



规格书

SPECIFICATION

CUSTOMER NAME	客户名称:	
CUSTOMER NO.	客户编号:	
SERIES	系 列:	SATA连接器
MODEL NO.	型 号:	XB-series
DRAWING NO.	图 形 号:	SATA CONNECTOR

If specification of this product meets your request, please confirm all the items of it and return to us with signature and stamp, it will be basis of our production and record. Thanks your cooperation in advance!

若此产品规格符合贵司要求，敬请确认此规格书内所有项目
并签名和盖章后回传给我司，以作我司产品制作之

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东莞市溪榜电子有限公司

Dong guan Xi Bang Electronics Co., Ltd

地址：广东省东莞市黄江镇合路工业区

**Address:He Lu Industrial Zone, Huangjiang Town
Dongguan City, Guangdong Province**

Tel: (0769)82055138/82056828

Fax:(0769)83663452

邮箱: admin@alspr.com switch@alspr.com

<http://www.alpsr.cn/> <http://www.alpsr.com/>

Dong Guan XB ElectronicsCo., Ltd

AccountNumber: 705540238

BankName: CitibankN.A.,HongKongBranch

Country/Region: Hong Kong

BankCode:006

BankAddress: 3GardenRoad, Central, Hong Kong

SWIFT/BIC: CITIHKHX (CITIHKHXXXX*If 11 characters are required)

MaIL: HK@ALPSR.CN XB@ALPSR.CN XB@ALPSR.COM

Quality core! Afterburner for Made in China!



External Serial ATA Connector

1. SCOPE

1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the **External Serial ATA Connector**.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in Tyco 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENT

The following Tyco documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. TYCO SPECIFICATIONS

- A. 109-1: General Requirements for Test Specifications
- B. 109-197 : Tyco Specification vs EIA and IEC Test Methods
- C. 501-XXX : Test Report

3. REQUIREMENTS

3.1. DESIGN AND CONSTRUCTION

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. MATERIALS

- A. Housing : Thermoplastic High Temp., UL94V-0
- B. Contact : Copper alloy, Gold plating on contact area, Tin plating on solder tail, Nickel underplating overall
- C. Shield: Copper alloy, Nickel underplating overall

3.3. RATINGS

- A. Voltage: 12VAC Max
- B. Current: 1.5A per contact
- C. Temperature: - 40 °C to +105 °C
- D. WITHSTANDING VOLTAGE: 500 VAC

DR	DATE	APVD	DATE
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. This specification is a controlled document.

3.4.PERFOMANCE REQUEIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per AMP Specification 109-1TEST REQUIREMENTS AND PROCEDURES SUMMARY.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

Test Item		Requirement	Procedure
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection.
ELECTRICAL REQUIREMENT			
2	Contact Resistance	30mΩ Max Initial 45mΩ Max Final	EIA-364-6B Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max.
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5mA MAX	EIA-364-20B 500VAC for 1minute Test between adjacent circuits of unmated connector.
4	Insulation Resistance	1000MΩ Min	EIA-364-21C Impressed voltage 500VDC. Test between adjacent circuits of unmated connector.
MECHANICAL REQUIREMENT			
5	Mating Force	40N Max	EIA-364-13B Operation Speed : 12.5mm/min. Measure the force required to mate connector.
6	Un-mating Force	10N Min	EIA-364-13B Operation Speed : 12.5mm/min. Measure the force required to un-mate connector.
7	Durability	See Note	EIA-364-9C Operation Speed : 200cycle/hour. Durability Cycles : 2500Cycles
8	Vibration	No electrical discontinuity greater than 0.1 or 1 μ sec shall occur. See Note.	EIA-364-28D Subject mated connectors to 5.35 G's RMS. 30 minutes in each of three mutually perpendicular planes.
9	Mechanical Shock	No electrical discontinuity greater than 0.1 or 1 μ sec shall occur. See Note.	EIA-364-27B Accelerate Velocity : 30G Waveform : Half-sine shock plus Duration : 11msec No. of Drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test.

Figure 1 (Cont.)

