ARS-2160H/ARS-2320S
SCSI Hard Disk Drive

User's Manual

—Version: 1.3—

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ACARD TECHNOLOGY

WEEE Statement

WEEE Statement

English

In order to cope with the increasing waste electrical and electronic equipment, reduce the use of landfill and incinerator, and prevent the harmful matter of waste equipment from entering the environment, the European Union (EU) has set the Directive on Waste Electrical and Electronic Equipment (WEEE) asking manufacturers to collect, recycle and treat waste electrical and electronic equipment properly. Member nations already established their free of charge recycle systems of WEEE before August 13, 2005. Accordingly, ACARD has to be responsible for recycling all products exported to Germany. You can return your ACARD product that needs recycling to a local collector.

WEEE Erklärung

German

Mit dem Ziel die steigende Menge elektrischer und elektronischer Altgeräte zu bewältigen ohne hierzu unnötig Mülldeponien und Verbrennungsanlagen zu belasten und um die Verschmutzung der Umwelt durch freiwerdende Stoffe aus den Altgeräten zu vermeiden, hat die Europäische Union (EU) die Richtlinie über Elektro- und Elektronik-Altgeräte erlassen. Die Richtlinie verpflichtet Hersteller, elektrische und elektronische Altgeräte umweltgerecht einzusammeln, zu recyceln und zu entsorgen. Die Mitgliedsstaaten der EU haben bereits ihre kostenfreien Recyclesysteme konform der WEEE vor dem 13. August 2005 eingerichtet. Entsprechend der Richtlinie ist ACARD verantwortlich für die umweltgerechte Entsorgung aller nach Deutschland exportierten ACARD Produkte. Sie können Ihr zu entsorgendes ACARD Produkt zu Ihrer örtlichen Sammelstelle bringen.

AEEA verklaring

Dutch

Met het doel de stijgende hoeveelheid afgedankte elektrische en elektronische apparatuur te beheersen zonder hiervoor onnodig stortplaatsen en verbrandingsovens te belasten en om de vervuiling van het milieu door vrijkomende stoffen uit de afgedankte apparatuur te voorkomen, heeft de Europese Unie (EU) de richtlijn betreffende afgedankte elektrische en elektronische apparatuur besloten. Deze richtlijn verplicht fabrikanten afgedankte elektrische en elektronische apparatuur in te zamelen, te recyclen en te verwijderen. De lidstaten van de EU hebben reeds de kosteloze recyclesystemen volgens de AEEA vóór de 13 augustus 2005 ingericht. Conform de richtlijn is ACARD verantwoordelijk voor de verwijdering van alle naar Nederland geëxporteerde ACARD producten. U kunt uw afgedankt ACARD product naar uw locale inzamelplaats brengen.

Elektrik ve Elektronik Madde Atıkları Demeci

Turkish

Elektrik ve electronik madde atıklarının yukselmesiyle basedebilmek ,arazi doldurma ve cop yakma fırını kullanımını azaltmak,atık madde zararlarının cevreye yayılmasını onlemek icin Avrupa Birligi (AB),ureticilerden elektrik ve elektronik madde atıklarını gerektigi gibi toplamalarını,geri donusturmelerini ve kimyasal isleme tabi tutmalarını talep etmek icin Elektrik ve Elektronik Madde Atıkları uzerine bir direktif hazırladı.Topluluk uyeleri,13 Agustos 2005' ten once elektrik ve elektronik madde atıklarının ucretsiz geri donusum sistemlerini coktan olusturmuslardı.Bundan dolayı, ACARD, Almanya'ya ihrac ettigi butun urunlerin geri donusumunden sorumludur.ACARD urunleri geri donusum gerektirirse yerel toplayıcılara geri verebilirsiniz.

WEEE бюлетень

Russian

ЧтобЫ cIIравиться с увеличивающимся ненуӽным электрическим и электронным оборудованием, уменъшите использование закапывания мусора и использования установки для сжигания отходов, препятствуйте вредному выбросам загрязнять окружановки среду, Европейский союз (EC) установил Директиву по Ненужному Электрическому и Электронному Оборудованию (WEEE) для того, чтобы изготовителей собрали, перерабатывали и вообще проявили внимание к ненужному электрическому и злектронному оборудованию должным образом. Члены нации установили бесплатную систему и электронному оборудованию должным образом. Члены нации установили бесплатную систему переработки WEEE до 13 августа 2005. Соответственно, ACARD обязан быть ответственным за то, что переработал все продукты, экспортируемые в Германию. Вы можете возвратнть ваш продукт ACARD, который нуждается в рециркуляции местному сборщику.

WEEE Statement

French

Afin de gérer la quantité croissante de déchets électriques et électroniques, de réduire l'utilisation des décharges et des incinérateurs et d'éviter que des déchets nocifs ne polluent l'environnement, l'Union Européenne a publié la directive WEEE sur les déchets électriques et électroniques. Celle-ci spécifie que les fabricants doivent collecter, recycler et traiter l'équipement électronique et électrique usagé. Depuis le 13 août 2005, les pays membres ont mis en place un système de recyclage gratuit selon le WEEE,.

