SFF Committee

SFF-8012

Specification for

4-Pin Power Connector Dimensions

Standardized as EIA-677 at Rev 3.1 dated September 16, 2005

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 Committee documentation may be purchased in hard copy or electronic form.
SFF Specifications are available at fission.dt.wdc.com/pub/standards/sff/spec

SFF Committee

SFF-8012

Specification for

4-Pin Power Connector Dimensions

Rev 3.1 September 16, 2005

Secretariat: SFF Committee

Abstract: This document revises the formerly published specification for the pin dimensions of the 4-pin power connector used on many magnetic disk drives.

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 document 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 document.

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

Documentation: This document has been prepared in a similar style to that of the ISO (International Organization of Standards).

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EXPRESSION OF SUPPORT BY MANUFACTURERS

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

Adaptec
All Best Technique
Berg
Cirrus Logic
Conner Peripherals
DDK Electronics
ENDL
Fujitsu Microelectronics
Harting Elect
Hitachi America
IBM
Madison Cable
Maxtor
Methode
Mitsumi
Molex
Montrose/CDT
National Semiconductor
Oak Technology
Quantum
Seagate
Silicon Systems
Unisys

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

FCI/Berg
Hitachi Cable

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

AMP
Amphenol
Compaq
DEC
Dell
Honda Connector
Specialty Electronics
Winchester Electronics

The following member companies of the SFF Committee voted to forward this industry specification to an accredited standards body.

Adaptec
Fujitsu Microelectronics
Hitachi America
MiniStor Peripherals
Oak Technology
Silicon Systems

If you are not a member of the SFF Committee, but you are interested in participating, the following principles have been reprinted here for your information.

PRINCIPLES OF THE SFF COMMITTEE

The SFF Committee is an ad hoc group formed to address storage industry needs in a prompt manner. When formed in 1990, the original goals were limited to defining de facto mechanical envelopes within which disk drives can be developed to fit compact computer and other small products.

Adopting a common industry size simplifies the integration of small drives (2 1/2" or less) into such systems. Board-board connectors carrying power and signals, and their position relative to the envelope are critical parameters in a product that has no cables to provide packaging leeway for the integrator.

In November 1992, the SFF Committee objectives were broadened to encompass other areas which needed similar attention, such as pinouts for interface applications, and form factor issues on larger disk drives. SFF is a forum for resolving industry issues that are either not addressed by the standards process or need an immediate solution.

Documents created by the SFF Committee are expected to be submitted to bodies such as EIA (Electronic Industries Association) or an ASC (Accredited Standards Committee). They may be accepted for separate standards, or incorporated into other standards activities.

The principles of operation for the SFF Committee are not unlike those of an accredited standards committee. There are 3 levels of participation:

- Attending the meetings is open to all, but taking part in discussions is limited to member companies, or those invited by member companies
- The minutes and copies of material which are discussed during meetings are distributed only to those who sign up to receive documentation.
- The individuals who represent member companies of the SFF Committee receive documentation and vote on issues that arise. Votes are not taken during meetings, only guidance on directions. All voting is by letter ballot, which ensures all members an equal opportunity to be heard.

Material presented at SFF Committee meetings becomes public domain. There are no restrictions on the open mailing of material presented at committee meetings. In order to reduce disagreements and misunderstandings, copies must be provided for all agenda items that are discussed. Copies of the material presented, or revisions if completed in time, are included in the documentation mailings.

The sites for SFF Committee meetings rotate based on which member companies volunteer to host the meetings. Meetings have typically been held during the ASC T10 weeks.

The funds received from the annual membership fees are placed in escrow, and are used to reimburse ENDL for the services to manage the SFF Committee.

Foreword

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 in which space was at a premium and time to market with the latest machine was an important factor. System integrators worked individually with vendors to develop the packaging. The result was wide diversity, and with space being such a major consideration in packaging, it was not possible to replace one vendor's drive with a competitive product.

The desire to reduce disk drive sizes to even smaller dimensions such as 1.8" and 1.3" made it likely that devices would become even more constrained in dimensions because of a possibility that such small devices could be inserted into a socket, not unlike the method of retaining semiconductor devices.

