SFF specifications are available at http://www.snia.org/sff/specifications
or ftp://ftp.seagate.com/sff

This specification was developed by the SFF Committee prior to it becoming the SFF TA (Technology Affiliate) TWG (Technical Working Group) of SNIA (Storage Networking Industry Association).

The information below should be used instead of the equivalent herein.

POINTS OF CONTACT:

Chairman SFF TA TWG
Email: SFF-Chair@snia.org

If you are interested in participating in the activities of the SFF TWG, the membership application can be found at:
http://www.snia.org/sff/join

The complete list of SFF Specifications which have been completed or are currently being worked on can be found at:
http://www.snia.org/sff/specifications/SFF-8000.TXT

The operations which complement the SNIA's TWG Policies & Procedures to guide the SFF TWG can be found at:
http://www.snia.org/sff/specifications/SFF-8032.PDF

Suggestions for improvement of this specification will be welcome, they should be submitted to:
http://www.snia.org/feedback

SFF Committee documentation may be purchased in electronic form.
SFF specifications are available at ftp://ftp.seagate.com/sff

SFF Committee

SFF-8640

Specification for

Serial Attachment 4X 24 Gb/s Unshielded Connector

Rev 1.0 February 10, 2015

Secretariat: SFF Committee

Abstract: This specification defines the general requirements of a four lane, high speed (up to 24 Gb/s per lane) unshielded Input/Output connector for serial interface unshielded devices, backplanes and cables.

This specification provides a common reference for systems manufacturers, system integrators, and suppliers. This is an internal working specification of the SFF Committee, an industry ad hoc group.

This specification is made available for public review, and written comments are solicited from readers. Comments received by the members will be considered for inclusion in future revisions of this specification.

The description of a connector in this specification does not assure that the specific component is actually available from connector suppliers. If such a connector is supplied it must comply with this specification to achieve interoperability between suppliers.

Support: This specification is supported by the identified member companies of the SFF Committee.

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Saratoga CA 95070

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EXPRESSION OF SUPPORT BY MANUFACTURERS

The following member companies of the SFF Committee voted in favor of this industry specification.

FCI
Foxconn
GLGnet Electronics
Hewlett Packard
HGST
Seagate
Sichuan
TE Connectivity

The following member companies of the SFF Committee voted to abstain on this industry specification.

Amphenol
Arista
Broadcom
EMC
Finisar
JDS Uniphase
Sumitomo

The user's attention is called to the possibility that implementation to this Specification may require use of an invention covered by patent rights. By distribution of this specification, no position is taken with respect to the validity of a claim or claims or of any patent rights in connection therewith. Members of the SFF Committee which advise that a patent exists are required to provide a statement of willingness to grant a license under these rights on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain such a license.

Change History

Revision 1.0
- Source of SFF-8629 Rev 1.3 as modified for 24 Gb/s operation

Foreword

The development work on this specification was done by the SFF Committee, an industry group. The membership of the committee since its formation in August 1990 has included a mix of companies which are leaders across the industry.

When 2 1/2" diameter disk drives were introduced, there was no commonality on external dimensions e.g. physical size, mounting locations, connector type, connector location, between vendors.

The first use of these disk drives was in specific applications such as laptop portable computers and system integrators worked individually with vendors to develop the packaging. The result was wide diversity, and incompatibility.

The problems faced by integrators, device suppliers, and component suppliers led to the formation of the SFF Committee as an industry ad hoc group to address the marketing and engineering considerations of the emerging new technology.

During the development of the form factor definitions, other activities were suggested because participants in the SFF Committee faced more problems than the physical form factors of disk drives. In November 1992, the charter was expanded to address any issues of general interest and concern to the storage industry. The SFF Committee became a forum for resolving industry issues that are either not addressed by the standards process or need an immediate solution.

Those companies which have agreed to support a specification are identified in the first pages of each SFF Specification. Industry consensus is not an essential requirement to publish an SFF Specification because it is recognized that in an emerging product area, there is room for more than one approach. By making the documentation on competing proposals available, an integrator can examine the alternatives available and select the product that is felt to be most suitable.

SFF Committee meetings are held during T10 weeks (see www.t10.org), and Specific Subject Working Groups are held at the convenience of the participants. Material presented at SFF Committee meetings becomes public domain, and there are no restrictions on the open mailing of material presented at committee meetings.

