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Chapter 1 About SCSIDE

1.1 Revolutionary Technology

SCSIDE® is a revolutionary technology developed by ACARD Technology Corp. It can not only transform IDE data into SCSI type, but also save the expenditures. Through this technology any cheap IDE device can have high-performance SCSI applications. The following examples are simply a little portion of SCSIDE® applications.

- 1. To transform an IDE hard disk into an external SCSI one for notebook and desktop PC users to back up data.
- To transform an IDE CD-ROM or CD-R/RW into a SCSI one. It is an unprecedented technology.
- 3. To transform your favorite IDE DVD-ROM, DVD-RAM/R, DVD-R/RW or DVD+RW/ +R into an LVD SCSI one.
- 4. To daisy chain multiple SCSIDE® DVD-ROMs to create a DVD-ROM server.
- 5. To transform a DMA33/66/100/133 hard drive of 5400rpm or 7200rpm into an LVD SCSI one for PC workstations, servers and Unix workstations, servers.

The basic structure of SCSIDE® is a "RAID On Chip" which highly integrates multiple CPUs. This ROC design is resulting from ACARD's years of experiences in the design of IDE, SCSI and RISC CPU chips. The block diagram on the next page shows that ROC has multiple CPUs. Its ROM, RAM, DMA controllers and external ROM interface can be used as the firmware update of flash ROM. ACARD has a perfect firmware technology, too. It makes the transformation of IDE to SCSI really "plug and play". The firmware has been tested on almost all brands of IDE DMA33/ 66/100/133 HDDs, ATAPI CD-ROMs, DVD-ROMs. Whether your IDE device is an ATA hard drive, CD-ROM, CD-RW or DVD-ROM, you can all plug it and enjoy the advantages of SCSI. With the intelligent firmware design, you don't need to install a driver into the operating system so as to use SCSIDE® products. In the operating system it is just like a SCSI device.



Figure 1-1

1.2 SCSIDE® Design

The objectives of SCSIDE® design are given as follows:

- 1. Save the expenses of SCSI by using an inexpensive IDE device.
- 2. Create applications like SCSI CD-ROM and high speed SCSI DVD-ROM.
- 3. Apply "plug and play" to the transformation of IDE device to SCSI one. It is not necessary to install a driver.

We welcome you to be a new member of SCSIDE® and have a good time.

Chapter 2 Introduction

2.1 Overview

ARS-2016 and ARS-2016E Ultra 160 SCSI RAID 1 System are designed for mirroring. The only difference is that ARS-2016E is for external connection. Either of them consists of two hard drives for duplicating data as Figure 2-1 shows. But the computer regards them as a single drive. Via an on-board microcontroller, ARS-2016 or ARS-2016E makes high-level applications more flexible and stable. It can easily transform any IDE device into an Ultra 160 SCSI one.



The same data is recorded into both HDDs

Figure 2-1

2.2 Features

ARS-2016/2016E Mirror Smart 160 has the following features.

- Is a standalone Ultra 160 SCSI-to-SCSI RAID 1 controller.
- Uses ATA 66/100/133 hard drives.
- Automatic fan adjustment to maintain a more constant environment.
- Has an on-board ACARD RAID On Chip (ROC) SCSIDE® engine.
- Supports "Big Drives" technology (over 137GB HDD).

- Supports HOT SWAP.
- Has an auto-eject handle on the cabinet to indicate a failed hard drive.
- Alarm warning for a failed hard drive.
- Has an alarm-off resetting button.
- Supports instant rebuilding (up to 2500MB/m).
- A full array of LED indicators.
- Has an on-board System On Chip (SOC) SCSIDE® engine.
- Has lower CPU system loading.
- Supports multitasking.
- Has aluminum & steel heat sink frame design.
- Supports cross-platform operation systems like Windows 98/ME/NT/2000/ XP, Server 2003, Linux, Mac, Sun Solaris and FreeBSD.

2.3 Quick Start

The following 8 steps are for ARS-2016.

- Step 1: Make sure that all cables are connected firmly to your PC.
- Step 2: Take the cabinet out of the Mirror Smart 160.
- Step 3: Put a hard drive into the cabinet and connect it with the internal cable.
- Step 4: Replace the cabinet to the Mirror Smart 160.
- Step 5: Make sure that the auto-eject handle on the cabinet is closed.
- Step 6: Remove another cabinet and repeat step 3 to 5.
- Step 7: Power on the system.
- Step 8: Use the Mirror Smart 160 as a new hard drive.

The same 8 steps are for ARS-2016E, too.

- Step 1: Make sure that all cables are connected firmly to your PC.
- Step 2: Take the cabinet out of the Mirror Smart 160.
- Step 3: Put a hard drive into the cabinet and connect it with the internal cable.
- Step 4: Replace the cabinet to the Mirror Smart 160.
 - 7

Step 5: Make sure that the auto-eject handle on the cabinet is closed.

Step 6: Remove another cabinet and repeat step 3 to 5.

