

INTERNATIONAL STANDARD



**Universal serial bus interfaces for data and power –
Part 2-3: Universal Serial Bus Cables and Connectors Class Document
Revision 2.0**



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International Standard IEC 62680-2-3 has been prepared by technical area 14: Interfaces and methods of measurement for personal computing equipment, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on documents prepared by the USB Implementers Forum (USB-IF). The structure and editorial rules used in this publication reflect the practice of the organization which submitted it.

The text of this standard is based on the following documents:

| CDV | Report on voting |
|--------------|------------------|
| 100/2333/CDV | 100/2436/RVC |

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

A list of all the parts in the IEC 62680 series, published under the general title *Universal serial bus interfaces for data and power* can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

The IEC 62680 series is based on a series of specifications that were originally developed by the USB Implementers Forum (USB-IF). These specifications were submitted to the IEC under the auspices of a special agreement between the IEC and the USB IF.

The USB Implementers Forum, Inc.(USB-IF) is a non-profit corporation founded by the group of companies that developed the Universal Serial Bus specification. The USB-IF was formed to provide a support organization and forum for the advancement and adoption of Universal Serial Bus technology. The Forum facilitates the development of high-quality compatible USB peripherals (devices), and promotes the benefits of USB and the quality of products that have passed compliance testing.

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This series covers the Universal Serial Bus interfaces for data and power and consists of the following parts:

IEC 62680-1-1, *Universal Serial Bus interfaces for data and power – Part 1-1: Common components – USB Battery Charging Specification, Revision 1.2*

IEC 62680-2-1, *Universal Serial Bus interfaces for data and power – Part 2-1: Universal Serial Bus Specification, Revision 2.0*

IEC 62680-2-2, *Universal Serial Bus interfaces for data and power – Part 2-2: USB Micro-USB Cables and Connectors Specification, Revision 1.01*

IEC 62680-2-3, *Universal Serial Bus interfaces for data and power – Part 2-3: Universal Serial Bus Cables and Connectors Class Document Rev. 2.0*

This part of the IEC 62680 series consists of several distinct parts:

- the main body of the text, which consists of the original specification developed by the USB-IF.

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Universal Serial Bus Cables and Connectors Specification

Revision 2.0
August, 2007

Revision History

| Revision | Date | Filename | Comment |
|----------|-------------------|------------------------|---|
| 2.0 RC 6 | August 10, 2007 | CabConnRC6_Aug10.doc | Added Go/No-go & latch measurement for Micro series Added Drain wire inspection process Added pin contact visual inspection Added clarifying text to 4-axis test description |
| 2.0 RC5 | June 5, 2007 | CabConn20RC5_June5 | Removed Shielding Effectiveness Replace Rotational Continuity with 4-Axis continuity Other miscellaneous minor changes |
| 2.0 RC4 | May, 2007 | CabConn20RC4_May07 | Cable Construction inspection added |
| 2.0 | April 4, 2007 | CabConn20 | Removed Shielding Effectiveness, Added power line resistance test Added cable rotation test |
| 2.0 | February 14, 2007 | CabConn Rev 2.0 | Edits from Tsuyoshi YAMANE of Matsushita |
| 2.0 | February 13, 2007 | CabConn Rev 2.0 | Edited by Jim Koser new chart from Hirose |
| 2.0 | February 7, 2007 | CabConn Rev 2.0 | Edited draft |
| 2.02RC2 | February 6, 2007 | CabConnRC2_02-06-07 | Work group editorials |
| 2.01RC2 | December 6, 2006 | CabConnRC2_12-06-06 | Work group editorials |
| 2.0RC2 | July 11, 2006 | CabConnRC2_7-11-06 | Added durability requirements for Ruggedized Standard "A" receptacle and durability requirements for Micro series |
| 2.0RC2 | June 7, 2006 | CabConnRC2_6-7-06 | Added new critical dimensions drawings for standard "A" and "B" plugs and receptacles and changed the criteria for "mini" products to the use of go – no go gages in Appendix B |
| 2.0RC2 | March 24, 2006 | CabConnRC2_3-23-06.doc | Added new IP agreement |
| 2.0RC2 | December 03, 2003 | CabConnRC2.doc | Final edit during USB DWG meeting in Austin prior to posting the document to Web site |
| 2.0RC1 | October 29, 2002 | CabConnRC1.doc | Adjust formatting in technical edit pass |
| 2.0RC | August 13, 2002 | | Rewrite of test program to reflect current practice and general updates to reflect changes in the USB Specification. |
| 1.1 | September 1, 1999 | | Editorial Update for improved use. Add Appendices 'A' and 'B.' |
| 1.0 | May 22, 1999 | | Accepted unanimously by USB-IF DWG after 30-day posting without negative comment. |
| 1.0RC | March 27, 1999 | | Release for industry comment |

