SLOVENSKI STANDARD
SIST EN 50468:2009

01-oktober-2009

Zahteve za odpornost opreme s telekomunikacijskim vhodom proti prenapetosti in nadtokovom zaradi delovanja strele

Resistibility requirements to overvoltages and overcurrents due to lightning for equipment having telecommunication port

Anforderungen zur Zerstörfestigkeit von Einrichtungen mit Telekommunikationsanschluss gegen Überspannungen und -ströme infolge Blitzschlags

Exigences de tenue aux surtensions et aux surintensités dues à la foudre pour les matériels de communication avec port

Ta slovenski standard je istoveten z: **EN 50468:2009**

ICS:

29.120.50	Varovalke in druga medtokovna zaġļ ita	Fuses and other overcurrent protection devices
91.120.40	Zaġļ ita pred strelo	Lightning protection

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EUROPEAN STANDARD

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EN 50468

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ICS 29.120.50; 91.120.40

English version

Resistibility requirements to overvoltages and overcurrents due to lightning for equipment having telecommunication ports

Exigences de tenue
aux surtensions et aux surintensités
dues à la foudre pour les matériels
avec port de communication

Anforderungen zur Zerstörfestigkeit
von Einrichtungen
mit Telekommunikationsanschluss
gegen Überspannungen
und -ströme infolge Blitzschlags

This European Standard was approved by CENELEC on 2009-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 81X, Lightning protection.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50468 on 2009-02-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2010-02-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-02-01

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1 Scope

This European Standard specifies the minimum level of resistibility of equipment having telecommunication port(s) to overvoltages and overcurrents.

This European Standard covers telecommunication equipment installed at customer premises as shown in Figure 1.

Overvoltages or overcurrents covered by this European Standard are surges due to direct or indirect lightning on the telecommunication line plant.

Overvoltages or overcurrent not covered by this European Standard are

– short-term induction of alternating voltages from electric power systems (including electrified railway),

– earth potential rise due to power faults or load switching,

– direct contacts between telecommunication lines and low voltage power lines.

This European Standard is intended for use by network (public/private) operators and the equipment manufacturers.

This European Standard applies to equipment having telecommunication port(s) connected to external conductors, i.e. conductor located outside the customer's building.

The tests are type tests and, although they are applicable to a complete system, it is recognised that they may be applied to individual items of equipment during development and design work.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CLC/TR 50450:2006, Resistibility requirements for equipment having (a) telecommunication port(s)

EN 60950-1:2006, Information technology equipment – Safety – Part 1: General requirements (IEC 60950-1:2005, mod.)

IEC 60050-701:1988, International Electrotechnical Vocabulary (IEV) – Chapter 701: Telecommunications, channels and networks

ITU-T Recommendation K.21, Resistibility of telecommunication equipment installed in customer premises to overvoltages and overcurrents

ITU-T Recommendation K.44, Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – Basic Recommendation

3 Terms, definitions and abbreviations

For the purposes of this document, the following terms and definitions apply, in addition with those definitions and abbreviations in ITU-T recommendation K.44.

3.1
resistibility
ability of telecommunication equipment or installations to withstand, in general without damage, the effects of overvoltages or overcurrents, up to a certain, specified extent, and in accordance with a specified criterion

[ITU-T K.44]

NOTE Two acceptance criteria are recognized:

Criterion A – Equipment shall withstand the test without damage or other disturbance (such as corruption of software or misoperation of fault-protection facilities) and shall operate properly within the specified limits after the test. It is not required to operate correctly during the test.

Criterion B – A fire hazard shall not arise in the equipment as a result of the tests. Any damage, if it occurs, shall be confined to a small part of the equipment.

3.2
telecommunication port
port which is intended to be connected to telecommunication networks, Local Area Networks (e.g. Ethernet, Token Ring) and similar networks, either through physical connection (cable optical fibre) or radio connection

[CLC/TR 50450]

NOTE In the latter case the antenna port is the telecommunication port.

3.3
external ports
particular interface of the specified equipment, which is directly connected to metallic conductors extending beyond the building or shelter boundary

[ITU-T K.44]

3.4
internal ports
particular interface of the specified equipment which is connected to metallic conductors which do not leave the building or shelter. These interfaces connect to cables which interconnect system blocks

[ITU-T K.44]

3.5
telecommunication
any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems

[IEV 701-01-05 of IEC 60050-701:1988]

4 Reference configuration

The diagram below shows equipment with telecommunication port(s) installed at customers premises. This ensures that the appropriate electromagnetic environment for the installation is considered, independent of the ownership of the equipment.

