SLOVENSKI STANDARD
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Informacijska tehnologija - Univerzalni sistemi pokabljenja - 99-3. del: Infrastruktura pokabljenja bivalnih prostorov v dolžini do 50 m, ki podpira hkratne in nehkratne aplikacije

Information technology - Generic cabling systems - Part 99-3: Home cabling infrastructures up to 50 m in length to support simultaneous and non simultaneous provision of applications

Informationstechnik - Anwendungsneutrale Kommunikationskabelanlagen - Teil 99-3: Infrastruktur von Heimverkabelungen bis zu 50 m Länge zur gleichzeitigen oder nicht-gleichzeitigen Bereitstellung von Netzanwendungen

Technologies de l'information - Systèmes de câblage générique - Partie 99-3: Infrastructure de câblage résidentiel de 50 m de longueur maximale supportant des applications simultanées et non-simultanées

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35.110	Omreževanje	Networking
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Information technology - Generic cabling systems - Part 99-3: Home cabling infrastructures up to 50 m in length to support simultaneous and non simultaneous provision of applications

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CENELEC

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

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Contents

Figures

Tables

Foreword

This document (CLC/TR 50173-99-3:2012) has been prepared by CLC/TC 215 "Electrotechnical aspects of telecommunication equipment".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Introduction

EN 50173-4 specifies generic cabling in homes, installed to support one or more of the following groups of applications and based upon balanced and coaxial cabling as appropriate:

a) Information and Communication Technologies (ICT);

b) Broadcast and Communication Technologies (BCT);

c) Command, Controls and Communications in Buildings (CCCB).

EN 50083 (all parts) and EN 60728 (all parts) standards deal with cable networks including equipment and associated methods of measurement for headend reception, processing and distribution of television signals, sound signals and their associated data signals and for processing, interfacing and transmitting all kinds of signals for interactive services using all applicable transmission media including community antenna television (CATV) and master antenna television/satellite master antenna television (MATV/SMATV) networks.

The EN 50174 series specify the specification, planning and practices applicable to installation of telecommunications cabling within homes.

This Technical Report describes a grading system applicable to telecommunications cabling within homes which provides a range of implementation solutions to support both non-simultaneous and simultaneous provision of applications incorporating:

1) a cabling structure in accordance with, but less complex than that of, EN 50173-4 and with defined connecting hardware pin assignment for certain applications;

2) components meeting or exceeding the requirements of EN 50173-4;

3) shorter cabling channels than those specified in EN 50173-4 (simultaneous transmission of telephony and 100BASE-T is supported by the reduced channel attenuation resulting from the restriction of maximum channel lengths to 50 m).

1 Scope

This Technical Report describes a grading system applicable to telecommunications cabling within homes which provides a range of implementation solutions to support both non-simultaneous and simultaneous provision of applications incorporating:

a) a cabling structure in accordance with, but less complex than that of, EN 50173-4 and with defined connecting hardware pin assignment for certain applications;

b) components meeting or exceeding the requirements of EN 50173-4;

c) shorter cabling channels than those specified in EN 50173-4.

Safety (electrical safety and protection, optical power, fire, etc.) and electromagnetic compatibility (EMC) requirements are outside the scope of this Technical Report and are covered by standards and regulations. However information given in this Technical Report may be of assistance in meeting these standards and regulations.

2 Normative references

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

EN 50XXX [1)], *Information technology — Access network cabling within multi-subscriber premises to support deployment of optical broadband networks*

EN 50173-1:2011, *Information technology — Generic cabling systems — Part 1: General requirements*

EN 50173-4, *Information technology — Generic cabling systems — Part 4: Homes*

EN 50174-1, *Information technology — Cabling installation — Part 1: Installation specification and quality assurance*

EN 50174-2, *Information technology — Cabling installation — Part 2: Installation planning and practices inside buildings*

EN 50174-3 [1)], *Information technology — Cabling installation — Part 3: Installation planning and practices outside buildings*

EN 50288-4-1, *Multi-element metallic cables used in analogue and digital communication and control — Part 4-1: Sectional specification for screened cables characterised up to 600 MHz — Horizontal and building backbone cables*

EN 50407-2 [1)], *Multi-pair cables used in high bite rate digital access telecommunication networks – Part 2: Indoor multi-pair/quad cables for installation in Multi Dwelling Units shaft supporting universal services, xDSL and applications up to 100 MBits over IP*

EN 50441-1, *Cables for indoor residential telecommunication installations — Part 1: Unscreened cables — Grade 1*

EN 50441-2, *Cables for indoor residential telecommunication installations — Part 2: Screened cables — Grade 2*

EN 50441-4, *Cables for indoor residential telecommunication installations — Part 4: Cables up to 1 200 MHz — Grade 3*

1) At draft stage.

