

Annex D Changes from IEEE Std 1076,~~2000 Edition~~2002¹

(Informative)

This annex lists those clauses that have been changed from IEEE Std 1076,~~2000 Edition~~2002, during its revision. The clause numbers are from ~~IEEE Std 1076, 2000 Edition; where a new clause has been added, it is described as being added between or after existing clauses from IEEE Std 1076, 2000 Edition~~ this present revision. Note that purely editorial changes, such as typographic error corrections and changes made to conform to IEEE terminological rules, are not listed.

~~Clause 1: 1.1.1.2 and 1.2.~~

~~Clause 2: 2.4.1.~~

~~Clause 3: 3.1.3, 3.1.3.1, 3.1.4, 3.1.4.1, 3.3.1, and 3.4.1.~~

~~Clause 4: Introduction, 4.3.1.2, 4.3.2, 4.3.3, and 4.3.3.2.~~

~~Clause 5: 5.1, 5.2, 5.2.1, 5.2.1.2, and 5.2.2.~~

~~Clause 6: 6.1 and 6.3.~~

~~Clause 7: 7.1, 7.2.4, and 7.4.1.~~

~~Clause 8: 8.1 and 8.8.~~

~~Clause 9: 9.6.1 and 9.6.2.~~

~~Clause 10: 10.1, 10.2, 10.3, and 10.4.~~

~~Clause 11: 11.2.~~

~~Clause 12: 12.3, 12.4.3, 12.5, and 12.6.2.~~

~~Clause 13: 13.1, 13.2, 13.8, and 13.10.~~

~~Clause 14: 14.1, 14.2 and 14.3.~~

Clause 0

0.2.4: Describes incorporation of PSL.

Clause 1

1.1.1: Descriptions of generic (formerly 1.1.1.1) and ports (formerly 1.1.1.2) moved to 4.4.5.1 and 4.4.5.2, respectively.

1.1.2: Addition of subprogram instantiations, package declarations and instantiations, and PSL declarations in entity declarative part.

1.1.3: Addition of PSL directives in entity statement part.

1.2: Change to scope of architecture body.

¹Updated for P1076-2006.

1.2.1: Addition of subprogram instantiations, package declarations and instantiations, and PSL declarations in block declarative part.

1.3: Addition of verification unit binding indication in configuration declaration.

1.3.1: Rules for configuring generate statements extended to include if-generate and case-generate statements; addition of specification that discrete range in a generate specification be static.

1.3.2: Addition of verification unit binding indication in component configuration.

Clause 2

2.1: Addition of subprogram header; description of uninstantiated and generic-mapped subprograms.

2.1.1.1: Changes for VHPI; changes to subtype rules.

2.1.1.2: Changes to signal parameter mode rules; changes to subtype rules.

2.2: Addition of subprogram instantiations, package declarations and instantiations, and PSL declarations in subprogram declarative part; additional rules relating to uninstantiated subprograms.

2.3: New subclause describing subprogram instantiation declarations.

2.4: Extension to operator overloading rules.

2.4.2: Extension to rule relating to appearance of a signature.

2.5: Revision relating to new array subtype rules; other clarifications and corrections.

2.6: Addition of package header; description of uninstantiated and generic-mapped packages; addition of subprogram instantiations, package declarations and instantiations, and PSL declarations in package declarative part; rules relating to packages appearing other than as a design unit.

2.7: Addition of subprogram instantiations, package declarations and instantiations, PSL declarations, and attribute declarations and specifications in package body declarative part; rules relating to packages appearing other than as a design unit.

2.8: New subclause describing package instantiation declarations.

2.9: Addition of profile conformance, distinguished from lexical conformance.

Clause 3

3: Clarification of predefined operations; definition of unconstrained, partially constrained, and fully constrained composite subtypes.

3.1: Clarification of range constraints and range bounds of scalar types.

3.1.1: Clarification of enumeration literal declaration.

3.1.3.1: Change to definition of resolution limit.

3.1.5: New subclause describing predefined operations on scalar types.