The problems faced by integrators, device suppliers, and component suppliers led to the formation of an industry ad hoc group to address the marketing and engineering considerations of the emerging new technology in disk drives. After two informal gatherings on the subject in the summer of 1990, the SFF Committee held its first meeting in August.

During the development of the form factor definitions, other activities were suggested because participants in the SFF Committee faced problems other than the physical form factors of disk drives. In November 1992, the members approved an expansion in charter 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.

At the same time, the principle was adopted of restricting the scope of an SFF project to a narrow area, so that the majority of documents would be small and the projects could be completed in a rapid timeframe. If proposals are made by a number of contributors, the participating members select the best concepts and uses them to develop specifications which address specific issues in emerging storage markets.

Those companies which have agreed to support a documented 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.

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

The development work on this specification was done by the SFF Committee, an industry group. The membership of the committee since its formation in 1990 through July 1998 has included the following organizations:

3M	Methode Electronics
Adaptec	Microsoft
All Best Technique	MiniStor Peripherals
Alps Tohoku	Mitsumi
AMP	Molex
Amphenol Interconnect	Montrose/CDT
Apple Computer	National Semiconductor
Areal Technology	NEC Deutschland
Aztech Systems	NYPLA Industrial
Berg Electronics	O R Technology
Burndy	Oak Technology
Circuit Assembly	Philips Laser Optics Systems
Cirrus Logic	PrairieTek
Compaq Computer	Promise Technology
Conner Peripherals	Quantum

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Digital Equipment
Elastomeric Technologies
Elco
ENDL
Foxconn International
Framatome Connectors
Fujitsu Takamisawa America
Harting Electronik
Harting North America
Hewlett Packard
Hitachi America
Hitachi Cable Manchester
Honda Connectors
IBM
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Intel
Intellistor
Iomega
JPM
JTS
JVC
LG Electronics
Madison Cable
Matsushita Electric
Maxtor
Ricoh
Robinson Nugent
Rodime
Rohm LSI Systems
Samsung Electronics
Sanyo
Seagate Technology
Silicon Integrated Systems
Silicon Systems
Sony
Specialty Electronics
Stocko Connectors
Sun Microsystems
TEAC America
Texas Instruments DMSG
Thomas & Betts
Toshiba America
Unisys
Wearnes Hollingsworth
Wearnes Peripherals
Wearnes Technology
Western Digital
Winchester Electronics
YC Cable USA
Zenith Data Systems

If you are not receiving the documentation of SFF Committee activities or are interested in becoming a member, the following signup information is reprinted here for your information.

Annual SFF Committee Membership Fee	$ 1,800.00
Annual SFF Committee Paper Documentation Fee	$ 300.00
Annual Surcharge for AIR MAIL to Overseas	$ 100.00
Annual Surcharge for Electronic Documentation	$ 360.00

Name: _____

Title: _____

Company: _____

Address: _____

_____

_____

Phone: _____

Fax: _____

Email: _____

Please register me as a Member of the SFF Committee for one year.

Paper documentation	$ 1,800
Electronic documentation	$ 2,160

Check Payable to SFF Committee for $_____ is Enclosed

Please invoice me $_____ on PO #: _____

MC/Visa/AmX_____ Expires_____

Please register me as an Observer on the SFF Committee for one year.

Paper documentation	$ 300 U.S. $ 400 Overseas
Electronic documentation	$ 660 U.S. $ 760 Overseas

Check Payable to SFF Committee for $_____ (POs Not Accepted)

MC/Visa/AmX_____ Expires_____

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FIGURES

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SFF Committee --

Power Connector Pin Dimensions

1. Scope

This SFF Specification defines the mating interface of the 4-position connector system commonly used to provide power to small form factor disk drives.

The purpose of this SFF Specification is to define the mating dimensions and performance so that products from different vendors may be used in the same configurations.

In an effort to broaden the applications for small form factor disk drives, an ad hoc industry group of companies representing system integrators, peripheral suppliers, and component suppliers decided to address the issues involved.

