SFF Committee

SFF-8111

Specification for

1.8" Form Factor (60x70mm)

Standardized as EIA 676:2006 at Rev 1.3 dated October 8, 2002

This specification was submitted as a project to the Electronic Industries Alliance, and was Expired at that time.

EIA standards can be purchased from http://global.ihs.com/

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:
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SFF Committee

SFF-8111 Specification for

1.8" drive form factor (60x70mm)

Rev 1.3 October 8, 2002

Secretariat: SFF Committee

Abstract: This specification defines the dimensions for 1.8" magnetic disk drives which have a parallel interface and operate at 5V.

This document provides a common specification for systems manufacturers, system integrators, and suppliers of magnetic disk drives. This is an internal working document 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.

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

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EXPRESSION OF SUPPORT BY MANUFACTURERS

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

Compaq
DDK Fujikura
EMC
ENDL
FCI/Berg
Fujitsu CPA
Hitachi Cable
IBM
Molex
Seagate
Toshiba America
Tyco AMP

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

Amphenol
Finisar
Intel
Picolight
Unisys

To save space for SFF Specifications being reviewed, the information on the principles of the SFF Committee and how to join has not been printed.

SFF Committee --

1.8" drive form factor (60x70mm)

1. Scope

The 81xx suite of specifications defines the configuration characteristics associated with 1.8" disk drives.

The purpose of the 81xx suite is to define the external characteristics of drives such that products from different vendors may be used in the same mounting configurations. The set of specifications provide external dimensions, connectors, connector placement, mounting holes and interface pinouts to assist manufacturers in the systems integration of small form factor disk drives.

- SFF-8111 defines a 60x70mm 1.8" form factor drive with a parallel interface operating at 5V
- SFF-8120 defines a 78x54mm 1.8" form factor drive with a parallel interface operating at 3.3V

In an effort to broaden the applications for storage devices, an ad hoc industry group of companies representing system integrators, peripheral suppliers, and component suppliers decided to address the issues involved.

The SFF Committee was formed in August, 1990 and the first working document was introduced in January, 1991.

1.1 Description of Clauses

Clause 1 contains the Scope and Purpose.

Clause 2 contains Referenced and Related Standards and SFF Specifications.

Clause 3 begins the specification

2. References

The SFF Committee activities support the requirements of the storage industry, and it is involved with several standards.

2.1 Industry Documents

The following interface standards are relevant to this Specification.

- T13/D1321 ATA-5 ATA/ATAPI-5
- T13/D1410 ATA-6 ATA/ATAPI-6

2.2 SFF Specifications

There are several projects active within the SFF Committee. At the date of printing document numbers had been assigned to the following projects. The status of Specifications is dependent on committee activities.

F = Forwarded	The document has been approved by the members for forwarding to a formal standards body.
P = Published	The document has been balloted by members and is available as a published SFF Specification.
A = Approved	The document has been approved by ballot of the members and is in preparation as an SFF Specification.
C = Canceled	The project was canceled, and no Specification was Published.
D = Development	The document is under development at SFF.
E = Expired	The document has been published as an SFF

	Specification, and the members voted against re-publishing it when it came up for annual review.
e = electronic	Used as a suffix to indicate an SFF Specification which has Expired but is still available in electronic form from SFF e.g. a specification has been incorporated into a draft or published standard which is only available in hard copy.
i = Information	The document has no SFF project activity in progress, but it defines features in developing industry standards. The document was provided by a company, editor of an accredited standard in development, or an individual. It is provided for broad review (comments to the author are encouraged).
s = submitted	The document is a proposal to the members for consideration to become an SFF Specification.

