



Enclosure Management Cabling for Pedestal Systems with Hot- Swap Drive Enclosures

Cabling Guide for:

- Intel® Server Chassis SC5600 and SC5650
- Intel® Server Boards S5520HC, S5500HCV, S5520SC and S5500BC
- Intel® RAID Controllers RS2SG244, RS2WG160, RS2BL080, RS2BL040, RS2PI008, RS2MB044, RS2WC080, RS2WC040, SRCASJLV, SRCASRB, SRCASLS4I, SRCATAWB, SRCASBB8I, SRCASPH16I, SRCAS18E, SRCAS144E, SASMF8I, SASUC8I and SASWT4I.
- Intel® Integrated RAID Module RMS2AF080, RMS2AF040, RMS2LL080, RMS2LL040
- Intel® RAID Expander Card RES2SV240
- Intel® Integrated RAID Module SROMBSASMR
- Intel® Entry RAID Module AXX4SASMOD

Revision 5.0

September, 2010

Revision History

Date	Revision Number	Modifications
April, 2009	3.0	Initial release for Intel® S5500/S5520 series boards.
September, 2009	4.0	Added new RAID controllers, modules and server systems
September, 2010	5.0	Added new RAID controllers, modules and server systems

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1. Connecting One Expander Backplane

Note: Before any cabling operation, please refer to the respective RAID module or RAID controller *Tested Hardware and Operating System lists*, in order to confirm their compatible Intel® Server Boards or Systems.

You must connect the following cables to the backplane:

- SATA/SAS data cables
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
 - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
 - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
 - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board. Do not use the HSBP_B connector.

2. Connecting Two Expander Backplanes

You must connect the following cables to the backplane:

- SATA/SAS data cables
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
 - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
 - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
 - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.

3. Connecting One Non-Expander Backplane

You must connect the following cables to the backplane:

- SATA/SAS data cables:
 - With 4-drive Non-expander backplane, RAID controller ports 0-3 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
 - With 6-drive Non-expander backplane, RAID controller ports 0-5 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
 - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
 - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
 - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board. Do not use the HSBP_B connector.
- Connect the Fault LED control cable (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

4. Connecting One Non-expander + One Expander Backplane

You must connect the following cables to each backplane:

- SATA/SAS data cables:
 - With 4-drive Non-expander backplane, RAID controller ports 0-3 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
 - With 6-drive Non-expander backplane, RAID controller ports 0-5 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, and so on.
- Power cables
- IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
 - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
 - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
 - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.
- Connect the Fault LED control cable to the Non-Expander backplane (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

5. Connecting Two Non-Expander Backplanes

Only Intel® RAID Controller SRCSASPH16I can support Fault LED control with two Non-expander backplanes.

You must connect the following cables to the backplane:

- SATA/SAS data cables:

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- With 4-drive Non-expander backplane, RAID controller ports 0-3 or port 8-11 must be connected to the Non-expander backplane. Make sure port 0 is connected to slot 0, port 1 to slot 1, port 8 to slot 0, port 9 to slot 1, and so on.
 - With 6-drive Non-expander backplane, RAID controller ports 0-5 or port 8-13 must be connected to the Non-expander backplane ports. Make sure port 0 is connected to slot 0, port 1 to slot 1, port 8 to slot 0, port 9 to slot 1, and so on.
 - Power cables
 - IPMB cable for updating the hot-swap controller firmware, reading the temperature, and detecting drive presence:
 - Cable: Use the 4-pin IPMB cable provided with a hot-swap drive enclosure.
 - Backplane Connector: Use the white 4-pin IPMB connector on the backplane.
 - Mainboard Connectors: Use the white 4-pin HSBP_A connector on the server board to connect the six-drive backplane. Use the white 4-pin HSBP_B connector to connect the four-drive backplane.
 - Connect the Fault LED control cable (for drive identification and drive fault/rebuild indication with amber drive LEDs) according to the instructions for your RAID controller provided in Section 6.

6. Connecting Fault LED Control Cables

Only non-expander backplanes (AXX6DRV3GR and AXX4DRV3GR) require Fault LED control cables.

Important: Only one Fault LED control cable – either SES or SGPIO depending on the RAID controller – must be connected to a backplane. Do not connect both SES and SGPIO cables to the same backplane. This may result in unexpected behavior including RAID array failures.

The following matrix describes the connectors and cables for connecting Fault LED control cables.

