
**Space systems — Subsystems/units to
spacecraft interface control document**

*Systèmes spatiaux — Document de contrôle des interfaces entre les
sous-systèmes/unités et le véhicule spatial*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11892 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

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Space systems — Subsystems/units to spacecraft interface control document

1 Scope

This International Standard provides space system manufacturing organizations with the minimum interface related items and generic format for creating the interface control document (ICD) which subsystems or units suppliers prepare for spacecraft systems (SC) integrators.

In this International Standard, ICD is not defined to contain descriptions regarding various properties of subsystems or units or tasks to be done by suppliers, i.e. performance, functions, endurance to launch mechanical environment, or quality assurance provisions. Such descriptions are presumed to be defined in other contractual documents such as technical specifications.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendment) applies.

ISO 15864:2004, *Space systems — General test methods for space craft, subsystems and units*

3 Terms, definitions and abbreviated terms

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3.1 Terms and definitions

3.1.1

subsystem

assembly or group of electrical, thermal and/or mechanical units which is dedicated to specific functions of a spacecraft system (SC)

3.1.2

unit

independently handled device at the lowest level of hardware assembly that works with specified complex electrical, thermal and/or mechanical functions

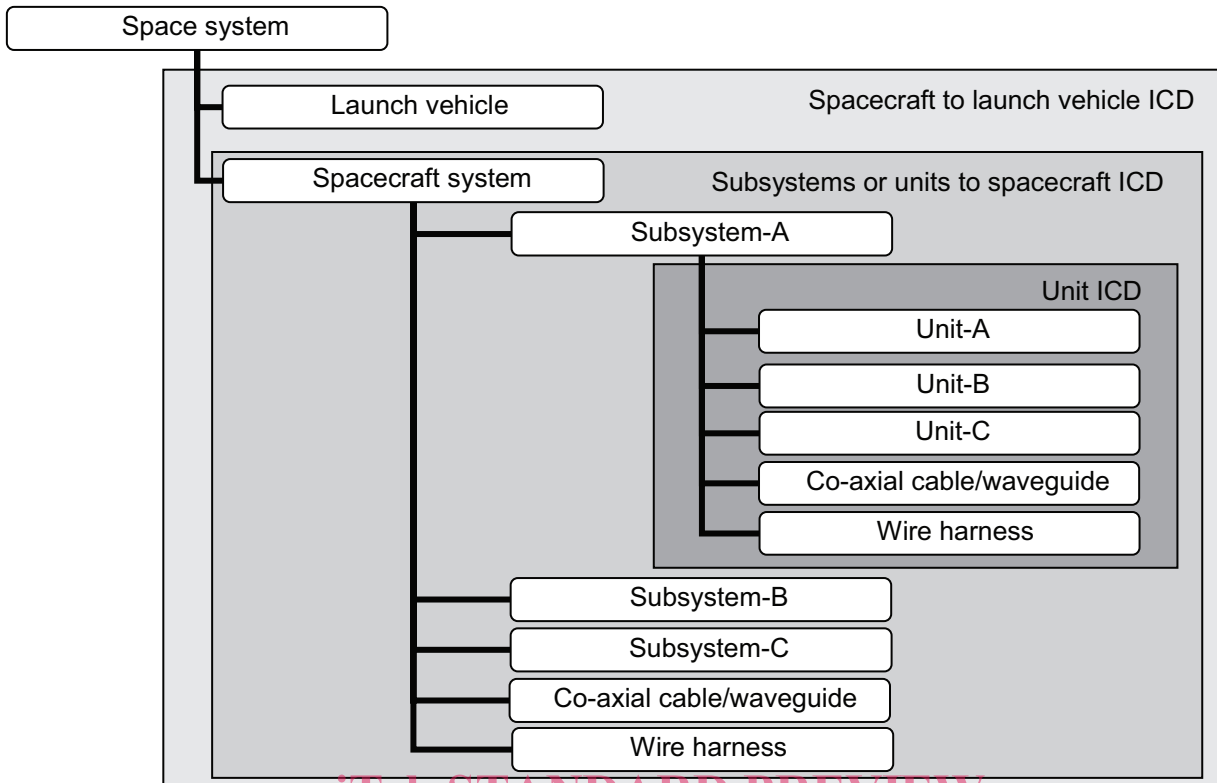
NOTE Several units build up a subsystem. A single unit may occasionally comprise a subsystem by itself.

3.1.3

subsystems/units to spacecraft interface control document

set of documents that defines and controls the electrical, thermal, and mechanical interface requirements between a subsystem and the spacecraft system (SC)

NOTE Figure 1 illustrates the hierarchy of a space system and the ranges where various interface control documents are applicable.



