

---

---

**Space data and information transfer  
systems — Proximity-1 space link  
protocol — Coding and synchronization  
sublayer**

*Systèmes de transfert des informations et données spatiales —  
Protocole pour liaisons spatiales de proximité 1 — Sous-couche de  
codage et synchronisation*

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## 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 21459 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 211.2-B-1, April 2003) and was adopted (without modifications except those stated in Clause 2 of this International Standard) by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 13, *Space data and information transfer systems*.

(standards.iteh.ai)

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

# Space data and information transfer systems — Proximity-1 space link protocol — Coding and synchronization sublayer

## 1 Scope

Proximity space links are defined to be short-range, bi-directional, fixed or mobile radio links, generally used to communicate among probes, landers, rovers, orbiting constellations, and orbiting relays. These links are characterized by short time delays, moderate (not weak) signals, and short, independent sessions.

This International Standard defines the coding and synchronization sublayer of the Proximity-1 space link protocol. It defines the data unit of this sublayer, i.e. the PLTU. It defines the coding and synchronization mechanisms required for cross support. It also specifies the send and receive side functionality of this sublayer. This International Standard does not specify

- individual implementations or products,
- implementation of service interfaces within real systems,
- methods or technologies required to perform the procedures, or
- management activities required to configure and control the protocol.

The scope and field of application are furthermore detailed in subclauses 1.2 and 1.3 of the enclosed CCSDS publication.

## 2 Requirements

Requirements are the technical recommendations made in the following publication (reproduced on the following pages), which is adopted as an International Standard:

CCSDS 211.2-B-1, April 2003, *Proximity-1 space link protocol — Coding and synchronization sublayer*.

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 211.2-B-1.

*Pages i to v*

This part is information which is relevant to the CCSDS publication only.

*Page 1-5*

Add the following information to the reference indicated:

[2] Document CCSDS 101.0-B-6, October 2002, is equivalent to ISO 22641:2005.

[4] Document CCSDS 211.1-B-1, April 2003, is equivalent to ISO 21460:2006.

### 3 Revision of publication CCSDS 211.2-B-1

It has been agreed with the Consultative Committee for Space Data Systems that Subcommittee ISO/TC 20/SC 13 will be consulted in the event of any revision or amendment of publication CCSDS 211.2-B-1. To this end, NASA will act as a liaison body between CCSDS and ISO.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 21459:2006](https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006)

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

# ***Consultative Committee for Space Data Systems***

**RECOMMENDATION FOR SPACE  
DATA SYSTEM STANDARDS**

**PROXIMITY-1 SPACE LINK PROTOCOL—  
CODING AND  
SYNCHRONIZATION  
SUBLAYER**

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

**CCSDS 211.2-B-1**

**BLUE BOOK**

April 2003



**iTeh STANDARD PREVIEW**  
(blank page)  
**(standards.iteh.ai)**

ISO 21459:2006

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>



CCSDS RECOMMENDATION FOR PROXIMITY-1 SPACE LINK  
 PROTOCOL—CODING AND SYNCHRONIZATION SUBLAYER

**AUTHORITY**

Issue:	Blue Book, Issue 1
Date:	April 2003
Location:	Matera, Italy

This document has been approved for publication by the Management Council of the Consultative Committee for Space Data Systems (CCSDS) and represents the consensus technical agreement of the participating CCSDS Member Agencies. The procedure for review and authorization of CCSDS Recommendations is detailed in *Procedures Manual for the Consultative Committee for Space Data Systems*, and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This Recommendation is published and maintained by:  
 iTeh STANDARD PREVIEW  
 (standards.iteh.ai)

CCSDS Secretariat  
 Office of Space Communication (Code M-3)  
 National Aeronautics and Space Administration  
 Washington, DC 20546, USA

## STATEMENT OF INTENT

The Consultative Committee for Space Data Systems (CCSDS) is an organization officially established by the management of member space Agencies. The Committee meets periodically to address data systems problems that are common to all participants, and to formulate sound technical solutions to these problems. Inasmuch as participation in the CCSDS is completely voluntary, the results of Committee actions are termed **Recommendations** and are not considered binding on any Agency.

This **Recommendation** is issued by, and represents the consensus of, the CCSDS Plenary body. Agency endorsement of this **Recommendation** is entirely voluntary. Endorsement, however, indicates the following understandings:

- Whenever an Agency establishes a CCSDS-related **standard**, this **standard** will be in accord with the relevant **Recommendation**. Establishing such a **standard** does not preclude other provisions which an Agency may develop.
- Whenever an Agency establishes a CCSDS-related standard, the Agency will provide other CCSDS member Agencies with the following information:
  - The **standard** itself.
  - The anticipated date of initial operational capability.
  - The anticipated duration of operational service.
- Specific service arrangements are made via memoranda of agreement. Neither this Recommendation nor any ensuing standard is a substitute for a memorandum of agreement.

No later than five years from its date of issuance, this **Recommendation** will be reviewed by the CCSDS to determine whether it should: (1) remain in effect without change; (2) be changed to reflect the impact of new technologies, new requirements, or new directions; or, (3) be retired or canceled.

In those instances when a new version of a **Recommendation** is issued, existing CCSDS-related Agency standards and implementations are not negated or deemed to be non-CCSDS compatible. It is the responsibility of each Agency to determine when such standards or implementations are to be modified. Each Agency is, however, strongly encouraged to direct planning for its new standards and implementations towards the later version of the Recommendation.

CCSDS RECOMMENDATION FOR PROXIMITY-1 SPACE LINK  
PROTOCOL—CODING AND SYNCHRONIZATION SUBLAYER**FOREWORD**

Through the process of normal evolution, it is expected that expansion, deletion, or modification of this document may occur. This Recommendation is therefore subject to CCSDS document management and change control procedures which are defined in the *Procedures Manual for the Consultative Committee for Space Data Systems*. Current versions of CCSDS documents are maintained at the CCSDS Web site:

<http://www.ccsds.org/>

Questions relating to the contents or status of this document should be addressed to the CCSDS Secretariat at the address indicated on page i.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 21459:2006](https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006)

<https://standards.iteh.ai/catalog/standards/sist/de8c387e-abda-4e10-8249-91147fc0a885/iso-21459-2006>

CCSDS RECOMMENDATION FOR PROXIMITY-1 SPACE LINK  
PROTOCOL—CODING AND SYNCHRONIZATION SUBLAYER

At time of publication, the active Member and Observer Agencies of the CCSDS were:

Member Agencies

- Agenzia Spaziale Italiana (ASI)/Italy.
- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- National Aeronautics and Space Administration (NASA)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.
- Russian Space Agency (RSA)/Russian Federation.

Observer Agencies

- Austrian Space Agency (ASA)/Austria.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centro Tecnico Aeroespacial (CTA)/Brazil.
- Chinese Academy of Space Technology (CAST)/China.
- Commonwealth Scientific and Industrial Research Organization (CSIRO)/Australia.
- Communications Research Laboratory (CRL)/Japan.
- Danish Space Research Institute (DSRI)/Denmark.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Federal Service of Scientific, Technical & Cultural Affairs (FSST&CA)/Belgium.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
- Institute of Space and Astronautical Science (ISAS)/Japan.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- MIKOMTEK: CSIR (CSIR)/Republic of South Africa.
- Korea Aerospace Research Institute (KARI)/Korea.
- Ministry of Communications (MOC)/Israel.
- National Oceanic & Atmospheric Administration (NOAA)/USA.
- National Space Program Office (NSPO)/Taipei.
- Space and Upper Atmosphere Research Commission (SUPARCO)/Pakistan.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.