RAID-6100

SCSI RAID Subsystem

Installation Guide

CE notification
The RAID-6100, developed by ADVANTECH CO., LTD., has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

On-line Technical Support
For technical support and service, please visit our support website at:
http://www.advantech.com/support

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Contents

CHAPTER 1

Introduction

Chapter 1 Introduction

The RAID-6100 disk array is a stand-alone subsystem that provides a high-density, flexible, scalable solution for centralized data storage. The RAID-6100 can be easily handled like any single SCSI HDD. It is compatible with any standard Ultra Wide/Ultra2/Ultra 160 SCSI adapter card.

The RAID-6100 provides several configurations designed for high data availability. The failed HDD can be hot-swapped and replaced with a new HDD. The system will dynamically reconfigure the drives and auto-rebuild the lost data in the background, without rebooting.

Users can set some HDDs as spare, thus enabling the RAID-6100 to recover data automatically (hot-spare.) Other functions include hot stand-by, auto drive failure detection, and so on.

The RAID-6100 is equipped with an alarm board that will automatically detect and notify you of a power failure, fan failure and overheating within the chassis. Audible and visual alarms enable users to locate the problems immediately.

You can also set your system to send alarm notification to a remote host, or a pager via a modem, and provide real-time and intelligent management for the server system.

1.1 Features & Specifications

Features

- 19” Rackmount High Capacity RAID Disk Array Subsystem
- Ultra 160 SCSI to SCSI Interface
- Host OS independent
- 12 x SCA-2 Hot Swap Disk Drive Bays (1” Height)
- 575W (2+1) Hot Swap Redundant Power Supply
- SAF-TE support

General Specification

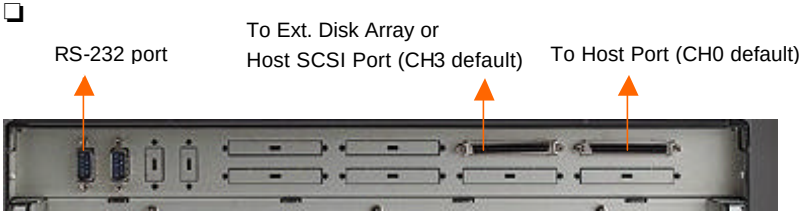
System Processor	CPU	PowerPC 64 bits RISC CPU
Cache Memory	Max. Capacity	1 GB (64 MB installed)
Channel		
	Number of Host or Drive Channel	4, extendable up to 8
	Interface	SCSI Ultra 160, LVD
	Max. Data Transfer Rate	160 MB/sec.
	All channels can be assigned as host or drive	Yes
	Multiple host support	Yes
	MSCS Clustering Support	Yes

Drive Bay	3.5” HDD	12
	Drive Form Factor	1” height (low profile)
	Drive Interface	Ultra 160, SCA-2 (80-pins)
	Backplane Board	Yes
	Security Lock/Door	Yes
RAID	Level	0, 1, (0+1), 3, 5, 30, 50
	Auto Rebuilding	Yes
	Hot-Spare	Yes
	On-line expansion	Yes
Cooling	Fan	4
Management	Control & Monitoring	Web Based GUI management software, Text-based RAID manager software via In-band SCSI, LAN SNMP, RS-232
	Alert notification	Fax, E-mail, Pager
	SAFE-TE Supported	Yes
	S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology)	Yes
	Fault detection system	HDDs, fans, temperature, power supply

	Controls	Power switch and alarm mute switch	
	Indicators	LCD/LED for power, ran, temperature, and HDDs (w/ HDD failure indicators)	
Power Supply	Watt	575W (2+1) Redundant	
	Input	AC 115 V	AC 230 V
		5 A	2.5 A
		50 Hz	60 Hz
Environment		Operating	Non-Operating
	Temperature	0 ~ 50° C	-40 ~ 60 ° C
	Humidity	10%-85%, non-condensing	10%-85%, non-condensing
Physical	Form factor	4U, Rackmount	
	Dimensions(W x H x D)	482 x 176 x 543mm (19” x 6.9” x 21.3”)	
	Weight	20 Kg (44.1lbs)	
Regulatory	CE, FCC		

