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Second edition
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Space data and information transfer systems — Packet telemetry

Systèmes de transfert des informations et données spatiales — Télémesure par paquets

Reference number
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Foreword

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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.

International Standard ISO 13419 was prepared by the Consultative Committee for Space Data Systems (CCSDS) (as CCSDS 102.0-B-5, November 2000) 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*.

This second edition cancels and replaces the first edition (ISO 13419:1997), which has been technically revised.

Space data and information transfer systems — Packet telemetry

1 Scope

This International Standard specifies the requirements for spacecraft packet telemetry systems.

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 102.0-B-5, November 2000, *Recommendation for space data system standards — Packet telemetry.*

For the purposes of international standardization, the modifications outlined below shall apply to the specific clauses and paragraphs of publication CCSDS 102.0-B-5.

Pages i to vi

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

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Update and add the following information to the references indicated in 1.7:

[2] Document CCSDS 101.0-B-5, June 2001, is equivalent to ISO 11754:2003.

[3] Document CCSDS 301.0-B-2, April 1990, is equivalent to ISO 11104:1991.

[4] Document CCSDS 202.0-B-3, June 2001, is equivalent to ISO 12172:2003.

[6] Document CCSDS 701.0-B-3, November 1992, is equivalent to ISO 13420:—[1)].

[8] Document CCSDS 103.0-B-2, June 2001, is equivalent to ISO 17433:2003.

[9] Document CCSDS 713.0-B-1, May 1999, is equivalent to ISO 15891:2000.

1) To be published. (Revision of ISO 13420:1997)

3 Revision of publication CCSDS 102.0-B-5

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 102.0-B-5. To this end, NASA will act as a liaison body between CCSDS and ISO.

Consultative Committee for Space Data Systems

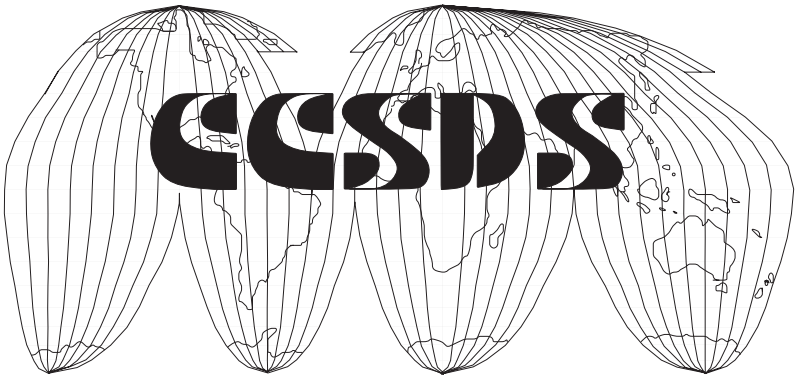
RECOMMENDATION FOR SPACE DATA SYSTEM STANDARDS

PACKET TELEMETRY

CCSDS 102.0-B-5

BLUE BOOK

November 2000



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CCSDS RECOMMENDATION FOR PACKET TELEMETRY

AUTHORITY

Issue:	Blue Book, Issue 5
Date:	November 2000
Location:	Boulder, Colorado, USA

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 reference [1], and the record of Agency participation in the authorization of this document can be obtained from the CCSDS Secretariat at the address below.

This document is published and maintained by:

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Program Integration Division (Code MT)
National Aeronautics and Space Administration
Washington, DC 20546, USA

STATEMENT OF INTENT

The **CONSULTATIVE COMMITTEE FOR SPACE DATA SYSTEMS (CCSDS)** is an organisation 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 shall be 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 cancelled.

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**.

FOREWORD

This document is a technical **RECOMMENDATION** for use in developing packetised telemetry systems and has been prepared by the **CONSULTATIVE COMMITTEE FOR SPACE DATA SYSTEMS** (CCSDS). The Packet Telemetry concept described herein is the baseline concept for spacecraft-to-ground data communication within missions that are cross-supported between Agencies of the CCSDS.

This **RECOMMENDATION** establishes a common framework and provides a common basis for the data structures of spacecraft telemetry streams. It allows implementing organisations within each Agency to proceed coherently with the development of compatible derived Standards for the flight and ground systems that are within their cognizance. Derived Agency Standards may implement only a subset of the optional features allowed by the **RECOMMENDATION** and may incorporate features not addressed by the **RECOMMENDATION**.

Through the process of normal evolution, it is expected that expansion, deletion or modification to this document may occur. This **RECOMMENDATION** is therefore subject to CCSDS document management and change control procedures which are defined in Reference [1]. 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.

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.
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– European Telecommunications Satellite Organization (EUTELSAT)/Europe.
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– Indian Space Research Organization (ISRO)/India.
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– National Space Program Office (NSPO)/Taipei.
– Swedish Space Corporation (SSC)/Sweden.
– United States Geological Survey (USGS)/USA.

CCSDS RECOMMENDATION FOR PACKET TELEMETRY

DOCUMENT CONTROL

A. FIRST ISSUE

DOCUMENT REFERENCE: CCSDS 102.0-B-1
TITLE: Recommendation for Space Data System Standards: Packet Telemetry, Issue 1
DATE: May 1984

B. ISSUE 2

DOCUMENT REFERENCE: CCSDS 102.0-B-2
TITLE: Recommendation for Space Data System Standards: Packet Telemetry, Issue 2
DATE: January 1987

C. ISSUE 3

DOCUMENT REFERENCE: CCSDS 102.0-B-3
TITLE: Recommendation for Space Data System Standards: Packet Telemetry, Issue 3
DATE: November 1992

D. ISSUE 4

DOCUMENT REFERENCE: CCSDS 102.0-B-4
TITLE: Recommendation for Space Data System Standards: Packet Telemetry, Issue 4
DATE: November 1995

UPDATES: (Significant changes are identified by change bars in the outside margin.)

Changes not Compatible with the Previous Issue

The option of Source Packet Segmentation has been eliminated.

Editorial Changes

The definition of Source Packet Grouping has been clarified.
Minor format changes have been made based on the specifications of the CCSDS Publications Manual.

E. ISSUE 5

DOCUMENT REFERENCE:	CCSDS 102.0-B-5
TITLE AND ISSUE:	Packet Telemetry, Issue 5
DATE:	November 2000

Changes Compatible with the Previous Issue

An option to carry CCSDS Network and IP packets in CCSDS Version 1 Frames has been added.

CCSDS RECOMMENDATION FOR PACKET TELEMETRY

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