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Vervangt CR 205-009:1996

Nederlandse norm

NEN-EN 50090-5-2 (en)

Home and Building Electronic Systems (HBES)
- Part 5-2: Media and media dependent layers -
Network based on HBES Class 1, Twisted Pair

ICS 97.120
maart 2004

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VOORBEELD
Preview

Normcommissie 381 025 "Telematica Installaties"

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EN 50090-2-2	NEN-EN 50090-2-2	Gebouwbeheersystemen (HBES) - Deel 2-2: Systemoverzicht - Algemene technische eisen (en)
EN 50090-3-2:2004	NEN-EN 50090-3-2:2004	Gebouwbeheersystemen (HBES) - Deel 3-2: Toepassingsaspecten - Gebruikersproces voor HBES klasse 1 (en)
EN 50090-4-2:2004	NEN-EN 50090-4-2:2004	Gebouwbeheersystemen (HBES) - Deel 4-2: Media lokale lagen - Transportlaag, netwerklaag en algemene delen van gegevensverbindingslaag voor HBES Klasse 1 (en)
EN 50090-7-1:2004	NEN-EN 50090-7-1:2004	Gebouwbeheersystemen (HBES) - Deel 7-1: Systemmanagement - Management procedures (en)
EN 50090-9-1:2004	-	-
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EN 61000-6-2	NEN-EN-IEC 61000-6-2	Elektromagnetische compatibiliteit (EMC) - Deel 6-2: Algemene normen - Immunitet voor industriële omgevingen (en,fr)
HD 21.2 S2	-	-
HD 22.2 S2	-	-
IEC 60189-2	-	-
IEC 60332-1	-	-
IEC 60754-2	-	-

EUROPEAN STANDARD

EN 50090-5-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 97.120

Supersedes R205-009:1996

English version



**Home and Building Electronic Systems (HBES)
Part 5-2: Media and media dependent layers -
Network based on HBES Class 1, Twisted Pair**

Systèmes électroniques pour les foyers
domestiques et les bâtiments (HBES)
Partie 5-2: Médias et couches
dépendantes des médias -
Réseau basé sur HBES Classe 1,
Paire Torsadée

Elektrische Systemtechnik für Heim
und Gebäude (ESHG)
Teil 5-2: Medien und medienabhängige
Schichten -
Netzwerk basierend auf ESHG Klasse 1,
Twisted Pair

This European Standard was approved by CENELEC on 2003-12-02. 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.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Contents

Foreword	5
Introduction.....	6
1 Scope.....	6
2 Normative references	6
3 Terms, definitions and abbreviations	7
3.1 Terms and definitions.....	7
3.2 Abbreviations	9
4 Requirements for HBES Class 1, Twisted Pair Type 0 (TP0)	10
4.1 Datagram service	10
4.2 Medium definition.....	14
4.3 Power feeding service.....	16
4.4 Data link layer type Twisted Pair Type 0.....	25
4.5 Full Twisted Pair Type 0 frame structure	35
5 Requirements for HBES Class 1, Twisted Pair Type 1 (TP1-64 & TP1-256)	36
5.1 Physical layer requirements – Overview.....	36
5.2 Requirements for analogue bus signals.....	38
5.3 Medium attachment unit (MAU)	43
5.4 Twisted Pair Type 1 bus cable.....	50
5.5 Topology.....	53
5.6 Services of the physical layer type Twisted Pair Type 1	56
5.7 Behaviour of the physical layer type Twisted Pair Type 1 entity.....	58
5.8 Data link layer type Twisted Pair Type 1.....	58
Figure 1 – NRZ line code	11
Figure 2 – Character format.....	11
Figure 3 – Transmitter rising and falling edges.....	12
Figure 4 – Repeater maximum transition time	15
Figure 5 – TP0 power supply gauge.....	18
Figure 6 – Power supply dynamic internal resistor measuring test set-up.....	18
Figure 7 – Falling edge and over-current measurements.....	19
Figure 8 – TP0 Network with distributed power supply	20
Figure 9 – Voltage / Current gauge of one node.....	21
Figure 10 – Voltage / Current gauge of <u>entire</u> distributed power supply with 6 to 8 supplying nodes.....	24
Figure 11 – Common part of frame structure.....	26
Figure 12 – Control Field	26
Figure 13 – CTRL E Field	27
Figure 14 – Format1s, L_Data_Standard Frame Format with standard field-name abbreviations.....	27
Figure 15 – Format 1e, L_Data_Extended Frame Format with standard fieldname abbreviations	28
Figure 16 – EFF field	29

