SLOVENSKI STANDARD
SIST-TP CLC/TR 50552:2011

01-december-2011

Nadomešča:
SIST CLC/R 205-010:1998

Stanovanjski in stavbni elektronski sistemi (HBES) - Odprti komunikacijski sistem - Vmesniki - Srednji vmesnik, sukani par, razred 1

Home and Building Electronic Systems (HBES) - Open communication system - Interfaces - Medium interface, twisted pair, class 1

Ta slovenski standard je istoveten z: CLC/TR 50552:2010

ICS:

35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

SIST-TP CLC/TR 50552:2011 **en**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CLC/TR 50552

May 2010

ICS 97.120

Supersedes R205-010:1996

English version

Home and Building Electronic Systems (HBES) - Open communication system - Interfaces - Medium interface, twisted pair, class 1

Home and Building Electronic Systems (HBES) -
Open communication system -
Interfaces -
Medium interface, twisted pair, class 1

This Technical Report was approved by CENELEC on 2010-05-01.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. CLC/TR 50552:2010 E

Foreword

This Technical Report was prepared by the Technical Committee CENELEC TC 205, Home and Building Electronic Systems (HBES), joined by the co-operating partner KNX Association.

This document supersedes R205-010:1996.

It was circulated for voting in accordance with the Internal Regulations, Part 2, Subclause 11.4.3.3 (simple majority) and was approved by CENELEC as CLC/TR 50552 on 2010-05-01.

This Technical Report relates to the HBES system as described in the EN 50090 series under the generic title "*Home and Building Electronic Systems (HBES)*", which comprises the following parts:

Part 1: Standardization structure

Part 2: System overview

Part 3: Aspects of application

Part 4: media independent layers

Part 5: Media and media dependent layers

Part 6: Interfaces

Part 7: System management

Part 8: Conformity assessment of products

Part 9: Installation requirements

Contents

Figures

Introduction

In R205-010:1996 was published documenting the medium interface solutions for Twisted pair implementations of the then existing European home and building electronic systems, more specifically Batibus and EIB.

In 1997 the convergence process between the Batibus, EIB and EHSA was initiated, which resulted in 2003 in the publication of the KNX standard and in the subsequent submission of this standard by the KNX Association as CENELEC cooperating partner to CLC/TC 205. This resulted in a positive UAP vote of this standard as part of the EN 50090 series by the European National Committees.

This version intends to bring the description of the HBES medium interface up to date with the current technical situation.

1 Scope

This Technical Report describes the current realisations of Twisted Pair 1 medium interface solutions.

TP1 signal forms are not described in this technical report as they already form part of EN 50090-5-2.

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.

EN 50090-1 [1]	Home and Building Electronic Systems (HBES) - Part 1: Standardization structure
EN 50090-2-2	Home and Building Electronic Systems (HBES) - Part 2-2: System overview - General technical requirements
EN 50090-5-2	Home and Building Electronic Systems (HBES) - Part 5-2: Media and media dependent layers - Network based on HBES Class 1, Twisted Pair
EN 60998-2-1	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units (IEC 60998-2-1)
EN 60998-2-2	Connecting devices for low-voltage circuits for household and similar purposes - Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units (IEC 60998-2-2)
EN 60715:2001	Dimensions of low-voltage switchgear and controlgear - Standardized mounting on rails for mechanical support of electrical devices in switchgear and controlgear installations (IEC 60715:1981 + A1:1995)
EN 60669-1	Switches for household and similar fixed-electrical installations - Part 1: General requirements (IEC 60669-1)
EN 60603-7:2009	Connectors for electronic equipment - Part 7: Detail specification for 8-way, unshielded, free and fixed connectors (IEC 60603-7:2008)
EN 60999 (Series)	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units (IEC 60999 (Series))
EN 61535	Installation couplers intended for permanent connection in fixed installations (IEC 61535)

1) Under consideration.

EN 61643-21:2001 Low voltage surge protective devices - Part 21: Surge protective devices connected to telecommunications and signalling networks - Performance requirements and testing methods (IEC 61643-21:2000 + corr. Mar. 2001)

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50090-1 apply.

3.2 Abbreviations

M M

O O

4 Medium interface realisation type 1

4.1 Introduction

This connector type is used to connect the TP1 cable to TP1 devices and/or to connect two TP1 cable parts.

