



# TA Document 2001014

## Assignment of Automotive CTS code and Unit\_SW\_Version

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**Abstract:**  
This specification defines CTS code for use by the Automotive interoperability architecture. It also specifies a Unit\_SW\_Version for the Automotive Unit directory.

**Keywords:**  
Automotive CTS Unit\_SW\_Version IEC 61883-1.

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## **Change History**

**Version 0.9 (April 27, 2001)**

**Version 0.95 (August 6, 2001)**

## 1. Overview

### 1.1 Purpose

This specification defines the CTS code for use by the Automotive architecture. It also specifies a Unit\_SW\_Version for the Automotive Unit directory as defined by the 1394 Unit\_Spec\_ID. These values fall under the ISO/IEC 13123-1994 standard, as referenced in [R3]. These are extensions to the assignment in IEC 61883-1 [R4].

### 1.2 Scope

The Automotive architecture defines a framework and a set of APIs to allow devices operating in an IEEE1394 network to interact and provide services. Full details of the Automotive specification may be found at [R6].

As part of the Automotive architecture, the underlying message system in the Automotive space uses a CTS code to denote an Automotive unique message, not defined within AV/C or HAVi, being carried on the FCP protocol.

In addition, the Automotive architecture uses the Unit\_SW\_Version field to define the software version of the Automotive specification that a particular implementation conforms to.

New Automotive CTS code and Unit\_SW\_Version will be reflected in maintenance of IEC 61883-1 [R4].

## 2. References

The following standards contain provisions, which through reference in this document, constitute provisions of this standard. All the standards listed are normative references. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

- [R1] IEEE Std 1394-1995, Standard for a High Performance Serial Bus
- [R2] IEEE Std 1394a-2000, Standard for a High Performance Serial Bus – Amendment 1
- [R3] ISO/IEC 13123-1994: Control and Status register (CSR) Architecture for Microcomputer Buses
- [R4] IEC 61883-1: Consumer audio/video equipment – Digital interface – Part 1: General
- [R5] 1394TA Document 1998018, Assignment of HAVi CTS code and Unit\_SW\_Version 1.0
- [R6] 1394TA Document 2001018, 1394 Automotive (IDB-1394) Draft 0.1

## 3. Definitions

### 3.1 Conformance levels

**3.1.1 expected:** A key word used to describe the behavior of the hardware or software in the design models *assumed* by this Specification. Other hardware and software design models may also be implemented.

**3.1.2 may:** A key word that indicates flexibility of choice with *no implied preference*.

**3.1.3 shall:** A key word indicating a mandatory requirement. Designers are *required* to implement all such mandatory requirements.

**3.1.4 should:** A key word indicating flexibility of choice with a strongly preferred alternative. Equivalent to the phrase *is recommended*.

**3.1.5 reserved fields:** A set of bits within a data structure that are defined in this specification as reserved, and are not otherwise used. Implementations of this specification shall zero these fields. Future revisions of this specification, however, may define their usage.

**3.1.6 reserved values:** A set of values for a field that are defined in this specification as reserved, and are not otherwise used. Implementations of this specification shall not generate these values for the field. Future revisions of this specification, however, may define their usage.

NOTE—The IEEE is investigating whether the “may, shall, should” and possibly “expected” terms will be formally defined by IEEE. If and when this occurs, draft editors should obtain their conformance definitions from the latest IEEE style document.

### 3.2 Glossary of terms

**3.2.1 byte:** Eight bits of data, used as a synonym for octet.

**3.2.2 CSR Architecture:** A convenient abbreviation of the following reference (see clause 2): ISO/IEC 13213-1994 [ANSI/IEEE Std 1212, 1994 Edition], Information Technology—Microprocessor systems—Control and Status Register (CSR) Architecture for Microcomputer Buses [R3].

**3.2.3 quadlet:** Four bytes of data.

### 3.3 Acronyms and abbreviations

AV/C Audio Video Control

IEEE The Institute of Electrical and Electronics Engineers, Inc.



## 4. CTS code

### 4.1 CTS code for Automotive protocol

The proposed Automotive CTS code is 4. Table 4-1 summarizes the CTS code assignments:

Refer to reference [R6] for the detail of the Automotive Supplement .

**Table 4.1 – CTS code assignment**

CTS code of FCP frame				CTS
msb		lsb		
0	0	0	0	AVC
0	0	0	1	Reserved for CAL
0	0	1	0	Reserved for EHS
0	0	1	1	HAVi
0	1	0	0	Reserved for automotive application
0	1	0	1	(Reserved)
1	1	0	1	
1	1	1	0	Vender unique
1	1	1	1	Extended CTS

## 5. Unit Directory

### 5.1 Unit\_Spec\_ID

The Unit\_Spec\_ID field for the FCP units shall be the organization ID of 1394 TA.

### 5.2 Unit\_SW\_Version

The Unit\_SW\_Version field is used to identify, which protocol is supported by the device. If a device supports more than one protocol, the device shall have a separate unit directory for each protocol supported (note 2).

**Table 5.1 – Unit\_SW\_Version code assignment**

Unit_SW_Version value	Description
01 00 00 <sub>16</sub>	Reserved (note 1)
01 00 01 <sub>16</sub>	AV/C protocol
01 00 02 <sub>16</sub>	Reserved for CAL protocol
01 00 04 <sub>16</sub>	Reserved for EHS protocol
01 00 08 <sub>16</sub>	HAVi protocol
01 00 0A <sub>16</sub>	Reserved for automotive protocol
01 40 00 <sub>16</sub>	Vender unique protocol
01 40 01 <sub>16</sub>	Vender unique protocol (note 3)
Other values	Reserved for future definition

Note 1: Some early implementation of AV/C device may use this value.

Note 2: IEC 61883 implies one unit directory shared by multiple protocols using Unit\_SW\_Version as bit fields corresponding to each protocol. However, separate unit directory is advantageous as it allows to have protocol dependent entry in the unit directory.

Note 3: This value is defined for the compatibility of IEC 61883-1 specification. It is recommended to have two separate directories for the vender unique and AV/C protocol instead of having one unit directory with this Unit\_SW\_Version value.

The other entries of unit directory may be defined and used by the protocol specified by the Unit\_SW\_Version.