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SFF-8301

Specification for

3.5" Form Factor Drive Dimensions

Rev 1.9 January 19, 2018

Secretariat: SFF TA TWG

Abstract: This specification defines the dimensions for 3.5" magnetic disk drives.

This specification provides a common reference for systems manufacturers, system integrators, and suppliers.

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.

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Intellectual Property

The user's attention is called to the possibility that implementation of this Specification may require the 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. This specification is considered SNIA Architecture and is covered by the SNIA IP Policy and as a result goes through a request for disclosure when it is published. Additional information can be found at the following locations:

- Results of IP Disclosures: http://www.snia.org/sffdisclosures
- SNIA IP Policy: http://www.snia.org/ippolicy

Change History

Rev 1.5 (January 27, 2010)
- Added new bottom fastener position A13 dimension (3.000 in) to Figure 4-1.
- Added new bottom fastener position choice description to Section 4.1

Rev 1.6 (March 16, 2010)
- Updated new bottom fastener position choice description in Section 4.1 as per advice of the committee at the March 2010 meeting.

Rev 1.7 (February 8, 2013)
- Note on thread size omitted from redrawn Figure 4-1 included in Table 4-1.

Rev 1.8 (August 30, 2014)
- Editorial changes for consistency between specifications in revised EIA-740.

Rev 1.8.1 (December 19, 2017)
- Updated to SNIA-TA SFF format.
- Added lead in requirement for mounting holes.
- Clarified mounting screw penetration.

Rev 1.9 January 19, 2018
- Publication of revision 1.9.

Foreword

The development work on this specification was done by the SNIA SFF TWG, an industry group. Since its formation as the SFF Committee in August 1990, the membership 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 SFF Committee provided a forum for system integrators and vendors to define the form factor of disk drives.

During their definition, other activities were suggested because participants in SFF faced more challenges than the form factors. 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.

In July 2016, the SFF Committee transitioned to SNIA (Storage Networking Industry Association), as a TA (Technology Affiliate) TWG (Technical Work Group).

Industry consensus is not a requirement to publish a 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 meets during the T10 (see www.t10.org) and T11 (see www.t11.org) weeks, and SSWGs (Specific Subject Working Groups) are held at the convenience of the participants.

Many of the specifications developed by SFF have either been incorporated into standards or adopted as standards by ANSI, EIA, JEDEC and SAE.

For those who wish to participate in the activities of the SFF TWG, the signup for membership 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 by the SFF Committee is contained in the document SFF-8000 which can be found at:

http://www.snia.org/sff/specifications

Suggestions for improvement of this specification will be welcome, they should be submitted to:

http://www.snia.org/feedback

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1. Scope

This specification defines the dimensions of 3.5" disk drives.

1.1 Application Environment

The environment for the 3.5" Drive Form Factor is any computer, cabinet, or enclosure connecting to one or more drives in a restricted packaging environment.

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

1.2 Copyright

1.3 Disclaimer

The information contained in this publication is subject to change without notice. The SNIA makes no warranty of any kind with regard to this specification, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The SNIA shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this specification.

Suggestions for revisions should be directed to http://www.snia.org/feedback/

2. References

2.1 Industry Documents

- ASME Y14.5M Geometric Dimensioning and Tolerancing

2.2 Sources

There are several projects active within the SFF TWG. The complete list of specifications which have been completed or are still being worked on is contained in the document SFF-8000 which can be found at http://www.snia.org/sff/specifications.

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

2.3 Conventions

The dimensioning conventions are described in ANSI-Y14.5M, Geometric Dimensioning and Tolerancing. All dimensions are in millimeters, which are the controlling dimensional units (if inches are supplied, they are for guidance only).

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

2.4 Definitions

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

Height: Distance from board surface to farthest overall connector feature

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. Describing a feature as optional in the text is done to assist the reader. If there is a conflict between text and tables on a feature described as optional, the table shall be accepted as being correct.

Reserved: Where this term is used for defining the signal on a connector pin its actual function is set aside for future standardization. It is not available for vendor specific use. 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.

3. General Description

3.1 Mounting Holes

There are four to six mounting holes on the bottom and two on each side.

Although a disk vendor may provide for three positions per side, systems manufacturers may find that the hole located between the two specified holes is not in the same location relative to the other holes for a wide selection of drives. For this reason, the middle hole has not been specified and is considered optional.

The pair of bottom mounting holes located by dimension A7 is required. One additional pair of bottom mounting holes are required, either the pair of mounting holes located by dimension A6 or the pair of mounting holes located by dimension A13. Providing all three pairs of mounting holes (located by dimensions A7, A6, and A13) is allowed.

Threaded holes on the form factor shall include a lead in feature. Exact configuration of the lead in is not defined since the implementation of the form factor is beyond the scope of this specification. An example lead in for a cast aluminum implementation is a countersink of 4 mm diameter x 90º (0.157” diameter x 90º). Appropriate information regarding recommended screw type and torque should be included in the product data sheet to enable proper mounting of the device without damaging threads.