Step 7: Power on the system.

Step 8: Use the Mirror Smart 160 as a new hard drive.

2.4 Package

Upon receiving the package of ARS-2016/2016E, unpack it and check its contents.

- ARS-2016 or ARS-2016E
- Support CD contains the driver of SCSI card and the Mirror Smart Utility
- A user's manual
- Ultra 160 SCSI cable
- Ultra 160/320 terminator (optional)
- AEC-67160 Ultra 160 SCSI Adapter (optional)
- Two small plastic sticks (for loosening the handle of the cabinet)

2.5 Specifications

1.ARS-2016/2016E Mirror Smart 160

| Materials | Aluminum & st | eel base, o | cover, ABS s | shell and front | panel |
|---------------|-----------------|-------------|--------------|-----------------|-------|
| Temperature | 0°C to 70°C for | or operatio | n | | |
| | -20°C to 85°C | for storag | е | | |
| Humidity | 15% to 90% | | | | |
| Dimension (AR | S-2016) | Length: | 21.5cm | | |
| | | Width: | 14.5cm | | |
| | | Height: | 8.5cm | | |
| Dimension (AR | S-2016E) | Length: | 28cm | | |
| | | Width: | 18cm | | |
| | | Height: | 16cm | | |

2.AEC-67160 SCSI Adapter (optional)

Please refer to the user's manual of AEC-67160 SCSI Adapter.

2.6 Compatibility

ARS-2016/2016E is particularly designed for DMA hard drives. It fully supports the following brands of DMA33/66/100/133 hard drives. It is recommended to set the jumper as Master on the hard drive. ARS-2016/2016E is also compatible with various kinds of SCSI cards, and can operate well in Mac and Linux.

IBM-Deskstar-DTLA-307030 (30.7GB) IBM-Deskstar-IC35L040AVVN07-0 (40GB) IBM-Deskstar-IC35L040AVER07-0 (41.0GB) IBM-Deskstar-IC35L060AVV207-0 (61.4GB) IBM-Deskstar-IC35L080AVVA07-0 (82.3GB) IBM-Deskstar-IC35L120AVVA07-0 (123.5GB) IBM-Deskstar-IC35L180AVV207-1 (185.2GB)

WD-200BB (20GB)
WD-400BB (40GB)
WD-600JB (60GB)
WD-600BB (60GB)
WD-800JB (80GB)
WD-1000BB (100GB)
WD-1800BB (180GB)
WD-2000JB (200GB)

MAXTOR-DiamondMax PLUS 60 (20GB) MAXTOR-DiamondMax PLUS 60 (30GB) MAXTOR-DiamondMax PLUS 40 (40GB) MAXTOR-DiamondMax PLUS 8 (40GB) MAXTOR-DiamondMax 9 (60GB; 200GB) MAXTOR-DiamondMax 16 (250GB)

MAXTOR-D740X-6L080L4 (80GB) MAXTOR-D740X-6L020J1 (20GB)

SEAGATE Barracuda IV ST380021A (80GB) SEAGATE Barracuda V ST3120023A (120GB) SEAGATE Barracuda 7200.7 ST3160021A (160GB) SEAGATE Barracuda 7200.7 ST380011A (80GB)

Auto Reassign HDD

The following hard drives have auto reassign function: IBM-Deskstar-IC35L080AVVA07-0 (82.3GB) IBM-Deskstar-IC35L180AVV207-1 (185.2GB)

MAXTOR-DiamondMax 16 (250GB)

SEAGATE Barracuda V ST3120023A (120GB) SEAGATE Barracuda 7200.7 ST3160021A (160GB) SEAGATE Barracuda 7200.7 ST380011A (80GB)

Please visit www.acard.com for the newest information.

Chapter 3 The Control Panel

ARS-2016/2016E has a control panel composed of 5 LEDs and an alarm-off resetting button. From left to right and up to down they are defined as follows.

Hard Drive Power LED: It indicates if the hard drive is normal.

Hard Drive Access LED: It lights when the system is busy in reading/writing.

Hard Drive Error or Malfunction LED: It lights when the hard drive, the track or the fan fails, or the temperature is too high.

System Power LED: It indicates if the system is normal.

Rebuilding LED: It lights when you replace a failed hard drive and the data in another drive is being copied into the new drive.

Alarm-Off Resetting Button: Push it to stop buzzing when alarm is activated.



Figure 3-1

NOTICE: Replace the handle to "Close" after installing all devices otherwise the "Alarm" will be activated when power is on.

The control panel of ARS-2016/2016E is described in details below.





- During normal operation, if the system detects a failed hard drive, the failed drive LED^{III} will glitter 10 seconds in alarm. Then, it will keep lighting with handle ejecting. It indicates that the failed drive needs to be replaced.
- After a new drive is installed and plugged, the system will check the new drive. At this moment, LED A ☆, B ☆ and C ☆ will keep lighting. The currently checked new drive LED
 will glitter to indicate the hard drive.
- When the new drive is ready, LED A ☆, B ☆ and C ☆ will keep lighting, and the new drive LED Ø will keep glittering. Yet, LED A ⊟, B ⊟ and C ⊠ will light to indicate that the system is rebuilding data to the new drive.

