IEC 62529

Edition 3.0 2024-06

INTERNATIONAL STANDARD

IEEE Std 1641™

colour inside

Standard for Signal and Test Definition

IEC 62529:2024-06(en) IEEE Std 1641-2022

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.01; 35.060

ISBN 978-2-8322-8703-3

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Standard for Signal and Test Definition

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The text of this International Standard is based on the following documents:

IEEE Std	FDIS	Report on voting
1641 (2022)	91/1933/FDIS	91/1945/RVD

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IEEE Standard for Signal and Test Definition

Developed by the

Test and Diagnosis for Electronic Systems Standards Committee (SCC20)
on
IEEE Standards and Standards Innovations (S&SI)
Strategic Management and Delivery Committee (SMDC)

Approved 21 September 2022

IEEE SA Standards Board

Abstract: The means to define and describe signals used in testing ae provided in this standard. It also provides a set of common basic signals, built upon formal mathematical specifications so that signals can be combined to form complex signals usable across all test platforms.

Keywords: ATE, ATLAS, automatic test equipment, IEEE 1641™, signal definitions, test definitions, test requirements, test signals, unit under test, UUT

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IEEE Introduction

This introduction is not part of IEEE Std 1641™-2022, IEEE Standard for Signal and Test Definition.

This signal and test definition (STD) standard provides the ability to unambiguously define test signals. It includes a rigorous mathematical and definitive foundation for all of its signal components. Any signal defined using this standard shall be the same regardless of the equipment that is used to create it. The standard supports the implementation of new technologies by providing users with the ability to describe their own signals by combining existing signals. Thus, any desired signal may be described, and there is no limit on the extensibility of signals supported by this standard.

Signals defined using this standard can be used in a programming environment of the user's choice provided that that environment fulfills the minimum requirements defined in this standard. This universality enables the user to take full advantage of modern program structures and development environments, including graphical programming environments.

This standard was developed by the P1641 Working Group (of the IEEE Standards Coordinating Committee 20 (SCC20) on Test and Diagnosis for Electronic Systems), which has prepared a companion guide, IEEE Std 1641.1™, to explain how to implement signal definitions and test requirements in conformance with STD.

IEEE Standard for Signal and Test Definition

1. Overview

1.1 Scope

This standard provides the means to define and describe signals used in testing. It provides a set of common basic signal definitions, built upon formal mathematical specifications, so that signals can be combined to form complex signals usable across all test platforms. The standard provides support for structural textual languages and programming language interfaces for interoperability.

1.2 Purpose

This standard provides a common reference for signal definitions, which may be used throughout the life cycle of a unit under test (UUT) or test system. Such a reference shall in turn facilitate information transfer, test reuse, and broader application of test information—accessible through commercially available development tools.

1.3 Word Usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*).

The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*).[6, 7]

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

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[6] The use of the word *must* is deprecated and cannot be used when stating mandatory requirements, *must* is used only to describe unavoidable situations

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