De ce fait, Acard est responsable du recyclage de tous les produits exportés vers l'Allemagne. Vous pouvez mettre au rebut votre équipement ACARD usagé dans votre centre local de recyclage.

Pour plus d'informations sur les lieux de mise au rebut des équipements usagés destinés au recyclage, veuillez contacter votre mairie, votre service de traitement des déchets ménagers ou le magasin où vous avez acheté le produit.

RAEE

Spanish

Con la finalidad de reducir el incremento de residuos eléctricos y de material electrónico, reduciendo el uso de los vertederos e incineradoras y prevenir el preocupante aumento del contacto de estos residuos con el medio ambiente. Por este motivo la Unión Europea ha fijado la Directiva de Residuos de Aparatos Eléctricos y Electrónicos (RAEE) solicitando a los fabricantes la recolección, reciclaje y tratamiento de ests residuos correctamente. Los paises miembros ya han establecido su sistema de reciclaje gratuito de RAEE antes del 13 de Agosto del 2005. Por este motivo ACARD es el responsable del reciclaje de todos los productos exportados a Alemania. Usted puede devolver su producto Acard a un punto de recogida local cuando desee reciclarlo.

Dichiarazione WEEE

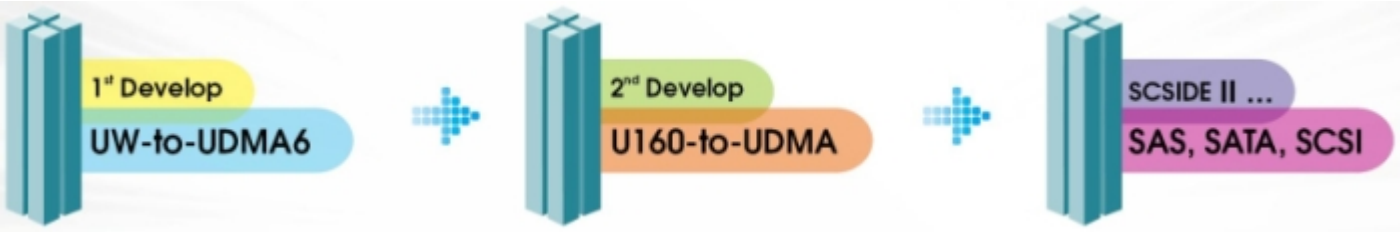
Italian

Per far fronte all'aumento dei residui delle apparecchiature elettriche ed elettroniche, ridurre l'uso di materiale di riporto e degli inceneritori, ed impedire che il materiale nocivo delle apparecchiature residue entri a contatto con l'ambiente, l' Unione Europea (UE) ha stabilito le Direttive sui Residui delle apparecchiature Elettriche ed Elettroniche (WEEE) chiedendo ai fornitori di raccogliere correttamente, riciclare e trattare le apparecchiature elettriche ed elettroniche residue. Le nazioni facenti parte dell' Unione Europea hanno già stabilito il loro sistema gratuito di riciclaggio di questo materiale (WEEE) prima del 13 agosto 2005. Di conseguenza, ACARD è responsabile del riciclaggio di tutti i prodotti esportati in Germania. Potete restituire il vostro prodotto acquistato da ACARD che deve essere riciclato da un' azienda specifica locale.

Chapter 1 About SCSIDE II

The Overview

ACARD is an expert of storage. It has years of experiences in the design, development and application of storage devices. The quick solutions it provides always meet the market demand, and have won praise from some well-known manufacturers in the world. Over the years its exclusive SCSIDE technology, chips and system applications have obtained an important market share, but now owing to the change of times, its SCSIDE technology is no longer simply used to make SCSI-to-IDE (SATA) Bridges that turn ATA/IDE (SATA) hard drives or ATAPI devices into high-performance SCSI ones. The technology can be furthermore used to design serialized, visualized and fit-for-network Bridges to connect more storage devices and to do more transformations like SATA-to-SAS, Network-to-SATA/SAS, etc. For these different applications, ACARD has given the technology a new name SCSIDE II. That means the second generation of SCSIDE technology. Storage products based on SCSIDE II are more practical and more popular.



Besides having the new functions of ACARD's IC, the series products of SCSIDE II contain the technology of the first generation, too. In operation, SCSIDE II uses the built-in RISC on the chip for interface transformation to lower the burden of CPU in data transfer, and accordingly enhances the I/O performance, makes the whole system more stable and more efficient. The applications of SCSIDE II on different storage devices are flexible and steady. The prices of SCSIDE II products are also reasonable.

The reason of turning an IDE/SATA/SAS interface into a high-end, all-purpose SATA/SCSI/Network one is that corporations have desired to get highly efficient and stable interfaces for data transfer by using inexpensive storage interfaces so as to accomplish the economy of costs. Obviously, SCSIDE II has the technological advantage and its price meets the corporate budget. ACARD's series products of SCSIDE II are quite compatible with Windows NT/2000/XP/Vista, Linux, Unix and Mac.