Under different situations the beep of warning is different.

- (1). The warning for a failed fan is a short beep in every 8 seconds.
- (2). The warning for higher temperature is 3 short beeps in every 8 seconds.
- (3). The warning for a failed track is 2 short beeps in every 8 seconds.
- (4). The warning for a failed hard drive is a beep in one second and then mute in the next second. This will last for 10 seconds.
- (5). The warning for a new hard drive without enough capacity is a long beep and then two short beeps.
- (6). After rebuilding, there will be a long beep.
- (7). After comparing data, there will be a short beep and then a long beep.
- (8). When drawing the cabinet manually, there will be a beep in one second and then mute in the next second. This will last for 10 seconds. Please draw the cabinet after 10 seconds.

Chapter 4 Hardware Installation

The hardware installation includes the installation of a SCSI adapter and that of ARS-2016/2016E Mirror Smart 160. For convenience we take ARS-2016E as an example here.

4.1 Installing a SCSI Adapter

The installation of a SCSI adapter is quite easy. If you don't have a SCSI adapter and like to buy the AEC-67160 SCSI adapter, you may contact with a salesperson of ACARD. According to the manual you can quickly install the SCSI adapter. Then, you need to install its driver, which is contained in the support CD.

4.2 Installing ARS-2016E

The installation of ARS-2016E is divided into several parts such as IDE hard drive connection, internal connection, external power connection, external cable connection, DIP switch setting, etc.

4.2.1 Preparation

Before installing ARS-2016E, you need to understand the following important things.

- In the initial installation, if the two hard drives are different in capacity, ARS-2016E will take the smaller drive as the standard.
- If the two hard drives are the same in capacity, ARS-2016E will take the drive on the upper cabinet as the standard.
- Both cabinets support HOT SWAP.
- In rebuilding, the source drive cannot be removed, but the destination drive can be when Hard Drive Error or Malfunction LED is on.

You are suggested to use the hard drives of the same brand and model.



- When rebuilding finishes, ARS-2016E will produce a long beep.
- When HOT SWAP is progressing, the system of ARS-2016E must be in the state of "Power On".
- Use Ultra DMA33/66/100/133 HDD to let ARS-2016E perform better.

4.2.2 IDE Hard Drive Connection

Before connecting an IDE hard drive to the cabinet of ARS-2016E, you have to set the hard drive as "Master" mode by adjusting the jumper setting. In addition, if the hard drive has contained data or installed with a certain version of OS, you had better back up your data first, and install the OS again after connection. The hard drive cannot work without installing the OS again. After connection just treat the IDE hard drive as a new one.



HDD Cabinet

Figure 4-1

Before connecting an IDE hard drive to the cabinet, you have to power off the system, then follow the two steps below to open the cabinet.

Step 1: Insert the plastic stick into the loophole to loosen the handle.

(Use a pin in case of losing the stick.)

Step 2: Hold the handle to pull out the cabinet.





NOTICE: The handle is a switch to control the hard drive power, so do not open it arbitrarily during operation.

Follow the 5 steps to connect an IDE hard drive to the cabinet. Please do the job according to Figure 4-3 on page 17.

Step 1: Find out pin 1 of the 40-pin connector on the IDE hard drive.

- Step 2: Find out the color line of the IDE cable inside the cabinet, which indicates pin 1 of the 40-pin connector.
- Step 3: Connect the IDE cable to the IDE hard drive by pin 1 to pin 1.
- **Step 4**: Connect the 4-pin power connector inside the cabinet to the IDE hard drive's 4-pin connector.
- Step 5: Finally replace the cabinet.
- 16



Figure 4-3

4.2.3 External Power Connection

After connecting the IDE hard drive to the cabinet of ARS-2016E, you can connect the power cord as shown in Figure 4-4.



Figure 4-4

4.2.4 External Cable Connection

Now you can follow the directions below to connect your ARS-2016E(s).

Step 1: Identify the LVD SCSI cable.

- Step 2: Insert one end of the LVD SCSI cable into the host adapter's LVD connector.
- Step 3: Insert the other end of the LVD SCSI cable into ARS-2016E's external SCSI connector.
- Step 4: Insert an external terminator into ARS-2016E's second external SCSI connecotr. Please see Figure 4-5 for the whole process.
- Step 5: If you want to connect more ARS-2016Es, you can take another SCSI cable, insert it into the present ARS-2016E's second SCSI connector.
- Step 6: Insert the other end of the SCSI cable into the next ARS-2016E's first SCSI connector. Repeat step 5 to 6 to connect other ARS-2016Es.
- **Step 7**: Remember to add a terminator to the last ARS-2016E. Please see Figure 4-6 for the whole process.



