

RoHS Compliant

SATA Disk Module

SDM Power Cable-less solution Design Guide for AMH

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Version 1.2



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1. General Description

Apacer's SATA-Disk Module (SDM) is a high-performance embedded design to replace the conventional SATA hard disk drive and plugged into a standard Serial ATA 7-pin connector commonly found in desktops, IT-STB, industrial PC and thin client systems. Designed to work at 5 Volts with a built-in microcontroller for file management and communication between the SATA standard interface, SDM does not require additional or proprietary host software drivers and complies with major operating systems such as Microsoft's Windows series. Two types of power sources are provided, the power cable type and the connector type. This design guide is mainly focused on the connector type.

Applied Model

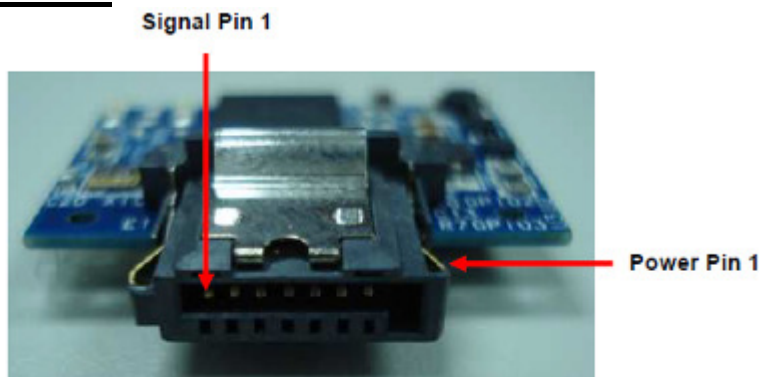
Apacer SATA Disk Module 4 (SDM4) with 7+2 SATA connector.

Notice

Modules with power cable design or requiring an external power cable are not applicable on this customized socket.

2. Pin Assignments

Device



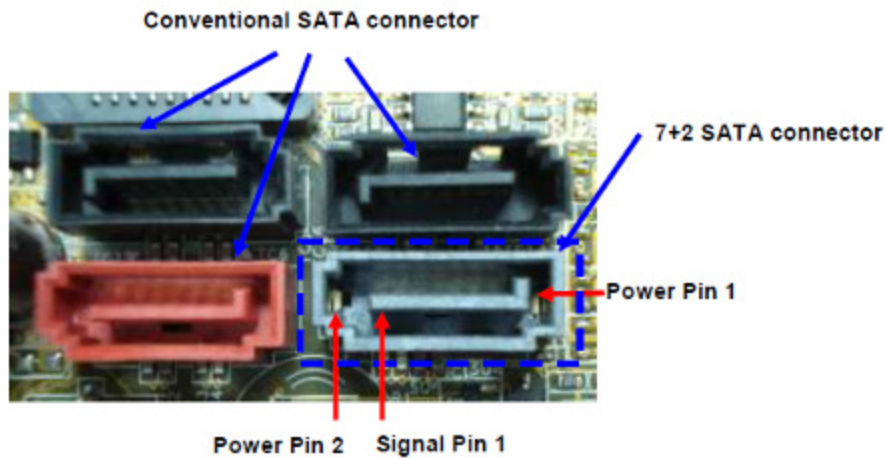
Signal Segment

Name	Type	Description
S1	GND	
S2	Rx+	+ Differential Receive Signal
S3	Rx-	- Differential Receive Signal
S4	GND	
S5	Tx-	- Differential Transmit Signal
S6	Tx+	+ Differential Transmit Signal
S7	GND	