SCSI-to-SATA

The basic type of SCSIDE II is raising a SATA interface from 15.G to 3G. The SCSI interface is raised to Ultra 320 too. Besides being applied to SATA devices for transformation, SCSIDE II also supports the newest SATAPI devices for the transformation of SATA to SCSI. Furthermore, the form factors of SCSIDE II products include the industrial standards, too. In other words, such modularized products are specially designed for industrial storage equipment.

Chapter 2 Introduction

2.1 Overview

ARS-2160H / ARS-2320S is an internal SCSI-to-SATA-II bridge HDD enclosure, which converts a standard 2.5” SATA HDD into SCSI HDD with SCA2 80-pin connector. This device easily and efficiently enables users to create their own SCSI HDD.

2.2 Features

- ACARD chips: ARC767 and ARC772
- Cost effective and higher system I/O performance
- Get the maximum benefits and high performance from SCSI Bus and SATA for devices
- Creates new SCSI devices in economic cost
- Designed in 3.5” form factor for a built-in 2.5” SATA hard disk drive
- Cross-platform operation supports Windows NT/2000/XP/2003/Vista, Linux, Mac, Sun
- Supports full LVD/SE SCSI interface

2.3 Specifications

- ARS-2160H supports 160MB/s of transfer rate
  ARS-2320S supports 320MB/s of transfer rate
- Supports the hot-swappable SCA 80-pin SCSI connector
- Supports a SATA hard drive of 1.5G/3.0G
- Supports SCSI RAID card
- Provides Flash ROM for firmware update
- Selectable SCSI ID from 0 to 15

2.4 Package and Others

2.4.1 Package

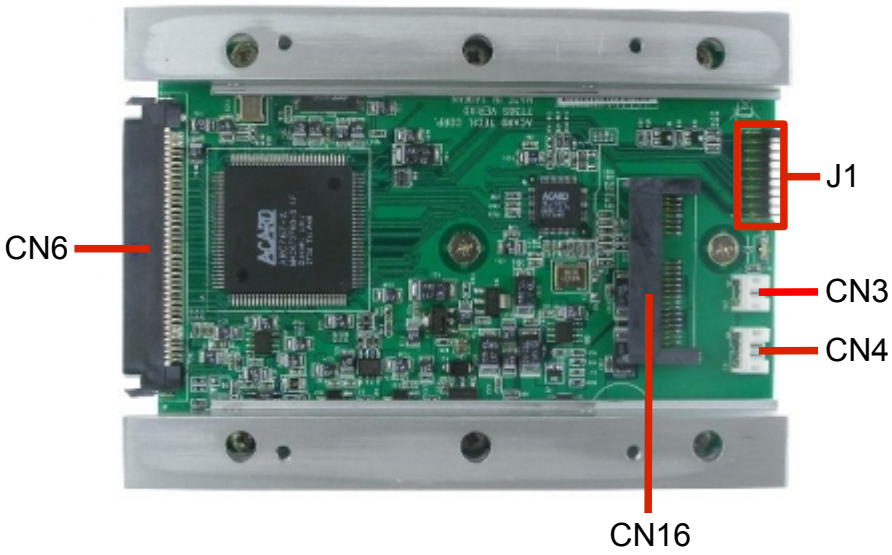
- ARS-2160H or ARS-2320S × 1
- screws for 2.5” SATA hard drive × 4
- screws for ARS-2160H or ARS-2320S × 4
- User's manual × 1

2.4.2 Spec Parameters

Temperature: Operation: 0°C to 70°C
Storage : -40°C to 85°C
Humidity: 15% to 90%
Size: 14.6 cm (L) x 10.1 cm (W) x 2.5 cm (H)

2.4.3 Connectors

CN6: SCA2 80-pin connector
CN16: SATA II integrated connector
CN3 & CN4: reserved
J1: jumper

