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Space engineering - Interface requirements for electrical actuators

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English version

Space engineering - Interface requirements for electrical actuators

Ingénierie spatiale - Exigences d'interface pour les actionneurs électriques

Raumfahrttechnik - Anforderungen an Schnittstellen für elektrische Aktuatoren

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

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European Foreword

This document (EN 16603-20-21:2020) has been prepared by Technical Committee CEN/CLC/TC 5 "Space", the secretariat of which is held by DIN.

This standard (EN 16603-20-21:2020) originates from ECSS-E-ST-20-21C.

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of an identical text or by endorsement, at the latest by December 2020, and conflicting national standards shall be withdrawn at the latest by December 2020.

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

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Introduction

This standard identifies the requirements needed to specify, procure or develop the electronics needed for driving release actuators (both explosive like pyrotechnic devices or non-explosive like thermal knives) and gives the relevant electrical interface specification, both from source and load perspective.

The present standard covers explosive or non-explosive actuators electronics required to comply with single fault tolerance with respect to actuation success.

For a reference architecture description, it is possible to refer to ECSS-E-HB-20-21.

ECSS-E-HB-20-21 includes a clarification of the principles of operation of the actuator electronics, identifies important issues related to actuators and explains the requirements of the present standard.

1 Scope

In general terms, the scope of the consolidation of the electrical interface requirements for electrical (hold down and release or deployment) actuators in the present ECSS-E-ST-20-21 and the relevant explanation in the handbook ECSS-E-HB-20-21 is to allow a more recurrent approach both for actuator electronics (power source) and electrical actuators (power load) offered by the relevant manufacturers, at the benefit of the system integrators and of the Agency, thus ensuring:

- better quality,
- stability of performances, and
- independence of the products from specific mission targets.

A recurrent approach enables manufacturing companies to concentrate on products and a small step improvement approach that is the basis of a high quality industrial output.

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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 16602-30-02	ECSS-Q-ST-30-02	Space product assurance - Failure modes, effects (and criticality) analysis (FMEA/FMECA)
EN 16603-33-11	ECSS-E-ST-33-11	Space engineering - Explosive subsystems and devices