Figure 17 – Format 2, Short Acknowledgement frame format	30
Figure 18 – Transmission definition	35
Figure 19 – Format 1s, Full L_Data_Standard Request frame format	35
Figure 20 – Format 1e, Full L_Data_Extended Request frame format	36
Figure 21 – Logical structure of physical layer type TP1	38
Figure 22 – Octet mapped to a serial character.....	38
Figure 23 – “1”-Bit frame.....	39
Figure 24 – “0”-Bit frame.....	40
Figure 25 – Delayed logical “0”	41
Figure 26 – Overlapping of two logical “0” (example)	42
Figure 27 – Method of transmitting.....	45
Figure 28 – Example of transmitter characteristics.....	46
Figure 29 – Example of a diagram of a TP1-64 transmitter.....	46
Figure 30 – Example of a diagram of a TP1-256 transmitter ($I_{\text{limit}} 0,4 \text{ A}$).....	47
Figure 31 – Relation between framed data and asynchronous signal	48
Figure 32 – Relation between digital signal and serial bit stream	49
Figure 33 – Example of a Light Dimmer	50
Figure 34 – Physical Segments	53
Figure 35 – Physical segments combined to a line.....	54
Figure 36 – Lines combined to a zone.....	54
Figure 37 – Network topology	55
Figure 38 – Control Field	59
Figure 39 – Frame Fields with Standard Fieldname Abbreviations	59
Figure 40 – Format 1s, L_Data_Standard Frame Format.....	60
Figure 41 – Check octet.....	60
Figure 42 – Frame Fields with Standard Fieldname Abbreviations	61
Figure 43 – Format 1e, L_Data_Extended Frame Format.....	61
Figure 44 – Extended Control Field.....	62
Figure 45 – Format 3 - L_Poll_Data request frame format.....	62
Figure 46 – L_Poll_Data response frame format	63
Figure 47 – Format 2 - Short Acknowledgement frame format.....	64
Figure 48 – Character timing.....	64
Figure 49 – Priority operation.....	66
Figure 50 – Guarantee of access fairness.....	67
Figure 51 – State machine of data link layer	72
Table 1 – Electrical data encoding	11
Table 2 – Transceiver characteristics – Sending part.....	12
Table 3 – Transceiver characteristics – Receiving part	13
Table 4 – Mandatory and optional requirements for physical layer services	13
Table 5 – Ph-Result parameter	14
Table 6 – Requirements for the TP0 line	15
Table 7 – General hardware requirements	16

Table 8 – Current consumption requirements	17
Table 9 – Power supply voltage	17
Table 10 – Requirements for one supplying DPS device	21
Table 11 – Requirements for entire DPS	23
Table 12 – Possible cable lengths depending on number of DPS devices connected (for a typical cable)	24
Table 13 – Priority of frames – IFT	32
Table 14 – Requirements for Acknowledgement wait time, frame re-transmission	34
Table 15 – Requirements for full wait time, frame re-transmission	34
Table 16 – System parameters of physical layer Type TP1-64 and TP1-256	37
Table 17 – Analogue and digital signal of a logical “1”	39
Table 18 – Analogue and digital signal of logical “0”	41
Table 19 – Limits within a character	42
Table 20 – Unit currents for standard devices	44
Table 21 – Dynamic requirements of a TP1-64 transmitter	45
Table 22 – Dynamic requirements of a TP1-256 transmitter	46
Table 23 – Requirements for the receiver	47
Table 24 – Requirements for bit coding	48
Table 25 – Requirements for the bit decoding unit	49
Table 26 – Requirements for TP1 cable	51
Table 27 – Requirements for character coding	65
Table 28 – Requirements for character decoding	65
Table 29 – Priority sequence, in descending order of importance	66

Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 205, Home and Building Electronic Systems (HBES) with the help of CENELEC co-operation partner Konnex Association (formerly EHBESA).

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50090-5-2 on 2003-12-02.

This European Standard supersedes R205-009:1996.

CENELEC takes no position concerning the evidence, validity and scope of patent rights.

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Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights other than those identified above. CENELEC shall not be held responsible for identifying any or all such patent rights.

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) 2004-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-12-01

EN 50090-5-2 is part of the EN 50090 series of European Standards, which will comprise the following parts:

- Part 1: Standardisation 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

Introduction

According to OSI Physical Layers consist of the medium, the cable, the connectors, the transmission technology etc. which refers to their hardware requirements. In this European Standard however, the status of the Physical Layer as a “communication medium” is emphasized.

1 Scope

This European Standard defines the mandatory and optional requirements for the medium specific physical and data link layer for HBES Class 1 Twisted Pair in its two variations called TP0 and TP1.

Data link layer interface and general definitions, which are media independent, are given in EN 50090-4-2.