Connection of One Device



4.2.5 DIP Switch Setting

The DIP switch setting gives a unique SCSI ID number to the Mirror Smart 160. The figure shows the DIP switch of ARS-2016E. It can represent the DIP switch of ARS-2016E without column 7 and 8.



Please follow the instructions below to set DIP switch properly.

Give a unique SCSI ID number to each ARS-2016E in a daisy chain according to the following figure. Even if there is only one ARS-2016E, you still need to give it an ID number.



Figure 4-8

The above figure without the last two columns means the DIP switch of ARS-2016. For the illustration of SCSI ID number in ARS-2016E, please see Figure 4-9 on the next page.

The SCSI ID number in ARS-2016E is illustrated below.



The SCSI ID number in ARS-2016 is illustrated below.



Figure 4-10

Chapter 5 Troubleshooting

This chapter is divided into two main sections: basic troubleshooting and advanced troubleshooting.

5.1 Basic Troubleshooting

When your ARS-2016/2016E cannot function normally, please examine it according to the points listed below.

1. Check the power status

Check if the power status is ON.

2. Check the IDE HDD

Check if the IDE hard drives are in the Master mode.

3. Check the host adapter

Check if the host adapter, AEC-67160, is inserted firmly onto the motherboard.

4. Check all connectors and cables

Check if the pins of ARS-2016/2016E's power connector, SCSI connectors, the IDE hard drives' connectors and power connectors are bent. Then, check if power cords and SCSI cables are connected firmly.

5. Check the DIP switch setting

Check if the DIP switch setting is correct.

6. SCSI ID number problem

If you have more than one ARS-2016/2016Es, don't use the same SCSI ID number in order not to cause conflict.

5.2 Advanced Troubleshooting

Let's explain the troubleshooting of ARS-2016E in Windows XP. At first, set the ID number of the SCSI host adapter, AEC-67160 as 7.

5.2.1 Verify the SCSI Adapter

Check if the displayed device on the list of devices is just the installed SCSI adapter. The steps of entering "Device Manager" are as follows.

Step 1. Double click "My Computer" to select "Control Panel".



Figure 5-1

P. Good rod Proved Hell Eds. Deve Powerses (1925) Hell - - -🔇 ald in 🖏 in 🏂 🔎 souch 🐞 nobles 🖽 i Audices 🔂 Control Pane 🖌 🛃 🗤 Cuntred Band (8) Pick a category 🕞 seatch to these three Appearance and Thomas Cristers and Other Bankners . Sec Also ingo the subangs for your context levels and in rease, recall and offer the reserve Shuhazi Hashe
 Janara Tapon
 Other Costre Data
 Optical whith un th Performance and Maintenance 🛃 stalt 🔰 🐉 Coder Parel Million M

Step 2. Double click "Control Panel" to select "Printers and Other Hardware".

Figure 5-2

Step 3. Double click "Printers and Other Hardware" to select "System".



Figure 5-3

Step 4. Double click "System" to select "System Properties". In "System Properties" click "Hardware" and then "Device Manager".



Figure 5-4

Step 5. In "Device Manager" double click "SCSI and RAID controllers" to check if the SCSI host adapter, AEC-67160 is installed well.



Figure 5-5

5.2.2 Verify ARS-2016E

If you can find ARS-2016E, the Mirror Smart 160 which you have installed with AEC-67160 in "Device Manager", AEC-67160 is installed successfully. If you cannot find, but see a yellow question mark, inspect the IDE connector on AEC-67160. It could be a bad connection or the device's malfunction or AEC-67160's failed driver. Please check your Mirror Smart 160 as follows.

Step 1. Click "Disk drives" to show your hard disk drives.



Figure 5-6

Step 2. Double click "ATA MirrorSmart 160 SCSI Disk Device". Then, click "General", and in "Device Status" inspect if ARS-2016E is working properly.

| TA Minn | orSmart | 160 SC | SI Disk Device | Pmperties | ? 🛛 |
|------------------------|---|---------------------------------------|-----------------------------------|--------------------|--------|
| General | Policies | Volumes | SCSI Properties | Driver | |
| \$ | ATA Min | uSmail 16 | 60 BCSI Disk Devi | 33 | |
| | Device : | yne: | Diss drives | | |
| | Manufad | turer: | (Standard disk dii | vec) | |
| | Location | | Rus Number II, L | argel D II, I II N | 1 |
| Ths If you start | device in w are havin the trouble | vorking pro g problems shooter. | operlji. s with this device, r | bick Troublesh | et to |
| | | | Ľ | <u>T</u> rcuolesh | oot |
| Device | usage | | | | |
| Usc :hi | s device (| enable) | | | * |
| | | | (| 0k 🛛 | Cancel |

Figure 5-7

Appendix 1 SCSI Adapter Compatibility

All the SCSI adapters listed below can be used together with ARS-2016/2016E, the Mirror Smart Plus.