3.2.1: Extensions to array type definitions; addition of array constraints, extending index constraints.

3.2.1.1: Extension and clarification of rules relating to index ranges and array subtypes.

3.2.1.2: Addition of new predefined array types.

3.2.1.3: New subclause describing predefined operations on array types.

3.2.2: Extensions to rules for record type definitions; addition of record constraints.

3.3: Clarification and revision of type rules.

3.4: Clarification and revision of type rules.

3.4.1: Addition of FLUSH operation; minor revision of type rule.

3.5.1: Addition of subprogram instantiation in protected type declarative part; clarification of type rules.

3.5.2: Addition of subprogram instantiations, and package declarations and instantiations in protected type body declarative part.

3.6: New subclause describing string representations, formerly in 14.3.

Clause 4

4: Addition of subprogram instantiations, package instantiations, PSL verification units, and PSL declarations in declarations.

4.1: Additional rules for generic types and type declarations.

4.2: Extension of subtype indication relating to constraints and resolution functions.

4.3: Change in terminology for generics.

4.3.1.1: Clarifications.

4.3.1.2: Revision of rules relating to resolved signals; clarification of type rules.

4.3.1.3: Revision of rules relating to appearance of variable declarations.

4.4: Former 4.3.2 promoted to this subclause.

4.4.1: Descriptions of interface objects demoted into this new subclause; revisions to rules relating to interface constants; revision of rules relating to an object being read and updated; revision of rules relating to modes.

4.4.2: New subclause describing interface type declarations.

4.4.3: New subclause describing interface subprogram declarations.

4.4.4: New subclause describing interface package declarations.

4.4.5: Revisions relating to new classes of interface declarations and new places where interface lists may appear.

4.4.5.1: New subclause containing descriptions from former 1.1.1 and 1.1.1.1; extensions relating to generic types, subprograms and packages.

4.4.5.2: New subclause containing descriptions from former 1.1.1 and 1.1.1.2; extension relating to non-static expression associated with a port; extension relating to port modes.

4.4.6: Extensions relating to new classes of interface declarations and new places where association lists may appear; extensions to actual designators; clarifications of rules for type conversions and conversion functions.

4.4.6.1: New subclause containing descriptions from former 5.2.1.2; extensions relating to new classes of generics and new places where generic map aspects may appear.

4.4.6.2: New subclause containing descriptions from former 5.2.1.2.

4.5: Former 4.3.3 promoted to this subclause.

4.5.1: Extension to type rules; addition of rules relating to external names.

4.5.2: Clarification of rules relating to types.

4.6: Clarification of type rules.

Clause 5

5.1: Additional entity classes defined; revision of rules relating to specification of named entities; revision of rules relating to decoration of packages.

5.2: Addition of verification unit binding indication in configuration specification.

5.2.1: Extensions relating to new classes of interface declarations; clarification of error condition; descriptions in former 5.2.1.2 moved to 4.4.6.

5.2.2: Clarification.

5.2.3: New subclause describing verification unit binding indications.

5.3: Clarification of type rules.

Clause 6

6.1: Addition of external names; deleted rule relating to access-typed prefix.

6.3: Revision of expanded name rules relating to architecture bodies.

6.6: Clarification of predefined attribute names.

6.7: New subclause describing external names.

Clause 7

7.1: Addition of operators.

7.2: Addition of operators and predefined operations.

7.2.1: Extensions relating to operand types and unary forms.

7.2.2: Addition of matching relational operators.

7.2.3: Clarification of rule for index ranges.

7.2.4: Correction of terminology relating to index ranges.

7.2.6: Extension relating to operand types.

7.2.8: New subclause describing condition operator.

7.3.1: Revision of rules relating to null string literals; correction of terminology relating to index ranges.

7.3.2: Clarification of rules relating to discrete range choices.

7.3.2.2: Extensions relating to expressions of the type of the aggregate; revision and correction of terminology in rules relating to index ranges.

7.3.3: Additional rule relating to uninstantiated subprograms; clarification of parameter index range rules.