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⁾	<i>Home and Building Electronic Systems (HBES) – Part 1: Standardisation structure</i>
EN 50090-2-2	<i>Home and Building Electronic Systems (HBES) – Part 2-2: System overview – General technical requirements</i>
EN 50090-3-2:2004	<i>Home and Building Electronic Systems (HBES) – Part 3-2: Aspects of application – User process for HBES Class 1</i>
EN 50090-4-2:2004	<i>Home and Building Electronic Systems (HBES) – Part 4-2: Media independent layers – Transport layer, network layer and general parts of data link layer for HBES Class 1</i>
EN 50090-7-1:2004	<i>Home and Building Electronic Systems (HBES) – Part 7-1: System Management – Management procedures</i>
EN 50090-9-1:2004	<i>Home and Building Electronic Systems (HBES) – Part 9-1: Installation requirements – Generic cabling for HBES Class 1 Twisted Pair</i>
EN 50290 series	<i>Communication cables</i>
EN 61000-4-5	<i>Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test (IEC 61000-4-5)</i>
EN 61000-6-1	<i>Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1, mod.)</i>
EN 61000-6-2	<i>Electromagnetic compatibility (EMC) – Part 6-2: Generic standards - Immunity for industrial environments (IEC 61000-6-2, mod.)</i>
HD 21.2 S2	<i>Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 2: Test methods (IEC 60227-2, mod.)</i>

¹⁾ At draft stage.

HD 22.2 S2	<i>Rubber insulated cables of rated voltages up to and including 450/750 V – Part 2: Test methods (IEC 60245-2, mod.)</i>
IEC 60189-2	<i>Low-frequency cables and wires with PVC insulation and PVC sheath – Part 2: Cables in pairs, triples, quads and quintuples for inside installations</i>
IEC 60332-1	<i>Tests on electric cables under fire conditions – Part 1: Test on a single vertical insulated wire or cable</i>
IEC 60754-2	<i>Test on gases evolved during combustion of electric cables – Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity</i>

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1

HBES Class 1 Twisted Pair Type 0

the Twisted Pair medium Twisted Pair Type 0 (TP0) is a physical layer specification for data and power transmission on a single twisted pair, allowing asynchronous character-oriented data transfer in a half duplex bi-directional communication mode, using a specifically unbalanced/unsymmetrical base-band signal coding with collision avoidance under SELV conditions

3.1.2

HBES Class 1 Twisted Pair Type 1

the Twisted Pair medium Twisted Pair Type 1 (TP1) is a physical layer specification for data and power transmission on a single twisted pair, allowing asynchronous character-oriented data transfer in a half duplex bi-directional communication mode, using a specifically balanced/symmetrical base-band signal coding with collision avoidance under SELV conditions

3.1.3

distributed power supply

the bus is powered in a distributed way by a number of the devices connected to the line (compared to a centralized power supply)

3.1.4

Logical Tag Extended HEE

usage of the L_Data_Extended frame dedicated to extended group addressing

3.1.5

Remote Powered Devices

remote Powered Bus Devices (RPD) do not extract their energy for the application circuit and the bus controller from the bus but from another independent source of energy, e.g. mains. Owing to the reduced DC power consumption of RPD, a bus line equipped with such devices requires less power from the installed Power Supply Unit (PSU). The connection of bus-controller and application to the same electrical potential reduces the effort of galvanic separation in RPD

3.1.6

TP0 C Factor

to simplify system engineering, the supply current of a TP0 device (both power supply and bus device) is expressed by a factor "C", defined as

$$C = \frac{\text{Actual current}}{\text{Reference device supply current}}$$

The actual current can either be the one provided by a power supply or used by a device

3.1.7**TP0 Character**

11 bit set including 8 data bits, 1 check bit (odd parity bit) and two synchronisation bits (start and stop bits)

3.1.8**TP0 Distortion**

percentage ratio of the deviation time between the instant a transition occurs and the ideal transition instant, and the bit duration (~208 µs); the distortion is measured for each bit of a character, starting with the start bit

3.1.9**TP0 Inter-Frame Time**

time between the end of a frame (end of stop bit for the last character) and the beginning of the next frame (beginning of the start bit of the first character)

3.1.10**TP0 Line Load**

percentage ratio representing the proportion of actual character transmission during a specified integration time interval

3.1.11**TP0 Odd parity bit**

check bit whose value is such that there is an odd number of logic "0" within the data and parity fields

3.1.12**TP0 Repeater**

connects a primary segment to a secondary segment

3.1.13**TP1 Backbone Couplers**

15 backbone couplers can be used to couple up to 16 zones to a full sized TP1 network

3.1.14**TP1 Backbone Line**

the main line of the inner zone is called backbone line

3.1.15**TP1 Bridge**

four TP1-64 physical segments can be combined to a line by using bridges. To such a line 256 devices can then be connected

3.1.16**TP1 Line**

a TP1 line consists of a maximum of 256 devices, either directly connected in case of TP1-256 or separated over 4 physical segments in case of TP1-64, each with 64 devices

3.1.17**TP1 Line Couplers**

routers that combine lines to a zone are called line couplers

3.1.18**TP1 Logical Unit**

converts the serial bit stream to octets and octets to the serial bit stream, which is a serial stream of characters

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