levels of measures are needed to protect these installations: in addition to precision protection at the terminal equipment itself, which protects communications equipment from residual energy and from voltages coupled-in by inductance and capacitance, protection devices capable of diverting partial lightning currents should also be installed where the wiring enters the building.

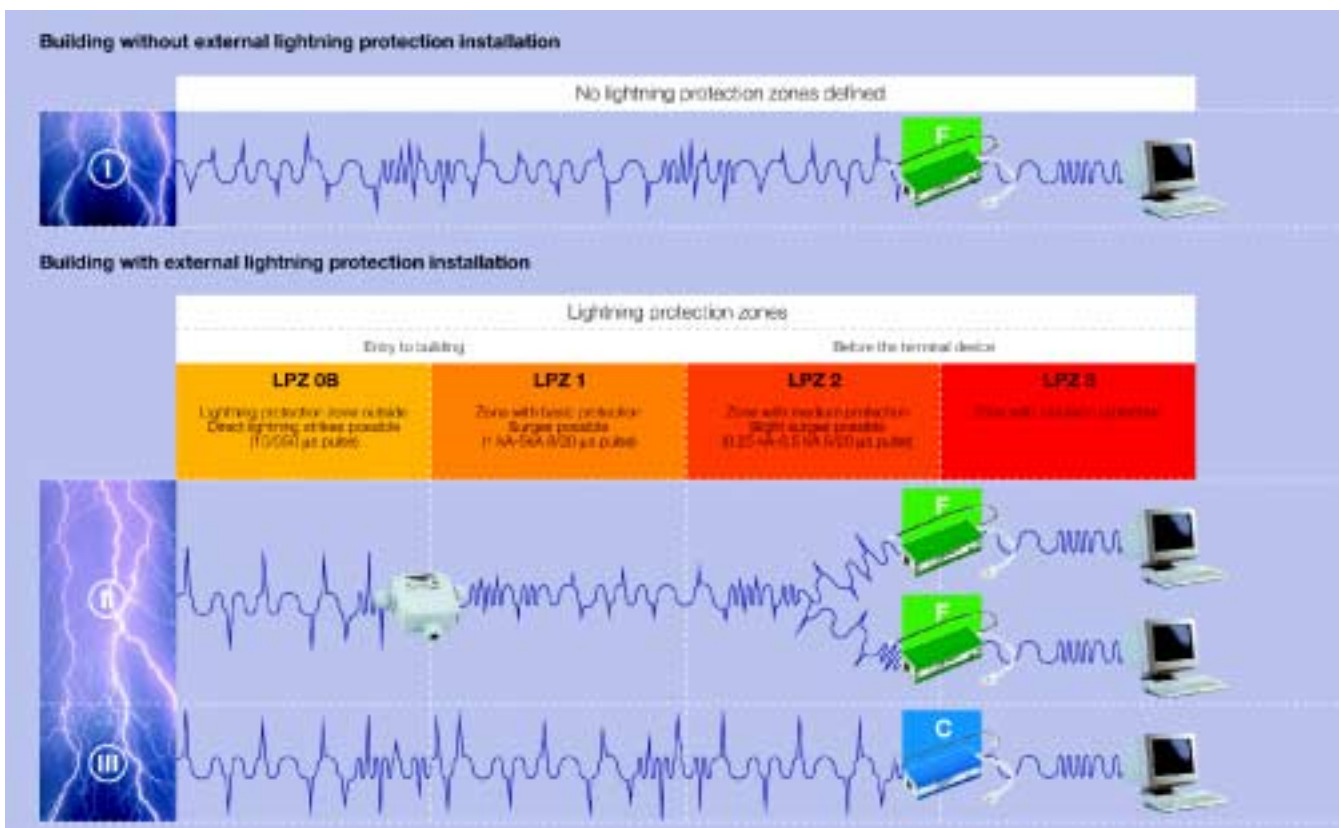
Devices that are particularly suitable for the protection of analog telecommunications equipment are surge protectors RJ11-Tele/4... and RJ45-Tele/4.... The trouble-free operation of these devices has been certified by BAPT Test Report No. 118664640-1-2/97.

Example 1: Where a building has no external lightning protection installation, a surge caused by a distant lightning strike, for example, would be coupled-in via the telecommunications installation as well. Surge voltages may also be coupled inductively and capacitively on to the internal wiring. However, since the partial lightning energy is likely to be low, it is sufficient to provide a surge protector for lightning protection zone LPZ 1 → 3, which is installed at the terminal device. Surge protector RJ11-Tele/4-F would be suitable for

the case of Example 1. This device is suitable for the protection of analog fax machines, modems and telephones (four wires protected).

Example 2: A building with an external lightning protection installation (LPZ 0) is also threatened by direct lightning strikes to the lightning protection installation. Partial lightning energies are reliably diverted by using a combination device of type SC-Tele/4-C-G (basic and precision protection LPZ 0 → 3) or a basic protection device TKS-B (basic and precision protection LPZ 0 → 2). In addition, a precision protection device such as RJ11-Tele/4-F or ASP-Tele/4, filters out surge voltages that may be coupled on to the telecommunication line by induction or capacitance.