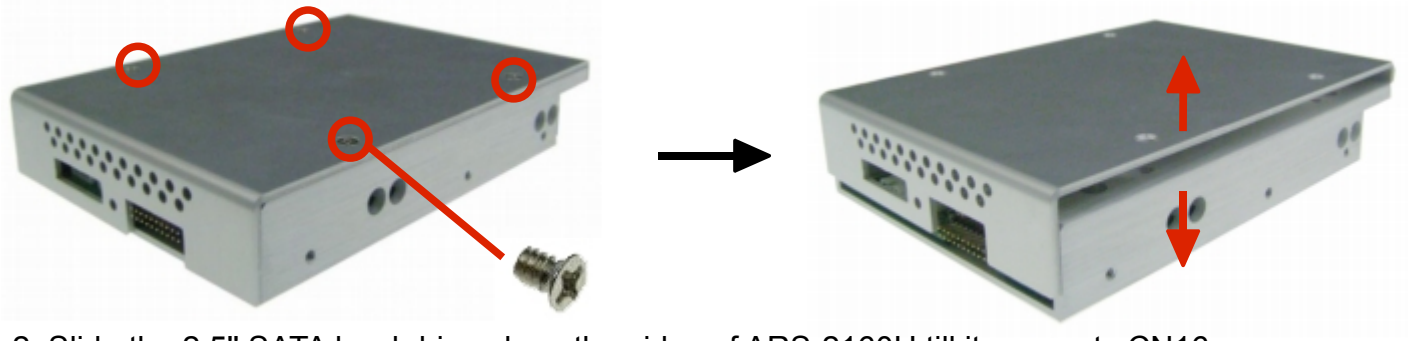


Chapter 3 Hardware Installation

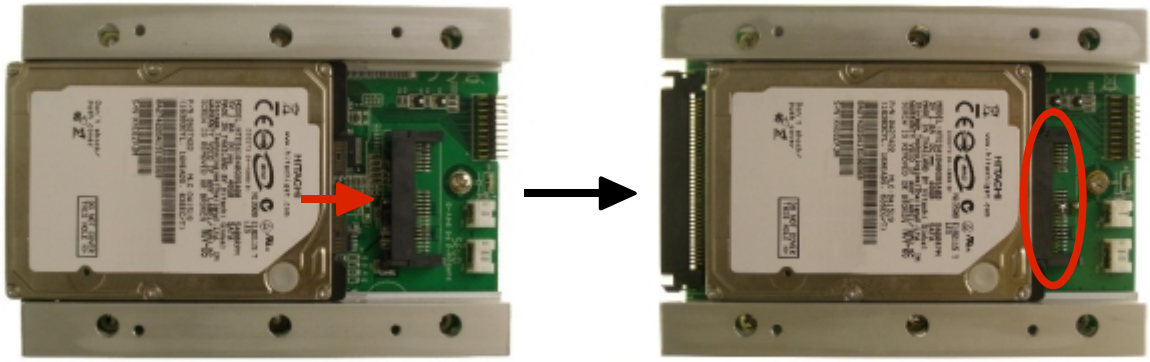
3.1 Install a 2.5" HDD

The hard drive installation procedures for ARS-2160H / ARS-2320S are the same.
Here we simply take ARS-2160H to demonstrate.

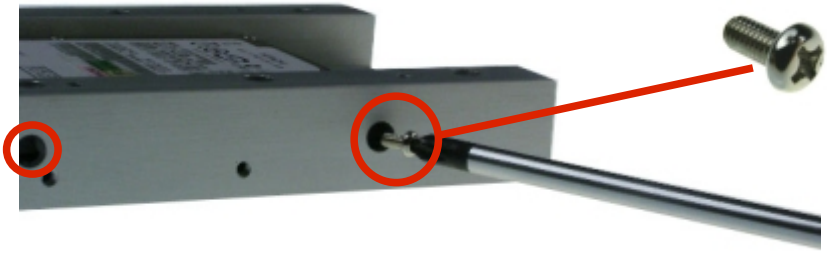
1. Remove the 4 screws of ARS-2160H and open the upper cover.



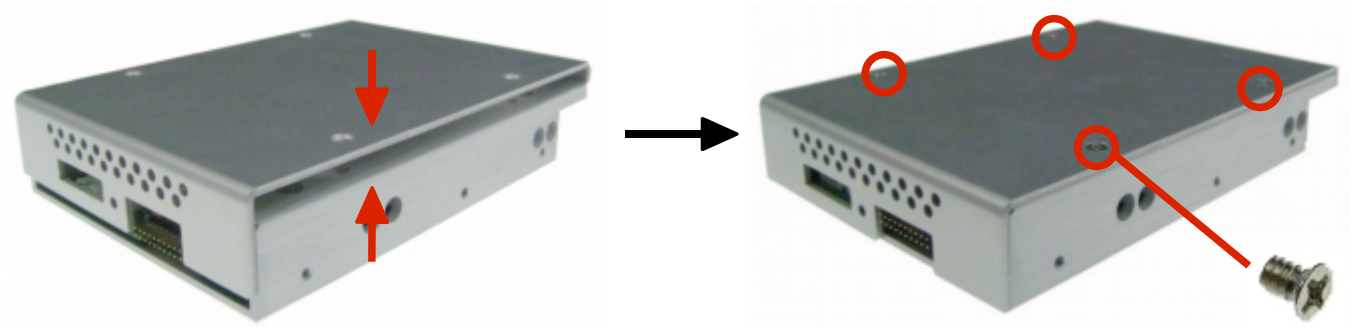
2. Slide the 2.5" SATA hard drive along the sides of ARS-2160H till it connects CN16.