4.2 Technical characteristics

No	Requirements	Type 1	M/O
1	Standard for screw-less connector standard for connector with screw	EN 60998-2-2 EN 60998-2-1	M
2	Number of contacts/ways	≥ 2	M
3	Bus interruption	Connector shall allow disconnecting device without interrupting bus	M
4	Non-interchangeable with other connectors	Compliant by design or color	M
5	Coding measure	Coding: see Male socket: Pin diameter: (1 ± 0,05) mm Pin length: 6…8 mm Cable: Core diameter: 0,8…1,0 mm (no mix of different diameters allowed at same time) Strip length: 5…6 mm Figure 2	O
6	Clamping unit/ terminals	Screw-less or with screw	M
7	Wire cross section, wire type	0,8 mm-1,00 mm dia solid (AWG Cu 20-18) 0,5 mm^2 (AWG Cu 20) stranded	O
8	Nr. of wires connectable per pole with identical diameter	≥ 3 x 0,8 mm dia (AWG Cu 20) or ≥ 3 x 1,0 mm (AWG Cu 18)	O
9	Test probe access	min. 1 mm x 1 mm – shall be accessible in mounted condition	O
10	Male contact pins	1 mm ∅ (± 0,05 mm), 6 to 8 mm long - tin coated	O

No	Requirements	Type 1	M/O
11	Wire pull out force per conductor	> 30 N	M
12	Plug extraction force per pole	> 3 N	M
13	Plug insertion force	< 10 N	M
14	Mating cycles with load at rated voltage and current	50	M
15	Increase of contact resistance after item number 15	< 1,5 times of the originally measured contact resistance	M
16	Mechanical strength	EN 50090-2-2	M
17	Vibration/ shock	EN 50090-2-2	M
18	Environmental class	3k6 (-10/+85°C, light condensation)	M
19	Climatic withstand	EN 50090-2-2	M
20	Temperature rise	< 45 K with rated current and with cross section	M
21	Rated insulation voltage for bus	50 V	M
22	Test voltage between live parts bus-bus (Usage class B - basic insulation)	0,8 kV impulse 0,6 kV AC	M
23	Clearance and creepage distances between bus contacts and outer surface when mated (Usage class B – basic insulation)	Clearance : 3 mm Creepage : 3 mm [a]	M
24	Insulation resistance between poles (100 V DC)	> 10^{11} Ω	M
25	Nominal voltage	32V	M
26	Nominal current	3A	M
27	Pollution degree (or Micro Environmental Class)	2	M
28	Contact resistance R_D(one connection) - for R_c1 and R_c2 see Figure 1	Conductor-conductor R_c1 < 10 mΩ	M
		Conductor-contact pin R_c2 < 10 mΩ	M
29	IP degree (outlets, connectors) mated or not mated	IP20 in both cases	M
30	Installation aspects	On site installation possible	M
31	Terminal-conductor material	E-Cu	M

[a] Creepage distances can if necessary be provided via an additional cover over the connector surface, if the connector itself does not provide these required creepage distances.

