

ANSI/CEA Standard

Twisted Pair Physical Layer & Medium Specification

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

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1. Introduction

This document is the specification for the CEBus Twisted Pair (TP) Physical Layer and Medium. Its purpose is to present all the information necessary for the development of a TP physical network and devices to communicate and share information over that network in an orderly manner. This is one of a series of documents covering the various media that comprise the CEBus standard.

This document covers the complete physical layer (OSI layer 1) including the interface to the Medium Access Control (MAC) Layer and the interface to the medium. The document also provides a complete set of physical and electrical specifications for the medium and the specification for a number of data channels available on the medium.

Certain items in the specification may not have been resolved at the time of the release of this version of the specification; these items are indicated as under study.

1.1 Safety Preamble

This preamble sets forth several recommendations related to safety concerns with respect to the CEBus Twisted Pair(TP) Draft Standard.

This discussion is not complete, nor does it address all possible safety issues. The designer is urged to consult, among other things, the relevant local and national electrical codes. Local codes usually supplement the National Electrical Code[8] and may impose additional safety related requirements.

It is strongly recommended that products conforming to the CEBus TP Draft Standard be designed, constructed, assembled, and installed in accordance with recognized safety provisions appropriate to products covered by the standard.

CEBus TP network branch cables systems as described in this standard are subject to at least three direct electrical safety hazards during their use. These hazards are:

- Direct contact between network cable and components and power or lighting circuits.
- High energy transients coupled into the network cabling system.
- Potential differences between safety grounds to which network components are connected.

These electrical safety hazards should be alleviated for the network to perform properly. In addition to provisions for properly handling these faults in an operational system, special measures shall be taken to ensure that the intended safety features are maintained during modification of an existing network.

All wire and wiring performed for TP networks should conform to Article 725, Class 1, Class 2, Class 3 Remote-Control, Signaling, and Power-Limited Circuits, and Article 800, Communications Circuits, of the National Electrical Code [8].

1.2 Scope

This specification contains all the information necessary to facilitate the exchange of data and control information over twisted pair media within a home. The document is divided into six Sections (1 - 6):

1. An introduction to the TP standard.
2. A general description of the TP network design.
3. The specifications of the allowed topology and configuration rules - this section covers network components, allowed wiring configurations, coexistence with other services, configuration of the wiring and attachment of devices, and power distribution rules.
4. A specification of the TP physical medium - this section covers frequency allocation of the medium,