3. Fix the SATA hard drive to the two sides of ARS-2160H with the enclosed 4 screws.



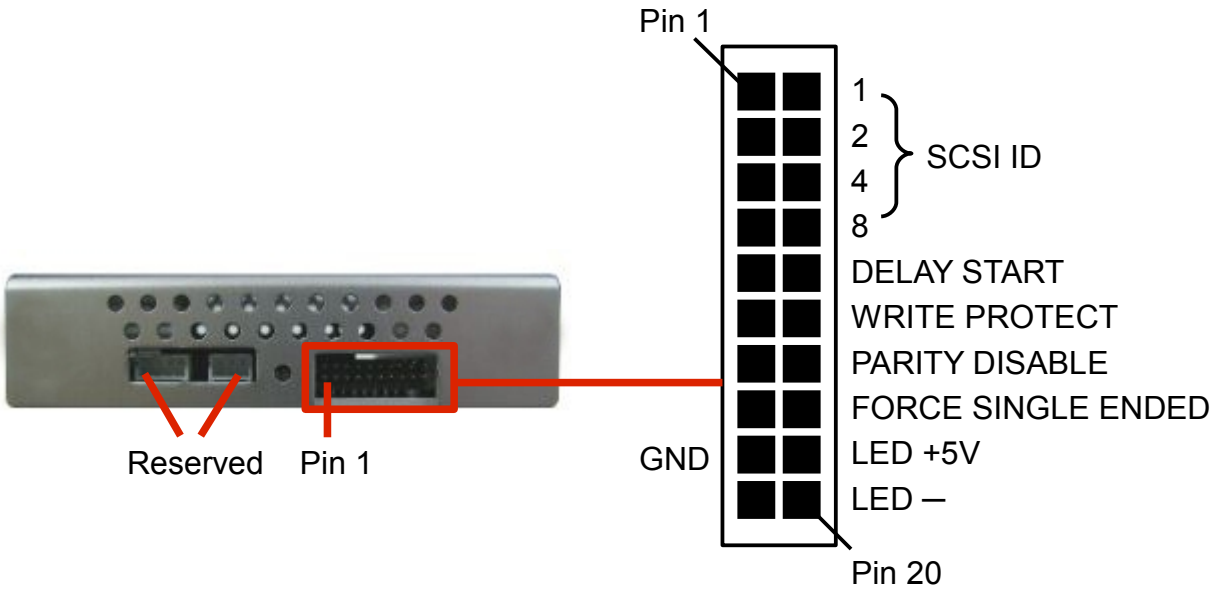
4. Return the upper cover of the bridge and fix with the 4 screws.



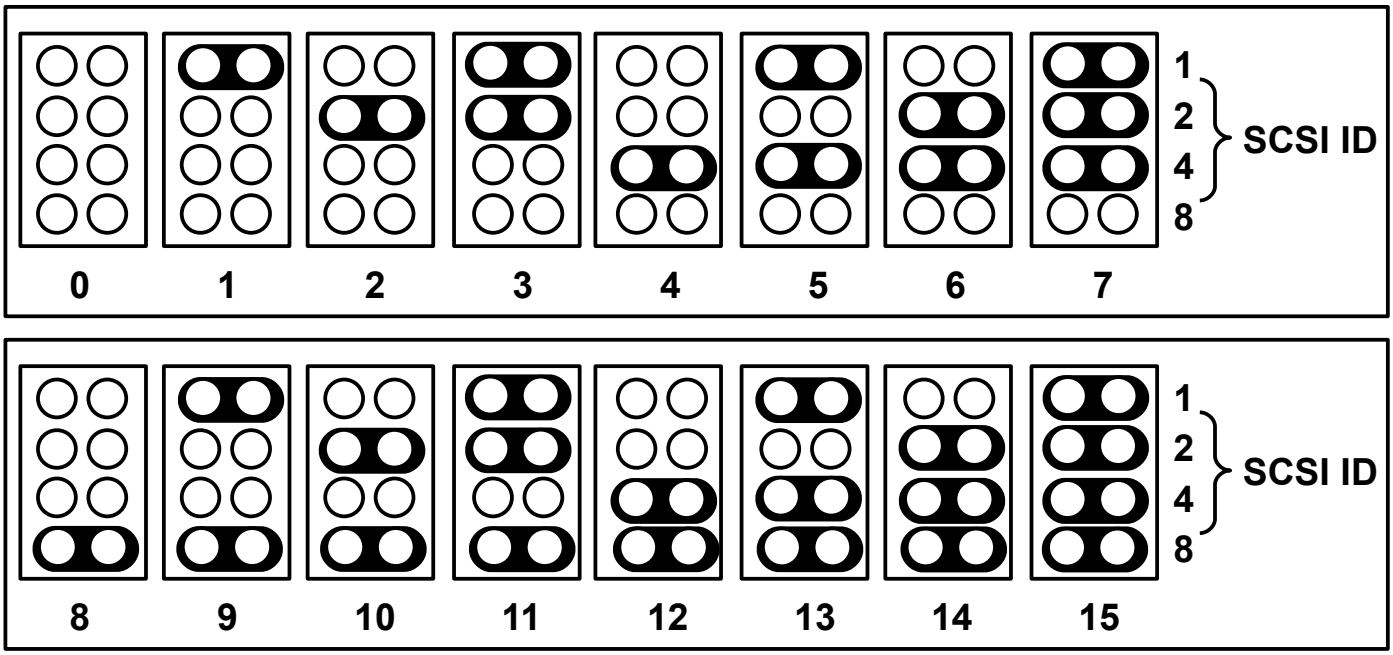
5. Set the jumper, and connect CN6 of ARS-2160H to the host SCA2 80-pin connector.