Spec #	Rev	List of Specifications as of October 16, 2002
SFF-8000		SFF Committee Information
INF-8001i	E	44-pin ATA (AT Attachment) Pinouts for SFF Drives
INF-8002i	E	68-pin ATA (AT Attachment) for SFF Drives
SFF-8003	E	SCSI Pinouts for SFF Drives
SFF-8004	E	Small Form Factor 2.5" Drives
SFF-8005	E	Small Form Factor 1.8" Drives
SFF-8006	E	Small Form Factor 1.3" Drives
SFF-8007	E	2mm Connector Alternatives
SFF-8008	E	68-pin Embedded Interface for SFF Drives
SFF-8009	4.1	Unitized Connector for Cabled Drives
SFF-8010	E	Small Form Factor 15mm 1.8" Drives
INF-8011i	E	ATA Timing Extensions for Local Bus
SFF-8012	3.0	4-Pin Power Connector Dimensions
SFF-8013	E	ATA Download Microcode Command
SFF-8014	C	Unitized Connector for Rack Mounted Drives
SFF-8015	E	SCA Connector for Rack Mounted SFF SCSI Drives
SFF-8016	C	Small Form Factor 10mm 2.5" Drives
SFF-8017	E	SCSI Wiring Rules for Mixed Cable Plants
SFF-8018	E	ATA Low Power Modes
SFF-8019	E	Identify Drive Data for ATA Disks up to 8 GB
INF-8020i	E	ATA Packet Interface for CD-ROMs
INF-8028i	E	- Errata to SFF-8020 Rev 2.5
SFF-8029	E	- Errata to SFF-8020 Rev 1.2
SFF-8030	1.8	SFF Committee Charter
SFF-8031		Named Representatives of SFF Committee Members
SFF-8032	1.5	SFF Committee Principles of Operation
INF-8033i	E	Improved ATA Timing Extensions to 16.6 MBs
INF-8034i	E	High Speed Local Bus ATA Line Termination Issues
INF-8035i	E	Self-Monitoring, Analysis and Reporting Technolog
INF-8036i	E	ATA Signal Integrity Issues
INF-8037i	E	Intel Small PCI SIG
INF-8038i	E	Intel Bus Master IDE ATA Specification
INF-8039i	E	Phoenix EDD (Enhanced Disk Drive) Specification
SFF-8040	1.2	25-pin Asynchronous SCSI Pinout
SFF-8041	C	SCA-2 Connector Backend Configurations
SFF-8042	C	VHDCI Connector Backend Configurations
SFF-8043	E	40-pin MicroSCSI Pinout
SFF-8045	4.5	40-pin SCA-2 Connector w/Parallel Selection
SFF-8046	E	80-pin SCA-2 Connector for SCSI Disk Drives
SFF-8047	C	40-pin SCA-2 Connector w/Serial Selection
SFF-8048	C	80-pin SCA-2 Connector w/Parallel ESI
SFF-8049	E	80-conductor ATA Cable Assembly