ACARD AEC-67160 Adaptec ASC 29160 Adaptec ASC 39160 Adaptec AHA 2940U2W Adaptec AHA 2940UW Initio 9100UW Tekram DC-390U2W(53C895) Tekram DC-390U3W Tekram 390UF LSI Symbios 53C875 Ultra Wide SCSI Controller

Appendix 2 Mirror Smart Utility

The Mirror Smart Utility is used to manage and control ARS-2016/2016E. With it you can easily set, change and check all things concerning the situation of hard drives.

After entering the utility, if you want to change some basic settings, you can click "Setup" and select "Preference" as shown below.

| Hirror Smart S Hi Change Mirror | stup | Compare HDDs | |
|---|---------------------------|--------------------------------------|-----|
| Update Firmw Mai Notification Capacit | are nSet.p 7 533 GB | Mulu MIRROR 100 EVD Revision 119M | |
| 🖃 Statu: | Miner acave | Transferrate SCS 18UMB/S | |
| IDD0 Ver Ju | · ATA | Mulu Maxter 67646-0 | (Se |
| 🗸 🖃 – Capacit | y 33.3 GB | Revision NARD | |
| Statu: | , Read/Write | Transiemale ATA 100MB/S | |
| 1001 Ventio | r ata | Motte Maxiu: 8804010 | Se |
| 📃 🔜 🗠 baont | y CLIOR | Revision NAL-3 | |
| Slahe | . Write only | Tours of the ATA 100MB/S | |

The main items in "Preference" are explained as follows.

| | U seconds (Min: 3 seconds Max: 30 seconds) |
|---|---|
| | Time interval to update the event log 🛛 🗖 Disable |
| - | hours (Min: 1 hour Max: 24 hours) |
| | -Ocmpare Uptions |
| | |
| | -cct Normal Sicw |
| 4 | 📕 🗖 Auto compare after rebuilding |
| | This option only supports Mirrar Smart of old versions For Mirror Emart 160 LVD, it is set in 'Mirror Smart Setup' |
| | Disolay |
| - | Popup the main window when an error occurs |
| - | ——— □ Show the main window when the program starts |

- 1. Set the time to update the status of Mirror Smart.
- 2. Set the time to save the event log.
- 3. Set to compare the data of 2 hard drives after rebuilding.
- 4. Set to pop up the main window when an error occurs.
- 5. Set to show the main window when the program is running.

If you want to set the functions of Mirror Smart, you can click "Setup" and select "Mirror Smart Setup" as shown below.

| Sila Preterence Mirror Smart Betup Hi Change Mirror Stell | C Compare HDDs |
|---|--|
| Update Firmware Mai Notification Secup Capability (RFB) RR Status (Mirminiante | Mudu MRR:DR:160LVD Revision 18M re Transferirate (300:11-1MH0) |
| HDD0 Vendor (4T4 | Mode Maxtor 6E040L0 55 |
| Coloring (2000) | Revision NAR6 |
| Status (Vriteory) | Thans enrate ATA 101MP/5 55 |
| HDD1 Vendhr ATA | Minde Muxtur 6E04000 🤽 |
| Case by JUD oB | Revision NARC |
| Status Read/Wrb | 2 Transferinate ATA 193ME/S 블 🐗 |

| 🐨 Enable instum reading | 🗜 Fan 0 catestion | 📕 Far Disute centrol — |
|-------------------------|-------------------------|------------------------|
| 🗖 RMD dam | 🔚 Fimil delection | 💌 Far 2 ndr randrid 🗕 |
| T SWite protect | Fan 2 cateotion | _Rebuilding Rate |
| 🗖 МАС СЕ вираот | 🗖 Fan O catestion | C Slow |
| 🕂 Wininghover | 👿 Alamine di Lillin 🗕 | C Norma |
| | 🔲 Compare after repuild | ng C Fast |
| C ASYNC | | Temperature Control |
| CIONE | | C0 11D1 |
| C 20M | C ALAS | Le- mit 37 37 |
| C 401/2 | C ADAG | tvise-timit 📅 🔽 💶 |
| C COME | C ATA: CO | Hi-lin . 41 41 |
| CON L | G ATA:SO | warme 🖅 🐨 📥 |

The main items in "Mirror Smart Setup" are explained as follows.

- 1. Set to read the 2 hard drives' data in turn.
- 2. Set the alarm above 10 seconds.
- 3. Set to detect Fan 2.
- 4. Set the warning buzzer.
- 5. Set to detect Fan 0.
- 6. Set to control Fan 0 automatically.
- 7. Set to control Fan 2 automatically.
- 8. Set the rebuilding rate.
- 9. Set alarm-off reset button.
- 10. Set to compare after rebuilding.
- 11. Set the SCSI speed limit.
- 12. Set the IDE speed limit.
- 13. Set the temperature control.
- 35

If you want to change the size of Mirror Smart, you can click "Setup" and select "Change Mirror Size" as shown below.

| Mitt City | or Smart Sc mos Minor B | | Compare HDDs | |
|--------------|--|--|--|------------------------------|
| | let: Fimile Notification Osciality Status | rt Settip Thin Sti Virrenset Ke | Min: all MIRROF 120 LAD Revision 1 TM Transformate (SCG) 100MB/S | |
| | Vender Octacity State | Alica BBI3 GB Write chty | Model Maxter 6LL/ULL Revision NARS Ther stemate 71.5 TCLM205 | <mark>%</mark> <u>=</u> ¢ |
| 1001 | Vendor Capacity Cisius | ATA 23.3 GB Ges :/white | Model Martin 6F74017 Revision NARC Transferrate ALA 10 M 899 | - <mark>≫</mark> ≝ 4 |



- 1. Set a new size equal to or larger than the current one.
- 2. Set the maximum size.