3.2 Dimensions

TABLE 3-1 3.5" DISK DRIVE DIMENSIONS

Dimension	Millimeters		Inches	
A 1	17.80	Max	0.700	Max
A 1	26.10	Max	1.028	Max
A 1	42.00	Max	1.654	Max
A 2	147.00	Max	5.787	Max
A 3	101.60		4.000	
A 4	95.25		3.750	
A 5	3.18		0.125	
A 6	44.45		1.750	
A 7	41.28		1.625	
A 8	28.50		1.122	
A 9	101.60		4.000	
A10	6.35		0.250	
A11	0.25		0.010	
A12	0.50		0.020	
A13	76.20		3.000	
Threads				
Size	6-32 UNC-2B			
Fastener penetration	2.39	Min	0.094	Min
	3.56	Max	0.140	Max
Fastener penetration applies to fasteners used to mount the device. The device shall accept the maximum fastener penetration.				

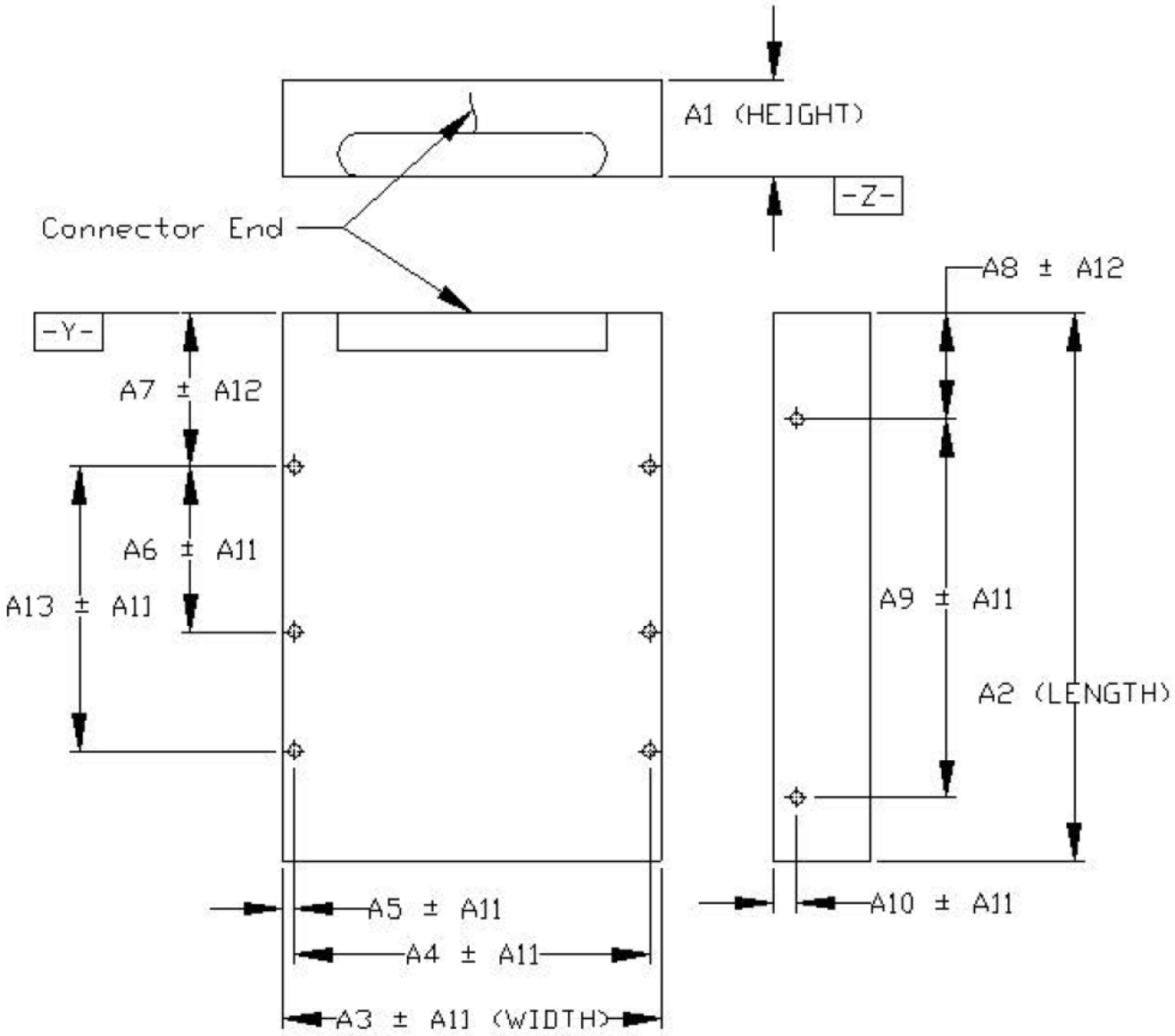

FIGURE 3-1 FORM FACTOR OF 3.5" DISK DRIVE