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American National Standard

*for Information Technology –
Serial Attached SCSI - 3 (SAS-3)*

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INCITS 519-2014

American National Standard
for Information Technology –
Serial Attached SCSI - 3 (SAS-3)

Secretariat

Information Technology Industry Council

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American National Standards Institute, Inc.

Abstract

This standard specifies the functional requirements for the Serial Attached SCSI (SAS) physical interconnect, which is compatible with the Serial ATA physical interconnect. The SAS Protocol Layer - 3 (SPL-3) standard documents the SAS protocol layer corresponding to the Serial Attached SCSI - 3 (SAS-3). Prior to this standard, the protocol layer was included with the physical layer. This standard is intended to be used in conjunction with SCSI and ATA command set standards.

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Foreword (This foreword is not part of American National Standard INCITS 519-2014.)

This standard defines the physical layer of the Serial Attached SCSI (SAS) interconnect.

This standard contains ten annexes. Annexes A, B, and D are normative and are considered part of this standard. Annexes C and E through J are informative and are not considered part of this standard.

Requests for interpretation, suggestions for improvement and addenda, or defect reports are welcome. They should be sent to the INCITS Secretariat, International Committee for Information Technology Standards, Information Technology Institute, 1101 K Street, NW, Suite 610, Washington, DC 20005-3922.

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Introduction

This standard defines the Serial Attached SCSI (SAS) interconnect.

The standard is organized as follows:

- Clause 1 (Scope) describes the relationship of this standard to the SCSI and ATA families of standards.
- Clause 2 (Normative references) provides references to other standards and documents.
- Clause 3 (Definitions, symbols, abbreviations, keywords, and conventions) defines terms and conventions used throughout this standard.
- Clause 4 (General) describes the SAS physical architecture.
- Clause 5 (Physical layer) describes the physical layer. It describes passive interconnect components (connectors, cables, and backplanes), the transmitter device and receiver device electrical characteristics, and out of band (OOB) signals.
- Normative Annex A (Jitter tolerance pattern (JTPAT)) describes the jitter tolerance patterns.
- Normative Annex B (SASWDP) includes the simulation program used for transmitter device and receiver device compliance.
- Informative Annex C (StatEye) includes a simulation program that may be used for TxRx connection compliance.
- Normative Annex D (End to end simulation for trained 12 Gbit/s) includes end to end simulation procedures and reference S-parameter file descriptions for trained 12 Gbit/s.
- Informative Annex E (12 Gbit/s S-parameters and end to end simulation) provides information regarding S-parameter measurement and an end to end simulation tool description for trained 12 Gbit/s.
- Informative Annex F (Signal performance measurements) describes signal measurement techniques.
- Informative Annex G (Description of the included Touchstone models for trained 1.5 Gbit/s, 3 Gbit/s, and 6 Gbit/s) provides information about how S-parameter models included with this standard were derived.
- Informative Annex H (Mini SAS 4x active cable assembly power supply and voltage detection circuitry) provides a sample circuit diagram for detecting the presence of a Mini SAS 4x active cable assembly.
- Informative Annex I (SAS icons) defines the SAS icons.
- Informative Annex J (Bibliography) lists a bibliography for this standard.

American National Standard
for Information Technology -

Serial Attached SCSI - 3 (SAS-3)

1 Scope

The SCSI family of standards provides for many different transport protocols that define the rules for exchanging information between different SCSI devices. This standard specifies the functional requirements for the Serial Attached SCSI (SAS) physical interconnect, which is compatible with the Serial ATA physical interconnect. The SAS Protocol Layer - 3 (SPL-3) standard documents the SAS protocol layer corresponding to the Serial Attached SCSI - 3 (SAS-3), defining the rules for exchanging information between SCSI devices using a serial interconnect. Other SCSI transport protocol standards define the rules for exchanging information between SCSI devices using other interconnects.

Figure 1 shows the relationship of this standard to the other standards and related projects in the SCSI family of standards.

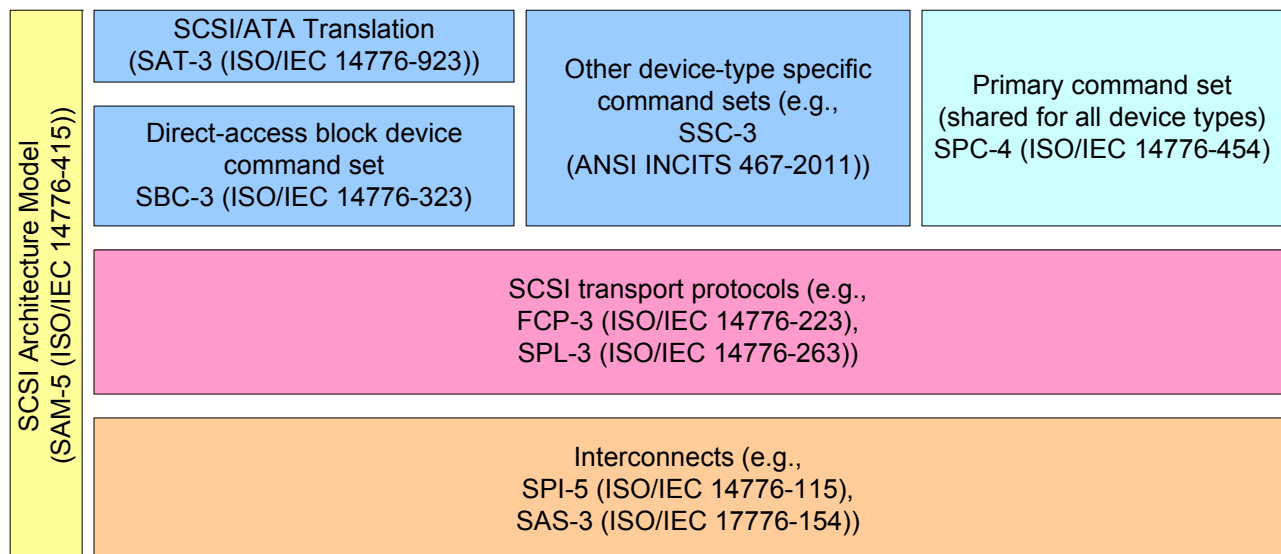


Figure 1 — SCSI document relationships