If the current size is the maximum size, you cannot change the size again.

If you want to update the firmware of Mirror Smart, you can click "Setup" and select "Update Firmware" as shown below.

| Minor Smart Setup II. Change Minor Asel | 11 Compare HDDs |
|--|---|
| Update Immoare II. Met Nothestor Vetup II. Cappony (PERIGR Status (Minor active | Macal (FINKON UTUM) Revision 12-4 Transferrate (SOV 120ME/2 |
| DDD Vencor ATA Covery BEBGB Eldine (Loc Write | Horsen Marcel FTG4010 |
| Canadity ULUCU Canadity ULUCU Status (VCLOUD) | Nheni Mururi 6501010 🥞 Devisi in NAVI: Transformati PTA 153MR/5 💾 📲 |

| 1 | |
|----------|--|
| | |

| Himvare | | |
|------------------|-------------------------|--|
| та каназаларомна | Salart (mixale) | hen 104 bittiM.Aeyet sir |
| 7.85 | | |
| | Valentuas APROMIA Va | The set of sector ACRO Manual Starts and sector and the sector ACRO Manual Starts and sector and se |

- 1. The current F/W version.
 - 2. Update to the newest version.
 - 3. Click "Open" and then "Yes" to confirm.

If you want to receive a mail whenever a hard drive fails, you can click "Setup" and select "Mail Notification Setup" as shown below. Then, in "Mail Setup" be sure that Enable mail notification is activated. And type related data in the following three rows: 1. SMTP server, 2. User account, 3. Sender Email.

| H di | vor Stricht Sis ange Mirrer P | h.s. ≱s ⊻ V | Cempare HDDs | |
|-------|----------------------------------|----------------|---------------------------|---------------|
| di Na | Kathalian | Set ID | Mann MIRIOR 160 LVD | |
| - | Capacity | 0000 | Revision HCB | |
| - | fila e | Minor active | Threfer all ECO (B0/BH | 1 |
| IDD0 | Ver cor | j4. = | Made Maxter HHI4 II II | 30 |
| / 📰 | Capacity | 88.5.28 | tevision No+3 | 1 11 - |
| - | ftaun | Pear/Wite | Transfermale (STA 100VB/E | 1 🗖 🤄 |
| IDD1 | Wen don | 474 | Made Makter 6F04010 | * |
| | Capacity | 883.38 | Housen News | |
| - | Ptatus | Mine only | ransfer rate ATA 1557Br3 | |

| | Mail Notification Set | 10 🔀 |
|------|-----------------------|---------------------------|
| | F Enable mail notif | cation |
| | Mail Setup Superv | isor Event Filter |
| 1. — | SMIP server | MAIL AGARD COM |
| 2. — | User account | Supervisor |
| 3. — | Sender Lmail | Supervisor@MAIL ACARD COM |
| | | |
| | | |
| | | |
| | | |
| | | OK Cancel |

Then click "Supervisor", and type the receiver's mail address in the row near to the bottom. After clicking "Add", the address will be added to the list.

| Tail Setup Super | msor Event Filter | | |
|------------------|-----------------------------|----------|-------|
| System superviso | r list (Enter the e-mail ad | idreas)D | elete |
| | | | |
| | | | |
| | | | |

Finally click "Event Filter", and choose several events for which you want to send a mail to notify the supervisor. There are five events for choice: 1. HDD failed, 2. HDD is removed, 3. HDD is inserted, 4. Fan failed, 5. HDD over heat.

| Mail Notification Setup | ~ | |
|-------------------------|-----------------|--|
| ■ (natematholice); | arit | |
| Mai Setup Supervisor | Event Filter | |
| Determine error ever | nts to send mai | |
| Bad sector on HDD | ন | |
| LIDV railed | R | |
| | M | |
| | П | |
| Est failed | P | |
| HED over heat | P | |

If you want to know the version of Mirror Smart Utility, you can click "About!".



Click "Status List" to see the status of Mirror Smart.



- 1. Host Bus ID No. and the SCSI adapter.
- 2. Target ID No. and the Mirror Smart.

Click "Mirror Info" to see all the information about the hard drives.