1.2 External Connections

❑

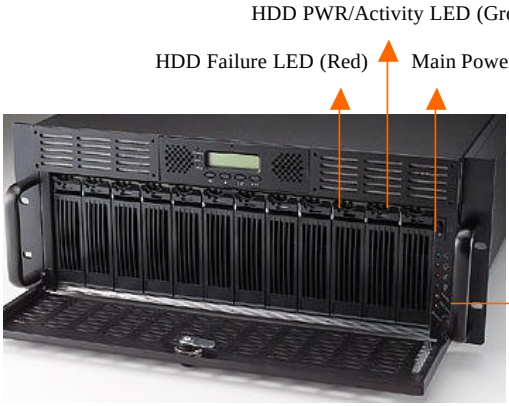


SCSI port to Host (CH0 default): "To Host" SCSI port is the default for the host bus adapter (HBA).

SCSI port to External Disk Array or Host (CH3 default, CH4~7 optional): The "CH1~7" SCSI port expands disk array or host bus adapter (HBA). Multiple Host or MSCS clustering configuration is acceptable by RAID Controller. Please refer to the RAID Controller User's manual.

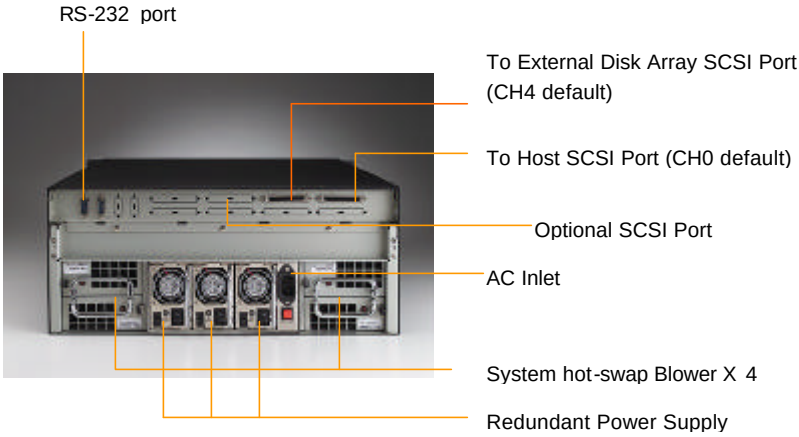
RS-232 (COM) Port: This COM Port is for terminal mode management or Modem telecommunication. Please refer to the RAID Controller User's manual.

1.3 Front Panel



Status Indicator LEDs

1.4 Rear Panel



1.5 Redundant Power Supply

Input current

Input Power	1100W
Vin: 115VAC	12 A
Vin: 230VAC	7A

DC Output Characteristics (Three Power Module)

To be met under all loading combinations.

Output Voltage	V1 +5	V2 3.3V	V3 +12V	V4 -5V	V5 -12V	5VSB Standby
Max. Load	60A	25A	25A	1A	1A	2.5A
Min. Load	3A	0A	1A	0A	0A	0A
Max. Power	300W / 521W			5W	12W	12.5W
Load Reg. %	+/-5%	+5/-3%	+/-5%	+/-10%	+/-10%	+/-5%
Cross Reg. %	+/-5%	+5/-3%	+/-5%	+/-10%	+/-10%	+/-5%
Line Reg. %	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%
Ripple %	+/-1%	+/-1%	+/-1%	+/-2%	+/-2%	+/-1%
Noise %	+/-1%	+/-1%	+/-1%	+/-2%	+/-2%	+/-1%

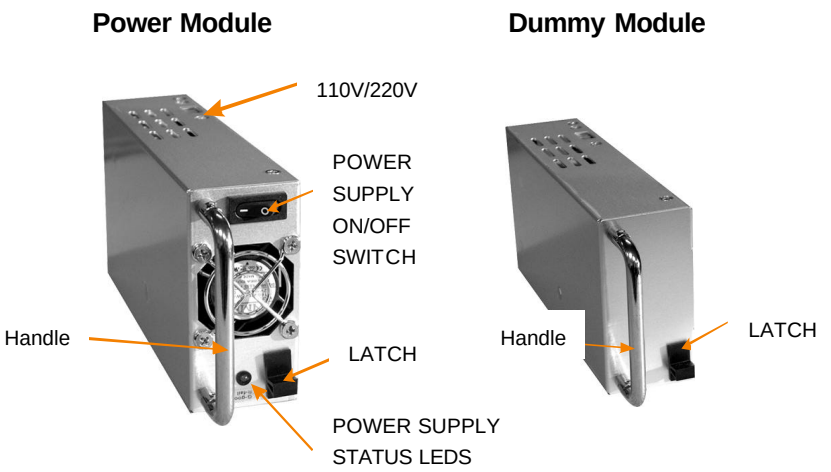
Note 1: The +12 Volt output of the power supply must be capable of 25 Amps peak for 10 seconds. A +/-5% tolerance is permissible. Output voltage is measured at the load and of the output cable.

