

Surge protection for Ethernet 10Base2 (Cheapernet) and Ethernet 10Base5 (yellow cable)

A system widely used for in-house networks is coaxial Ethernet. There are two variants of this bus system: Ethernet 10Base2 uses BNC connectors, Ethernet 10Base5 uses N connectors. For precision protection, all computer outputs (e.g. server, network cards, etc.) should be fitted with surge protectors. This provides the computer installation with perfect surge protection. Networks that extend throughout an entire building can only be protected from partial lightning currents by protective devices installed where wiring enters the building.

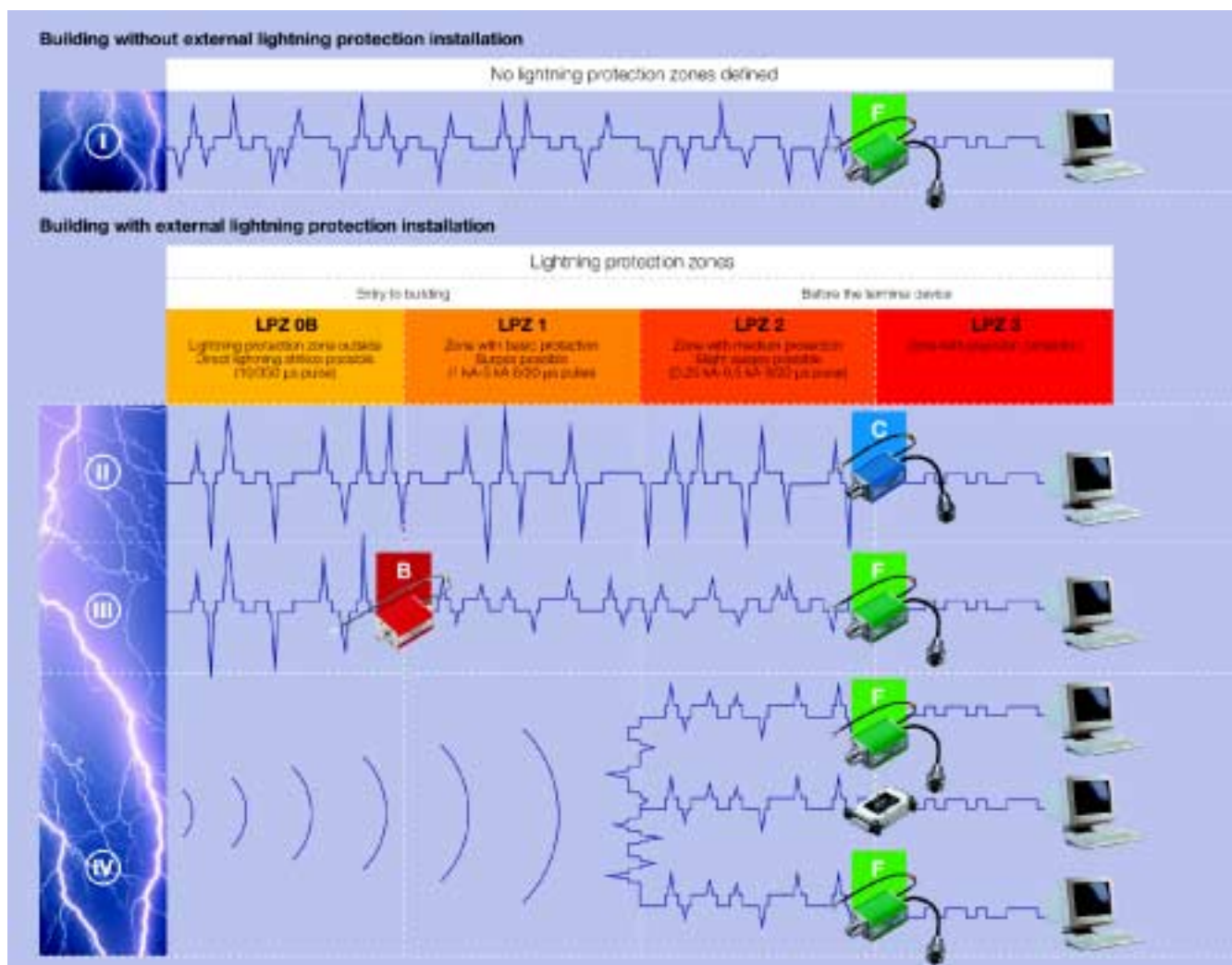
Example 1: Where a building has no external lightning protection installation, a surge caused by a distant lightning strike, for example, may be coupled in via the Ethernet cabling installation. Surge voltages may also be coupled inductively and capacitively on to internal wiring. However, since the partial lightning energy is likely to be relatively low, it is sufficient to provide a medium or precision protection device for lightning protection zone LPZ 1 → 3 (Ethernet 10Base2 system: medium and precision protection device KoaxB-E2/MF-F).