- 1. The whole system as one hard drive in RAID 1.
- 2. The hard drive in the upper cabinet.
- 3. The hard drive in the lower cabinet.
- 4. Compare the 2 hard drives.
- 5. The fan in the upper cabinet.
- 6. The temperature of the hard drive in the upper cabinet.
- 7. Eject the hard drive in the upper cabinet.
- 8. The fan in the lower cabinet (X means a failed fan).
- 9. The temperature of the hard drive in the lower cabinet (Now it is too high).
- 10. Eject the hard drive in the lower cabinet.

Click "Compare HDDs" to see if the Source HDD and the Target HDD contain the same data. The percentage bar on the bottom of the figure shows the process of comparison. It is also used to indicate the process of rebuilding.

| 🚆 Mirror Smart Utilit | ¥. | |
|-----------------------|-------------------|---|
| Rie Setup Eventille | ç About | |
| Status List Minnor of | Lvent Log | |
| Host Rus 2 - 3 | CGI Target ID 0 | Compare HBDs |
| MIRROR Vendo | ACARE | Model MIRFOR 160 LVD |
| 📃 Oabachity | CODOB | Revision 110M |
| Status | Rebuilding mode | ranster rate ISCSI 160MD/S |
| HDD0 Vendor | - AIA | Model Maxium SEUAULL 🦉 |
| 🖌 💷 — Capabity | 53.3.3B | Revision NA-R |
| Otator | Sucree | Transfer rate ATA 188MB/S |
| HDD1 Veridu | ATA | Model Mastrin 6664010 |
| 🖃 Capabity | FRA GR | Jevis on INARE |
| V 🖃 🛛 Status | Taiget | Transfer rate ATA 133t/B03 👘 |
| utal expanity | 38 3 .3B 800549 | 28 Dlucks Rebuilding rate: 8459-7ME/min |
| Rebuilding progress | 2.1 GB / 4/ C70 | 1 blocks Remaining time Dh: 10h: 42a |
| | | 5% |

If a hard drive is detected not existing or having an error, the status will be shown as the figure.

| Host Bus | 2 30 | CSI Target ID 🛛 | Compare HBDs | |
|----------|---------------|-----------------|-----------------------------|-----------------|
| IRROR | Vendor | /\CARD | Mindel MIRROR 130 LVD | |
| | Capacity | 67.3 GB | Devision 070M | |
| | Pretus | Single HDD | Tran=fer rate SCSI 160MB/S | |
| IDDA | Vendor | | Mad-1 | |
| | Conacity | | Revoice | |
| | Status | HD not exist | Tranifier rate | |
| 1001 | Vendor | ATA | Mond≠l Ma⊮tor EY06CL0 | <u>**</u> |
| | Capacity | 67.3 GB | Devision YAR4 | |
| / 💷 | Status. | Road/Write | Transfer rate ATA 133 YE/S | - <mark></mark> |

If you want to read the record of an event log, click "Open Event Log" under "Event Log". Then, choose the file you need.

| -valcin' | y About | | |
|----------|--|--|--|
| Save D | vent Log., | | |
| Open E | Vent Log | Compare HDDs | |
| Vendor | NCARD | Mude MIRROR 160 LVE | |
| Capacity | 38.3 BE | Revision 113M | |
| Status | Mirror active | Transfer rate SCS 180 MH/S | [|
| V sucur | рта | Mr de Maxtor 6804010 | <u>\$</u> |
| Capacity | DCLC DE | Revision NAR3 | |
| ຍະພະ | ReactWrite | тала елган. (576-100 МВ иб | 📛 H |
| Vencor | 414 | Minde Maxtor 6±14110 | <u>Se</u> |
| Capacity | JUC OF | REVISION NALS | |
| Sistus | Write only | Gale Frida E ATA 100MB/S | i 📛 🖓 |
| | Save D Soon D Voncor Capacity Status Voncor Capacity Vencor Capacity Sistus | Severology, Severology, Severology, Severology, Severology, Vancor (ACARD) Appacity (SECIDE) Status (Minic active) Vision (ATA) Capacity (DCCIDE) Status (Reac/Write) Vencor (ATA) Capacity (DCCIDE) Status (Reac/Write) Status (Vente only) | Save Event Log Compare HDDs 2 Scont angetter 0 Compare HDDs Vancor (NSARD) Mude (MIRROR 100 LVE) Capacity (36.5 GB) Revision (119M) Status (Minn outwor) Transfer rate (SCS 160 MEVS) Viancor (ATA) Mindle (Maxtor: 6E040L0) Capacity (30.0 GB) Revision (14R3) Status (React/Write) Transfer rate (ATA 100MB/S) Viencor (ATA) Mindle (Maxtor: 6E040L0) Status (Write only) Gate Fridate (ATA 100MB/S) |

| Open Event | Log | | 2 🛛 |
|---------------|----------------|---|--------|
| Look in [| LogEackup | | * 🗔 • |
| 20030516 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| File name. | 20037516 | | Oper |
| Files of lype | ng Fles (" hg) | • | Cancel |

Click the file to read as the following figure shows.