MECHANICAL REQUIREMENT			
TEST ITEM		REQUIREMENT	PROCEDURE
10	Solder ability	Wet solder coverage : 95% Min.	J-STD-002 category 3 aging Steam Aging Preconditioning: 93 +3/-5°C, 100% H.R., 8 hrs. Solder temperature: 245±5°C for 5sec.
ENVIRONMENTAL REQUIREMENTS			
11	Resistance to Wave Soldering Heat (DIP)	No physical damage shall occur.	Tyco spec. 109-202, Condition B Solder Temp. : 265±5°C, 10±0.5sec.
12	Resistance to Reflow Soldering Heat (SMT)	No physical damage shall occur.	Tyco spec. 109-201, Condition B Pre-soak condition, 85°C /85% RH for 168 hours. Pre Heat : 150~180°C, 90±30sec. Heat : 230°C Min., 30±10sec. Peak Temp. : 260+0/-5°C, 20~40sec. Duration : 3 cycles
13	Thermal Shock	See Note	EIA-364-32C Mated Connector to 10cycles between -55+/-3°C and +85+/-2°C
14	Humidity-Temperature	See Note	EIA-364-31B. Mated Connector to 96hours at 40°C with 90~95% RH
15	Temperature Life	See Note	EIA-364-17B. Mated Connector to 500hours at 85°C
16	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	EIA-364-26B. Subject mated connectors to 35+/-2 °C and 5+/-1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour.

Figure 1 (End)

NOTE : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group							
	A	B	C	D	E	F	G	H
	Test Sequence (a)							
Examination of Product	1,9	1,6	1,9	1,5	1,5	1,5	1	1
Contact Resistance	2,8	2,5	2,8	2,4	2,4	2,4		
Insulation Resistance			3,6					
Dielectric withstanding voltage			4,7					
Mating Force	3,6							
Un-mating Force	4,7							
Durability	5							
Vibration		3						
Physical shock		4						
Humidity Temperature			5					
High Temperature Life				3				
Salt Spray					3			
Thermal Shock						3		
Solderability							2	
Resistance to Soldering Heat								2

Figure 2

NOTE : (a) Numbers indicate sequence in which tests are performed.

(b) Discontinuities shall not take place in this test group, during tests.

***PLEASE PROVIDE MORE DETAIL FIGURES IF NECESSARY.**

5 Single Lane External Serial ATA Data Interface

5.1 Purpose and Use Cases

The Single Lane External Serial ATA Data Interface provides a single lane connection between a PC/Laptop and a commodity storage device using standard Serial ATA devices. This interface is for the use of an external drive that sits outside the PC chassis, similar to USB or 1394 hard drives and optical drives. While this does not exclude other usages, the requirements are derived based on this usage model.

Power is supplied to the external storage device via a separate means, which is outside the scope of this specification. This separate means is expected to be similar to power delivery for USB or 1394 external drives.

The scope of the specification is to define the external interconnect, compliance points, and associated electrical requirements/parameters for device interoperability.

The primary implementation is:

- A HBA containing a host chip connected to a shielded external connector. A buffer IC is required to protect a standard internal Serial ATA host, unless the Serial ATA host used is *explicitly* designed for direct external connection.
- A shielded Serial ATA cable for external usage.
- A Serial ATA device enclosure with a corresponding external connector. A buffer IC is required to protect a standard internal Serial ATA device, unless the Serial ATA device used is *explicitly* designed for direct external connection.

This implementation is shown in Figure 5.1 below:

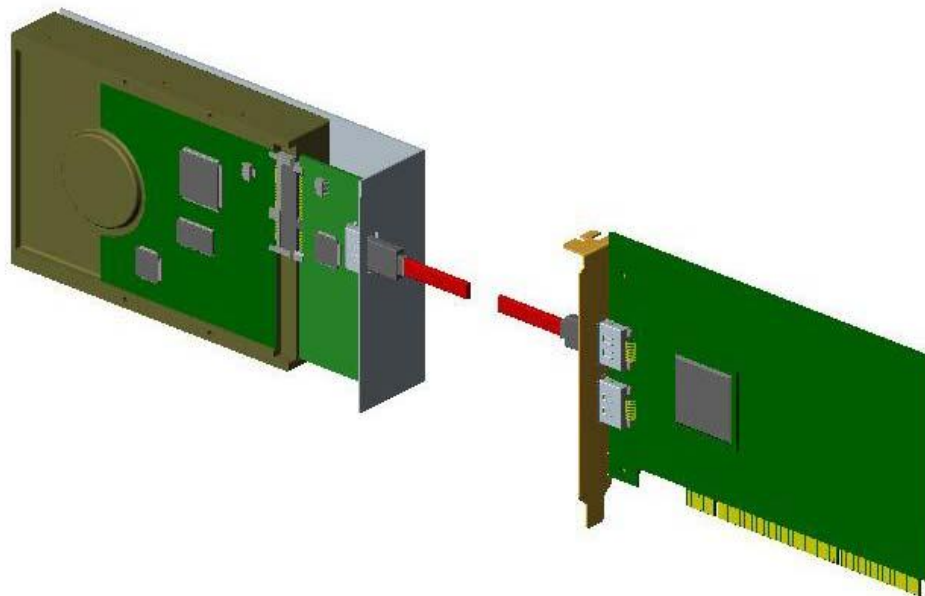


Figure 5.1: Use Case for HBA with external cable and single device enclosure

A second potential implementation is a Serial ATA host directly assembled on the motherboard connected to a shielded external connector via a pigtail to the motherboard connection. In this implementation, the external Serial ATA cable and the drive assembly are similar to figure 5.1, but another cable and connector pair between the motherboard and the external cable is introduced, placing an additional discontinuity point between host and drive.