INF-8050i	1.0	Bootable CD-ROM
INF-8051i	E	Small Form Factor 3" Drives
INF-8052i	E	ATA Interface for 3" Removable Devices
SFF-8053	5.5	GBIC (Gigabit Interface Converter)
INF-8055i	E	SMART Application Guide for ATA Interface
SFF-8056	C	50-pin 2mm Connector
SFF-8057	E	Unitized ATA 2-plus Connector
SFF-8058	E	Unitized ATA 3-in-1 Connector
SFF-8059	E	40-pin ATA Connector
SFF-8060	1.1	SFF Committee Patent Policy
SFF-8061	1.1	Emailing drawings over the SFF Reflector
SFF-8062		Rolling Calendar of SSWGs and Plenaries
SFF-8065	C	40-pin SCA-2 Connector w/High Voltage
SFF-8066	C	80-pin SCA-2 Connector w/High Voltage
SFF-8067	3.0	40-pin SCA-2 Connector w/Bidirectional ESI
INF-8068i	1.0	Guidelines to Import Drawings into SFF Specs
SFF-8069	E	Fax-Access Instructions
INF-8070i	1.3	ATAPI for Rewritable Removable Media
SFF-8072	1.2	80-pin SCA-2 for Fibre Channel Tape Applications
SFF-8073	-	20-pin SCA-2 for GBIC Applications
INF-8074i	1.0	SFP (Small Formfactor Pluggable) Transceiver
SFF-8075	1.0	PCI Card Version of SFP Cage
SFF-8076	-	SFP Additional IDs
SFF-8080	E	ATAPI for CD-Recordable Media
INF-8090i	5.4	ATAPI for DVD (Digital Video Data)
SFF-8101		3 Gbs and 4 Gbs Signal Characteristics
SFF-8110	C	5V Parallel 1.8" drive form factor
SFF-8111	1.3	1.8" drive form factor (60x70mm)
SFF-8120	2.6	1.8" drive form factor (78x54mm)
SFF-8200e	1.1	2 1/2" drive form factors (all of 82xx family)
SFF-8201e	1.3	2 1/2" drive form factor dimensions
SFF-8212e	1.2	2 1/2" drive w/SFF-8001 44-pin ATA Connector
SFF-8221	1.3	Pre-Aligned 2.5" Drive >10mm Form Factor
SFF-8222	1.1	2.5" Drive w/SCA-2 Connector
SFF-8223	0.3	2.5" Drive w/Serial Attachment Connector
SFF-8300e	1.2	3 1/2" drive form factors (all of 83xx family)
SFF-8301	1.4	3 1/2" drive form factor dimensions
SFF-8302e	1.1	3 1/2" Cabled Connector locations
SFF-8323	0.3	3 1/2" drive w/Serial Attachment Connector
SFF-8332e	1.2	3 1/2" drive w/80-pin SFF-8015 SCA Connector
SFF-8337e	1.2	3 1/2" drive w/SCA-2 Connector
SFF-8342e	1.3	3 1/2" drive w/Serial Unitized Connector
INF-8350i	6.1	3 1/2" Packaged Drives
SFF-8400	C	VHDCI (Very High Density Cable Interconnect)
SFF-8410	16.1	High Speed Serial Testing for Copper Links
SFF-8411		High Speed Serial Testing for Backplanes
SFF-8412	8.1	HSOI (High Speed Optical Interconnect) Testing
SFF-8415	3.1	HPEI (High Performance Electrical Interconnect) T
SFF-8416	0.1	HPEI Measurement of Bulk Cable
SFF-8420	11.1	HSSDC-1 Shielded Connections
SFF-8421	2.4	HSSDC-2 Shielded Connections
SFF-8422	C	FCI Shielded Connections
SFF-8423	C	Molex Shielded Connections
SFF-8424		Dual Row HSSDC-2 Shielded Connections
SFF-8430	4.1	MT-RJ Duplex Optical Connections
SFF-8441	14.1	VHDCI Shielded Configurations

SFF-8451	10.1	SCA-2 Unshielded Connections
SFF-8452	3.1	Glitch Free Mating Connections for Multidrop Aps
SFF-8453		Shielded High Speed Serial connectors
SFF-8460	1.2	HSS Backplane Design Guidelines
SFF-8470	2.1	Multi Lane Copper Connector
SFF-8471	C	ZFP Multi Lane Copper Connector
SFF-8472	9.3	Diagnostic Monitoring Interface for Optical Xcvrs
INF-8475i	-	XPAK Pluggable Receiver
SFF-8480	2.1	HSS (High Speed Serial) DB9 Connections
SFF-8482	0.0	Internal Serial Attachment Connector
SFF-8483		External Serial Attachment Connector
SFF-8500e	1.1	5 1/4" drive form factors (all of 85xx family)
SFF-8501e	1.1	5 1/4" drive form factor dimensions
SFF-8508e	1.1	5 1/4" ATAPI CD-ROM w/audio connectors
SFF-8523	0.3	5 1/4" drive w/Serial Attachment Connector
SFF-8551	3.2	5 1/4" CD Drives form factor
SFF-8572	-	5 1/4" Tape form factor
SFF-8610	C	SDX (Storage Device Architecture)

2.3 Sources

Copies of ANSI standards or proposed ANSI standards may be purchased from Global Engineering.

15 Inverness Way East	800-854-7179 or 303-792-2181
Englewood	303-792-2192Fx
CO 80112-5704	

Copies of SFF Specifications are available by joining the SFF Committee as an Observer or Member.