The Small Form Factor 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 contains the General Description.

Clause 4 contains the Glossary.

Clause 5 defines the Configuration.

Clause 6 defines the Mating Dimensions.

Clause 7 defines the Mating Performance.

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 many SFF Specifications.

- X3.131R-1994 SCSI-2 Small Computer System Interface
- X3.253-1995 SPI (SCSI-3 Parallel Interface)
- X3.302-xxxx SPI-2 (SCSI-3 Parallel Interface -2)
- X3.277-1996 SCSI-3 Fast 20
- X3.221-1995 ATA (AT Attachment) and subsequent extensions

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 specification has been approved by the members for forwarding to a formal standards body.
P = Published	The specification has been balloted by members and is available as a published SFF Specification.
A = Approved	The specification 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 specification is under development at SFF.
E = Expired The specification has been published, and the members voted against re-publishing when it came up for review.
a = archive Used as a suffix to indicate an SFF Specification which has been Archived. This specification will always be available at the ftp site and new development effort in the subject area shall be done under a new number.
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 specification 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). As the copyright on such documents is retained by the author, the INF or 'i' specifications cannot be freely copied for distribution.

Spec #	Rev	List of Specifications as of September 16, 2005
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	3.1	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
SFF-8025	0.7	SFF Committee Specification Categories
SFF-8026	0.1	SFF Committee Documentation
INF-8028i	E	- Errata to SFF-8020 Rev 2.5
SFF-8029	E	- Errata to SFF-8020 Rev 1.2
SFF-8030	2.0	SFF Committee Charter
SFF-8031		Named Representatives of SFF Committee Members
SFF-8032	1.6	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 & Reporting Technology
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-8044		ZIF Connector
SFF-8045	4.7	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)
SFF-8054	0.2	Automation Drive Interface Connector
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	E	Emailing drawings over the SFF Reflector
SFF-8062		Rolling Calendar of SSWGs and Plenaries
SFF-8064		Unshielded HD Cable/Board Connector System
SFF-8065	C	40-pin SCA-2 Connector w/High Voltage
SFF-8066	C	80-pin SCA-2 Connector w/High Voltage
SFF-8067	3.4	40-pin SCA-2 Connector w/Bidirectional ESI
INF-8068i	E	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	C	20-pin SCA-2 for GBIC Applications
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SFF-8075	1.0	PCI Card Version of SFP Cage
SFF-8076	-	SFP Additional IDs
INF-8077i	3.1	XFP (10 Gbs Small Form Factor Pluggable Module)
SFF-8078	C	XFP-E
SFF-8079	1.7	SFP Rate and Application Selection
SFF-8080	E	ATAPI for CD-Recordable Media
SFF-8082	5.1	Labeling of Ports and Cable Assemblies
SFF-8084	0.2	0.8mm SFP Card Edge Connector Dimensioning
SFF-8085	0.9	100 Mbs Small Formfactor Transceivers
SFF-8086	1.4	Compact Multilane Series: Common Elements
SFF-8087	1.5	Compact Multilane Series: Unshielded
SFF-8088	1.6	Compact Multilane Series: Shielded
SFF-8089	1.3	SFP Rate and Application Codes
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SFF-8101	C	3 Gbs and 4 Gbs Signal Characteristics
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SFF-8122		1.8" (60x70mm) w/SCA-2 Connector
SFF-8120	2.6	1.8" drive form factor (78x54mm)
SFF-8123	C	1.8" (60x70mm) w/Serial Attachment Connector
SFF-8124	0.2	Memory Form Factor Disk Drive Connections
SFF-8131	1.3	30mmx40mm Form Factor
SFF-8132	1.3	30mmx40mm Form Factor w/35-pin ATA Parallel Cnctr
SFF-8133	1.1	30mmx40mm Form Factor w/12-pin CE-ATA X4 Cnctr
SFF-8141	1.1	54mmx71mm Form Factor
SFF-8142		54mmx71mm Form Factor w/35-pin ATA Parallel Cnctr
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SFF-8201	2.4	2 1/2" drive form factor dimensions

