SLOVENSKI STANDARD
oSIST prEN 16603-50-25:2021

01-september-2021

Vesoljska tehnika - Sprejem obvestila CCSDS 232.0-B-3, protokol vesoljske podatkovne povezave TC, številka 3, september 2015

Space engineering - Adoption Notice of CCSDS 232.0-B-3, TC Space Data Link Protocol, Issue 3, September 2015

Ta slovenski standard je istoveten z: prEN 16603-50-25

ICS:

49.140	Vesoljski sistemi in operacije	Space systems and operations

oSIST prEN 16603-50-25:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 16603-50-25

July 2021

ICS 49.140

English version

Space engineering - Adoption Notice of CCSDS 232.0-B-3, TC Space Data Link Protocol, Issue 3, September 2015

Raumfahrttechnik - Adoption Notice von CCSDS 232.0-B-3, TC Space Data Link Protocol, Ausgabe 3, September 2015

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/CLC/JTC 5.

If this draft becomes a European Standard, CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN and CENELEC 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, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

Table of contents

European Foreword

This document (prEN 16603-50-25:2021) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN (Germany).

This document (prEN 16603-50-25:2021) originates from ECSS-E-AS-50-25C-DIR1.

This document is currently submitted to the ENQUIRY.

EN 16603-50-24, EN 16603-50-25 and EN 16603-50-26 will together supersede EN16603-50-04:2014.

The main changes with respect to EN16603-50-04:2014 are listed below:

- Replacement of document by three Adoption Notices.

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

1
Scope

This document identifies the clauses and requirements modified with respect to the standard CCSDS 232.0-B-3, *TC Space Data Link Protocol*, Issue 3, September 2015 for application in ECSS.

2
Context information

In the standard CCSDS 232.0-B-3, *TC Space Data Link Protocol*, CCSDS specifies a data link layer protocol for the efficient transfer of space application data of various types and characteristics over ground-to-space links. The Communications Operation Procedure-1 (COP-1) specified in CCSDS 232.1-B-2 is used with the TC Space Data Link Protocol: it provides a mechanism for delivery of frames in sequence and without gaps or duplication.

This Adoption Notice adopts and applies CCSDS 232.0-B-3 with a minimum set of modifications, identified in the present document, to allow for reference and for a consistent integration in the ECSS system of standards.

The TC Transfer Frame specified in CCSDS 232.0-B-3 is similar to the TC Transfer Frame specified in clauses 5 (Segmentation sublayer) and 6 (Transfer sublayer) in the EN 16603-50-04:2014 (ECSS-E-ST-50-04) *Space data links – Telecommand protocols synchronization and channel coding*.

EN 16603-50-04:2014 (ECSS-E-ST-50-04) is superseded by the following three Adoption Notices: EN 16603-50-24 (ECSS-E-ST-50-24), EN 16603-50-25 (ECSS-E-AS-50-25) and EN 16603-50-26 (ECSS-E-AS-50-26).

Differences between these two standards that are not covered by the normative modifications in clause 4 are described in the informative Annex A.

Overview of superseded EN 16603-50-xx Standards

Superseded EN	New EN	Based on CCSDS
EN 16603-50-01:2014	EN 16603-50-21	CCSDS 131.0-B-3 (Sept. 2017)
EN 16603-50-03:2014	EN 16603-50-22	CCSDS 132.0-B-2 (Sept. 2015)
	EN 16603-50-23	CCSDS 732.0-B-3 (August 2016)
EN 16603-50-04:2014	EN 16603-50-24	CCSDS 231.0-B-3 (Sept. 2017)
	EN 16603-50-25	CCSDS 232.0-B-3 (Sept. 2015)
	EN 16603-50-26	CCSDS 232.1-B-2 (Sept. 2010)

3 Abbreviated terms

Abbreviation	Meaning
COP	Communications Operation Procedure
FARM	Frame Acceptance and Reporting Mechanism
FDU	Frame Data Unit
GVCID	Global Virtual Channel Identifier
SDLS	Space Data Link Security

4 Application requirements

a. CCSDS 232.0-B-3, TC Space Data Link Protocol, Issue 3, September 2015 shall apply with the following modifications listed in Table 4-1.