7.3.4: Revision of rule describing effect of type qualification.

7.3.5: Extension allowing conversion between array types with different index types; addition of rules relating to null arrays; extension relating to array types with undefined index ranges.

7.3.6: Extension to rules relating to constraints.

7.4.1: Addition of operations defined in STD LOGIC 1164; revision and extension to rules describing locally static primaries, constraints and subtypes.

7.4.2: Revision and extension to rules describing globally static primaries, constraints and subtypes.

Clause 8

8.1: Generalization of type of a condition; extended applicability of rules for forming sensitivity list.

8.2: Revision of rules relating to messages and severity level.

8.3: Revision of rules relating to messages and severity level.

8.4: Addition of force and release assignment; addition of simple, conditional and selected signal assignment.

8.4.1: New subclause containing descriptions from former 8.4, describing simple signal assignment, force and release.

8.4.1.1: Former 8.4.1; clarification of subtype rules; addition of rules relating to force and release.

8.4.2: New subclause containing descriptions from former 9.5.1 describing conditional signal assignment, force and release.

8.4.3: New subclause containing descriptions from former 9.5.2 describing selected signal assignment, force and release, and matching selected signal assignment.

8.5: Addition of simple, conditional and selected variable assignment.

8.5.1: New subclause containing descriptions from former 8.5, describing simple variable assignment; clarification of subtype rules; extension dealing with VHPI force; deleted text originally intended to be non-normative; addition of rule relating to aggregate targets.

8.5.1.1: Former 8.5.1; revision of rules relating to composite target.

8.5.2: New subclause describing conditional variable assignment.

8.5.3: New subclause describing selected variable assignment.

8.6: Extension relating to uninstantiated subprograms; revision of rules relating to index ranges of parameters.

8.8: Addition of matching case statement; revision of rules relating to choices and expression subtype.

8.12: Revision to rules relating to result subtype.

Clause 9

9: Addition of PSL directive as a concurrent statement.

9.2: Addition of **all** in a process sensitivity list; addition of subprogram instantiations, and package declarations and instantiations in process declarative part.

9.4: Addition of rule disambiguating assertions.

9.5: Revision of concurrent signal assignment rules; former 9.5.1 moved to 8.4.2; former 9.5.2 moved to 8.4.3.

9.6.1: Revision of rules for equivalent block statements.

9.6.2: Revision of rules for equivalent block statements.

9.7: Addition of if-generate and case-generate statements.

Clause 10

10.1: Revision of rules relating to declaration of architecture bodies.

10.2: Revision of rules relating to scope of architecture names; additional rules relating to uninstantiated declarations and PSL verification units.

10.3: Additional rules relating to packages, architecture names, subprogram and package instantiation, alternative labels of generate statements, PSL verification units, PSL declarations and PSL directives; revision of rules for visibility of interface objects; revision of visibility by selection rules.

[10.4: Revision of rules relating identified declarations; Revision of rules relating to direct visibility; additional rule relating to context declarations.](#)

[10.5: Additional rule relating to subprogram instantiation.](#)

[Clause 11](#)

[11.1: Addition of package instantiation declaration, context declaration and PSL verification unit as primary units; Additional rule relating to context declarations.](#)

[11.2: Additional rules relating to context declarations; addition of library IEEE and new packages.](#)

[11.3: New subclause describing context declarations.](#)

[11.4: Addition of context references.](#)

[Clause 12](#)

[12.1: Additional rules relating to VHPI and PSL verification units; extension to rule relating to top-level generics; additional rules relating to package instantiations; revision to order of elaboration of drivers; additional rules relating to external names.](#)

[12.2: Additional rules relating to package and subprogram headers.](#)

[12.2.1: Revision of order of elaboration.](#)

[12.2.2: Revision of order of elaboration; additional rules for new classes of generics.](#)

[12.2.3: Revision of order of elaboration.](#)

[12.2.4: Revision of order of elaboration; additional rules relating to association with non-static expressions; clarification of subtype rules.](#)