SFF-8212e	1.2	2 1/2" drive w/SFF-8001 44-pin ATA Connector
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SFF-8300	1.2	3 1/2" drive form factors (all of 83xx family)
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SFF-8323	1.4	3 1/2" drive w/Serial Attachment Connector
SFF-8332e	E	3 1/2" drive w/80-pin SFF-8015 SCA Connector
SFF-8337e	E	3 1/2" drive w/SCA-2 Connector
SFF-8342e	1.3	3 1/2" drive w/Serial Unitized Connector
INF-8350i	E	3 1/2" Packaged Drives
SFF-8400	C	VHDCI (Very High Density Cable Interconnect)
SFF-8401		Optical Transceiver for Short-Reach Appcns
SFF-8410	16.1	High Speed Serial Testing for Copper Links
INF-8411	1.0	High Speed Serial Testing for Backplanes
SFF-8412	12.2	HSOI (High Speed Optical Interconnect) Testing
SFF-8414		HPEI Passive Cable Assembly S-Parm Measurements
SFF-8415	8.1	HPEI (High Performance Electrical Interconnect)
SFF-8416	15.0	HPEI Bulk Cable Measurement/Performance Reqmnts
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	0.5	Dual Row HSSDC-2 Shielded Connections
SFF-8425	1.4	Single Voltage 12V Drives
SFF-8426		HSSDC Double Width
SFF-8429	1.1	Signal Specification Architecture for HSS Links
SFF-8430	4.1	MT-RJ Duplex Optical Connections
SFF-8431		SFP+
SFF-8441	14.1	VHDCI Shielded Configurations
SFF-8448	0.5	SAS Sideband Utilization
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-8454		SCA-2 Enhanced HSS
SFF-8460	1.2	HSS Backplane Design Guidelines
SFF-8464	C	Improved MM HSS Optical Link Performance
SFF-8470	2.9	Multilane Copper Connector
SFF-8471	C	ZFP Multilane Copper Connector
SFF-8472	9.5	Diagnostic Monitoring Interface for Optical Xcvrs
INF-8475i	2.2	XPAK Small Formfactor Pluggable Receiver
SFF-8480	2.1	HSS (High Speed Serial) DB9 Connections
SFF-8482	1.9	Unshielded Dual Port Serial Attachment Connector
SFF-8483	C	External Serial Attachment Connector
SFF-8484	1.7	Multilane Unshielded Serial Attachment Connector
SFF-8485	0.5	Serial GPIO (General Purpose Input/Output) Bus
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	1.4	5 1/4" drive w/Serial Attachment Connector
SFF-8551	3.2	5 1/4" CD Drives form factor
SFF-8552	1.1	5 1/4" 9.5mm/12.7mm Optical Drive Form Factor
SFF-8572	C	5 1/4" Tape form factor
SFF-8610	C	SDX (Storage Device Architecture)
SFF-8617		SAS Transition cables

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 FaxAccess or 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

FaxAccess is a computer-operated service capable of faxing copies of documents selected from a menu. Anyone ordering documents over FaxAccess must be using the handset of a fax machine, as the documents are transmitted over the same line as the caller dialed in on to make the selection(s).

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. Specifications are available by FTP at fission.dt.wdc.com/pub/standards/sff/spec

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.

If this is the last page of an SFF Specification, it means that the latest copy of this specification is not available via FaxAccess. To obtain a copy, you may join the SFF Committee as a Member or an Observer, and sign up for either paper or electronic copies.

3. General Description

The application environment for small form factor disks is any computer connecting to one or more disks in a restricted packaging environment.

The purpose of an SFF Specification is to provide information that will assist vendors to design products that can fit the same packaging envelope.

Small form factor disks are widely-used where low power and small size are important configuration parameters.

4. Definitions and Conventions

4.1 Definitions

For the purpose of SFF Specifications, the following definitions apply:

4.1.1 Optional: This term describes features which are not required by the SFF Specification. However, if any feature defined by the SFF Specification is implemented, it shall be done in the same way as defined by the Specification.