EN 60603-7-2, *Connectors for electronic equipment — Part 7-2: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz (IEC 60603-7-2)*

EN 60603-7-3, *Connectors for electronic equipment — Part 7-3: Detail specification for 8 way, shielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz (IEC 60603-7-3)*

EN 60603-7-5, *Connectors for electronic equipment — Part 7-5: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz (IEC 60603-7-5)*

EN 60603-7-7, *Connectors for electronic equipment — Part 7-7: Detail specification for 8-way, shielded, free and fixed connectors for data transmission with frequencies up to 600 MHz (IEC 60603-7-7)*

EN 60603-7-51, *Connectors for electronic equipment — Part 7-51: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 500 MHz (IEC 60603-7-51)*

EN 60603-7-71, *Connectors for electronic equipment — Part 7-71: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 1 000 MHz (IEC 60603-7-71)*

EN 60794 (series), *Optical fibre cables (IEC 60794 series)*

EN 61076-3-104, *Connectors for electronic equipment — Product requirements — Part 3-104: Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1 000 MHz (IEC 61076-3-104)*

EN 61169-2, *Radio-frequency connectors — Part 2: Sectional specification — Radio frequency coaxial connectors of type 9,52 (IEC 61169-2)*

EN 61169-24, *Radio-frequency connectors — Part 24: Sectional specification — Radio frequency coaxial connectors with screw coupling, typically for use in 75 ohm cable networks (type F) (IEC 61169-24)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply in addition to those of EN 50173-4 and the EN 50174 series of standards.

3.1.1
access network
functional elements (equipment and infrastructure) that enable communication between the core network and a customer network

[SOURCE: EN 50174-3:201X, 3.1.1]

3.1.2
access provider
operator of any facility that is used to convey telecommunications signals to and from a customer premises

3.1.3
building network interface
interface between external network and the building network within a multi-dwelling building for the network for the transmission of television signal, sound signals and interactive services

Note 1 to entry: This point is also called “transfer point” or “external network interface”

[SOURCE: CLC/TR 50173-99-2:2010, 3.1.3]

3.1.4
community antenna television
system which is designed to provide sound and television signals received by terrestrial, satellite antennas or provided by locally generated sources to the outlets of a large group of buildings

[SOURCE: CLC/TR 50173-99-2:2010, 3.1.4]

3.1.5
equipment cord
terminated cable for inter-connection of equipment to the cabling infrastructure within the home

Note 1 to entry: In addition to the cable, an equipment cord may include filters and baluns.

3.1.6
external network interface
ENI
termination point providing external network demarcation

[SOURCE: EN 50173-1:2011, 3.1.37]

3.1.7
external service provider
operator of any service that furnishes telecommunications content (transmissions) delivered over access provider facilities

3.1.8
home network interface
HNI
interface for access to the network for transmission of television signal, sound signals and interactive services inside a home (single dwelling)

[SOURCE: CLC/TR 50173-99-2:2010, 3.1.7]

3.1.9
non-simultaneous application provision
use of a multi-pair balanced cabling permanent link to provide two or more applications but not at the same time

3.1.10
patch cord
cord used to establish connections on a patch panel

[SOURCE: EN 50173-1:2011, 3.1.56]

3.1.11
simultaneous application provision
use of a multi-pair balanced cabling permanent link to provide two or more applications at the same time

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply in addition to those of EN 50173-4 and the EN 50174 series of standards.

ADSL	asymmetric digital subscriber line
AO	application outlet
DSL	digital subscriber line
DVB-T	Digital Video Broadcast - Terrestrial
EMC	electromagnetic compatibility
ENI	external network interface
ffs	for further study
HF	high frequency (5 MHz to 30 MHz)
HNI	home network interface
ISDN	integrated service digital network
PoE	power over Ethernet (IEEE 802.3at)
SIF	satellite intermediate frequency (950 MHz to 2 150 MHz)
VDSL	very high bit rate digital subscriber line
VHF	very high frequency (30 MHz to 300 MHz)
UHF	ultra high frequency (300 MHz to 3 000 MHz)

4 Cabling infrastructure

4.1 Home cabling in accordance with EN 50173-4

EN 50173-4 defines two generic cabling structures (see Figure 1) to support the delivery of ICT and BCT applications within the home:

a) between the home distributor (HD) and a telecommunications outlet (TO) for the delivery of those services using ICT applications over balanced or optical fibre cabling;

b) between the HD and a broadcast outlet (BO) for the delivery of those services using BCT applications over either coaxial (BCT-C) or balanced (BCT-B) cabling.

