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**Home Digital Network Interface Specification with Copy
Protection**

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1 INTRODUCTION

The need for interfaces between cable set top boxes and digital television (DTV) receivers is one element of a general movement to interconnect multiple audio/visual (A/V) devices on a common bus or network. The IEEE 1394 interface has emerged as the preferred tool to accomplish this goal. This specification contains requirements and options for an IEEE 1394 digital interface between a cable TV set top box (called a Host Device in this standard because it “hosts” a removable security module), and a DTV receiver.

IEEE 1394, which covers the physical interface, has been extended by CEA-775, CEA-931 and CEA-799 which cover the command language, remote control commands, and on-screen graphics display respectively. This standard extends these to cover the needs of cable set-top boxes. In addition, the Digital Transmission Content Protection specification governs copy protection of digital content on this interface.

A schematic of the typical architecture expected in the implementation of this specification is shown in below.

The functional partitioning defined in this standard locates the MPEG signal processing into the DTV receiver while service access and content descrambling occurs in the Host device.

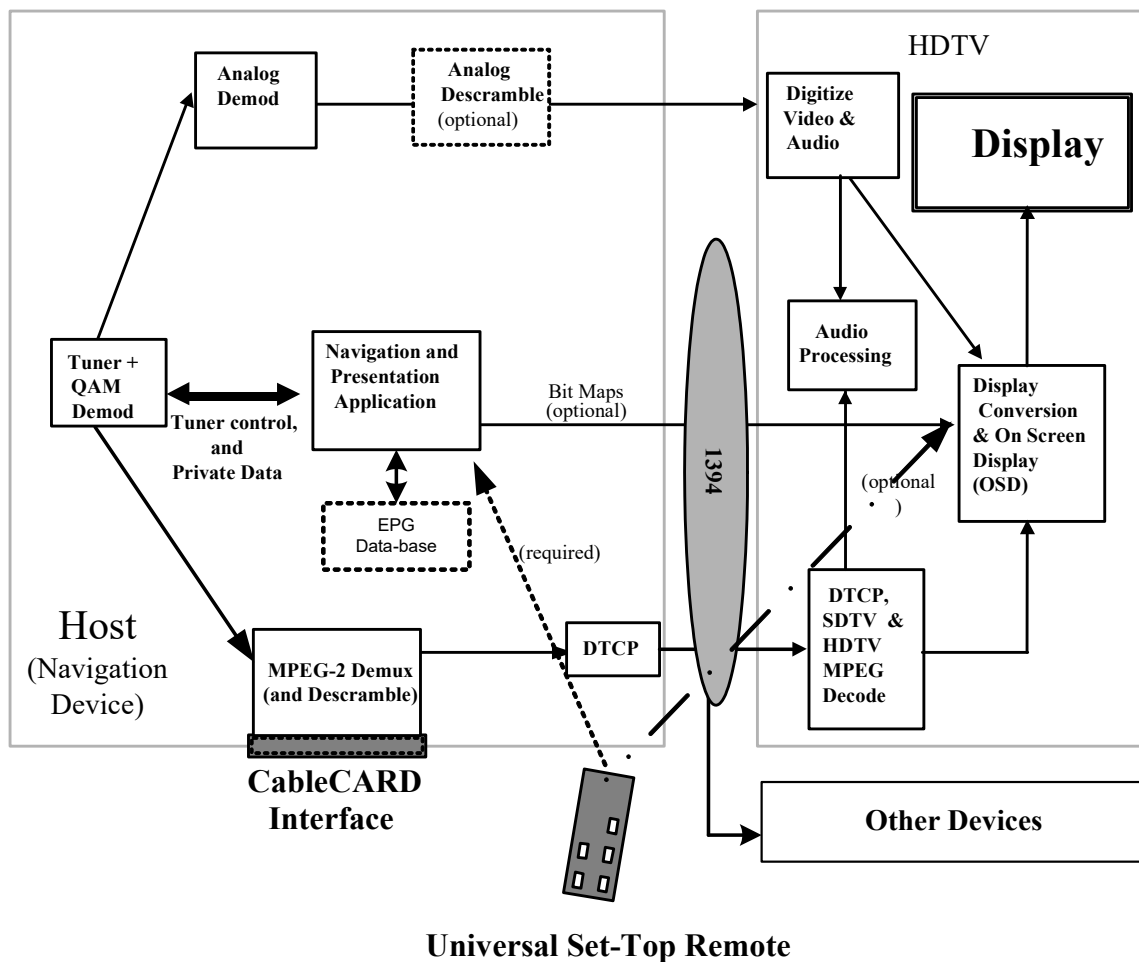


Figure 1 - Interface Between a Host Device and a DTV Receiver

To be compatible with Host Devices that comply with this standard, a DTV receiver shall support one or more analog audio/video inputs, and allow an external device such as a set-top box the ability to select either a digital or an analog audio/video source for display.