There are two compliance points for the Single Lane External Serial ATA Data Interface, one at each shielded external connector. As with other Serial ATA specifications, interconnect between the IC/PHY and the connectors at the mating interface are outside the scope of definition and are considered part of the delivered PHY solution. Implementations that have additional connections between the PHY/IC and the shielded external connector must provide such interconnects as part of the engineered solution. For an implementation such as shown in Figure 5.2, the compliance points remain at the shielded external connectors.

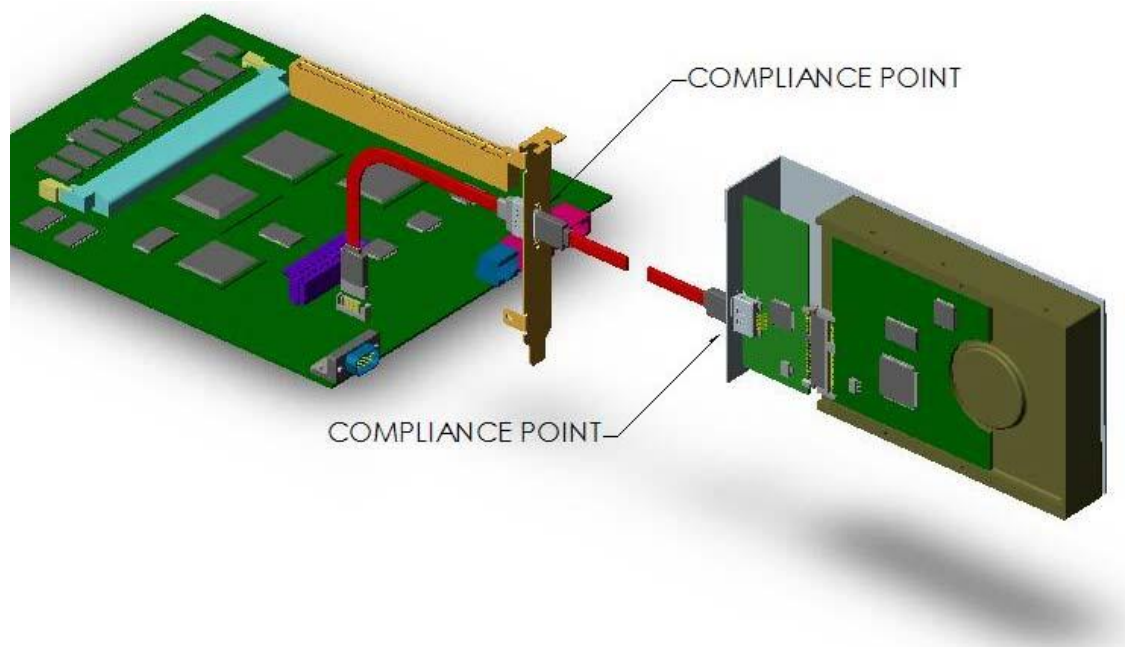


Figure 5.2: Use Case for on-Board Serial ATA Connector with extension cable to external cable to disk

The typical cable length is 2 meters (6 feet); long enough to reach from a floor mounted PC to a drive placed on the desktop. The compliance points for both ends of the external cable shall meet the Gen2m electrical specification.

The use of a standard internal Serial ATA host or device not specifically designed for direct external connection requires a buffer IC as part of the implementation. Note that since Single Lane External Serial ATA cables are a straight through design, (pin to pin), the host and device external connections, using the same external connector, have the *same* pin one locations but *opposite* signal definitions. Refer to the Serial ATA 1.0a specification for both host and device connection signal assignments.

5.2 External Serial ATA Component General Descriptions

Five components are defined in this section to support external Serial ATA.

- A shielded external cable receptacle for use with shielded (external Serial ATA) cabling.
- A fully shielded RA PCB mounted SMT plug, (and reversed pin-out version).
- A fully shielded RA PCB mounted through-hole plug.
- A fully shielded vertical PCB mounted SMT plug.
- A fully shielded vertical PCB mounted through-hole plug.

Footprints and recommended panel cutouts are included to encourage greater interoperability from multiple vendors.

