Rumfartsteknik – Elektrisk og elektronisk

Space engineering – Electrical and electronic

DANSK STANDARD
Danish Standards Association

Göteborg Plads 1
DK-2150 Nordhavn

Tel: +45 39 96 61 01
dansk.standard@ds.dk
www.ds.dk

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

CEN-CENELEC Management Centre:
Rue de la Science 23, B-1040 Brussels

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European Foreword

This document (EN 16603-20:2023) has been prepared by Technical Committee CEN-CENELEC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16603-20:2023) originates from ECSS-E-ST-20C Rev.2.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by May 2024.

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

This document supersedes EN 16603-20:2020.

The main changes with respect to EN 16603-20:2020 are listed below:

- clause 4.2.1.1 added due to addition of new clause 4.2.1.2;
- addition of requirements in new clause 4.2.1.2 “Reliable insulation”;
- the addition of the new clause 4.2.1.2 made it necessary to add the new header 4.2.1.1 “General requirements” to separate the requirement from the former clause 4.2.1 “Failure containment and redundancy” from the new requirements for “Reliable insulation”;
- update to cover the aspects of “reliable insulation” also known as “double insulation”;
- addition of several terms in clause 3.2 related to the added subject of “Reliable insulation”.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association.

This document has been developed to cover specifically space systems and has therefore precedence over any EN covering the same scope but with a wider domain of applicability (e.g. : aerospace).

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This Standard establishes the basic rules and general principles applicable to the electrical, electronic, electromagnetic, microwave and engineering processes. It specifies the tasks of these engineering processes and the basic performance and design requirements in each discipline.

It defines the terminology for the activities within these areas.

It defines the specific requirements for electrical subsystems and payloads, deriving from the system engineering requirements laid out in ECSS-E-ST-10 “Space engineering – System engineering general requirements”.

This standard may be tailored for the specific characteristics and constrains of a space project in conformance with ECSS-S-ST-00.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this ECSS Standard. For dated references, subsequent amendments to, or revision of any of these publications do not apply. However, parties to agreements based on this ECSS Standard are encouraged to investigate the possibility of applying the more recent editions of the normative documents indicated below. For undated references, the latest edition of the publication referred to applies.

EN reference	Reference in text	Title
EN 16601-00-01	ECSS-S-ST-00-01	*ECSS system – Glossary of terms*
EN 16603-10	ECSS-E-ST-10	*Space engineering – System engineering general requirements*
EN 16603-20-06	ECSS-E-ST-20-06	*Space engineering – Spacecraft charging*
EN 16603-20-07	ECSS-E-ST-20-07	*Space engineering – Electromagnetic compatibility*
EN 16603-20-08	ECSS-E-ST-20-08	*Space engineering - Photovoltaic assemblies and components*
EN 16603-20-20	ECSS-E-ST-20-20	*Space engineering - Electrical design and interface requirements for power supply*
EN 16603-33-11	ECSS-E-ST-33-11	*Space engineering – Explosive systems and devices*
EN 16603-50-05	ECSS-E-ST-50-05	*Space engineering – Radio frequency and modulation*
EN 16603-50-14	ECSS-E-ST-50-14	*Space engineering – Spacecraft discrete interfaces*
EN 16602-30-02	ECSS-Q-ST-30-02	*Space product assurance – Failure modes, effects (and criticality) analysis (FMEA/FMECA)*
EN 16602-30-11	ECSS-Q-ST-30-11	*Space product assurance – Derating – EEE components*
EN 16602-40	ECSS-Q-ST-40	*Space product assurance – Safety*
EN 16602-70-12	ECSS-Q-ST-70-12	*Space product assurance – Design rules for printed circuit boards*
	IEEE 145-1993	Antenna Terms
	Impedance Specifications for Stable DC Distributed Power Systems, EEE transactions on power electronics, Vol. 17, no. 2, March 2002	Impedance Specifications for Stable DC Distributed Power Systems, X. Feng, J. Liu, F.C. Lee, IEEE Transactions on power electronics, Vol. 17, no. 2, March 2002