INTERNATIONAL STANDARD



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Behavioural languages -

Part 3-2: Mathematical operation in VHDL

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

BEHAVIOURAL LANGUAGES –

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FOREWORD

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International Standard IEC 61691-3-2 has been prepared by IEC technical committee 93: Design automation.

This standard is based on IEEE Std 1076-2 (1996): IEEE Standard VHDL mathematical packages.

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

FDIS	Report on voting
93/131/FDIS	93/141/RVD

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

This standard does not follow the rules for the structure of international standards given in Part 3 of the ISO/IEC Directives.

IEC 61691 consists of the following parts, under the general title: Behavioural languages:

IEC 61691-1:1997, VHDL language reference manual 1)

IEC 61691-2:2001, Part 2: VHDL multilogic system for model interoperability

¹⁾ The edition 2 with the title: VHSIC hardware description language VHDL (1076a) (under consideration) will replace it.

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IEC 61691-3-1, Part 3-1: Analog description in VHDL (under consideration)

IEC 61691-3-2:2001, Part 3-2: Mathematical operation in VHDL

IEC 61691-3-3:2001, Part 3-3: Synthesis in VHDL

IEC 61691-3-4, Part 3-4: Timing expressions in VHDL (under consideration)

IEC 61691-3-5, Part 3-5: Library utilities in VHDL (under consideration)

The committee has decided that the contents of this publication will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

This set of packages provides a standard for the declaration of most frequently used real and complex elementary functions required for numerically oriented modeling applications. Use of these packages with their defined data types, constants, and functions is intended to provide a mechanism for writing VHDL models (compliant with IEEE Std 1076-1993) that are portable and interoperable with other VHDL models adhering to this standard. The standard serves a broad class of applications with reasonable ease of use and requires implementations that are of high quality.

This standard includes package bodies, as described in annex B, which are available in electronic format either on a diskette affixed to the back cover, or as a downloadable file from the IEC Web Store.

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1. Overview

1.1 Scope

This standard is embodied in the MATH_REAL and MATH_COMPLEX package declarations, and in the semantics of the standard mathematical definition and the conventional meaning of the functions that are part of this standard, along with 1.3. The information in annex A is a guide to users and implementors and is not a normative part of this standard, but suggests ways in which one might use this set of packages. The information in annex B is provided as a guideline for implementors and is not a normative part of this standard, but suggests ways implement this standard. The functions in this set of packages were chosen because of their widespread utility, as well as because they are needed to support general floating-point usage and to build other generic packages.