

**Home and Building Electronic Systems  
(HBES) - Part 7-1: System management  
- Management procedures**

Home and Building Electronic Systems (HBES) -  
Part 7-1: System management - Management  
procedures

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 50090-7-1:2004 sisaldab Euroopa standardi EN 50090-7-1:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 25.05.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 50090-7-1:2004 consists of the English text of the European standard EN 50090-7-1:2003.</p> <p>This document is endorsed on 25.05.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p><b>Käsitlusala:</b> This international standard establishes general principles for network- and device-management shared by and independent of the installation mode. The goal is to standardize the interaction, between a management client and a management server, that shall lead to the successful configuration of the devices. In this way, these management procedures thus specify the highest level communication requirements between a management client and a management server</p>	<p><b>Scope:</b> This international standard establishes general principles for network- and device-management shared by and independent of the installation mode. The goal is to standardize the interaction, between a management client and a management server, that shall lead to the successful configuration of the devices. In this way, these management procedures thus specify the highest level communication requirements between a management client and a management server.</p>
--	---

ICS 97.120

Võtmesõnad:

EUROPEAN STANDARD

**EN 50090-7-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2004

ICS 97.120

Supersedes R205-011:1996

English version

**Home and Building Electronic Systems (HBES)  
Part 7-1: System management -  
Management procedures**

Systèmes électroniques pour les foyers  
domestiques et les bâtiments (HBES)  
Partie 7-1: Management système -  
Procédures de management

Elektrische Systemtechnik für Heim  
und Gebäude (ESHG)  
Teil 7-1: Systemmanagement -  
Managementverfahren

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.

This European Standard exists in one official version (English). 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 version.

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

**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 .....	7
Introduction.....	8
1 Scope.....	8
2 Normative references .....	9
3 Terms and definitions and abbreviations.....	9
3.1 Terms and definitions .....	9
3.2 Abbreviations .....	11
4 Network management procedures .....	11
4.1 General .....	11
4.2 NM_IndividualAddress_Read.....	12
4.2.1 Description .....	12
4.2.2 Used management service .....	12
4.2.3 Sequence .....	12
4.2.4 Exception handling .....	12
4.3 NM_IndividualAddress_Write.....	12
4.3.1 Description .....	12
4.3.2 Used management services.....	13
4.3.3 Sequence .....	13
4.3.4 Exception handling .....	14
4.4 NM_SerialNumberDefaultIA_Scan.....	15
4.4.1 Description .....	15
4.4.2 Used management service .....	15
4.4.3 Sequence .....	15
4.4.4 Exception Handling.....	15
4.5 NM_IndividualAddress_SerialNumber_Read.....	15
4.5.1 Description .....	15
4.5.2 Used management service .....	15
4.5.3 Sequence .....	16
4.5.4 Exception handling .....	16
4.6 NM_IndividualAddress_SerialNumber_Write.....	16
4.6.1 Description .....	16
4.6.2 Used management services.....	16
4.6.3 Sequence .....	17
4.6.4 Exception handling .....	17
4.7 NM_DomainAddress_Read.....	17
4.7.1 Description .....	17
4.7.2 Used management service .....	17
4.7.3 Sequence .....	18
4.7.4 Exception handling .....	18
4.8 NM_DomainAddress_Write.....	18
4.8.1 Description .....	18
4.8.2 Used management services.....	18
4.8.3 Sequence .....	19
4.8.4 Exception handling .....	20
4.9 NM_DomainAddress_Scan.....	20
4.9.1 Description .....	20