14426 Black Walnut Ct	408-867-6630x303
Saratoga	408-867-2115Fx
CA 95070	FaxAccess: 408-741-1600

The increasing size of SFF Specifications has made FaxAccess impractical to obtain large documents. Document subscribers and members are automatically updated every two months with the latest specifications.

SFF specifications are available at ftp://ftp.seagate.com/sff

Electronic copies of documents are also made available via CD_Access, a service which provides copies of all the specifications plus SFF reflector traffic. CDs are mailed every 2 months as part of the document service, and provide the letter ballot and paper copies of what was distributed at the meeting as well as the meeting minutes.

ELECTRONIC COPIES

The status of SFF Specifications is summarized in SFF-8000, which is the only specification which can now be obtained over FaxAccess.

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Paper documentation $ 300 U.S. $400 Overseas
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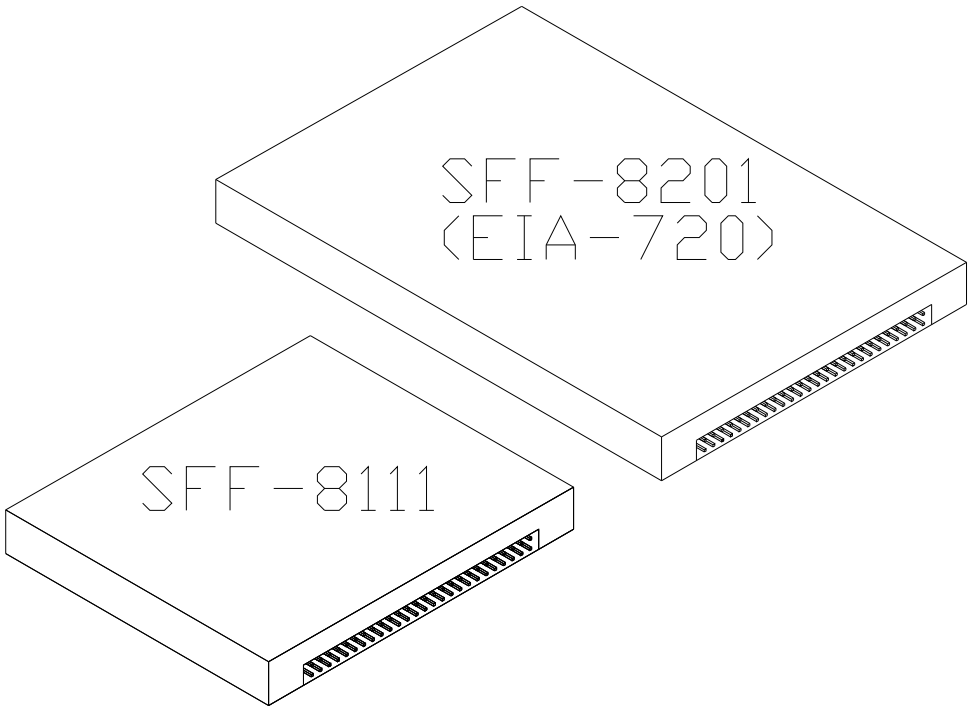
