

# ANSI/CEA Standard

## Introduction to the CEBus Standard

ANSI/CEA-600.10

December 1999

ANSI Approval June 2000



**CEA**<sup>®</sup>  
Consumer Electronics Association  
[www.CE.org](http://www.CE.org)

## NOTICE

Consumer Electronics Association (CEA<sup>®</sup>) Standards, Bulletins and other technical publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards, Bulletins and other technical publications shall not in any respect preclude any member or nonmember of CEA from manufacturing or selling products not conforming to such Standards, Bulletins or other technical publications, nor shall the existence of such Standards, Bulletins and other technical publications preclude their voluntary use by those other than CEA members, whether the standard is to be used either domestically or internationally.

Standards, Bulletins and other technical publications are adopted by CEA in accordance with the American National Standards Institute (ANSI) patent policy. By such action, CEA does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the Standard, Bulletin or other technical publication.

This CEA Standard is considered to have International Standardization implication, but the International Electrotechnical Commission activity has not progressed to the point where a valid comparison between the CEA Standard and the IEC document can be made.

This Standard does not purport to address all safety problems associated with its use or all applicable regulatory requirements. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before its use.

(Formulated under the cognizance of the CEA's **R7 Home Networks Committee**.)

Published by

©CONSUMER ELECTRONICS ASSOCIATION 2000  
Technology & Standards Department  
1919 S. Eads Street  
Arlington, Virginia 22202

**PRICE: Please call Information Handling Services, USA and Canada (1-800-854-7179)  
International (303-397-7956), or  
<http://global.ihs.com>**

All rights reserved  
Printed in U.S.A.

PLEASE!

DON'T VIOLATE  
THE  
LAW!

This document is copyrighted by the Consumer Electronics Association (CEA<sup>®</sup>)  
and may not be reproduced without permission.

Organizations may obtain permission to reproduce a limited number of copies by  
entering into a license agreement. For information contact:

Information Handling Services  
15 Inverness Way East  
Englewood, Colorado 80112-5704  
or call U.S.A. and Canada 1-800-854-7179, International (303) 397-7956  
See <http://global.ihs.com> or email [global@ihs.com](mailto:global@ihs.com)





## **CEA-600.10 (Formerly Titled EIA-600.10)**

### **Introduction to the CEBus Standard**

This document is the introduction to **EIA-600**. Original release 6-15-92.



**CONTENTS**

|  |    |
|--|----|
| 1. Overview and Purpose.....                     | 1  |
| 1.1 Standard Organization .....                  | 2  |
| 1.2 Relation of <b>EIA-600</b> to OSI Model..... | 3  |
| 2. Background .....                              | 4  |
| 3. Scope.....                                    | 5  |
| 4. Goals .....                                   | 5  |
| 4.1 Specification Development Goals .....        | 5  |
| 4.2 Technical Goals .....                        | 6  |
| 4.3 Non Goals.....                               | 7  |
| 5. Minimum Device Functionality .....            | 7  |
| 5.1 Protocol.....                                | 7  |
| 5.1.1 Data Link Layer .....                      | 7  |
| 5.1.2 Network Layer.....                         | 8  |
| 5.1.3 Application Layer .....                    | 9  |
| 5.2 CAL Functionality.....                       | 9  |
| 5.2.1 General.....                               | 9  |
| 5.2.2 Syntax .....                               | 9  |
| 5.2.3 Methods.....                               | 10 |
| 5.2.4 Instance Variables .....                   | 10 |
| 5.2.5 Objects .....                              | 10 |
| 5.2.6 Contexts .....                             | 11 |
| 5.2.7 Errors .....                               | 11 |
| 6. Wording, Definitions, and Abbreviations ..... | 11 |
| 6.1 Wording.....                                 | 11 |
| 6.2 Definitions and Abbreviations.....           | 11 |
| 6.2.1 OSI Model Terms .....                      | 11 |
| 6.2.2 General Network Terms.....                 | 13 |



# ***CEA-600.10 Introduction to the CEBus Standard***

## **1. Overview and Purpose**

This document comprises Section 1 of the complete **EIA-600** standard and is intended to provide a general introduction to the entire standard. The complete set of documents that comprise **EIA-600** provide the necessary specifications for the Consumer Electronic Bus (CEBus<sup>®</sup>) standard, a local communications and control network designed specifically for the home. The **EIA-600** network provides a standardized communication facility for exchange of control information and data among devices and services in the home.