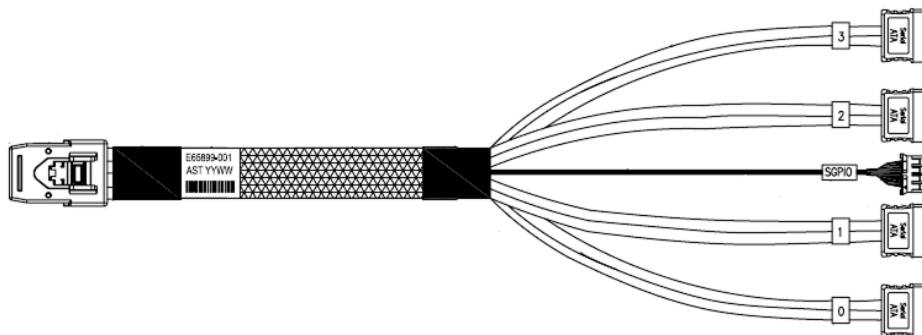
RAID Controller	Expander Backplanes: AXX6DRV3GEXP or AXX4DRV3GEXP	Non-Expander Backplanes: AXX6DRV3GR or AXX4DRV3GR
Onboard SATA Embedded RAID (ICH10R)	Not supported. SATA RAID controllers are not supported with SAS expander backplanes.	Server board connector: SATA_SGPIO, black Backplane connector: SGPIO, black Cable: 4-pin SGPIO
AXXROMBSASMR	SAS in-band. No Fault LED control cable needed.	RAID module connector: SES, white Backplane connector: SES, white Cable: 3-pin SES
AXX4SASMOD	SAS in-band. No Fault LED control cable needed.	RAID module connector: SAS_SGPIO, black Backplane connector: SGPIO, black Cable: 4-pin SGPIO Note: With AXX6DRV3GR, fault LEDs for slots 4 and 5 are always blinking.
SRCSATAWB, SRCSASRB	SAS in-band. No Fault LED control cable needed.	RAID card connector: J6, white Backplane connector: SES, white Cable: 3-pin SES Note: RAID FW 420 or higher is required.
SRCSASJV	SAS in-band. No Fault LED control cable needed.	RAID card connector: J2, white Backplane connector: SES, white Cable: 3-pin SES Note: RAID FW 312 or higher is required.
SRCSASBB8I, SRCSASLS4I	SAS in-band. No Fault LED control cable needed.	RAID card connector: J7, white Backplane connector: SES, white Cable: 3-pin SES
SASMF8I	SAS in-band. No Fault LED control cable needed.	RAID card connector: J9, white Backplane connector: SES, white Cable: 3-pin SES
SASUC8I	SAS in-band. No Fault LED control cable needed.	Fault LED control with non-expander backplanes is not supported.
SASWT4I	SAS in-band. No Fault LED control cable needed.	Fault LED control with non-expander backplanes is not supported.
SRCSAS144E	SAS in-band. No drive LED control cable needed.	Enclosure management not supported with passive backplanes/midplanes. Do not connect SES cable.
SRCSAS18E	SAS in-band. No drive LED control cable needed.	RAID card connector: J18, white Backplane connector: SES, white Cable: 3-pin SES

SRCSASPH16I	SAS in-band. No drive LED control cable needed.	RAID card connector: J17 (if you use port 0-7) and J18 (if you use port 8-15), white Backplane connector: SES, white Cable: 3-pin SES
RS2BL080	SAS in-band. No drive LED control cable needed.	RAID card connector: J11, white Backplane connector: SES, white Cable: 3-pin SES
RS2BL040	SAS in-band. No drive LED control cable needed.	RAID card connector: J11, white Backplane connector: SES, white Cable: 3-pin SES
RS2PI008	Not supported.	Not supported.
RS2MB044	SAS in-band. No drive LED control cable needed.	RAID card connector: J1A4, white Backplane connector: SES, white Cable: 3-pin SES
RS2SG244	SAS in-band. No drive LED control cable needed.	RAID card connector: J1C1, white Backplane connector: SES, white Cable: 3-pin SES
RS2WG160	SAS in-band. No drive LED control cable needed.	RAID card connector: J1C1, white Backplane connector: SES, white Cable: 3-pin SES
RS2WC080	SAS in-band. No drive LED control cable needed.	RAID card connector: J7, white Backplane connector: SES, white Cable: 3-pin SES
RS2WC040	SAS in-band. No drive LED control cable needed.	RAID card connector: J7, white Backplane connector: SES, white Cable: 3-pin SES
RMS2AF080	SAS in-band. No drive LED control cable needed.	Option 1: RAID module connector: J1A1 (SES), white Backplane connector: SES, white Cable: 3-pin SES Option 2: RAID module connector: J1A2 or J1B2 (SGPIO), black Backplane connector: SGPIO, black Cable: 4-pin SGPIO
RMS2AF040	SAS in-band. No drive LED control cable needed.	Option 1: RAID module connector: J1A1 (SES), white Backplane connector: SES, white Cable: 3-pin SES Option 2: RAID module connector: J1A2 (SGPIO), black Backplane connector: SGPIO, black Cable: 4-pin SGPIO

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RMS2LL080	SAS in-band. No drive LED control cable needed.	Option 1: RAID module connector: J1A1 (SES), white Backplane connector: SES, white Cable: 3-pin SES Option 2: RAID module connector: J1A2 or J1B2 (SGPIO), black Backplane connector: SGPIO, black Cable: 4-pin SGPIO
RMS2LL040	SAS in-band. No drive LED control cable needed.	Option 1: RAID module connector: J1A1 (SES), white Backplane connector: SES, white Cable: 3-pin SES Option 2: RAID module connector: J1A2 (SGPIO), black Backplane connector: SGPIO, black Cable: 4-pin SGPIO

Note: Below cable is SFF8087 to Four-port Internal Cable with one SGPIO Connector. This cable is shipped with some RAID controllers listed in this document. Refer to RAID controllers' technical documents for more details. RAID controllers that are shipped with this cable can connect the cable's SGPIO connector to the SGPIO header on the backplanes or midplanes listed in this document, so as to enable fault LED control.



Note: Intel® RAID Expander Card RES2SV240 has twenty-four independent ports supporting 6Gb/s, 3 Gb/s, or 1.5Gb/s SAS and SATA data transfers using six SFF-8087 mini-SAS connectors. This controller supports 4 inputs and 20 outputs configuration, or 8 inputs and 16 outputs configuration. The pedestal backplanes mentioned in this document supports up to 10 physical drives by connecting the expander card to both 6-drive and 4-drive hot-swap drive enclosures. Refer to Figure 4 in *Intel® RAID Expander Card RES2SV240 Hardware User's Guide (E93121-0xx)* for more details of the cabling. For cabling inside other Intel's pedestal chassis, it is recommended to connect RAID controller/module directly to backplanes, instead of connecting Intel® RAID Expander Card RES2SV240 between the RAID controller/module and backplane.