4.9.2	Used management service .....	20
4.9.3	Sequence .....	21
4.9.4	Exception handling .....	21
4.10	NM_Router_Scan .....	21
4.10.1	Description .....	21
4.10.2	Used management service .....	21
4.10.3	Sequence .....	22
4.11	NM_SubnetworkDevices_Scan .....	22
4.11.1	Description .....	22
4.11.2	Used management service .....	22
4.11.3	Sequence .....	23
4.12	NM_SubnetworkAddress_Read .....	23
4.12.1	Description .....	23
4.12.2	Used management service .....	23
4.12.3	Sequence .....	23
4.12.4	Exception handling .....	23
4.13	NM_IndividualAddress_Reset .....	24
4.13.1	Description .....	24
4.13.2	Used management services .....	24
4.13.3	Sequence .....	24
4.14	NM_IndividualAddress_Scan .....	25
4.14.1	Description .....	25
4.14.2	Used management services .....	25
4.14.3	Sequence .....	25
4.14.4	Possible Reactions .....	25
4.15	NM_IndividualAddress_Check .....	25
4.15.1	Description .....	25
4.15.2	Used management services .....	26
4.15.3	Sequence .....	26
4.16	NM_IndividualAddress_Check_LocalSubnetwork .....	27
4.16.1	Description .....	27
4.16.2	Used management service .....	27
4.16.3	Sequence .....	27
4.17	NM_GroupAddress_Check .....	27
4.17.1	Description .....	27
4.17.2	Used management service .....	27
4.17.3	Sequence .....	28
4.17.4	Exception handling .....	28
4.18	NM_FunctionalBlock_Scan .....	28
4.18.1	Description .....	28
4.18.2	Used management service .....	28
4.18.3	Sequence .....	29
4.18.4	Exception handling .....	29
5	Device management procedures .....	30
5.1	General .....	30
5.2	General exception handling .....	30
5.3	DM_Connect .....	30
5.3.1	General Description .....	30

5.3.2	Procedure: DMP_Connect_RCo.....	30
5.3.3	Procedure: DMP_Connect_RCI.....	31
5.4	DM_Disconnect.....	32
5.4.1	General Description.....	32
5.4.2	Procedure: DMP_Disconnect_RCo.....	32
5.4.3	Procedure: DMP_Disconnect_RCI.....	33
5.5	DM_Authorize.....	33
5.5.1	General Description.....	33
5.5.2	Procedure: DMP_Authorize_RCo.....	33
5.6	DM_SetKey.....	34
5.6.1	General description.....	34
5.6.2	Procedure: DM_SetKey_RCo.....	34
5.7	DM_Restart.....	35
5.7.1	General description.....	35
5.7.2	Procedure: DM_Restart_RCo.....	35
5.8	DM_Delay.....	36
5.8.1	Description.....	36
5.8.2	Procedure: DMP_Delay.....	36
5.9	DM_IndividualAddressRead.....	36
5.10	DM_IndividualAddressWrite.....	37
5.11	DM_DomainAddressRead.....	37
5.12	DM_DomainAddressWrite.....	37
5.13	DM_ProgMode_Switch.....	37
5.13.1	Description.....	37
5.13.2	Procedure: DMP_ProgModeSwitch_RCo.....	38
5.14	DM_GroupObject_Link_Read.....	38
5.14.1	Description.....	38
5.14.2	Used management service.....	38
5.14.3	Sequence.....	39
5.14.4	Exception handling.....	39
5.15	DM_GroupObject_Link_Write.....	39
5.15.1	Description.....	39
5.15.2	Used management services.....	39
5.15.3	Sequence.....	40
5.15.4	Exception handling.....	40
5.16	DM_MemWrite.....	40
5.16.1	General description.....	40
5.16.2	Procedure: DMP_MemWrite_RCo.....	41
5.16.3	Procedure: DMP_MemWrite_RCoV.....	42
5.17	DM_MemVerify.....	44
5.17.1	General description.....	44
5.17.2	Procedure: DMP_MemVerify_RCo.....	44
5.18	DM_MemRead.....	45
5.18.1	General description.....	45
5.18.2	Procedure: DMP_MemRead_RCo.....	46
5.19	DM_UserMemWrite.....	46
5.19.1	General description.....	46
5.19.2	Procedure: DMP_UserMemWrite_RCo.....	47