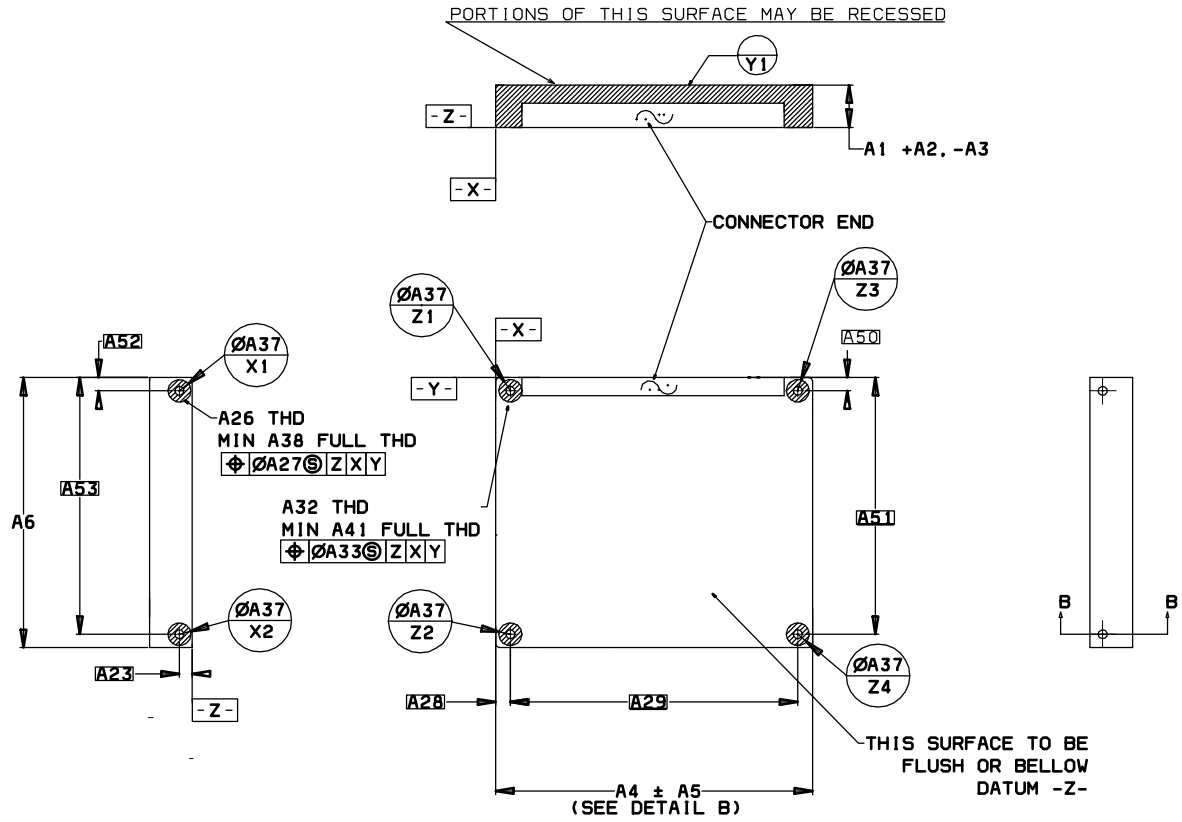
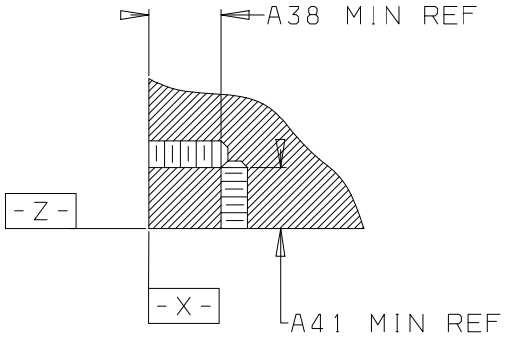
3.0 Introduction

This document describes a disk drive form factor for 1.8″ nominal disk diameter storage devices. The form factor is derived from the EIA-720 (SFF-8200e) form factor for 2.5″ disk drives. The form factor is a truncated form of EIA-720 form, which retains the EIA-720 connector position, width (A4 dimension) and Z-heights. The fastener positions and size are optimized for the SFF-8111 form factor. An EIA-720 aperture with both EIA-720 and SFF-8111 mounting holes can accommodate an EIA-720 or an SFF-8111 form factor device.



4.0 Physical Configuration





SECTION B-B

Table-1 : 1.8" DISK DRIVE DIMENSIONS

Dimension	Millimeters	Inches
A1	7.00	0.276
A1	9.50	0.374
A2	0.00	0.000
A3	0.50	0.020
A4	69.85	2.750
A5	0.25	0.010
A6	60.00	2.362
A23	2.82	0.111
A26	M 2.5	n/a
A27	0.50	0.020
A28	3.20	0.126
A29	63.45	2.498
A32	M 2.5	n/a
A33	0.50	0.020
A37	4.00	0.157
A38	2.80	0.110
A41	2.80	0.110
A50	2.95	0.116
A51	57.05	2.246
A52	2.95	0.116
A53	57.05	2.246