



IPC-D-620

Design and Critical Process Requirements for Cable and Wiring Harnesses

Developed by the Wire Harness Design Task Group (7-31k)
and IPC-HDBK-620 Handbook Task Group (7-31h) of the
Product Assurance Committee (7-30) of IPC

Users of this publication are encouraged to participate in the
development of future revisions.

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Design and Critical Process Requirements for Cable and Wiring Harnesses

1 GENERAL

1.1 Scope This document provides design and critical process requirements and technical insight that have been removed from the acceptance standards for cable and wire harness assemblies. Reference materials listed in this text are among those considered as required reading. The User is encouraged to obtain all relevant referenced materials as this document cannot (nor can any single document) cover every material, process, environment, performance, or safety aspect that affect a given design.

1.2 Purpose “Design Requirements for Cable and Wiring Harnesses” is the cable and wiring harness and systems-level design requirements companion to IPC/WHMA-A-620, “Requirements and Acceptance for Cable and Wire Harness Assemblies,” and its associated space addendum.

The intent of this document is to set forth the general design requirements for electrical wiring harnesses and cable assemblies. This document is intended for use by the design engineer, manufacturing engineer, quality engineer, or other individual responsible for the tailoring of specific requirements of this document to the applicable performance class.

It is not the intent of this document to exclude any alternate or contractor-proprietary documents or processes that meet or exceed the baseline of requirements established by this document. Use of alternate or contractor-proprietary documents or processes **shall** [A1A2A3] require review and prior approval of the User.

For purposes of this document:

- The Designer is the design agent for the User.
- The User is the individual, organization, company, contractually designated authority, or agency responsible for the procurement or design of electrical/electronic/electromechanical (EEE) hardware, and having the authority to define the class of equipment and any variation or restrictions to the requirements of this document (i.e., the originator/custodian of the contract detailing these requirements). The User is considered the Design Authority.
- The Supplier is considered the individual, organization or company which provides the Manufacturer (assembler) components (electrical, electronic, electromechanical, mechanical, printed boards, etc.) and/or materials (solder, flux, cleaning agents, etc.).
- The Manufacturer is considered the entity that provides a service or product to the User.

1.3 Performance/Product Classification This document recognizes that electrical wiring harnesses and cable assemblies are subject to performance/product classifications by intended end-item use. Three general end-product classes have been established to reflect differences in producibility, complexity, functional performance requirements, and verification (inspection/test) frequency. It **should** be recognized that there may be requirement overlaps between classes.

The User is responsible for defining the product class required, whether compliance to any of the A through C Appendices is required, and to indicate any exceptions to specific parameters where appropriate.

Class 1 – General Electronic Products

Includes products suitable for applications where the major requirement is function of the completed assembly.

Class 2 – Dedicated Service Electronic Products

Includes products where continued performance and extended life is required, and for which uninterrupted service is desired but not critical. Typically, the end-use environment would not cause failures.

Class 3 – High Performance/Harsh Environment Electronic Products

Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.