Note 2: Noise bandwidth is from DC to 20 MHz. See Figure 3.

Note 3: Regulation tolerance includes temperature change, warm up drift and dynamic load.

Hot-swap Power Module

Note: Prior to operating the unit, make sure the power voltage from the outlet is the same as the input voltage of the unit° The default setting is 220VAC



1.6 System Monitoring

Power status monitoring and alarm: System power supplies are monitored to ensure stable current flows to critical components. A failure will trigger the alarm, thus signal a red light on the front panel, and the buzzer will sound to alert. Even if the Alarm Reset button and the system mute are pressed, the red light from the Alarm LED will still be on unless the problem is solved.

Temperature monitoring and alert: To prevent the system from overheating and damages, the server board supports processor thermal sensing and auto-protection. A failure will trigger the alarm, thus signal a red light on the front panel, and the buzzer will sound to alert. Even if the Alarm Reset button and the system mute are pressed, the red light from the Alarm LED will still be on unless the problem is solved.

FANs monitoring and alert: To prevent the system from overheating and damages, the CPU fans and other system fans can be monitored for their speed and failure. The fans are set for their normal RPM range, and alarm threshold. A failure will trigger the alarm, thus signal a red light on the front panel, and the buzzer will sound to alert. Even if the Alarm Reset button and the system mute are pressed, the red light from the Alarm LED will still be on unless the problem is solved

HDD drive monitoring and alert: If the system installs a RAID hardware controller, it will be able to detect HDD failure status. A failure will trigger the alarm, thus signal a red light on the front panel, and the buzzer will sound to alert. Even if the Alarm Reset button and the system mute are pressed, the red light from the Alarm LED will still be on unless the problem is solved.

Rebuilding LED: Once a RAID hardware controller is installed, it will detect the HDD rebuilding status. An orange light will appear on the front panel.

RAID Status LED: Once a RAID hardware controller is installed, it will detect the RAID event failure status. A RAID failure status will trigger

the RAID status or Hard Disk failure alarm. The system will signal a red light on the front panel, and the buzzer will sound to alert. Even if the Alarm Reset button and the system mute are pressed, the red light from the Alarm LED will still be on unless the problem is solved.

The system provides optional browser-base software that allows user to monitor the current health status of this machine via network management software at remote site.