3.2 Set the Jumper

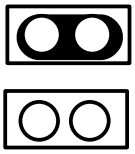
1. The jumper (J1) is used to set functions



2. The setting of SCSI ID



ID 7 is reserved for SCSI host, so don't set the ID of your SCSI drive as 7.



Short

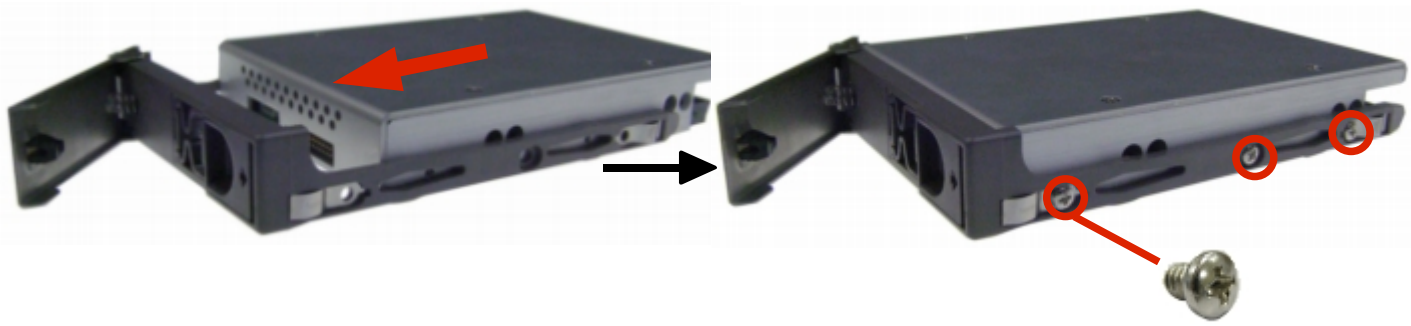
Open

	Short	Open
DELAY START	Delay Start	Normal Start
WRITE PROPECT	Write Protect	Normal read/write
PARITY DISABLE	Parity Disable	Parity Enable
FORCE SINGLE ENDED	SE SCSI mode	LVD SCSI mode

