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Standards

Irish Standard  
I.S. EN 16603-50-11:2020&LC:2020

# Space engineering - SpaceFibre - Very high-speed serial link

**I.S. EN 16603-50-11:2020&LC:2020**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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*This document is based on:*

*Published:*

*This document was published under the authority of the NSAI and comes into effect on:*

2020-11-18

ICS number:

49.140

NOTE: If blank see CEN/CENELEC cover page

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## National Foreword

I.S. EN 16603-50-11:2020&LC:2020 is the adopted Irish version of the European Document EN 16603-50-11:2020, Space engineering - SpaceFibre - Very high-speed serial link

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## Correction Notice

**Reference:** EN 16603-50-11:2020

**Title:** Space engineering - SpaceFibre - Very high-speed serial link

**Work Item:** JT005128

Brussels, 2020-10-07

**please include the following minor editorial correction(s) in the document related to:**

the following language version(s) :

- English
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- PQ/UQ
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- UAP
- TC Approval
- 2<sup>nd</sup> TC Approval
- Publication
- Parallel Publication

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It has been brought to our attention that this document, issued on 2020-09-16, requires modification.

The typo mistake in the English title has been corrected and the title page replaced.

Please find enclosed the updated English version.

We apologise for any inconvenience this may cause.

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EUROPEAN STANDARD

EN 16603-50-11

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 2020

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ICS 49.140

English version

## Space engineering - SpaceFibre - Very high-speed serial link

Ingénierie spatiale - SpaceFibre - Liaison série très haut débit

Raumfahrttechnik - SpaceFibre - Sehr schnelle serielle Schnittstelle

This European Standard was approved by CEN on 3 May 2020.

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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.

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**CEN-CENELEC Management Centre:  
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## European Foreword

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This document (EN 16603-50-11:2020) has been prepared by Technical Committee CEN-CENELEC/TC 5 "Space", the secretariat of which is held by DIN.

This document (EN 16603-50-11:2020) originates from ECSS-E-ST-50-11C.

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 March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

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 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).

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# 1 Scope

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SpaceFibre is a very high-speed serial link and network technology, designed specifically for use on board spacecraft. SpaceFibre is able to operate over fibre-optic and electrical cable and supports data rates of up to 5 Gbit/s (6,25 Gbit/s data signalling rate). It complements the capabilities of the widely used SpaceWire on-board networking standard: improving the data rate by a factor of 10, reducing the cable mass and providing galvanic isolation. Multi-laning improves the data rate further to well over 20 Gbit/s.

SpaceFibre provides a coherent quality of service mechanism able to support bandwidth reserved, scheduled and priority-based qualities of service. It substantially improves the fault detection, isolation and recovery (FDIR) capability compared to SpaceWire.

SpaceFibre aims to support high data-rate payloads, for example synthetic aperture radar and hyper-spectral optical instruments. It provides robust, long distance communications for launcher applications and supports avionics applications with deterministic delivery constraints through the use of virtual channels. SpaceFibre enables a common on-board infrastructure to be used across many different mission applications resulting in cost reduction and design reusability. SpaceFibre uses a packet format which is the same as SpaceWire enabling simple connection between existing SpaceWire equipment and high-speed SpaceFibre links and networks. Applications developed for SpaceWire can be readily transferred to SpaceFibre.

The SpaceFibre standard specifies the interfaces to the user application and to the physical medium. Intermediate interfaces between protocol layers are also specified. The functions that a SpaceFibre interface has to implement are specified. Connector and cable characteristics for SpaceFibre optical and copper implementations are also specified.

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



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