The external cable connector is a shielded version of the connector specified in Serial ATA 1.0a, with these basic differences:

- The External connector has no “L” shaped key, and the guide features are vertically offset and reduced in size. This prevents the use of unshielded internal cables in external applications.
- To prevent ESD damage, the insertion depth is increased from 5mm to 6.6mm and the contacts are mounted further back in both the receptacle and plug.
- The retention features are springs built into the shield on both the top and bottom surfaces.

External Serial ATA Connector renderings:

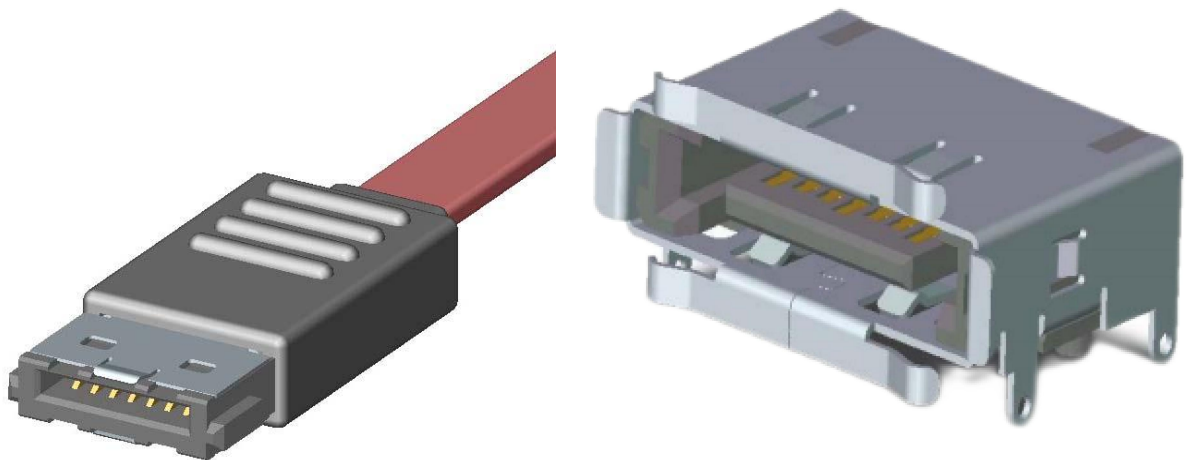


Figure 5.3: Renderings of External Serial ATA cable receptacle and right angle plug

5.3 External Serial ATA Electrical Requirements

The external cable assembly shall meet the electrical characteristics defined in Serial ATA II Specification, Electrical Specifications, Section 6.6.

The Single Lane External Serial ATA Data Interface PHY electrical performance shall comply with the following:

- Electrical characteristics defined in Serial ATA II Specification, Electrical Specifications, Gen1m and/or Gen2m at the shielded external connector compliance points.
- Support hot plugging and non-powered device attachment.
- Provide EMI protection consistent with home usage (FCC and CE Class B, EN55022).
- Provide ESD protection consistent with Home usage (EN55024).
- DC blocking caps are required at the device interface and recommended at the host interface.
- The device chassis ground, (if one exists), shall be isolated from the SATA signal ground by an amount of 2200 VDC for 60 seconds, applied as specified in section 5.3.2 of IEC publication 950. The host chassis ground may be directly connected.

5.4 External Serial ATA Mechanical Requirements

The external connector mechanical performance specifications shall be consistent with Serial ATA 1.0a specifications with the following exceptions:

- Durability shall be 2500 cycles with no exposure of the base metal of the signal contacts.
- Insertion force shall be a maximum of 40 newtons.
- Removal force shall be a minimum of 10.0 newtons at the conclusion of the durability test.

5.5 External Serial ATA Device Direct Connection Requirements

Serial ATA devices may have data interfaces specifically designed for direct connection in the Single Lane External Serial ATA environment without requiring a buffer IC. The data interface of the Single Lane External Serial ATA device must comply with all external Serial ATA mechanical requirements of Section 5.4. The PHY electrical performance shall comply with the following:

- Electrical characteristics defined in Serial ATA II Specification, Electrical Specifications, Gen1m and/or Gen2m at the shielded external connector compliance points.
- Support hot plugging and non-powered device attachment.
- Provide EMI protection consistent with home usage (FCC and CE Class B, EN55022).
- Provide ESD protection consistent with Home usage (EN55024).
- DC blocking caps are required at the device interface and recommended at the host interface.
- The device chassis ground, (if one exists), shall be isolated from the SATA signal ground by an amount of 2200 VDC for 60 seconds, applied as specified in section 5.3.2 of IEC publication 950. The host chassis ground may be directly connected.