| 🖀 Rielary Swart - 20030938.0ag | | | -) × |
|--------------------------------|---|---------|------|
| Trant time | Event description | Dis-ID | E |
| 2000/04/22 10 00:27 | Mirror Smart Utility version 2.04 started | | 1 |
| 2000/04/22 10 00:27 | CD% compared. | 2+2 | 202 |
| 2000/04/22 10 00:27 | C - acoulSC m/C - ATA MirrorEmart 160 050M OK. | C - 0 | |
| 2000/04/22 10 00:27 | 1 000 is CK. (ATA WD0 - WD20000- 15.0 10.6 GD | (C - C) | |
| 2000/04/22 10 00:27 | 1 CCT is CK. (ATA GT02001111A 0.19 10.0 GD) | 5-0 | |
| 2000/04/22 10 00:27 | C - acout90 m 1 - ATA MinorEmait 160 054 M Error. | C-1 | |
| 2003/04/22 18 38:27 | HDD0 is CKI (ATA Miskfor, ST030H5 TAH7 28.6 CE) | 8+1 | |
| 2003/04/22 16 36:27 | F001 is CK (ATA ETB12002 25A 3.35 12 0B) | 2-1 | |
| 2003/04/22 16 36:27 | Fan2 failed. | 3-1 | |
| 2003/04/2016 36:07 | 3 - acout30m (1 - ATA MirrorEmart 160.052 M Compa | 3-2 | |
| 2003/04/22 16 36:27 | HODD is CKI (ATALEMADTLA A30703 TX40 25 3 GB | 3-2 | |
| 2003/04/22 16 36:27 | HOD1 is CK (ATA Maxtor, GED40LC NARE 38.5 GB) | 3-2 | |
| 2103/04/22 16 3:422 | The firmware was updated from J62M to U54M | 5-2 | |
| 2.03/04/2. 18 9/.41 | The limitware was updated from JESM to US4M | 2.0 | |
| 2103/04/2016 39.61 | F22 Diover Heat | 9 U | ~ |

The "Event Log" describes the status of every event time. It is helpful for you to solve the problems.

| File Setop Eventillog Status List Minor ht | Khor: (Event Log) | | |
|---|--|---------|---|
| Fee Tine | Fort De gal | Bi i ID | 1 |
| 2006/01/26 05:17 56 | 2 - gl12160 T - ATA Mind Smart 130 054M Ends | 2 - 1 | |
| ALE: 44-bit 44-bit 44-bit | HE BLOCK (A MICOL SHEER AR 38K GF). | 9.1 | |
| 2000/01/25 05:17 50 | HECH is CK. (ATA ST0: 2022/204 0.00 112/30) | 2 - | |
| 2003/04/25 05:47 58 | Fen2 failed. | 2 | |
| 2016/04/25 05:17 56 | 2 - gl/2163-2 - ACA Mind Smart 130 754M Endt | 2-2 | |
| 2012/04/25 05 47 55 | HE TO BE CK (ATA IBM DT A A 50703 TO4O 25 5 (36) | 2.2 | |
| 2006/01/25 05:17 56 | HDD1 is not exist | 2-2 | |
| 411-146-n 1138-31 | HC 01 Tulion ATA Martin, 5 13, -3 TABA # 3 GB | · · | |
| 2000/01/25 17:15 40 | HECH was removed: ATA MAXTOR 6LC001.4 ABC 74 | 2-0 | |
| 2003/04/25 17:19 58 | HEC I failed | 2 - 0 | |
| 2019/C1/25 17:00 DE | HDC1 was heartan ATA MAXTCC 6L080 4 A53, 74 | 7-0 | |
| 2013/14/26 17 20 DF | Refuil From HDD1 or HDD1 | 5 0 | |
| 2006/01/26 17:20 58 | 10% repuikt | 2-0 | |
| ALE:1 46:5 17 21 4F | SHW recould | 5 11 | |
| 2000;01/25 17:22 00 | C0% repuik | 2 - 0 | |
| 2005/C4/25 17:25 28 | 40% repuilt | 2.0 | |

Technical Support Form Email: support@acard.com http://www.acard.com

| Model: | ARS-2016/2 | 016E | F/W Ver | sion: | | |
|------------|---------------|------|---------|-------|--|--|
| System | Configuration | | | | | |
| Motherb | oard | | | | | |
| BIOS ve | rsion | | | | | |
| SCSI ad | apter | | | | | |
| Chipset | | | | | | |
| Memory | | | | | | |
| Display of | card | | | | | |
| Other I/C |) card | | | | | |
| OS vers | ion | | | | | |
| Hard Dis | Hard Disk | | | | | |
| | | | | | | |
| Hard Dis | k Model/type | | | | | |
| Capacity | / | | | | | |
| | | | | | | |
| IDE Dev | ice Connectio | on | | | | |
| CD-ROM | 1 model | | | | | |
| CD-R m | odel | | | | | |
| MO or R | emovable | | | | | |
| | | | | | | |
| Others | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

MALARS2016XE10-0