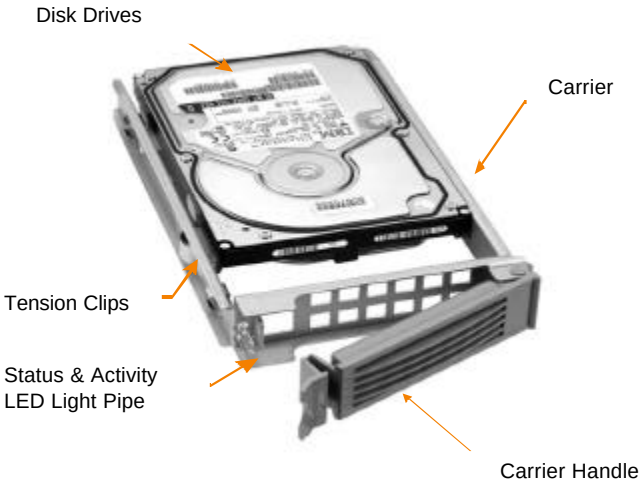
CHAPTER 2

System Installation

Chapter 2 System Installation

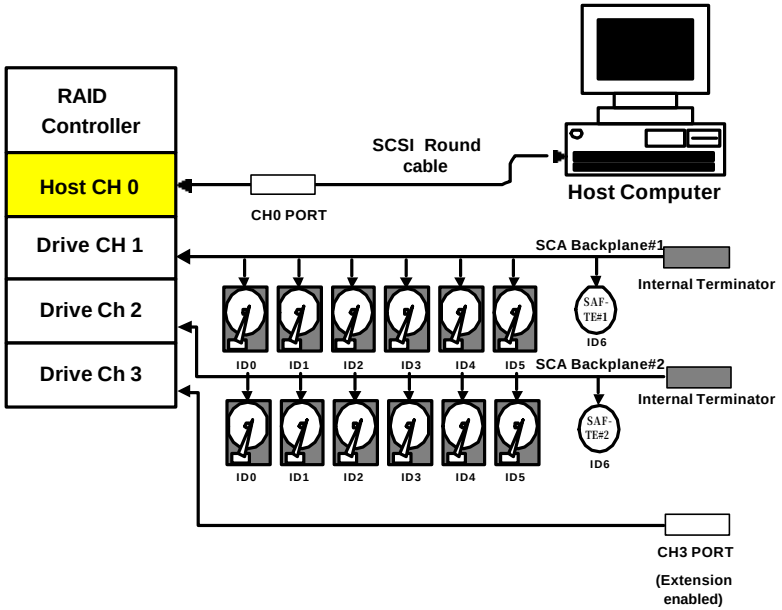
2.1 Adding Disk Drives

2.1.1 Disk Cartridges



2.2 Setup SCSI ID on SCSI Backplane

2.2.1 RAID Controller SCSI Channel default arrangement (4 Channels)



2.2.2 SCSI Channels and ID arrangement

- **Default Setting**

  CH0: Host Channel
  CH1: Disk1~ Disk6
  CH2: Disk7~ Disk12
  CH3: External Disk Array or Multiple Hosts

Backplane# 1 Arrangement:

BP	BP1	BP1	BP1	BP1	BP1	BP1	BP1
RAID CH#	CH1	CH1	CH1	CH1	CH1	CH1	CH1
ID#	ID0	ID1	ID2	ID3	ID4	ID5	ID6
Disk#	Disk1	Disk2	Disk3	Disk4	Disk5	Disk6	SEF-TE1

Backplane# 2 Arrangement:

BP	BP2	BP2	BP2	BP2	BP2	BP2	BP2
RAID CH#	CH2	CH2	CH2	CH2	CH2	CH2	CH2
ID#	ID0	ID1	ID2	ID3	ID4	ID5	ID6
Disk#	Disk7	Disk8	Disk9	Disk10	Disk11	Disk12	SEF-TE2

- **Optional Setting**

  CH0: Host Channel
  CH1: Disk1~ Disk12
  CH2: External Disk Array for 2nd Host Channel
  CH3: External Disk Channel

Backplane# 1 Arrangement:

BP	BP1	BP1	BP1	BP1	BP1	BP1	BP1
RAID CH#	CH1	CH1	CH1	CH1	CH1	CH1	CH1
ID#	ID0	ID1	ID2	ID3	ID4	ID5	ID6
Disk#	Disk1	Disk2	Disk3	Disk4	Disk5	Disk6	SEF-TE1

Backplane# 2 Arrangement:

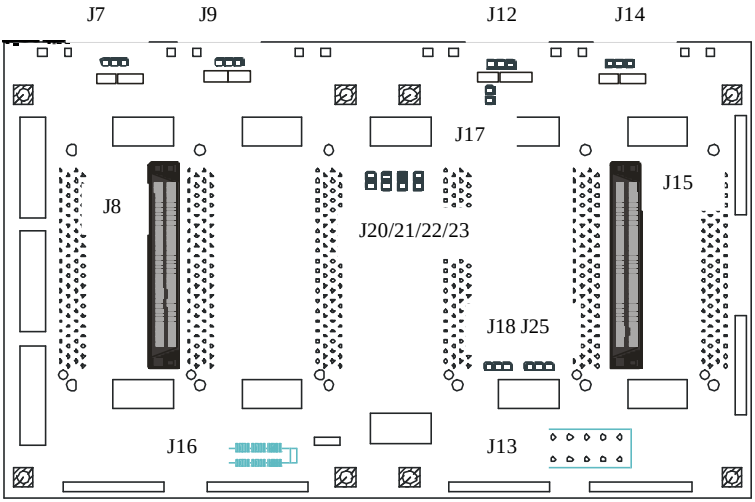
BP	BP2	BP2	BP2	BP2	BP2	BP2	BP2
RAID CH#	CH1	CH1	CH1	CH1	CH1	CH1	CH1
ID#	ID10	ID11	ID12	ID13	ID14	ID15	ID8
Disk#	Disk7	Disk8	Disk9	Disk10	Disk11	Disk12	SEF-TE2