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 KoaxB-E2/MF/C (LPZ 0 → 3, for Cheapernet) or KoaxN-E5/MF-C (for yellow cable) connected 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.

Example 3: A better solution is separate two-stage surge protection. Basic surge protectors KoaxB-E2/FF-B and KoaxN-E5/FF-B (LPZ 0 → 2) divert the partial lightning currents directly at the infeed point. Precision surge protectors KoaxB-E2/MF and KoaxN-E5/MF-F (LPZ 1 → 3) filter out residual surges.

Example 4: Ethernet systems are usually used within building systems. In these cases, the necessary surge protection is limited to the elimination of inductively and/or capacitively coupled surges due to a lightning strike on the external lightning protection system or a nearby strike, on a tree for instance. Medium and precision protection devices KoaxB-E2/MF-F and KoaxN-E5/MF-F are suitable for these applications.



Technical data

Surge protectors for Cheapernet and yellow cable		KoaxB-E2/FF-B	KoaxB-E2/MF-C	KoaxB-E2/MF-F	KoaxN-E5/FF-B	KoaxN-E5/MF-C	KoaxN-E5/MF-F
LPZ		0 → 2	0 → 3	1 → 3	0 → 2	0 → 3	1 → 3
Connector/protected cores		BNC/ 2 cores	BNC/ 2 cores	BNC/ 2 cores	N/ 2 cores	N/ 2 cores	N/ 2 cores
Max. discharge current/core symmetrical asymmetrical	Basic protection 10/350	2.5 kA/ 2.5 kA	2.5 kA/ 2.5 kA	-/-	2.5 kA/ 2.5 kA	2.5 kA/ 2.5 kA	-/-
	Medium protection 8/20	15 kA/ 15 kA	15 kA/ 15 kA	10 kA/ 0.5 kA	15 kA/ 15 kA	15 kA/ 15 kA	10 kA/ 0.5 kA
	Precision protection 8/20	15 kA/ 15 kA	15 kA/ 15 kA	10 kA/ 0.5 kA	15 kA/ 15 kA	15 kA/ 15 kA	10 kA/ 0.5 kA
Nominal voltage	U_N	110 V	5 V	5 V	110 V	5 V	5 V
Residual voltage	U_{res}	180 V	6.5 V	6.5 V	180 V	6.5 V	6.5 V
Voltage protection level at I_N symmetrical/asymmetrical	U_p	<500/ <500	<500/ <50	<500/ <50	<500/ <500	<500/ <50	<500/ <50
Insertion loss at 10 MHz	dB	0.1	0.2	0.2	0.1	0.2	0.2
Cut-off frequency 3 dB	Hz	950M	113M	200M	950M	113M	200M
Series resistance	Ω	-	4.7	-	-	4.7	-
Order no.		5082 40 4	5082 41 2	5082 42 0	5082 45 5	5082 46 3	5082 47 1

Protection devices for Cheapernet and Yellow Cable

<p>Basic protection LPZ 0 > LPZ 2</p> <p>For Ethernet 10Base2 (Cheapernet)</p> <p>For Ethernet 10Base5 (Yellownet)</p>	<p>KoaxB-E2/FF-B</p> <p>KoaxN-E5/FF-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"> BNC connector for Cheapernet N connector for yellow cable Simple to install Optional kit for mounting on wall or 35 mm top-hat rail (DLS-B5)
<p>Combined protection LPZ 0 > LPZ 3</p> <p>For Ethernet 10Base2 (Cheapernet)</p> <p>For Ethernet 10Base5 (Yellownet)</p>	<p>KoaxB-E2/MF-C</p> <p>KoaxN-E5/MF-C</p>		<p>Combined protection device. Installed directly at the terminal device (LPZ 0 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> BNC connector for Cheapernet N connector for yellow cable Simple to install Optional kit for mounting on wall or 35 mm top-hat rail (DLS-B5)
<p>Medium/precision protection LPZ 1 > LPZ 3</p> <p>For Ethernet 10Base2 (Cheapernet)</p> <p>For Ethernet 10Base5 (Yellownet)</p>	<p>KoaxB-E2/MF-F</p> <p>KoaxN-E5/MF-F</p>		<p>Medium and precision protection device. Installed directly at the terminal device (LPZ 1 > 3).</p> <p>Special features</p> <ul style="list-style-type: none"> BNC connector for Cheapernet N connector for yellow cable Simple to install Optional kit for mounting on wall or 35 mm top-hat rail (DLS-B5)