5.19.3	Procedure: DMP_UserMemWrite_RCoV .....	48
5.20	DM_UserMemVerify .....	50
5.20.1	General description .....	50
5.20.2	Procedure: DMP_UserMemVerify_RCo.....	50
5.21	DM_UserMemRead .....	51
5.21.1	General description .....	51
5.21.2	Procedure: DMP_UserMemRead_RCo .....	51
5.22	DM_InterfaceObjectWrite .....	52
5.22.1	General description .....	52
5.22.2	Procedure: DMP_InterfaceObjectWrite_R .....	52
5.23	DM_InterfaceObjectVerify.....	53
5.23.1	General description .....	53
5.23.2	Procedure: DMP_InterfaceObjectVerify_R .....	54
5.24	DM_InterfaceObjectRead .....	55
5.24.1	General description .....	55
5.24.2	Procedure: DMP_InterfaceObjectRead_R.....	56
5.25	DM_InterfaceObjectScan.....	57
5.25.1	General description .....	57
5.25.2	Procedure: DMP_InterfaceObjectScan_R .....	58
5.26	DM_LoadStateMachineWrite .....	59
5.26.1	General description .....	59
5.26.2	Procedure: DMP_LoadStateMachineWrite_RCo_Mem .....	61
5.26.3	Procedure: DMP_LoadStateMachineWrite_RCo_IO .....	65
5.27	DM_LoadStateMachineVerify .....	68
5.27.1	General description .....	68
5.27.2	Procedure: DM_LoadStateMachineVerify_RCo_Mem .....	69
5.27.3	Procedure: DMP_LoadStateMachineVerify_R_IO .....	69
5.28	DM_LoadStateMachineRead .....	70
5.28.1	General description .....	70
5.28.2	Procedure: DMP_LoadStateMachineRead_RCo_Mem .....	71
5.28.3	Procedure: DMP_LoadStateMachineRead_R_IO .....	72
5.29	DM_RunStateMachineWrite.....	73
5.29.1	General description .....	73
5.29.2	Procedure: DMP_RunStateMachineWrite_RCo_Mem.....	74
5.29.3	Procedure: DMP_RunStateMachineWrite_R_IO.....	75
5.30	DM_RunStateMachineVerify.....	76
5.30.1	General description .....	76
5.30.2	Procedure: DMP_RunStateMachineVerify_RCo_Mem.....	77
5.30.3	Procedure: DMP_RunStateMachineVerify_R_IO.....	78
5.31	DM_RunStateMachineRead.....	79
5.31.1	General description .....	79
5.31.2	Procedure: DMP_RunStateMachineRead_RCo_Mem .....	79
5.31.3	Procedure: DMP_RunStateMachineRead_R_IO.....	80
5.32	DM_LCSlaveMemWrite.....	81
5.32.1	General description .....	81
5.32.2	Procedure: DMP_LCSlaveMemWrite_RCo.....	82
5.33	DM_LCSlaveMemVerify.....	83
5.33.1	General description .....	83

5.33.2 Procedure: DMP_LCSlaveMemVerify_RCo .....	84
5.34 DM_LCSlaveMemRead .....	85
5.34.1 General description .....	85
5.34.2 Procedure: DMP_LCSlaveMemRead_RCo.....	85
5.35 DM_LCExtMemWrite .....	86
5.35.1 General description .....	86
5.35.2 Procedure: DMP_LCExtMemWrite_RCo .....	87
5.36 DM_LCExtMemVerify .....	88
5.36.1 General description .....	88
5.36.2 Procedure: DMP_LCExtMemVerify_RCo.....	89
5.37 DM_LCExtMemRead .....	90
5.37.1 General description .....	90
5.37.2 Procedure: DMP_LCExtMemRead_RCo .....	90
5.38 DM_LCExtMemOpen .....	91
5.38.1 General description .....	91
5.38.2 Procedure: DMP_LCExtMemOpen_RCo .....	91
5.39 DM_LCRouteTableStateWrite.....	91
5.39.1 General description .....	91
5.39.2 Procedure: DMP_LCRouteTableStateWrite_RCo .....	92
5.40 DM_LCRouteTableStateVerify.....	93
5.40.1 General description .....	93
5.40.2 Procedure: DMP_LCRouteTableStateVerify_RCo .....	93
5.41 DM_LCRouteTableStateRead.....	94
5.41.1 General description .....	94
5.41.2 Procedure: DMP_LCRouteTableStateRead_RCo .....	94
Table 1 – Resulting states after each event .....	60
Table 2 – Overview state machine types and tables.....	61
Table 3 – Overview addresses for the load management controls .....	61
Table 4 – Addresses of the load state controls.....	69
Table 5 – Addresses of the load state controls.....	71
Table 6 – Run state events and resulting run states.....	73
Table 7 – Addresses of the run state controls .....	74