4.1.2 Reserved: Where this term is used for bits, bytes, fields and code values; the bits, bytes, fields and code values are set aside for future standardization. The default value shall be zero. The originator is required to define a Reserved field or bit as zero, but the receiver should not check Reserved fields or bits for zero.

4.1.3 VU (Vendor Unique): This term is used to describe bits, bytes, fields, pins, signals, code values and features which are not described in this SFF Specification, and may be used in a way that varies between vendors.

4.1.4 VU Mode: A mode of execution by the drive in which its use is not defined by this SFF Specification. The means by which a vendor invokes vendor unique operations within a drive is defined by this SFF Specification.

4.2 Conventions

If there is a conflict between text and tables on a feature described as optional, the table shall be accepted as being correct.

Certain terms used herein are the proper names of signals. These are printed in uppercase to avoid possible confusion with other uses of the same words; e.g., ATTENTION. Any lower-case uses of these words have the normal American- English meaning.

A number of conditions, commands, sequence parameters, events, English text, states or similar terms are printed with the first letter of each word in uppercase and the rest lower-case; e.g., In, Out, Request Status. Any lower- case uses of these words have the normal American-English meaning.

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

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

5. Connector

5.1 Configuration

The power connector commonly used by many magnetic disk drives is of pin and socket construction.

The plug (male) half of the connector is mounted on the drive. The receptacle (female) half of the connector is mounted on a cable.

The pin assignments used by various interfaces are defined by the national standards and SFF Specifications listed in Clause 2.

5.2 Part Numbers

A number of suppliers provide components which comply with the connector described in this Specification.

There are many physical configurations to satisfy a diverse range of product applications. The connector identified by part number is not required, as an equivalent part may be used.

The following information has been provided as one example of a system that may be used.

Power Connector Plug	Molex 8981-4V
Power Connector Receptacle	Molex 70156

6. Power Connector Pin Dimensions

6.1 Plug

The dimensions defined in Table 6-1 are for the mating interface shown in Figure 6-1.

TABLE 6-1 POWER CONNECTOR PLUG

Dimension	Millimeters	Inches
A 1	2.10	.083
A 2	3.50	.138
A 3	5.08	.200
A 4	15.24	.600
A 5	6.60	.260
A 6	21.32	.839
A 7	1.65	.065
A 8	7.50	.295
A 9	6.00	.236
A10	4.95	.195
A11	1.00	.039
A12	11.18	.440
A13	3.80	.150
A14	3.00	.118
A15	5.10	.201
A16	17.80	.701
T 1	.04	.0016
T 2	.15	.006
T 3	.25	.010