Power Segment

Pin	Signal Description
P1	Vcc (5V)
P2	GND

Host



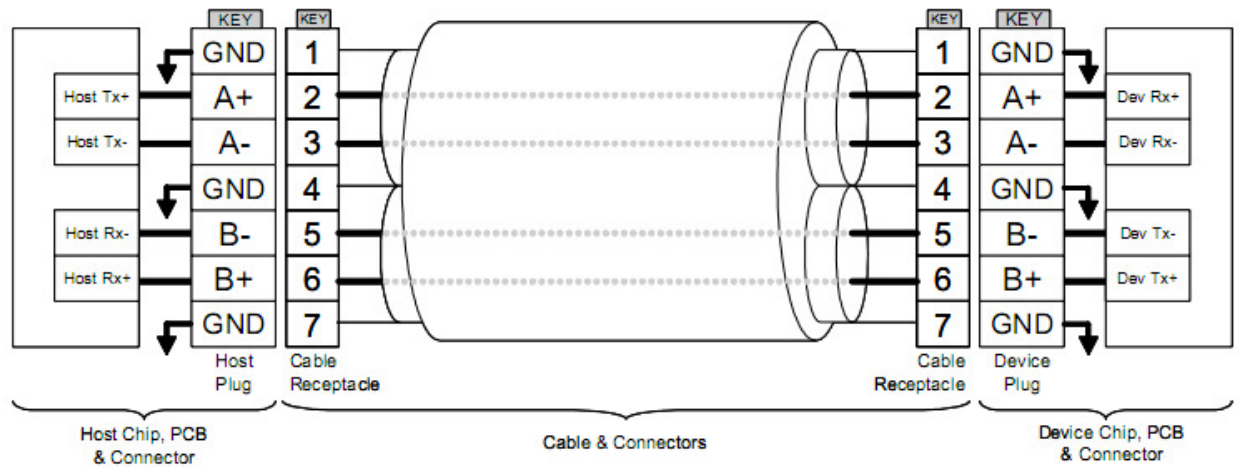
Signal Segment

Name	Type	Description
S1	GND	
S2	Tx+	+ Differential Transmit Signal
S3	Tx-	- Differential Transmit Signal
S4	GND	
S5	Rx-	- Differential Receive Signal
S6	Rx+	+ Differential Receive Signal
S7	GND	

Power Segment

Pin	Signal Description
P1	Vcc (5V)
P2	GND

The SATA Cable/Connector Diagram



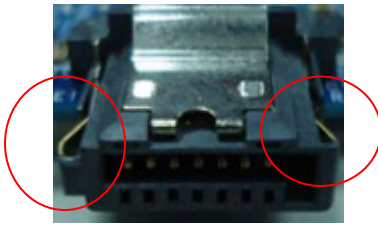
The connector on the left represents the Host with TX/RX differential pairs connected to a cable. The connector on the right shows the Device with TX/RX differential pairs also connected to the cable. Notice also the ground path connecting the shielding of the cable to the Cable Receptacle.

3. Device & Host Arrangement

Device

This connector type of SDM fits to any standard SATA male socket. However, there are two applications according to the type of male SATA connector on the host side.

1. External power supply is required if plugged into the conventional male SATA.
 2. External power supply is not required if plugged into the 7+2 male SATA connector.
- The connector type SDM equipped with power segment can also be used as a conventional one.



External power supply not required with the two additional metal pins (5V power and GND).

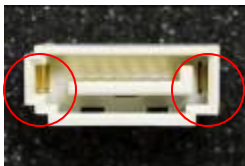


External power supply is required without the two additional metal pins.

Host

The 7+2 SATA male connector looks exactly the same as the conventional one, except two additional metal pins, 5V power pin and GND pin, on the both sides. Therefore, 5V power and GND are required while designing the 7+2 male SATA connector to a motherboard.

1. Power is not supplied if a device with conventional female SATA connector is used with the host since the female connector has no power pins on the sides.
2. No external power supply is required if a device with 7+2 female SATA connector is used with the host.



External power supply not required with the two additional metal pins (5V power and GND).



External power supply is required without the two additional metal pins.

Reminder

Modules with power cable design or requiring an external power cable are not applicable on this customized socket.

The Design of male SATA connector on motherboard



5. Ordering Information

Please contact either Apacer sales representative or ACMELUX CO for ordering the onboard socket.

Apacer Technology Inc.

Tel: +886-2-2698-2888

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amtsales@apacer.com

Item: SATA 7P Male 180° DIP

Part Number: 41.06799.0200B

ACMELUX CO., LTD.

TEL: +886-2-85124595

FAX: +886-2-85124322

Title: SATA 7P Male 180° DIP

DWG. Part Number#: 1645106072

Revision History

Revision	Date	Description	Remark
0.1	05/14/2009	Preliminary release	
1.0	02/21/2012	Official release	
1.1	04/13/2012	Revised SATA male connector design drawing: corrected the reversed pin 1 and pin 3 locations	
1.2	12/14/2012	Replaced the original socket with the white socket	