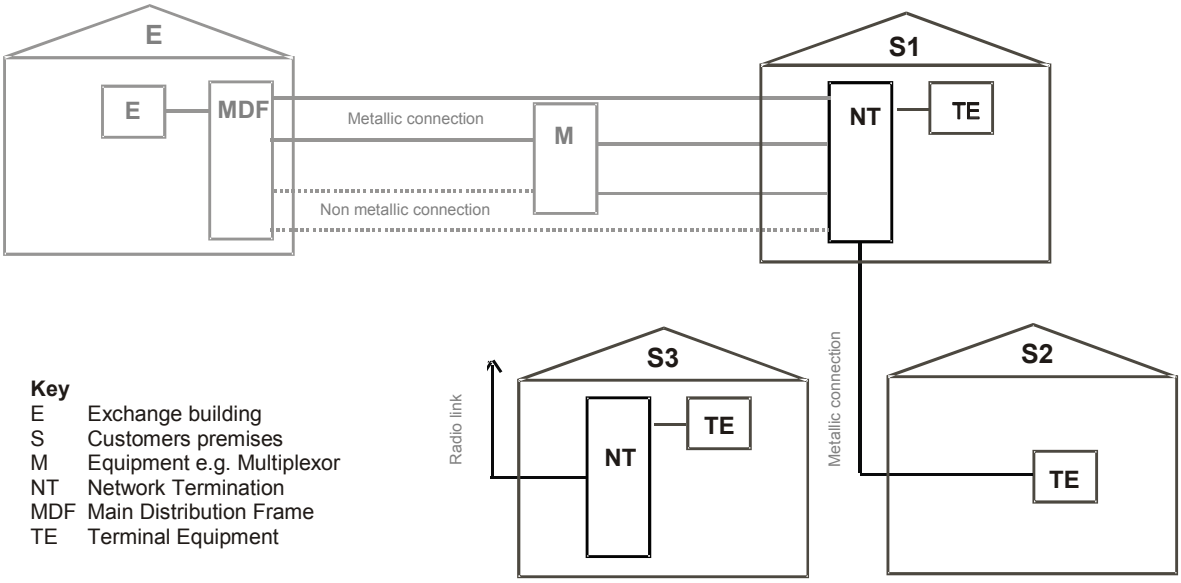

Figure 1 – Equipment with telecommunication ports installed at customers premises

5 Resistibility requirements

For equipment having only external telecommunications ports the resistibility requirements are defined in ITU-T K.21, "Basic test level". See also Figure 2, a).

For equipment having additional connections to networks, e.g. power networks, the test levels are defined in ITU-T K.21, "Enhanced test level". See also Figure 2, b) to e).

The inherent resistibility of the equipment may not be sufficient by itself, requiring co-ordinated primary protection to be fitted to fully comply.

NOTE For the external port, the probability of overvoltages and overcurrents on the equipment is determined by

– the length of the line and the environment it is installed in,

– the environment outside of the structure, and the structure itself.

6 Resistibility test requirements

An overview of the test conditions for the different ports is shown in 6.1 to 6.3. See also Figure 2 for identification of the ports. In Annex A is listed the relevant ITU specifications on this topic.

The complete test requirements, test generators, test circuits, test conditions, coupling and decoupling elements and port terminations are provided in ITU-T K.21 and K.44.

During test the level of overvoltages and overcurrents in untested ports shall not exceed the requirements in EN 60950-1.

Gas discharge tubes with 600 V nominal d.c. spark-over voltage are used as special test protector in the co-ordination test on external telecommunication port(s).

6.1 For ports connected to balanced copper cabling

6.1.1 Lightning test conditions for ports connected to external balanced copper cabling

Test No.	Test No. ITU-T K.21	Test description ITU-T K.21	Basic test levels	Enhanced test levels
6.1.1.1	2.1.1.a	Single port, lightning, inherent, transverse	$U_{c(max)}$ = 1,5 kV	$U_{c(max)}$ = 1,5 kV
6.1.1.2	2.1.1.b	Single port, lightning, inherent, port to earth	$U_{c(max)}$ = 1,5 kV	$U_{c(max)}$ = 6 kV
6.1.1.3	2.1.1.c	Single port, lightning, inherent, port to external port	$U_{c(max)}$ = 1,5 kV	$U_{c(max)}$ = 6 kV
6.1.1.4	2.1.2.a	Single port, lightning, coordination, transverse	$U_{c(max)}$ = 4 kV	$U_{c(max)}$ = 6 kV
6.1.1.5	2.1.2.b	Single port, lightning, coordination, port to earth	$U_{c(max)}$ = 4 kV	$U_{c(max)}$ = 6 kV
6.1.1.6	2.1.2.c	Single port, lightning, coordination, port to external port	$U_{c(max)}$ = 4 kV	$U_{c(max)}$ = 6 kV
6.1.1.7	2.1.3.a	Multiple port, lightning, inherent, port to earth	$U_{c(max)}$ = 1,5 kV	$U_{c(max)}$ = 1,5 kV
6.1.1.8	2.1.3.b	Multiple port, lightning, inherent, port to external port	$U_{c(max)}$ = 1,5 kV	$U_{c(max)}$ = 1,5 kV
6.1.1.9	2.1.4.a	Multiple port, lightning coordination, port to earth	$U_{c(max)}$ = 4 kV	$U_{c(max)}$ = 6 kV
6.1.1.10	2.1.4.b	Multiple port, lightning coordination, port to external port	$U_{c(max)}$ = 4 kV	$U_{c(max)}$ = 6 kV
6.1.1.11	2.1.5.a	Single port, lightning current, port to earth	I = 1 kA/wire	I = 5 kA/wire
6.1.1.12	2.1.5.b	Single port, lightning current, port to external port	I = 1 kA/wire	I = 5 kA/wire
6.1.1.13	2.1.6.a	Multiple port, lightning current, port to earth	I = 1 kA/wire Limited to 6 kA total	I = 5 kA/wire Limited to 30 kA total
6.1.1.14	2.1.6.b	Multiple port, lightning current, port to external port	I = 1 kA/wire Limited to 6 kA total [a]	I = 5 kA/wire Limited to 30 kA total [a]

[a] Peak current is set by the weaker of the port under test and the external port coupled to ground.