Hierarchy of a space system and related interface control document (ICD)

3.2 Abbreviated terms

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- CAD computer aided design
- ICD interface control document
- IDS interface data sheet
- MOI moment of inertia
- RF radio frequency

4 Subsystem to spacecraft ICD

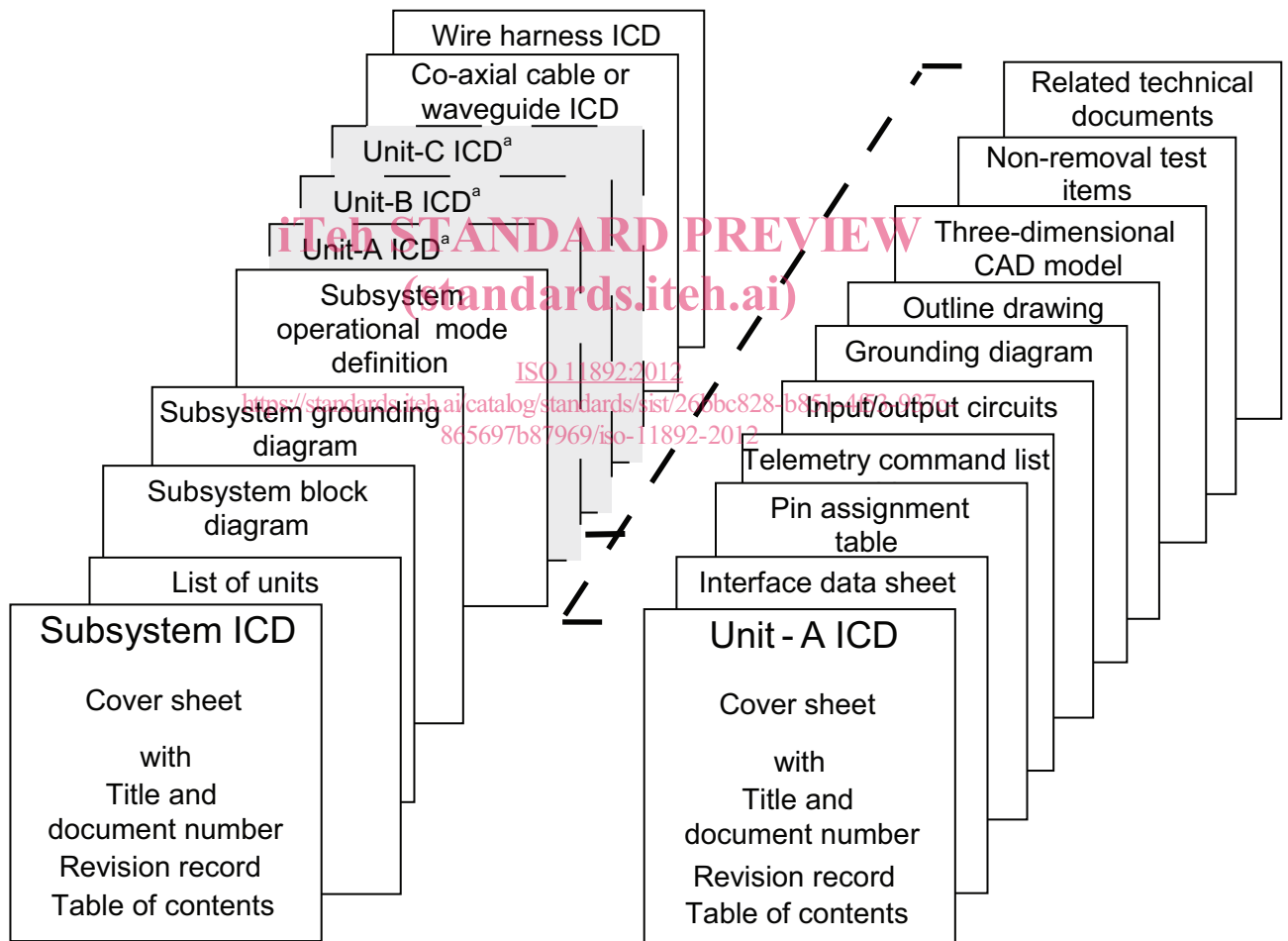
4.1 General

A subsystem ICD is a package constructed of sub-documents as shown in Table 1. It shall contain configuration control information, subsystem definition diagrams, and if applicable, co-axial cable or waveguide or wire harness in the subsystem. An individual ICD of each unit in the subsystem is normally a separate document. However, it may be contained as part of the subsystem ICD.

Layered construction of a subsystem ICD package is illustrated in Figure 2.