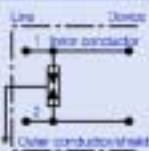

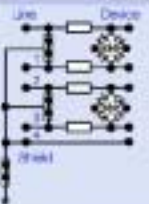

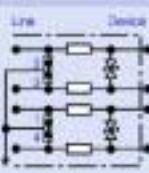

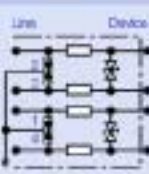

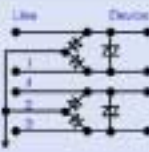
Example 3: Another way of protecting sensitive terminal devices from partial lightning currents is to use a combination protection device (basic and precision protection device LPZ 0 → 3) at the terminal device. However, with this variant it is important to realise that partial lightning energies travel as far as just before the terminal device, and may therefore be coupled on to neighbouring wiring. Suitable devices for combination protection are SC-Tele/4-C-G (screwless terminals) and RJ11-Tele/4-C (modular plug).



Technical data

Surge protectors for analog telecommunications		TKS-B	SC-Tele/4-C-G	RJ11-Tele/4-C	RJ11-Tele/4-F	RJ11-Tele/6-F	RJ45-Tele/4-C	RJ45-Tele/4-F	FRD 110	ASP-Tele/4
LPZ		0 → 2	0 → 3	0 → 3	1 → 3	1 → 3	0 → 3	1 → 3	1 → 3	2 → 3
Connector/protected cores		Terminals/ 2 cores	Terminals/ 4 cores	RJ11/ UTP 4 cores	RJ11/12/ UTP 4 cores	RJ11/12/ UTP 6 cores	RJ45/ UTP 4 cores	RJ45/ UTP 4 cores	Terminals/ 2 cores	Terminals/ 4 cores
Max. discharge current/core symmetrical asymmetrical	Basic protection 10/350	6 kA/ 6 kA	5 kA/ 5 kA	1.5 kA/ 1.5 kA	-/-	-/-	1,5 kA/ 1,5 kA	-/-	-/-	-/-
	Medium protection 8/20	20 kA/ 20 kA	15 kA/ 15 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	7.5 kA/ 0.5 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	10 kA/ 10 kA	-/-
	Precision protection 8/20	20 kA/ 20 kA	15 kA/ 15 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	7.5 kA/ 0.5 kA	7.5 kA/ 7.5 kA	7.5 kA/ 0.5 kA	10 kA/ 10 kA	250 kA/ 250 kA
Nominal voltage	U_N	110 V								110 V
Residual voltage	U_{res}	180 V								180 V
Voltage protection level at I_N symmetrical/asymmetrical	U_p	<500/ <500	<500/ <300	<500/ <300	<500/ <300	<500/ <300	<500/ <300	<500/ <300	<500/ <300	<300/ <300
Insertion loss at 36 kHz	dB	0.1	0.1	0.5	0.5	0.5	0,5	0.5	-	0.1
Cut-off frequency 3 dB	Hz	150M	>6M	100k	100k	100k	100k	100k	20k	>6M
Series resistance	Ω	-	8.2	8.2	2.2	2.2	8,2	2.2	15	-
Order no.		5097 97 5	5081 68 8	5081 92 0	5081 93 9	5081 94 7	5081 96 3	5081 97 1	5098 55 6	5083 10 9

Protection devices for analog telecommunications

<p>Basic protection LPZ 0 > LPZ 2</p>  <p>TKS-B</p>		<p>Basic protection device. Installed directly at the point where the data line is fed in (LPZ 0 > 2).</p> <p>Special features</p> <ul style="list-style-type: none"> • Can be mounted on 35 mm top-hat rail • Screwless terminals
<p>Combined protection LPZ 0 > LPZ 3</p>  <p>SC-Tele/4-C-G</p>		<p>Basic and precision protection device. Installed directly at the point where the incoming line is fed in or at the terminal device (LPZ 0 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> • Housing of insulating material, IP64 • Screwless terminals
<p>Combined protection LPZ 0 > LPZ 3</p>  <p>RJ11/45-Tele/4-C</p>		<p>Basic and precision protection device. Installed at the terminal device (LPZ 0 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> • RJ11/RJ45 modular connectors • Simple to install • Optional: fixing kit for wall or 35 mm top-hat rail (DLS-BE)
<p>Medium/precision protection LPZ 1 > LPZ 3</p>  <p>RJ11/45-Tele/4-F</p>		<p>Basic and precision protection device. Installed at the terminal device (LPZ 0 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> • RJ11/RJ45 modular connectors • Simple to install • Optional: fixing kit for wall or 35 mm top-hat rail (DLS-BE)
<p>Precision protection LPZ 2 > LPZ 3</p>  <p>ASP-Tele/4</p>		<p>Precision protection device. Installed directly at the terminal device (LPZ 2 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> • Screwless terminals • Simple to install