An external device may optionally supply user interface screens in analog video format instead of bitmap OSD.

2 REFERENCES

2.1 Normative References

The following standards and specifications are normative for devices complying with this interface specification. Where appropriate, this specification incorporates existing standards by reference. This specification also defines additional requirements not found elsewhere.

1. IEEE 1394-2008 “Standard for a High Performance Serial Bus”

IEEE 1394-2008 defines the physical, link, and transaction layers and the bus management protocol for data streams over a high-performance serial bus. It can be ordered from <http://shop.ieee.org/store/> and from Global Engineering Documents, <http://global.ihs.com/>.

2. Reserved

3. IEC 61883 “Digital Interface for Consumer Audio/Video Equipment”

IEC 61883-1 defines, among other things, a command/response protocol for delivering commands from a controller to another device over 1394 and connection management protocols for consumer devices.

IEC 61883-4 defines the digital data transmission format for transmitting MPEG-2 Transport Stream over an isochronous channel on 1394. IEC 61883-1 and -4 are normative and required for devices complying with this standard.

IEC 61883-2, -3, and -5 define digital data transmission formats for transmitting DVCR format AV data over an isochronous channel on 1394.

The IEC 61883 standard can be obtained from the IEC National Committees (e.g. ANSI in the US) and other sales outlets. Visit <http://www.iec.ch/>. Note: The current versions are 61883-1, Edition 2.0, dated 1/2003. Parts 2, 3, 4, and 5 are Edition 2.0 dated 8/2004.

4. DTCP Digital Transmission Content Protection Specification

This is the DTCP copy protection specification which is used to protect designated MPEG content from unauthorized use. An informational version is available from <http://www.dtcp.com/>. Use of the technology defined in this specification is subject to licensing by Digital Transmission Licensing Administrator, dtla@dtcp.com.

5. AV/C Digital Interface Command Set, General Specification, 1394 Trade Association, Version 4.2

This specification, available from <http://www.1394ta.org/>, defines a command set (AV/C) that can be used to communicate with a growing family of consumer devices.

6. Reserved

7. ISO/IEC 13818-1:2007, Information Technology - Generic Coding of Moving Pictures and Associated Audio - Part 1:Systems

This specification defines an MPEG-2 systems standard, including Transport Stream encoding. ISO/IEC 13818-1 is normative and required for devices complying with this standard.

8. ATSC A/53 Digital Television Standard, Parts 1 through 6

ATSC A/53, available from <http://www.atsc.org/>, is normative and required for devices complying with this standard. A/53 Parts 1, 3, and 4: 2009, Parts 2, 5, and 6: 2007.

9. CEA-775-C, DTV 1394 Interface Specification, September 2008

This is a general specification for a DTV receiver equipped with a 1394 interface. Also, the CEA-775 standard defines a data structure, the EIA Unit Identifier Descriptor, that allows the Host Device to discover the capabilities of the DTV receiver. CEA standards can be purchased from Global Engineering Documents, <http://global.ihs.com/>.

10. CEA-799-A, On-Screen Display Specification, July 2006

This standard defines a format and method of delivery for on-screen display (OSD) data and the syntax and semantics of the subframes that define the OSD data.

11. ANSI/SCTE 41 2004 POD Copy Protection System

This specifies the copy protection system used on the CableCARD-Host interface.

12. ANSI/SCTE 54 2009, Digital Video Service Multiplex and Transport System Standard for Cable Television

13. ANSI/SCTE 43 2005, Digital Video Systems Characteristics Standard for Cable Television

14. CEA-931-C Remote Control Command Pass-Through Standard for Home Networking, December 2007

2.2 Informative References

The following standards and specifications are informative references.

15. IPv4 over IEEE 1394

This specification, <http://www.ietf.org/rfc/rfc2734.txt>, describes the mapping of Internet Protocol (IP) to IEEE 1394. Devices use this protocol for IP data transfer, including such applications as e-mail, web browsing, and file transfer.