## 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 50090-7-1 on 2003-12-02.

This European Standard supersedes R205-011:1996.

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

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

**Konnex Association**  
Neerveldstraat, 105  
Twin House  
B - 1200 Brussels

Tel.: + 32 2 775 85 90  
Fax.: + 32 2 675 50 28  
e-mail: [info@konnex.org](mailto:info@konnex.org)  
[www.konnex.org](http://www.konnex.org)

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 50090-7-1 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

The management procedures capture the dynamics of managing distributed resources on the network in terms of abstract procedures. On the network itself, a procedure consists of a sequence of telegrams, exchanged between two partners: the management client and the management server.

The management client is a powerful device with 'controller' functionality, typically but not exclusively PC-based. Except for network-oriented management, the server is always one particular 'target device'. In the former case, it is in fact the network as a whole which acts as partner or server. Ultimately, of course, the response to a client request is always generated by the individual devices connected to the network, either one or many. In addition to its run-time behaviour (based on group communication), every device moreover supports a rich management server profile to this purpose. One important objective of this part "Management Procedures" is precisely to allow a concise description of such a profile. It is clear that the information about the full set of management procedures supported by a particular device or implementation, tells us significantly more about the device than merely the list of services through which this is realised.

Note that in general, one single device may well implement both client as well as server functionality. For and during the execution of one particular management procedure, however, one device takes on one single role.

## 1 Scope

This international standard establishes general principles for network- and device-management shared by and independent of the installation mode. The goal is to standardize the interaction, between a management client and a management server, that shall lead to the successful configuration of the devices. In this way, these management procedures thus specify the highest level communication requirements between a management client and a management server. These requirements specify

- a) the **sequence** of messages that shall be exchanged between a management client and a management server, and
- b) the **contents** and **interpretation** of the transported data, and
- c) the **action** to take based on these data (setting internal resources, state machines, physical actions, ...), and
- d) the error and exception handling.

The management procedures base on the application layer services.

Some management procedures solely base on the use of one or a sequence of dedicated application layer services to achieve the required goal. For these, the documents EN 50090-4-1 and EN 50090-4-2 provide sufficient information for the underlying mechanisms.

Other management procedures additionally use the application layer services to access internal data in the management server to achieve the required goal. These data are laid down as objects as specified in EN 50090-3-2.

## 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<sup>1)</sup> *Home and Building Electronic Systems (HBES) – Part 1: Standardisation structure*
- EN 50090-3-2:2004 *Home and Building Electronic Systems (HBES) – Part 3-2: Aspects of application – User process for HBES Class 1*
- EN 50090-4-1:2004 *Home and Building Electronic Systems (HBES) – Part 4-1: Media independent layers – Application layer for HBES Class 1*
- EN 50090-4-2:2004 *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*

## 3 Terms and 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

##### **network**

a combination of several transmission links connected at individual points by electrical or optical means as part of an installation, system, appliance or component

#### 3.1.2

##### **Bus Access Unit (BAU)**

the bus access unit contains all protocol layers plus the optional internal user application

#### 3.1.3

##### **device**

##### **product**

HBES Products consist of devices in the form of hardware, firmware and their associated software

#### 3.1.4

##### **management procedures**

the dynamics of managing distributed resources on the network in terms of abstract procedures between two partners: the management client and the management server

#### 3.1.5

##### **management client**

a powerful device with 'controller' functionality, typically but not exclusively PC-based

---

<sup>1)</sup> At draft stage.