

<b>STN</b>	<b>Elektronické systémy pre byty a budovy (HBES). Časť 5-3: Prenosové médium a vrstvy závislé od prenosového média. Rádiová frekvencia pre HBES triedy 1.</b>	<b>STN EN 50090-5-3</b>
		36 8051

Home and Building Electronic Systems (HBES) - Part 5-3: Media and media dependent layers - Radio Frequency for HBES Class 1

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/16

Obsahuje: EN 50090-5-3:2016

Oznámením tejto normy sa od 02.11.2018 ruší  
STN EN 50090-5-3 (36 8051) zo septembra 2007

**122664**

---

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2016

Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy  
rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
**EUROPÄISCHE NORM**

**EN 50090-5-3**

January 2016

ICS 97.120

Supersedes EN 50090-5-3:2006

English Version

**Home and Building Electronic Systems (HBES) - Part 5-3: Media  
and media dependent layers - Radio Frequency for HBES Class  
1**

Systèmes électroniques pour les foyers domestiques et les  
bâtiments (HBES) - Partie 5-3: Médias et couches  
dépendantes des médias - Radio Fréquence pour HBES  
Classe 1

Elektrische Systemtechnik für Heim und Gebäude (ESHG) -  
Teil 5-3: Medien und medienabhängige Schichten -  
Signalübertragung über Funk für ESHG Klasse 1

This European Standard was approved by CENELEC on 2015-11-02. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

Contents	Page
<b>European foreword.....</b>	<b>3</b>
<b>Introduction.....</b>	<b>4</b>
<b>1 Scope .....</b>	<b>5</b>
<b>2 Normative references.....</b>	<b>5</b>
<b>3 Terms, definitions and abbreviations.....</b>	<b>5</b>
<b>3.1 Terms and definitions .....</b>	<b>5</b>
<b>3.2 Abbreviations.....</b>	<b>6</b>
<b>4 General .....</b>	<b>6</b>
<b>5 HBES RF Physical Layer .....</b>	<b>7</b>
<b>5.1 Physical Layer for HBES RF Ready.....</b>	<b>7</b>
<b>5.1.1 Signalling for HBES RF Ready.....</b>	<b>7</b>
<b>5.1.2 Telegram structure for RF Ready .....</b>	<b>8</b>
<b>5.1.3 Medium access RF Ready .....</b>	<b>8</b>
<b>5.2 Physical Layer for HBES RF Multi .....</b>	<b>9</b>
<b>5.2.1 General requirements (HBES RF Multi).....</b>	<b>9</b>
<b>5.2.2 Physical Layer type RF Multi.....</b>	<b>11</b>
<b>5.2.3 Telegram structure for HBES RF Multi systems .....</b>	<b>13</b>
<b>6 HBES RF Data Link Layer .....</b>	<b>13</b>
<b>6.1 HBES RF Data Link Layer for all HBES RF devices .....</b>	<b>13</b>
<b>6.1.1 Differences to existing (bidirectional) HBES EN 50090 protocol .....</b>	<b>13</b>
<b>6.1.2 Data Link Layer Frame .....</b>	<b>15</b>
<b>6.1.3 Use of the HBES Ctrl Field .....</b>	<b>18</b>
<b>6.1.4 Data Link Layer protocol .....</b>	<b>18</b>
<b>6.1.5 Data Link Layer services .....</b>	<b>19</b>
<b>6.2 HBES RF Data Link Layer for HBES RF Ready .....</b>	<b>21</b>
<b>6.2.1 Data Link Layer protocol .....</b>	<b>21</b>
<b>6.2.2 The Layer-2 of an RF Retransmitter .....</b>	<b>21</b>
<b>6.3 HBES RF Data Link Layer specific to HBES RF Multi systems .....</b>	<b>22</b>
<b>6.3.1 Medium access RF Multi.....</b>	<b>22</b>
<b>6.3.2 Frame format.....</b>	<b>24</b>
<b>6.3.3 RF Multi-channel usage .....</b>	<b>24</b>
<b>6.3.4 Fast Acknowledgment .....</b>	<b>30</b>
<b>6.3.5 Data Link Layer protocol .....</b>	<b>35</b>
<b>6.3.6 Runtime with an RF Repeater and Fast Ack requested.....</b>	<b>38</b>
<b>6.3.7 InterFrame delays for RF Repeaters.....</b>	<b>38</b>
<b>6.3.8 Repetition counter .....</b>	<b>39</b>
<b>6.3.9 Media Coupler .....</b>	<b>39</b>
<b>6.4 Semi-directional devices and bidirectional mode.....</b>	<b>39</b>
<b>7 Compatibility between HBES Ready and HBES RF Multi.....</b>	<b>40</b>
<b>7.1 Communication between HBES RF 1.1 and HBES RF1 Multi devices .....</b>	<b>40</b>
<b>7.2 Communication between HBES RF Ready and HBES RF Multi devices .....</b>	<b>41</b>
<b>7.3 Communication between HBES RF Multi and HBES RF Multi devices .....</b>	<b>41</b>
<b>Bibliography.....</b>	<b>42</b>