NOTE The inclusion of optical fibre to deliver BCT applications may be included in EN 50173-4:2007/A2:201X.

For the purposes of this Technical Report, a more general term Application Outlet (AO) is used to describe a balanced cabling outlet that supports simultaneous and non-simultaneous provision of multiple ICT and BCT applications.

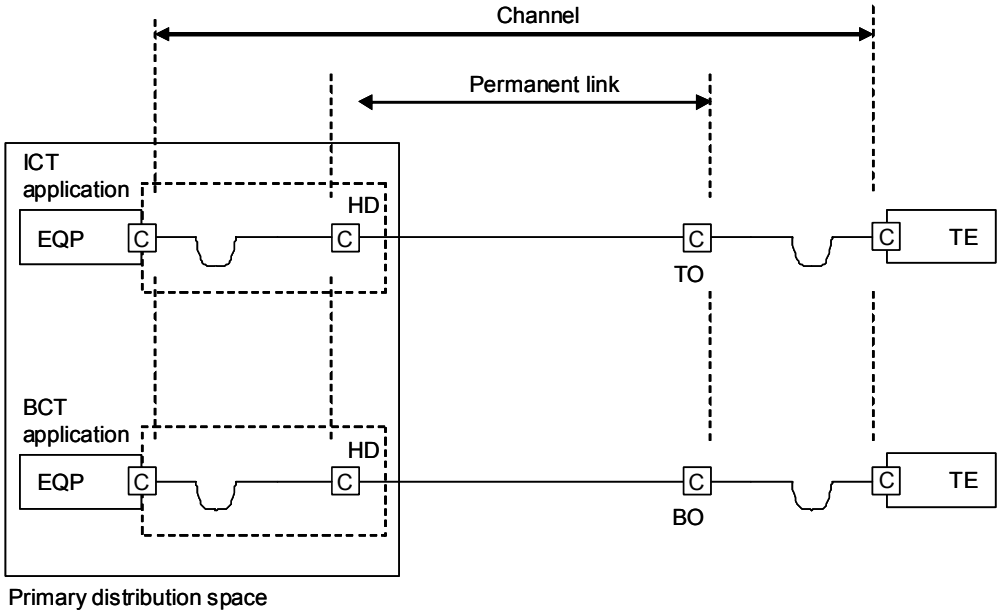

Figure 1 — Home cabling for ICT and BCT applications according to EN 50173-4

CLC/TR 50173-99-2 provides additional detail regarding the implementation of BCT-C and BCT-B cabling for applications in accordance with the EN 60728 series of standards.

Figure 1 shows the connection of the cabling to equipment at the HD. Alternatively, the cabling may be connected directly to an external network interface (ENI) as described in EN 50173-4 which may be accommodated in the primary distribution space or home entrance space (see EN 50174-2). In the case of BCT applications, this is more accurately described as a Home Network Interface (HNI) as described in CLC/TR 50173-99-2.

The ENI is connected via application-specific network access cabling (see 4.4.3) to:

1) other equipment within the home (e.g. a satellite antenna);
2) other equipment within the access network;
3) within multi-tenant premises, to a building network interface within a building entrance space.

The signal levels at HNIs are assumed to meet the requirements of EN 60728-1.

4.2 Application support

The balanced cabling for BCT applications specified in EN 50173-4 assumes a single-pair implementation. The balanced cabling for ICT applications specified in EN 50173-4 assumes a multi-pair implementation but is “not guaranteed to support the simultaneous transmission of different applications … within a cable or at an interface to the generic cabling” and that “the sharing of components by applications … may require additional performance requirements to be applied.” This applies to simultaneous provision of two identical applications or of different applications.

The specification of multi-pair balanced cabling to support the simultaneous provision of multiple ICT and BCT applications requires a modification of the implementations specified in EN 50173-4.

For example, the BCT applications providing radiofrequency transmission in the very high frequency and ultra high frequency (VHF/UHF) bands of analogue television and terrestrial digital video broadcast (DVB-T) use signal voltages in the mV range. In comparison, ICT applications use signal voltages of the order of 1 V. As a result specific provisions are needed to avoid electromagnetic disturbance on BCT applications.