[12.3: Additional rules relating to VHPI.](#)

[12.3.1: Additional rule relating to PSL declarations.](#)

[12.3.1.1: Additional rules relating to subprogram instantiations.](#)

[12.3.1.2: Revision of rules relating to composite type declarations.](#)

[12.3.1.3: Additional rules relating to constraints.](#)

[12.3.1.4: Revision of rules relating to composite object declarations; clarified applicability of rules.](#)

[12.3.1.5: Revision of rule relating to composite alias declarations.](#)

[12.3.1.8: New subclause describing elaboration of packages.](#)

[12.3.2.1: Revision of rules relating to composite attributes.](#)

[12.4: Additional rules relating to VHPI and to PSL directives.](#)

[12.4.2: Additional rules relating to if-generate and case-generate statements.](#)

[12.4.4: Revision to order of elaboration of drivers.](#)

[12.5: Revision of order of elaboration of parameters; additional rules relating to VHPI.](#)

[12.6: Additional rule relating to PSL directives; revision of rules relating to kernel variables.](#)

[12.6.1: Revision and extension of rules relating to kernel variables, to update of drivers, and to VHPI.](#)

[12.6.2: Revision and extension of rules relating to force and release, update of drivers and signals, kernel variables, and VHPI.](#)

[12.6.3: Additional rules relating to VHPI.](#)

[12.6.4: Former 12.6.4 partitioned into subclauses.](#)

[12.6.4.1: New subclause containing description of initialization from former 12.6.4; additional rules for VHPI and for force and release; revision of rules relating to order of signal update; additional rules relating to PSL directives.](#)

[12.6.4.2: New subclause containing description of the simulation cycle from former 12.6.4; additional rules for VHPI and for force and release; revision of rules relating to order of signal update; additional rules relating to PSL directives.](#)

[Clause 13](#)

[13: Former 13.10 deleted.](#)

[13.1: Additional rules relating to tool directives and to PSL; revision of character set usage; clarification of case correspondence.](#)

[13.2: Additional rules relating to tool directives and to PSL; additional delimiters.](#)

[13.7: Addition of length, signed and unsigned bases, decimal base, and non-digit characters.](#)

[13.8: Addition of delimited comments.](#)

[13.9: Additional reserved words defined; additional rules for PSL.](#)

[13.11: New subclause describing tool directives .](#)

Clause 14

[14.1: Additional rule relating to predefined attributes that are functions; clarification of attribute kinds; revision of rules for 'VALUE, 'IMAGE, 'POS, 'LENGTH, 'ASCENDING, and 'LAST_VALUE; revision of rules for attributes of arrays; addition of 'SUBTYPE and 'ELEMENT; additional rules for 'PATH_NAME and 'INSTANCE_NAME.](#)

[14.2: Additional types and operations defined.](#)

[14.3 Additional operations defined; description of string representation moved to 3.6.](#)

[14.4: New subclause describing standard environment package.](#)

[14.5: New subclause describing standard mathematical packages, formerly in IEEE 1076.2-1996.](#)

[14.6: New subclause describing standard multivalued logic package, formerly in IEEE 1164-1993.](#)

[14.7: New subclause describing standard synthesis packages, formerly in IEEE 1076.3-1997.](#)

[14.8: New subclause describing standard synthesis context declarations.](#)

[14.9: New subclause describing fixed-point packages.](#)

[14.10: New subclause describing floating-point packages.](#)

Clauses 15–21

[New clauses describing VHPI.](#)

Clause 22

[New clause describing standard tool directives.](#)

Annex A

[Revision of productions and addition of new productions.](#)

Annex B

[Revision of entries and addition of new entries.](#)

Annex E

[Deletion of entries.](#)

Annex F

[Revision of entries and addition of new entries.](#)

Annex G

[New annex describing VHPI header files and extension mechanisms.](#)

Annex H

[New annex describing accompanying files.](#)

Annex I

[New annex describing use of standard packages.](#)

[Annex.I](#)

[New annex describing use of protect directive.](#)