Unless otherwise specified, all tolerances are +/- T3

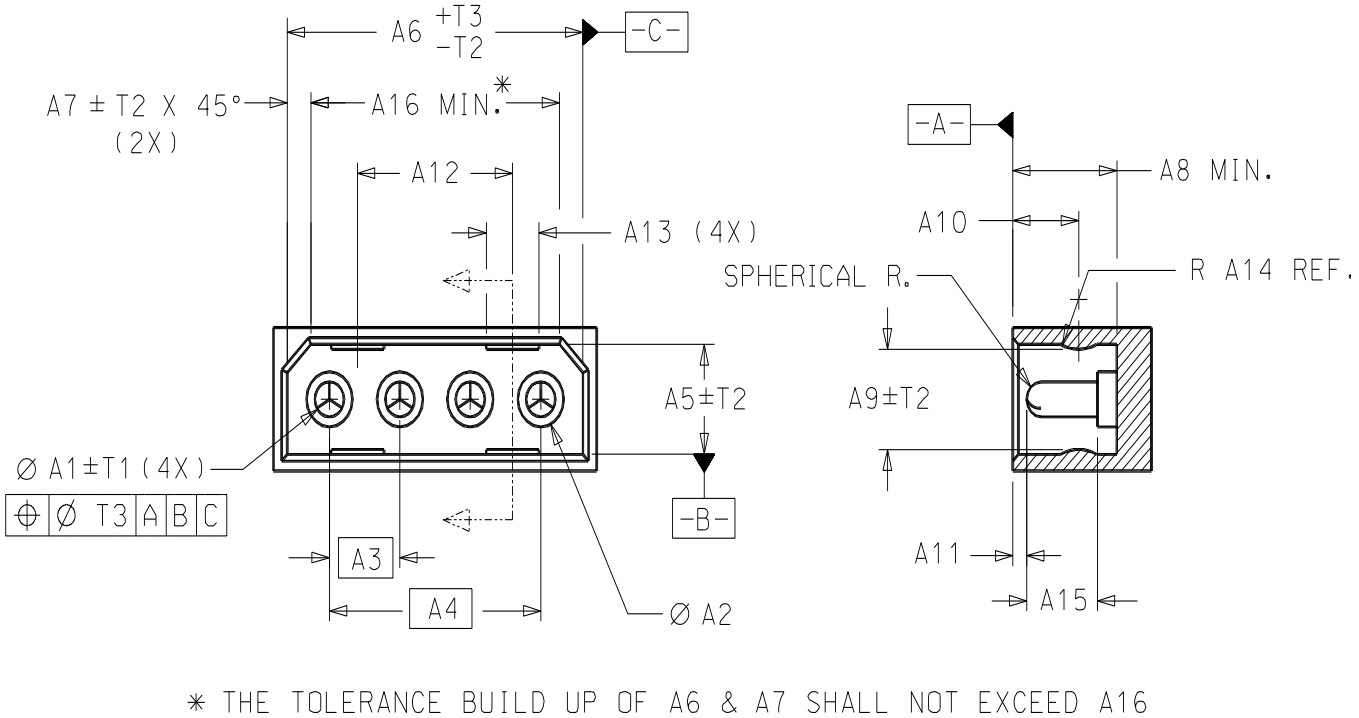


FIGURE 6-1 POWER CONNECTOR PLUG

6.2 Receptacle

The dimensions defined in Table 6-2 are for the mating interface shown in Figure 6-2.

TABLE 6-2 POWER CONNECTOR RECEPTACLE

Dimension	Millimeters	Inches
A 1	2.03	.080
A 2	5.08	.200
A 3	15.24	.600
A 4	6.30	.248
A 5	21.00	.827
A 6	1.78	.070
A 7	7.87	.310
A 8	5.51	.217
A 9	1.19	.047
A10	5.08	.200
A11	11.18	.440
A12	1.19	.047
A13	2.00	.079
A14	4.06	.160
T 1	.10	.004
T 2	.15	.006
T 3	.25	.010
T 4	.60	.024