Construction of subsystem to spacecraft ICD package

No	Title	Description (Subclause)
1	Cover sheet (with title and document number, revision record and table of contents)	4.2
2	Applicability	4.3
3	List of units	4.4
4	Subsystem block diagram	4.5
5	Subsystem grounding diagram	4.6
6	Subsystem operational mode definition (if applicable)	4.7
7	Unit ICD (if applicable)	4.8
8	Co-axial cable or waveguide ICD (if applicable)	4.9
9	Wire harness ICD (if applicable)	4.10



^a The individual ICD of each unit may be contained as a part of the subsystem ICD.

Layered construction of subsystem ICD package

4.2 Cover sheet

4.2.1 Title and document number

The cover sheet of the subsystem ICD shall contain the following items:

- title of the subsystem ICD package;
- document number of the ICD package;
- issue date;
- issuing organization.

4.2.2 Revision record

The revision record shall contain the following items:

- revision number;
- revision date;
- summary of revision contents;
- authorization.

4.2.3 Table of contents

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The table of contents shall indicate the name, document number and revision number of the following sub-documents which build up the subsystem ICD:

- list of units; <https://standards.iteh.ai/catalog/standards/sist/26bbc828-b851-4f53-937c-865697b87969/iso-11892-2012>
- subsystem block diagram;
- subsystem grounding diagram;
- subsystem operational mode definition (if applicable);
- unit ICD (if applicable);
- co-axial cable or waveguide ICD (if applicable);
- wire harness ICD (if applicable);
- non-removal test items (if applicable).

4.3 Applicability

The following information shall be addressed in the ICD:

- applicable documents;
- definitions;
- physical units.

4.4 List of units

The list of units shall contain all units included in the subsystem, including the co-axial cable or waveguide and/or wire harness provided to the spacecraft system by the subsystem organization. The list of units shall include the document number and revision record of each unit ICD if it is a separate document.

4.5 Subsystem block diagram

The subsystem block diagram shall graphically indicate the connection and relationship of all of the units included in the subsystem. The subsystem block diagram shall also show the connection and relationship between the subsystem and other relevant subsystems.

4.6 Subsystem grounding diagram

The subsystem grounding diagram shall graphically indicate the grounding and bonding configuration of all the units included in the subsystem.

4.7 Subsystem operational mode definition (if applicable)

The subsystem operational mode definition shall indicate all of the operational modes of the subsystem if applicable.

For this International Standard, "operational mode" is defined as any operational status which has different power consumption or heat dissipation from another status. Operational modes can also be differentiated by mechanical configurations, e.g. before and after deployment.

The definition shall also describe whether transition to the designated mode is caused by the subsystem itself or by a trigger from another subsystem.

4.8 Unit ICD (if applicable)

The unit ICD shall show the interface information of each unit contained in the subsystem. Details are defined in Clause 5.

4.9 Co-axial cable or waveguide ICD (if applicable)

The co-axial cable or waveguide ICD shall show the interface information of the co-axial cable or waveguide connecting the units in the subsystem or connecting the units to other subsystems.

4.10 Wire harness ICD (if applicable)

The wire harness ICD shall show the interface information of the wire harness connecting the units in the subsystem or connecting the units to other subsystems.

5 Unit ICD in detail

5.1 General

A unit ICD is a document package constructed from a sub-document as shown in Table 2.

Construction of unit ICD package

No	Title	Description (Subclause)
1	Cover sheet (with title and document number, revision record and table of contents)	5.2
2	Interface data sheet (IDS)	5.3
3	Pin assignment table	5.4
4	Telemetry command list	5.5
5	Input/output circuits	5.6
6	Grounding diagram	5.7
7	Outline drawing	5.8
8	Three-dimensional CAD model (if applicable)	5.9
9	Non-removal test items (if applicable)	5.10
10	Related technical documents (if applicable)	5.11

5.2 Cover sheet

5.2.1 Title and document number

The cover sheet of a unit ICD shall contain the following items:

- title of the unit ICD package;
- document number and revision of the ICD package;
- issue date;
- issuing organization.

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5.2.2 Revision record

The revision record shall contain the following items:

- revision number;
- revision date;
- summary of revision contents;
- authorization.

5.2.3 Table of contents

The table of contents shall indicate the name, document number and revision number of each sub-document which builds up the unit ICD:

- interface data sheet;
- pin assignment table;
- telemetry command list;
- input/output circuits;
- grounding diagram;
- outline drawing;

- photographs (if applicable);
- three-dimensional CAD model (if applicable);
- structure mathematical model (if applicable);
- thermal mathematical model (if applicable);
- appendix.

5.3 Interface data sheet (IDS)

Each interface item shall be given in the standard tabular format. A sample is shown in Table 3.

If the description is expressed with a drawing, figure or separate document, the ID number shall be listed.

Values shall be given with appropriate tolerances reflecting design maturity.

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