| Revision | Date | Filename | Comment |
|----------|-------------------|----------|---|
| 0.9a | January 19, 1999 | | Moved to Revision 0.9 by consensus of the Cable & Connector Work Group. Pending final editorial cleanup RRs to be voted on at a special Cable & Connector Work Group meeting February 21, 1999. |
| 0.9RC | December 18, 1998 | | Moves Document to 0.9RC by consensus of the Cable & Connector Group to Version 0.9 without Appendices Drawings and Lab Listings. Special dispensation by the DWG to move to Revision 1.0 for use at the January 1999 Plug Fest. |
| 0.8 | October 20, 1998 | | Release for industry comment |

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UNIVERSAL SERIAL BUS INTERFACES FOR DATA AND POWER –

Part 2-3: Universal Serial Bus Cables and Connectors Class Document Revision 2.0

1 Introduction

1.1 Purpose

This document describes the mechanical, electrical, environmental, design and performance criteria and voluntary supplier compliance requirements for USB connectors, cable and fabricated cable assemblies. In addition, this document provides detailed requirements for the design, approval and implementation of application specific USB connectors and fabricated cable assemblies.

1.2 Scope

The information provided in this document serves as a guideline for design, development and voluntary compliance testing of USB connectors and fabricated cables assemblies, as well as defining mechanical, electrical, environmental and performance characteristics. As such, it defines how USB connectors, cable and fabricated cables assemblies are to be implemented and how manufacturers and/or fabricators will interact with the voluntary compliance requirements.

1.3 Related Documents

American Society for Testing and Materials

ASTM-D-4565 *Standard Test Methods for Physical and Environmental Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable*. This specification is available through the World Wide Web site <http://www.astm.org/>

ASTM-D-4566 *Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable*. This specification is available through the World Wide Web site <http://www.astm.org/>

ANSI/EIA 364-C *Electrical Connector/Socket Test Procedures Including Environmental Classifications*, approved 1994. Available in hard copy – reference search site <http://www.nssn.org/information.html>

Underwriters Laboratories

UL STD-94 *Test procedures used to classify polymeric materials 94HB, 94V-1, 94V-2, 94-5VA, 94-5VB, 94VTM-0, 94VTM-1, 94VTM-2, 94HBF, 94HF-1, and 94HF-2*. This specification is available through the World Wide Web site <http://www.comm-2000.com/>

UL Subject-444 *Type CMP (plenum cable), Type CMR (riser cable), Type CM (commercial cable), and Type CMX (cable for restricted use)*. This specification is available through the World Wide Web site <http://www.comm-2000.com/>

[USB2.0] *Universal Serial Bus Specification*, revision 2.0 (also referred to as the *USB Specification*). This specification is available on the World Wide Web site <http://www.usb.org>.

USB On-The-Go *On-The-Go Supplement to the USB 2.0 Specification* (also referred to as the *USB On-The-Go Specification*). This specification is available on the World Wide Web site <http://www.usb.org>.