Unless otherwise specified, all tolerances are +/- T3

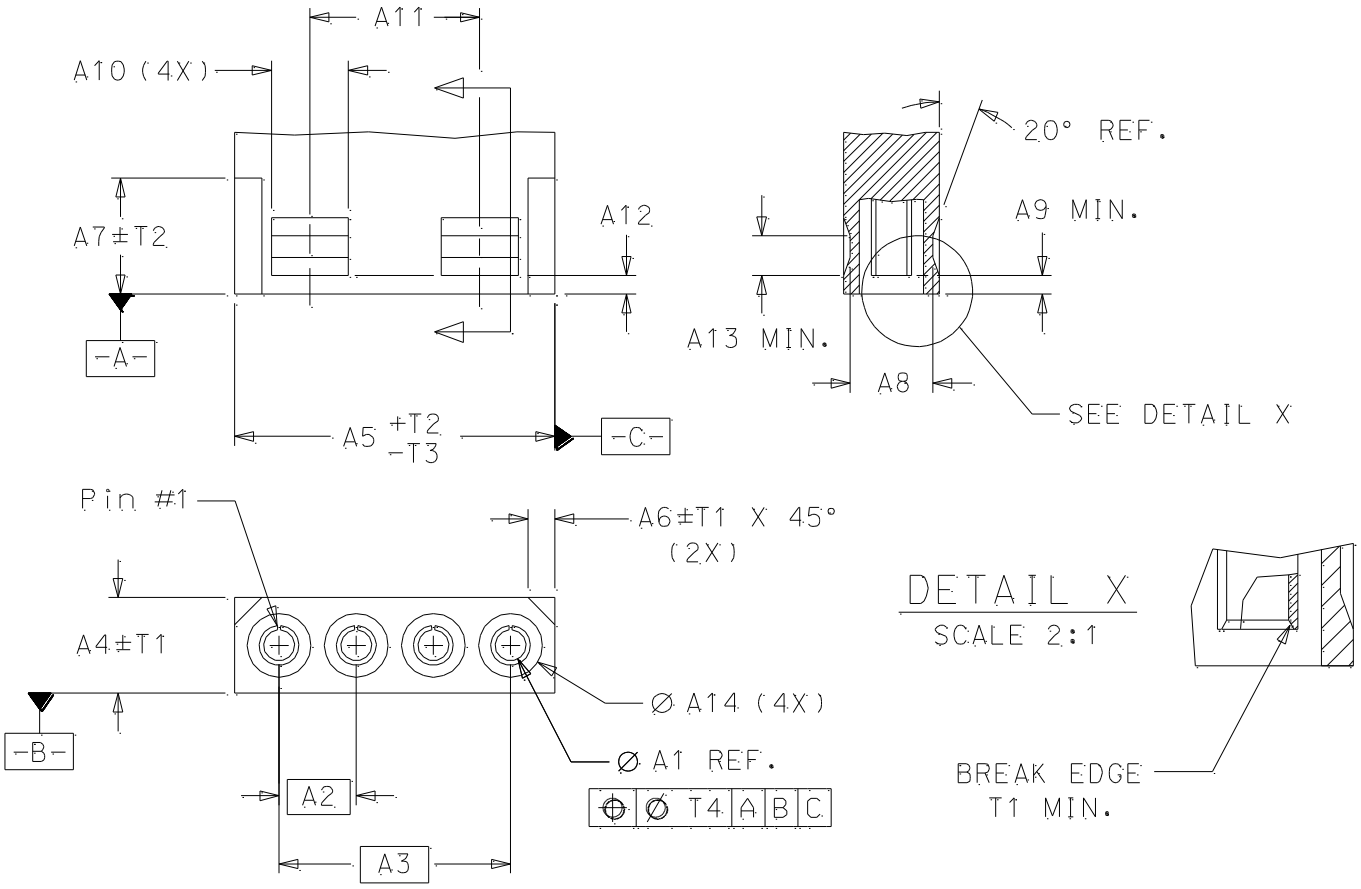


FIGURE 6-2 POWER CONNECTOR RECEPTACLE

Note: A detail view for the socket was added to Figure 6-2 to specify an edge break on the internal diameter. The tolerance is "T1" Min, so no additional specs are required for the table.

Dimension A4 is Table 6-2 has been adjusted:

	mm	inch
Previously	6.35	0.250
Now	6.30	0.248

This change addresses the concerns raised by Fujitsu. It is only a partial fix, but maintains the validity of the 8012 Plug spec. (table 6-1, A5)

7. Mating Performance

7.1 Mating Force

The test results should not include forces generated by housing detents.

Test Method: The connectors are mounted in appropriate fixtures and mated at a rate of 12.5mm per minute to a depth of 2.5mm.

Requirement: 3.85 lbs (1.75 kg) maximum per contact

7.2 Unmating Force

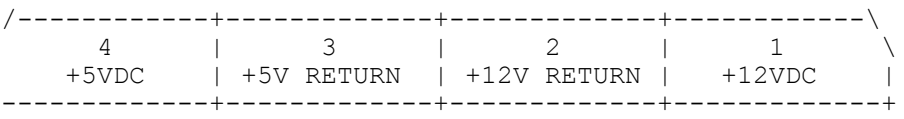
The test results should not include forces generated by housing detents.

Test Method: The connectors are unmated at a rate of 12.5mm per minute.