Table 4-1: Applicability table for CCSDS 232.0-B-3

Clause or requirement number	Applicability	Applicable text (the new/added text is underlined)	Comments	Text as in the original document (deleted text with strikethrough)
4.1.1b	Modified	Transfer Frame Data Field (up to 1017 octets, mandatory);	CCSDS requirement modified: number “1019” deleted	Transfer Frame Data Field (up to ~~1019 or~~ 1017 octets, mandatory);
4.1.1c	Modified	Frame Error Control Field (2 octets, mandatory).	CCSDS requirement modified: word “optional” replaced by the word “mandatory.”	Frame Error Control Field (2 octets, ~~optional~~).
4.1.3.2.1.4	Modified (renumbered NOTE)	NOTE 1	CCSDS existing NOTE is given a new number – the content of the note is unchanged	~~NOTE~~

4.1.3.2.1.4	Modified (new NOTE)	NOTE 2 – If the Packet Assembly Controller Function specified in 4.4.9 is used, there can be Frame Data Units that carry a MAP Reset command. In this case, the Frame Data Unit consists of a Segment Header only and the User Data field is absent. See 4.4.9.4.	New NOTE is added	
4.1.4.1.1	Modified (deleted requirement)		Requirement deleted	~~The Frame Error Control Field is optional; its presence or absence shall be established by management.~~
4.1.4.1.2	Modified	The Frame Error Control Field shall occupy the two octets following, without gap, the Transfer Frame Data Field.	CCSDS requirement modified: words "if present" deleted.	~~If present,~~ the Frame Error Control Field shall occupy the two octets following, without gap, the Transfer Frame Data Field.
4.1.4.1.3	Modified (deleted requirement)		Requirement deleted	~~If present, the Frame Error Control Field shall occur within every Transfer Frame transmitted within the same Physical Channel throughout a Mission Phase.~~
Note 2, below 4.1.4.1.3	Modified (deleted NOTE)		NOTE deleted	~~Whether this field should be used on a particular Physical Channel will be determined based on the mission requirements for data quality and the selected options for the underlying Channel Coding Sublayer.~~

Note 1 in 4.2.1.8.3.1	Modified (modified NOTE)	The No Bit Lock Flag provides a performance quality indicator that indicates specifically whether the Physical Layer is working normally by having enough signal energy to achieve bit synchronization with the received data stream.	CCSDS requirement modified: words “mission specific engineering measurement that” deleted.	The No Bit Lock Flag ~~is an optional, mission-specific engineering measurement that~~ provides a performance quality indicator that indicates specifically whether the Physical Layer is working normally by having enough signal energy to achieve bit synchronization with the received data stream.
4.2.1.8.3.2	Modified	The No Bit Lock Flag shall be set as follows: ‘0’ when at least one of the spacecraft demodulation units for the physical channel has achieved bit lock; ‘1’ when none of the spacecraft demodulation units for the physical channel has achieved bit lock.	CCSDS requirement modified to refer to spacecraft demodulation units for the physical channel. Sentences “Use of the No Bit Lock Flag is optional; if used, a) ‘0’ shall indicate bit lock has been achieved; b) ‘1’ shall indicate bit lock has not been achieved.”deleted.	~~Use of the No Bit Lock Flag is optional; if used,~~ ~~a) ‘0’ shall indicate bit lock has been achieved;~~ ~~b) ‘1’ shall indicate bit lock has not been achieved.~~
4.2.1.8.3.3	Modified	The No Bit Lock Flag shall always carry an actual report of the status of the physical channel, even when other fields in the CLCW report the status of an inactive virtual channel.	CCSDS requirement modified to refer to actual report of the status of the physical channel. Sentense “The single No Bit Lock Flag shall apply to all Virtual Channels and shall be updated whenever a change is signaled by the Physical Layer”. deleted.	~~The single No Bit Lock Flag shall apply to all Virtual Channels and shall be updated whenever a change is signaled by the Physical Layer.~~
4.2.1.8.3.4	Modified (deleted requirement)		Requirement deleted	~~If the No Bit Lock Flag is not used, it shall be set permanently to ‘0’.~~