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Vesoljska tehnika - SpaceWire - Identifikacijski protokol

Space engineering - SpaceWire - protocol identification

Raumfahrttechnik - SpaceWire - Protokoll zur Identifikation

Ingénierie spatiale - SpaceWire - identifieur de protocole

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Space engineering - SpaceWire protocol identification

Ingénierie spatiale - SpaceWire identifieur de protocole

Raumfahrttechnik - SpaceWire Protokoll zur Identifikation

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Foreword

This document (EN 16603-50-51:2014) has been prepared by Technical Committee CEN/CLC/TC 5 “Space”, the secretariat of which is held by DIN.

This standard (EN 16603-50-51:2014) originates from ECSS-E-ST-50-51C.

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of an identical text or by endorsement, at the latest by March 2015, and conflicting national standards shall be withdrawn at the latest by March 2015.

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 mandate 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).

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

There is a number of communication protocols that can be used in conjunction with the SpaceWire Standard (ECSS-E-ST-50-12), to provide a comprehensive set of services for onboard user applications. These protocols are covered by the ECSS-E-ST-50-5x series.

To distinguish between the various protocols a protocol identifier is used. This Standard specifies this protocol identifier.

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

2 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 16603-50-12	ECSS-E-ST-50-12	Space engineering - SpaceWire - Links, nodes, routers and networks
EN 16603-50-52	ECSS-E-ST-50-52	Space engineering - SpaceWire - Remote memory access protocol
EN 16603-50-53	ECSS-E-ST-50-53	Space engineering - SpaceWire - CCSDS packet transfer protocol
	CCSDS 133.0-B-1	Space Packet Protocol, Blue Book
	SMCS-ASTD-PS-001 Issue 1.1, 24 July 2009	STUP SpaceWire Protocol - Protocol Specification, EADS Astrium ASE4
	417-R-RTP-0050 Version 2.1, 16 January 2008	Geostationary Operational Environmental Satellites (GOES), GOES-R Series, GOES-R Reliable Data Delivery Protocol (GRDDP), NASA Goddard Spaceflight Centre

3 Terms, definitions and abbreviated terms

3.1 Terms defined in other standards

For the purpose of this Standard, the terms and definitions from ECSS-S-ST-00-01 apply.

3.2 Terms specific to the present standard

3.2.1 byte

8-bits where bit 7 is the most-significant bit

3.2.2 command

instruction to a SpaceWire node (target) to perform some action

NOTE For example, write data to memory.

3.2.3 command packet

packet that contains a command

3.2.4 confirmation

primitive passed from a service provider to a service user to indicate the success or otherwise of a previous service request

3.2.5 data character

SpaceWire symbol containing 8-bits of user information

3.2.6 Error End of Packet marker (EEP)

control character indicating that the Packet was terminated prematurely

3.2.7 End of Packet marker (EOP)

control character indicating the end of a packet

3.2.8 extender protocol identifier

two data characters following a protocol identifier which has value 0x00 that identify a particular protocol being used for communication

3.2.9 indication

primitive passed from a service provider to a service user to provide information or status to the service user

3.2.10 initiator

SpaceWire node that starts a transaction by sending a command to a SpaceWire node

3.2.11 initiator user application

application in an initiator that is using the SpaceWire protocol services

3.2.12 logical address

identifier of a initiator or target which can be used to route a Packet to the target or, if path addressing is being used, to confirm that the final target is the correct one i.e. that the logical address of the target matches the logical address in the packet

3.2.13 memory

addressable storage element including random access memory, registers, FIFO, mailboxes

3.2.14 packet

SpaceWire packet

3.2.15 path address

sequence of one or more SpaceWire data characters that defines the route to a target by specifying, for each router encountered on the way to the target, the output port that a Packet is forwarded through

3.2.16 protocol identifier

data character that identifies a particular protocol being used for communication

3.2.17 reply

response sent by a target to the initiator or some other node expecting the reply to provide the required information or to indicate that some commanded action has been completed by the target

3.2.18 reply packet

packet containing a reply

3.2.19 request

primitive passed from a service user to a service provider to request a service

3.2.20 response

primitive passed from a service user to a service provider in response to an indication from the service provider