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IEEE Standard for Receiver Fixture Interface

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IEEE Standards Coordinating Committee 20 on
Test and Diagnosis for Electronic Systems

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USA

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IEEE Standard for Receiver Fixture Interface

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IEEE Standards Coordinating Committee 20 on Test and Diagnosis for Electronic Systems

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Abstract: A mechanical and electrical specification for implementing a common interoperable mechanical quick-disconnect interconnect system for use by industry for interfacing large numbers of electrical signals (digital, analog, RF, power, etc.) is provided. These large interface panels (receiver and fixture panels) are employed primarily in test systems between stimulus/measurement assets and a related unit-under-test (UUT), although any application involving high-density contacts requiring a quick disconnect interface could benefit. The *receiver* is a receptacle that is mounted to test system mates with multiple *fixtures*, which serve as the *buffer* between the UUT and automatic test equipment (ATE). Fixtures translate standard input/output (I/O) signal routing offered at the receiver to a wiring interface that directly connects to the UUT. These UUT interfaces can represent cable connectors, direct plug-in (printed circuit board edge connectors), sensor monitoring, or manual feedback from the test technician.

The primary objectives of this standard are: (a) to establish interface standards that permit interchangeability of mechanical/electrical receiver/fixture/connector product assemblies from various manufacturers under an *open architecture*; and (b) to develop within this framework a defined set(s) of interconnecting connector and mechanical specifications that support available, accepted, low-cost commercial technology to reduced dependence on proprietary designs and extend life-cycle availability.

Keywords: connector, fixture, framework, interface, interoperability, mass-interconnect, quick disconnect, receiver, specification

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Introduction

This introduction is not part of IEEE Std 1505-2010, IEEE Standard for Receiver Fixture Interface.

Historical Background

On September 19, 1996, a group of receiver fixture product vendors/integrators announced the formation of an industry standards group called the RFI Alliance.

The organization later sought to gain identity through a standards organization, which ultimately became the Institute of Electrical and Electronic Engineers, Inc. (IEEE). Under the joint sponsorship of the Instrumentation and Measurement Society TC-5 Connectors/TC-8 Automated Instruments Committees and SCC20 Hardware Interface Subcommittee, an IEEE Std 1505 RFI Working Group was developed and authorized by the IEEE Standards Association. Participation in the IEEE Std 1505 RFI Working Group is open to vendors, integrators, and users.

IEEE Std 1505 Receiver Fixture Interface (RFI) Working Group focus

The IEEE Std 1505 RFI Working Group, sponsored by the IEEE Instrumentation and Measurement Society and IEEE SCC20, Test and Diagnosis for Electronic Systems, was formed to define a common electrical/mechanical interface specifications for applications involving test, production processing, quick-disconnect electrical interfacing, and subassembly mating requirements. The group is made up of technical individuals from industry, government, and academia, which reflect perspective views of a supplier, user, and general interest in the standard. To derive these specifications, the IEEE Std 1505 Working Group utilized the results of a study conducted by the Department of Defense Automatic Test System Research & Development Integrated Product Team (ARI) Critical Interface Working Group (CIWG), which reviewed as part of their tasks the Automatic Test System (ATS) Test Interface and the joint industry/government Common Test Interface (CTI) Working Group. The methodology step process includes: (a) defining the problem, (b) establishing a set of requirements, (c) evaluating available interface designs against a set of parameters that relate to the problem and requirements, and (d) defining a specification that will meet the consensus of the Working Group and industry short- and long-term goals. It was designed upon open standards or functional specifications that are supported by multiple-vendor products.

Cooperative relationship with the Common Test Interface

This document serves as the basis for supplemental pin map configuration standards, such as IEEE Std 1505.1-2008 and others that are expected to meet unique pin map requirements. Future revisions to this document may add new connector styles or types that support RFI needs.

The IEEE Std 1505 Working Group recognizes industry/government end-user integration and maintenance support of a defined CTI, a specific connector/pin map implementation of the standard. This document provides for these CTI end-users, and for its ATE system and hardware integrators, a defined, standardized framework and connector, and configuration specification to enable agency/aerospace interoperability and upward compatibility. The CTI Working Group has developed a *common test interface pin map configuration* (IEEE Std 1505.1) that uses this standard as its basis.

Vendor responsibility

Users and buyers of IEEE-1505-compliant hardware are forewarned that neither the IEEE nor any other referenced agency has responsibility for the warranty or certification of any RFI product compliance. Therefore, purchasers of RFI products are encouraged to request such information from the manufacturer.

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For more information about the IEEE Standards Association or the IEEE standards development process, visit the IEEE-SA web site at http://standards.ieee.org.

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Participants

At the time this standard was submitted to the IEEE-SA Standards Board for approval, the IEEE Std 1505 RFI Working Group had the following membership:

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David Dr[illegible]ste, *Co-Chair*

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The following is a historical list of participants who have dedicated their valuable time, energy, and knowledge to the creation of this material:

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The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

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Richard DeBlasio, *DOE Representative*
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IEEE Standard for Receiver Fixture Interface

1. Overview

1.1 Scope

The scope of this standard is the development of a common receiver fixture interface (RFI) specification that is based upon available commercial standards integrated under a common *open architecture*. This mechanical/electrical interface is intended to serve government/commercial interest for applications in test, system integration, manufacturing, monitoring, and other functional requirements that demand large contact densities and quick-disconnect mechanical operation.

1.2 Purpose

The purpose of this standard is to permit interchangeability of mechanical/electrical receiver/fixture/connector product assemblies from various manufacturers under an open architecture. The standard shall also define, within this framework, a set(s) of interconnecting connector and mechanical specifications that support available, accepted, low-cost commercial technology to reduce dependence on proprietary designs and extend life-cycle availability. Technical requirements incorporated shall be those identified by government and industry, including maximum flexibility, scalability, and range of application.

1.3 Background

A joint technical forum has been operational since 1997 under the auspices of the IEEE Std 1505 RFI Working Group.