APPENDIX A

Jumper Setting

Appendix A Jumper Setting

A.1 SCA Backplane Jumper Setting

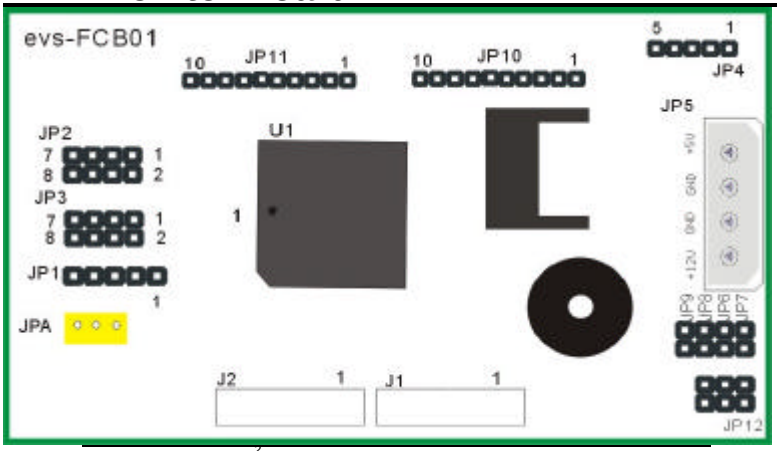


SCA Backplane

J7	Terminator A Jump (1-2: on, 2-3: off, None : Auto)
J8	68-Pin SCSI Connector A
J9	SAF-TE ID (1-2: ID-6, 2-3: ID-8)
J12	Slot ID (1-2: ID 0-5, 2-3: 10-15)
J13	Power Connector
J14	Terminator B Jump (1-2: on, 2-3: off, None : Auto)
J15	68-Pin SCSI Connector B
J16	I^2C Connector
J17	SAF-TE Enable/Disable Jump (Shot: SAF-TE Disable)

J18	Serial Port Connector (Factory Use Only)
J20	Factory Use Only (default On)
J21	Factory Use Only (default Off)
J22	Factory Use Only (default Off)
J23	Factory Use Only (default Off)
J25	ICMB Connector (Not Use)

A.2 Monitor Board



J1	I²C Connector, Connecting to SCA-2 Backplane
J2	I²C Connector, Connecting to SCA-2 Backplane
JP1	Factory Use Only
JP2	Jumper Setting for power module Detection, See Below
JP3	Factory Use Only, Default all Jumper open
JP4	Power Module OK Input
JP5	+5V&+12V Power Connector
JP6	Alarm Mute Switch Connector
JP7	Door Lock Switch Connector, Default Close
JP8	Fan Fail LED
JP9	Temperature Fail LED
JP10	Fan0&Fan1 Connector
JP11	Fan2&Fan3 Connector
JP12	Rebuild LED, Access LED, Error LED Connector
JPA	IPMI Connector

JP2 Jumper

Pins	Open	Short
1-2	Enables Power Module 0 Detect	Disables Power Module 0 Detect
3-4	Not use	Not use
5-6	Not use	Not use
7-8	Not use	Not use

JP2 Jumper Setting

APPENDIX B

Safety Instructions

Appendix B Safety Instructions

B.1 English

1. Read these safety instructions carefully.
2. Keep this user' s manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and be easily accessible.
5. Keep this equipment away from humidity
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened by qualified service personnel only.
14. If any of the following situations arises, get the equipment checked by service personnel.

a. The power cord or plug is damaged.

b. Liquid has penetrated into the equipment.

c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work well according to the installation reference guide.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW –20°C(-4°F) OR ABOVE 60°C (140°F). THE MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1; 1982 is equal to or less than 70dB(A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

9. über fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen drüfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a. Netzkabel oder Netzstecker sind beschädigt.
    b. Flüssigkeit ist in das Gerät eingedrungen.

c. Das Gerät war Feuchtigkeit ausgesetzt.

d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

15. Bitte lassen Sie das Gerät nicht unbehehrt hinten unter –20°C(-4°F) oder oben 60°C (140°F), weil diesen Temperaturen das Gerät zerstören könten.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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