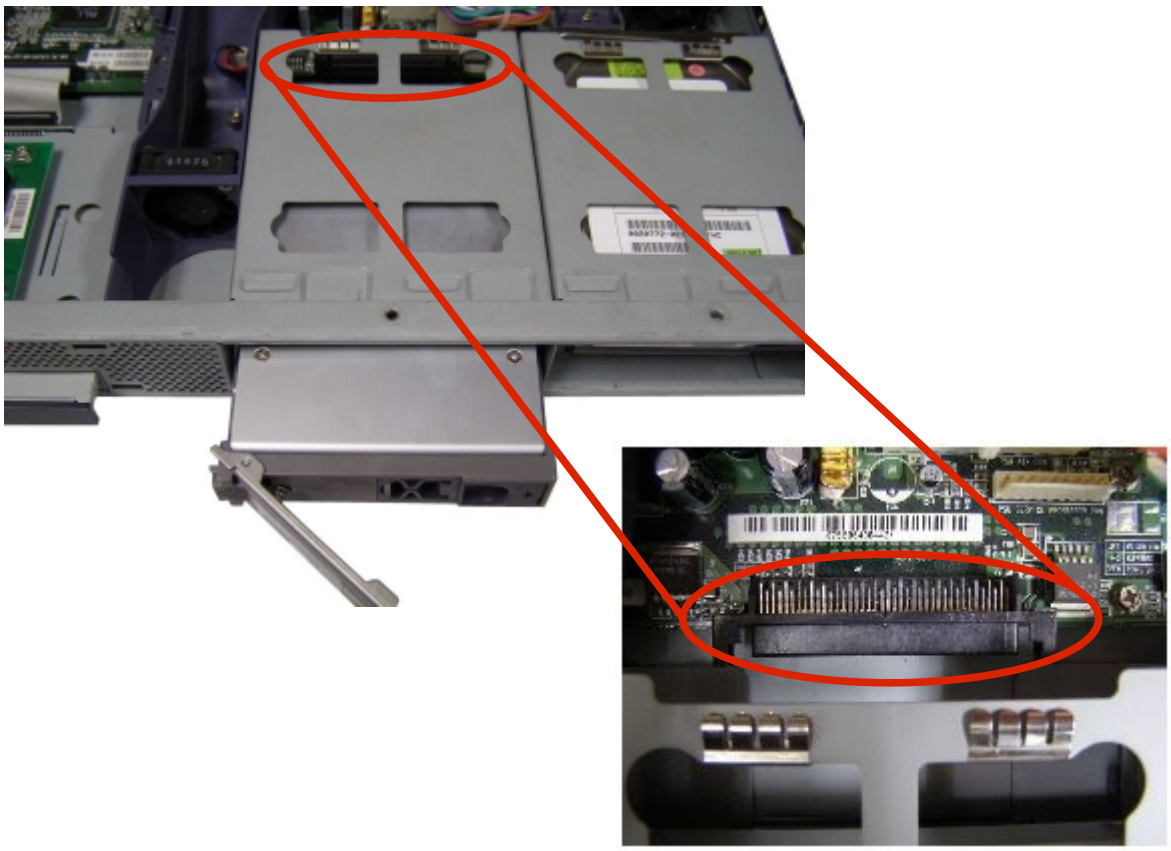
3.3 Install to the Server

The following steps are installing ARS-2160H / ARS-2320S to the server are the same. Here we take ARS-2160H and Sun Microsystem SunFire V120 Server for example.

1. Slide the well-installed ARS-2160H to the server tray, and fix with 6 screws.



2. Slide the ARS-2160H fixed on the tray to the server corresponding SCSI HDD bay.



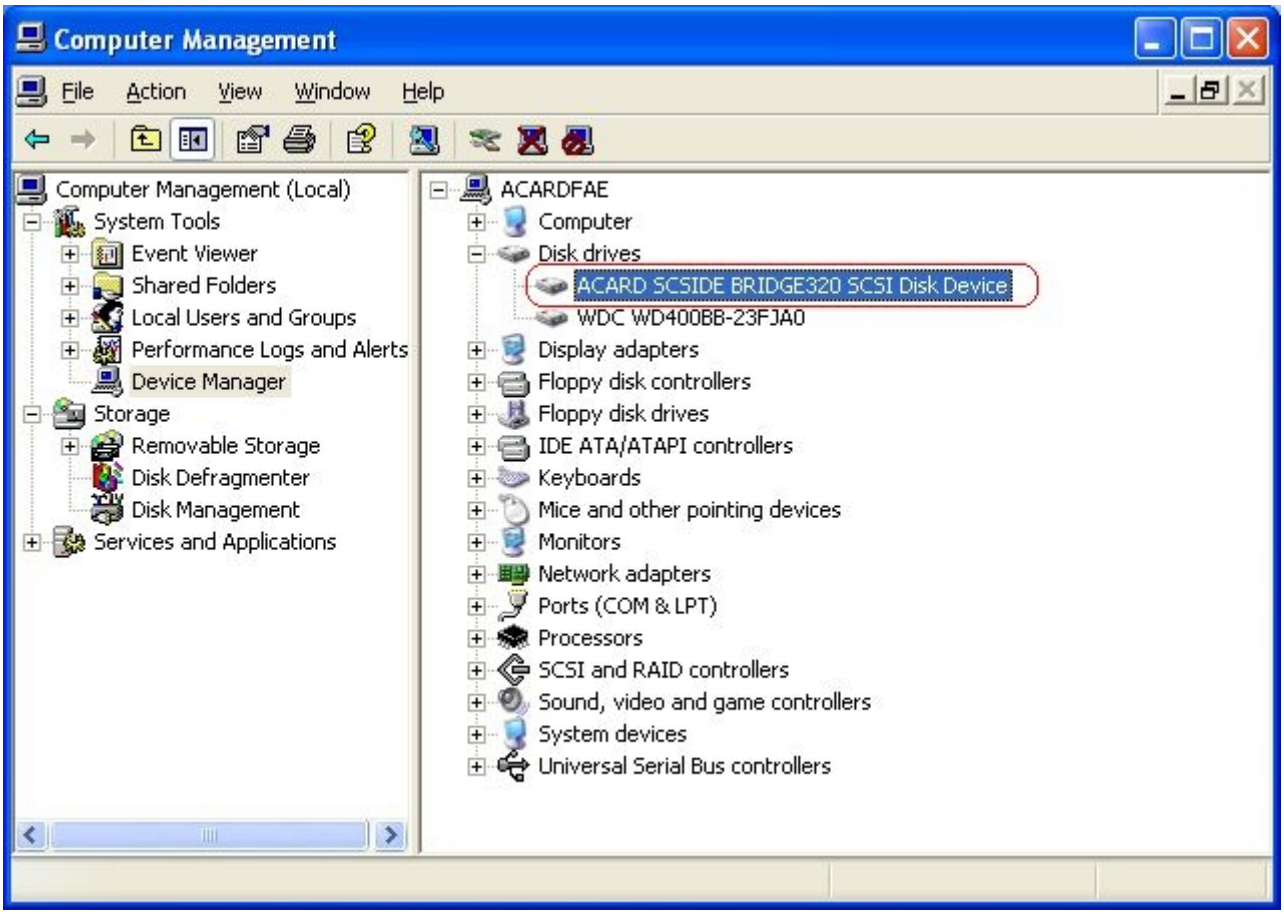
Be sure that ARS-2160H was formly connected to the SCSI connector. Then close the tray by the handle. The ARS-2160H can be treated as a real SCSI hard drive.