Most of the specifications developed by the SFF Committee have either been incorporated into standards or adopted as standards by EIA (Electronic Industries Association), ANSI (American National Standards Institute) and IEC (International Electrotechnical Commission).

If you are interested in participating or wish to follow the activities of the SFF Committee, the signup for membership and/or documentation can be found at:
www.sffcommittee.com/ie/join.html

The complete list of SFF Specifications which have been completed or are currently being worked on by the SFF Committee can be found at:
ftp://ftp.seagate.com/sff/SFF-8000.TXT

If you wish to know more about the SFF Committee, the principles which guide the activities can be found at:
ftp://ftp.seagate.com/sff/SFF-8032.TXT

Suggestions for improvement of this specification will be welcome. They should be sent to the SFF Committee, 14426 Black Walnut Ct, Saratoga, CA 95070.

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FIGURES

SFF Committee --

Serial Attachment 4X 24 Gb/s Connector

1 Scope

This specification defines the mechanical requirements for a composite connector system which is based on SFF-8680. For information not shown here refer to SFF-8680 document. This composite system is designed to support high speed serial signals and power on different contacts within the same housing.

1.1 Application Specific Criteria

Intended applications for this connector system include Serial Attached SCSI (SAS) as specified by the T10 standards and for other applications requiring such a connector system.

This connector shall meet the 24 Gb/s electrical performance requirements defined by Serial Attached SCSI - 3 (SAS-3) and is capable of intermating with previous generations of lower speed SAS.

2 References

2.1 Industry Documents

- INCITS 519 Serial Attached SCSI - 3 (SAS-3)
- SFF-8223 2.5 inch Form Factor Drive w/Serial Attached Connector (EIA-720)
- SFF-8323 3.5 inch Form Factor Drive w/Serial Attached Connector (EIA-740)
- SFF-8482 Serial Attachment 2x Unshielded Connector (EIA-966)
- SFF-8629 Serial Attachment 4X 24 Gb/s Unshielded Connector
- SFF-8639 Multifunction 6X Unshielded Connector
- SFF-8640 Serial Attachment 4X 24 Gb/s Unshielded Connector
- SFF-8680 Serial Attachment 2x Unshielded Connector

2.2 SFF Specifications

There are several projects active within the SFF Committee. The complete list of specifications which have been completed or are still being worked on are listed in the specification at ftp://ftp.seagate.com/sff/SFF-8000.TXT

2.3 Sources

Those who join the SFF Committee as an Observer or Member receive electronic copies of the minutes and SFF specifications (http://www.sffcommittee.com/ie/join.html).

Copies of ANSI standards may be purchased from the InterNational Committee for Information Technology Standards (http://www.techstreet.com/incitsgate.tmpl).

2.4 Conventions

The ISO convention of numbering is used i.e., the thousands and higher multiples are separated by a space and a period is used as the decimal point. This is equivalent to the English/American convention of a comma and a period.

American	French	ISO
0.6	0,6	0.6
1,000	1 000	1 000
1,323,462.9	1 323 462,9	1 323 462.9

3 General Description

This specification identifies the documentation required to implement a four lane 24 Gb/s unshielded connector suitable to the using applications, as illustrated in the following pictorial representation.

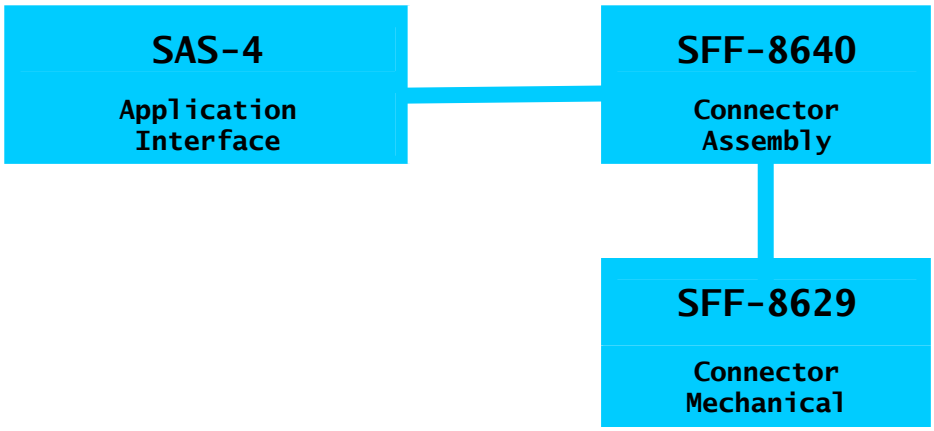


FIGURE 3-1 DOCUMENTATION TO IMPLEMENT A 24 GB/S CONNECTOR

4 Overview of Referenced Specifications

4.1 Application Requirements

The electrical and EMI considerations for the use of this connector are specified by the using standards listed in Section 1.1