## **European foreword**

This document (EN 50090-5-3:2016) has been prepared by CLC/TC 205 "Home and Building Electronic Systems (HBES)".

The following dates are fixed:

- latest date by which this document has (dop) 2016-11-02  
to be implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-11-02

This document supersedes EN 50090-5-3:2006.

EN 50090-5-3:2016 includes the following significant technical changes with respect to EN 50090-5-3:2006:

- the difference between this version and the previous version of Part 5-3 is that the previous version contained only a description of the HBES RF Ready solution, where the current version was extended with the upward compatible HBES RF Multi solution.

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

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

KNX Association as Cooperating Partner to CENELEC confirms that to the extent that the standard contains patents and like rights, the KNX Association's members are willing to negotiate licenses thereof with applicants throughout the world on fair, reasonable and non-discriminatory terms and conditions.

KNX Association  
De Kleetlaan 5, Bus 11  
B-1831 Brussels-Diegem  
Tel: +32 (0)2 775 86 44  
Mob: +32 (0) 476 21 56 58  
Fax: +32 (0)2 675 50 28  
e-mail: [info@knx.org](mailto:info@knx.org)  
[www.knx.org](http://www.knx.org)

Attention is drawn to the possibility that some of the elements of this document 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.

CEN and CENELEC maintain online lists of patents relevant to their standards. Users are encouraged to consult the lists for the most up to date information concerning patents (<ftp://ftp.cencenelec.eu/EN/IPR/Patents/IPRdeclaration.pdf>).

## 1 Scope

This European Standard defines the mandatory and optional requirements for the medium specific Physical and Data Link Layer of HBES Radio Frequency.

Data Link Layer interfaces and general definitions that are medium independent are given in EN 50090-4-1.

This European standard defines the requirements for HBES RF Ready and HBES RF Multi devices. HBES RF Ready is a single RF channel system. HBES RF Multi is an RF multichannel evolution of HBES RF Ready system with 2 additional RF channels for fast reaction time products and 2 RF channels for slow reaction time products.

HBES RF Multi, specified below provides the following features:

- more reliability in Frame transmissions in presence of interferers.
- more efficiency when more HBES RF products are installed at the same location.
- mixing of permanent and non-permanent receiving products.
- mixing of fast and slow reaction time devices.
- Listen Before Talk.

Fast RF channels are mainly intended to be used with human controlled applications like for example lights, shutters... Slow RF channels are mainly intended to be used with non-permanent receivers for automatic applications like sensors (smoke, temperature, wind, etc.), heating control, etc.

Compatibility issues with products in compliance with the former HBES RF specification (HBES RF 1.1) and the new versions are considered in Clause 7 at the end of this document.

## 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 50090-1:2011, *Home and Building Electronic Systems (HBES) — Part 1: Standardization structure*

EN 50090-4-1, *Home and Building Electronic Systems (HBES) — Part 4-1: Media independent layers — Application layer for HBES Class 1*

EN 50090-4-2, *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*

ETSI EN 300 220 (all parts), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW*

koniec náhľadu – text d'alej pokračuje v platenej verzii STN