3.4 Disk Information

View the information of all devices connected to SunFire V120 Server via the terminal, and you will know all about ARS-2160H / ARS-2320S as the following figure shows.

```
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] lockstat0 is /pseudo/lockstat@0
Aug 29 06:15:42 acard pseudo: [ID 129642 kern.info] pseudo-device: llc10
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] llc10 is /pseudo/llc1@0
Aug 29 06:15:42 acard ebus: [ID 521012 kern.info] power0 at ebus1: offset 0,2000
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] power0 is /pci@1f,0/pci@1,1/isa@7/power@0,2000
Aug 29 06:15:42 acard pseudo: [ID 129642 kern.info] pseudo-device: lofi0
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] lofi0 is /pseudo/lofi@0
Aug 29 06:15:42 acard pseudo: [ID 129642 kern.info] pseudo-device: fcp0
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] fcp0 is /pseudo/fcp@0
Aug 29 06:15:42 acard simba: [ID 370704 kern.info] PCI-device: usb@c,3, ohci0
Aug 29 06:15:42 acard genunix: [ID 936769 kern.info] ohci0 is /pci@1f,0/pci@1,1/usb@c,3
Aug 29 06:15:43 acard simba: [ID 370704 kern.info] PCI-device: usb@5,3, ohci1
Aug 29 06:15:43 acard genunix: [ID 936769 kern.info] ohci1 is /pci@1f,0/pci@1,1/usb@5,3
Aug 29 06:17:17 acard scsi: [ID 107833 kern.warning] WARNING: /pci@1f,0/pci@1/scsi@8,1/sd@1,0 (sd16):
Aug 29 06:17:17 acard   corrupt label - wrong magic number
Aug 29 06:17:17 acard
Aug 29 06:17:17 acard scsi: [ID 365881 kern.info]       Vendor 'ACARD', product 'SCSIDE', 195371568 512 byte blocks
Aug 29 06:20:07 acard scsi: [ID 107833 kern.warning] WARNING: /pci@1f,0/pci@1/scsi@8,1/sd@1,0 (sd16):
Aug 29 06:20:07 acard   corrupt label - wrong magic number
Aug 29 06:20:07 acard
Aug 29 06:20:07 acard scsi: [ID 365881 kern.info]       Vendor 'ACARD', product 'SCSIDE', 195371568 512 byte blocks
Aug 29 06:20:07 acard scsi: [ID 365881 kern.info]       <ACARD-SCSIDEBRIDGE160-10BP cyl 24034 alt 2 hd 64 sec 127>
```

In an OS like Windows XP you can see the ARS-2160H / ARS-2320S through My Computer/Properties/Hardware/Device Management/Disk drives..



Chapter 4 Troubleshooting

After installing ARS-2160H / ARS-2320S, if it doesn't work properly, try to eliminate the problem referring to the procedures below:

1. Check the hardware installation
   a. Make sure SATA HDD was firmly connected to the ARS-2160H / ARS-2320S.
   b. Make sure the ARS-2160H / ARS-2320S was firmly connected to the SCSI cable.
   c. Make sure the SCSI terminator was properly connected to the end of SCSI cable.

2. Check the SCSI ID setting
   a. Make sure if the SCSI ID is unique in the same SCSI channel.
      Note: The default SCSI host adapter ID is 7. If not required, please set ID to other ones.
   b. Make sure if the SCSI ID is supported by the SCSI host adapter.
      Note: Older SCSI card with narrow SCSI bus only does not support SCSI ID 8 or greater.

3. Check the device detection
   a. Make sure the ARS-2160H / ARS-2320S was detected by the SCSI host adapter.
   b. Make sure the model name was detected correctly.
   c. Make sure the SCSI synchronization speed is correct.

4. Check there is no error while data accessing. If there is an error occurred, try to:
   a. Lower the data transferring speed.
   b. Shorten the SCSI cable.
   c. Simplify the SCSI connection ex: connect only one device at a time.
   d. Exchange another SCSI cable or terminator.

Unfortunately, if the problem remain unchanged, please fill in the technical support form and mail to us for help.

Technical Support Form

Email address: support@acard.com
Website: http://www.acard.com

Model Name* (ex: ARS-2160H)		Firmware version*	
System Configuration			
Motherboard/System model*			
SCSI host adapter/chip brand & model*			
SCSI host BIOS version			
Other I/O card*			
Operating System*			
SATA HDD brand & model*			
SATA HDD capacity			
SATA HDD firmware			
Problem description*			

『 * 』 is required