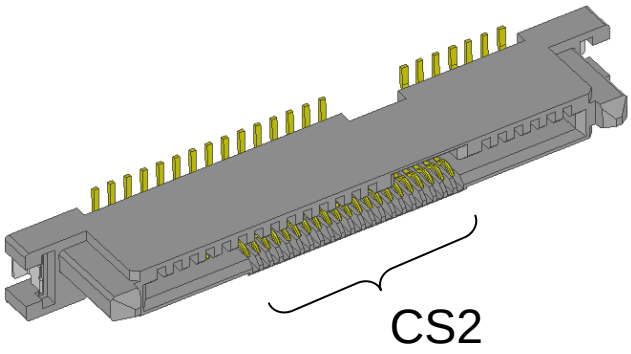
4.2 SFF-8629

This connector system is designed to allow devices to connect to cable assemblies or to PCB's with the same device connector interface.

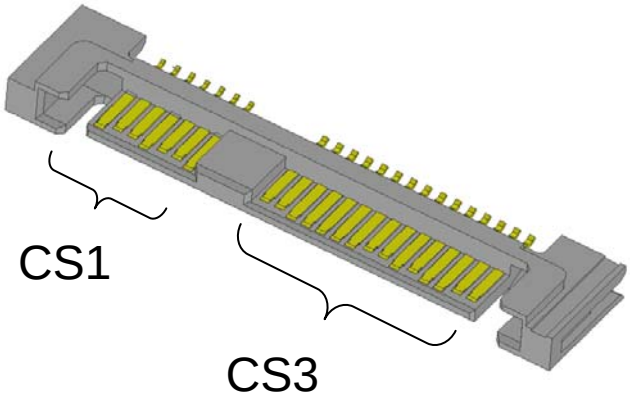
The device free (plug) interface incorporates three different contact sets (CS). Two of these sets (CS1 and CS2) contain 7 contacts for each physical link and typically are used for high speed serial signals. The high speed signals are grouped into differential pairs flanked with Grounds (G-S-S-G-S-S-G). In CS2, an adjacent Ground is shared between the pair of physical links that was not included in the SFF-8680 configuration. The third set (CS3) contains 15 contacts and typically would be used for low frequency purposes such as power and control.

The backplane fixed (receptacle) interface supports device free (plug) interfaces which have CS1 and CS3 only or has all CS1, CS2 and CS3 contacts. Blind mating is supported by the guides built into the mating interface and a provision for hot plugging is supported by the contact sequencing that is possible by using the offset contact positions.

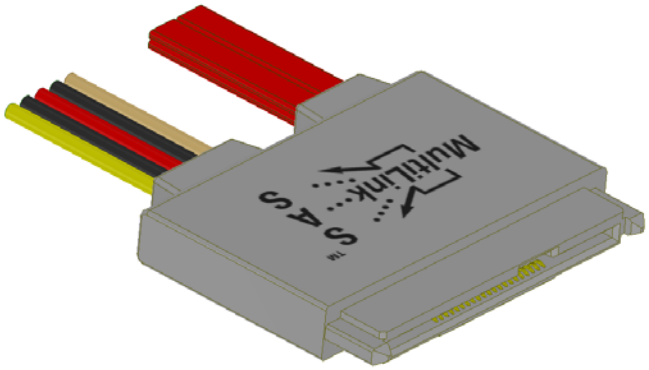
There is no provision for positive mating interface retention latching in the backplane fixed version, However, it does provide for two passive latches the same as found in SFF-8680 for the cabled version.



Backplane Fixed (Receptacle) Connector



Device Free (Plug) Connector



Cable Fixed (Receptacle) Connector

FIGURE 4-1 GENERAL VIEW CONNECTORS AND DESCRIPTIONS