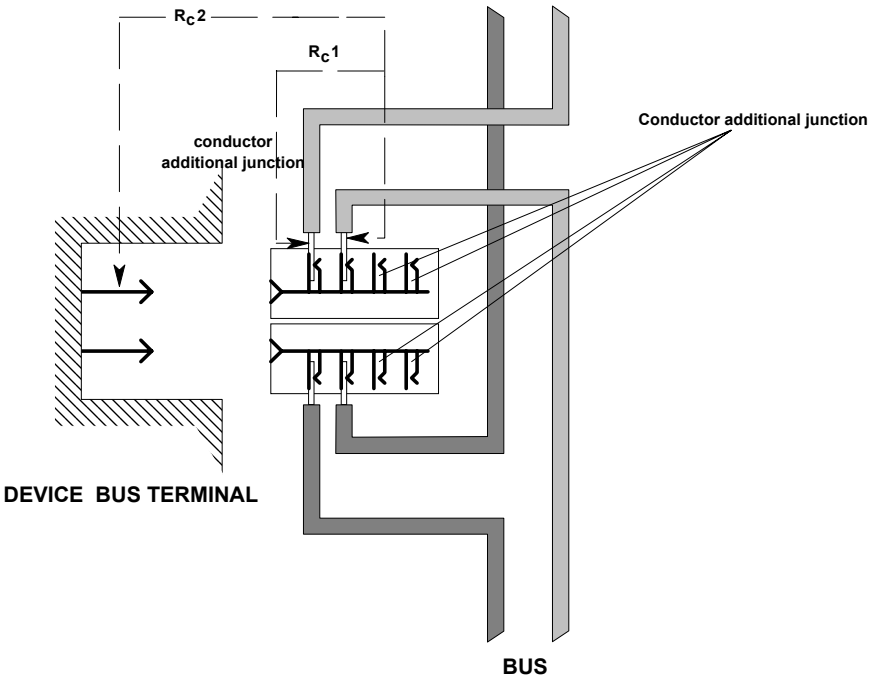
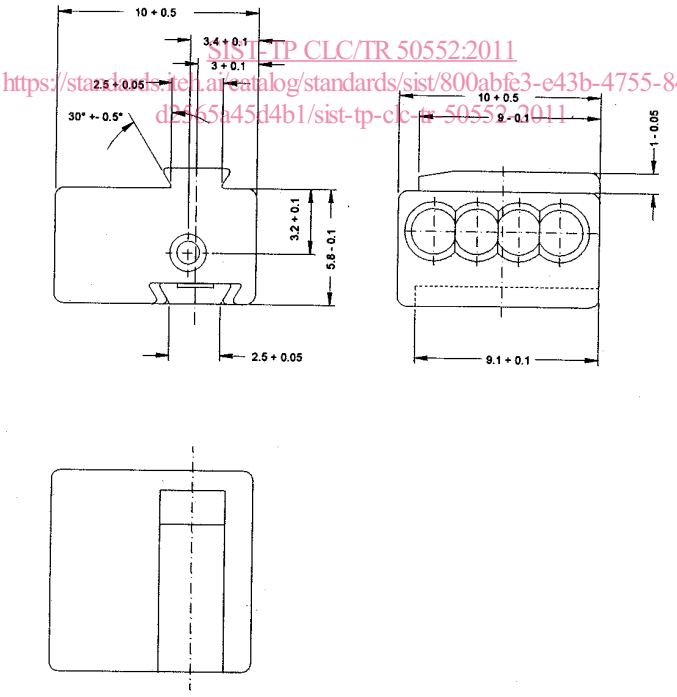


Figure 1 - Realisation type 1 - Principal diagram



Male socket:
Pin diameter: (1 ± 0,05) mm
Pin length: 6…8 mm

Cable:
Core diameter: 0,8…1,0 mm (no mix of different diameters allowed at same time)
Strip length: 5…6 mm

Figure 2 - Example of a realisation type 1 with constructional features

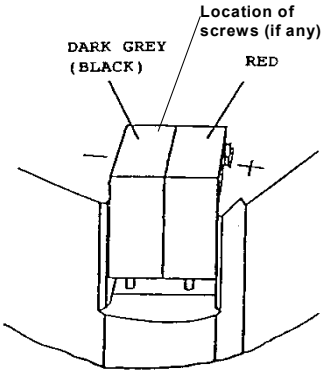


Figure 3 - Colour coding of cable connector

A bus connection block can either consist of two separate parts notched together or of one single inseparable block. When consisting of one single inseparable block, the colours indicating bus polarity (dark gray-red) shall be clearly visible to the user and ensure proper and safe connection. In case of white/yellow variation, white corresponds to minus where yellow to plus.

5 Medium interface realisation type 2

5.1 Introduction

This connector is intended for the automatic connection of TP1 DIN rail devices to the TP1 bus only when snapped onto the DIN-rail. It consists of a data rail and a contact block, the latter consisting of a housing and a set of spring contacts.

For ensuring connection between data rail and cable, requirements for a data rail to wire connector are specified.

5.2 Technical characteristics

No	Requirements	Type 2	M/O
1	Number of contacts/ways	2 or 4	O
2	Non-interchangeable with all other non-standardized connectors	Compliant by design	
3	Contact force of contact block on data rail (when using the standard coating as laid down in 4)	2 N < K < 8 N at any position of contact zone The shape of the contact shall be such that the requirements are met and no damage to the contact surface is inflicted.	M
4	Standard coating of contact pin and data rail tracks	Tin - thickness of data rail tracks coating : (10 - 25) µm - if any anti-diffusion barrier is necessary owing to the choice of the basic material, it shall be provided	O
5	Mating cycles with load at rated voltage and current	50	M
6	Increase of contact resistance after item 5	< 1,5 times of the originally measured contact resistance	M
7	Mechanical strength	EN 50090-2-2	M