**EIA-600** was developed by the Consumer Electronics Group of the EIA and an inter-industry committee of representatives from both EIA member and non-member companies. The major motivations for this development were:

To develop a universal method for devices in the home to communicate, regardless of manufacturer.

To allow the introduction of new products and services to the home with minimum confusion to consumers.

To meet the majority of anticipated home control requirements with a single, multi-media network standard.

To minimize the redundancy of control and operation methods among devices and equipment in the home.

**EIA-600** is intended to handle existing and anticipated control communication requirements consistent with a broad spectrum of residential applications. It is hoped that through the universality of this standard and subsequent competition, the industry will have new home control devices, products, and services provided at minimum practical costs. **EIA-600** is intended for such functions as remote control, status indication, remote instrumentation, energy management, security systems, entertainment device coordination, etc. These situations require economical connection to a shared local communication network carrying relatively short digital messages.

A major objective of this specification is compatibility. It is intended that every implementation of **EIA-600** be able to co-exist with every other implementation, that every device that meets this specification can communicate with all other **EIA-600** devices, and that the language used for control functions will be understood by all devices.

---

<sup>®</sup> CEBus is a registered Service Mark of the Electronic Industries Association.

## 1.1 Standard Organization

The standard covers three areas: the physical design and topology of the network media, a protocol for message generation, and a common command language. These areas are covered in eight volumes:

### *EIA-600.10 Introduction (this document)*

Covers the overview, background, scope, goals, plus provides a set of word usages and global definitions for the entire standard. This document also provides a concise statement of required minimum device functionality.

### *EIA-600.20 General Description*

Provides an overview description of the *EIA-600* standard starting with the general architecture, a discussion of the media and topologies used with each medium, and an overview of the message protocol and common command language used by all *EIA-600* devices.

### *EIA-600.31 to EIA-600.39 Physical Layer and Media*

Nine parts (in nine separate documents) cover all of the *EIA-600* allowed media and the physical layer interface to the media (OSI layer 1), plus a discussion of Node 0 that provides all network support functions, including router and brouter physical layer descriptions.

### *EIA-600.41 to EIA-600.46 Node Communications Protocol*

Six parts (in six separate documents) cover a complete description of the OSI protocol layers used by *EIA-600* (Application, Network, and Data Link Layers) and the resulting message packet format.

### *EIA-600.51 to EIA-600.54 Router Communication Protocol*

Four parts (in four separate documents) cover a complete description of the OSI layers necessary to implement a router function between *EIA-600* physical media.

### *EIA-600.61 to EIA-600.64 Brouter Communications Protocol*

Four parts (in four separate documents) cover a complete description of the OSI layers necessary to implement a Brouter function between *EIA-600* non-physical (RF, IR) and physical media.

*EIA-600.81 to EIA-600.82 Common Application Language (CAL)*

Specifies the high level command language (CAL) used by all devices communicating over *EIA-600*.

Several sections are divided into a number of parts. In many cases, due to size, each part is published as a separate document.

**1.2 Relation of *EIA-600* to OSI Model**

This *EIA-600* specification utilizes a description of protocol layering that corresponds with the open systems interconnection (OSI) model of the International Organization for Standardization (ISO). See Figure 1.1. For *EIA-600*, the model has been extended to include the requirements for inter-layer management and the specification of the various media used by *EIA-600* devices.

Although the CEBus architecture is modeled after the OSI architecture, the two are not the same. Some CEBus layers include additional functions not present in OSI layers. Also, the functions of OSI layers absent from the CEBus architecture are often represented in other CEBus layers. For example, *authentication* and *encryption* are functions of the OSI Presentation Layer. In the CEBus model, these functions are performed in the Application Layer.