Requirement: 0.25 lbs (113.5g) minimum per contact

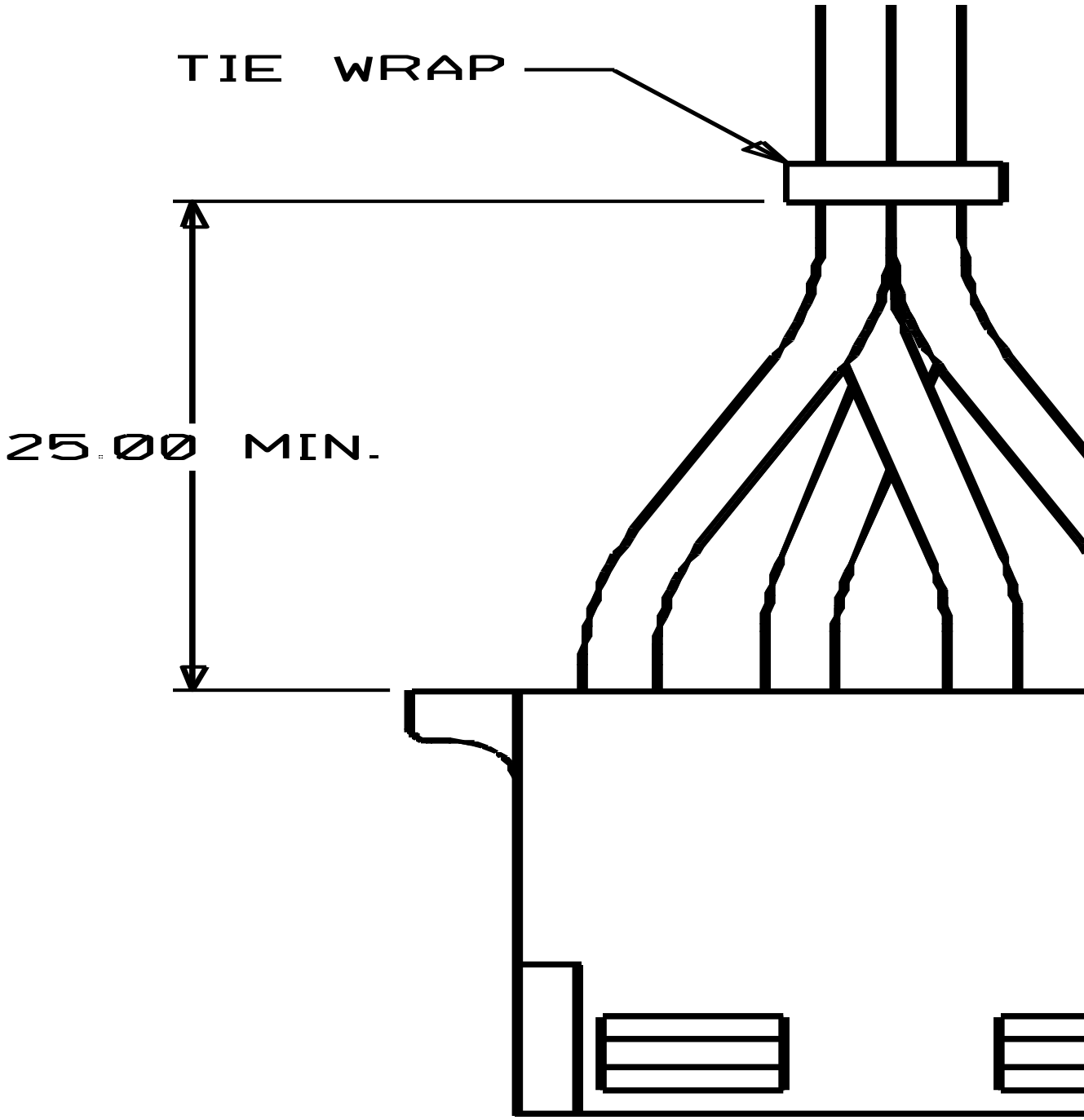
Annex A: Pin Usage

The pin assignment designations were extracted from X3.221-199x, the AT Attachment Interface. This is provided for information purposes only. In the event of any discrepancy, the information in a standard on the usage of pins takes precedence over information in this specification.



Annex B: Cable Application Guide

When restraining wires on a crimp style receptacle, the following recommendation on cable tie placement should be followed.


TIE WRAP
25.00 MIN.