AEC7720U

AEC7720UW

User's Manual

Ver : 1.01

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INDEX

Chapter 0   About the SCSIDE

Before you use the AEC7720U/AEC7720UW

SCSIDE® is a revolutionary invention developed by ACARD Technology Ltd. It not only offers the unprecedented functionality of converting IDE data flow into SCSI bus, but also minimize the converting overhead. This technology has opened up a numbers of possibilities of SCSI applications to use less expensive IDE device. The following examples are just a short list of the SCSIDE® application.

1. Convert IDE hard drive into an external SCSI hard drive for data backup in notebook and desktop PCs.
2. Convert IDE 50X CD-ROM into a 50X Ultra SCSI CD-ROM. Which is brand new in the world.
3. Convert your favorite IDE DVD-ROM into a Ultra SCSI DVD-ROM.
4. Create a DVD-ROM Server by daisy chain Multiple SCSIDE® DVD-ROM.
5. Convert 5400rpm or 7200rpm DMA33/66 HD into UW-SCSI HD for PC Workstation, PC Server, even for Unix Workstation and Server.

The basic architecture of SCSIDE® is a highly integrated multi CPUs "System On a Chip" design. This SOC design utilizes ACARD Technology's many years expertise in IDE, SCSI and RISC CPU chip design. As illustrated in the following diagram, this SOC has multiple CPUs, its own ROM and RAM, DMA controllers and external ROM interface for flash-ROM firmware update. ACARD Technology has also polished the firmware design to make the IDE to SCSI conversion a truly "plug and play" experience. The firmware has been test with almost all brands of IDE DMA33/66 HD, ATAPI CD-ROM, DVD-ROM. No matter what type of IDE device you have, ATA hard drive, CD-ROM, (CD-RW with limited support ; see2.2) or DVD-ROM, you can easily plug it on and ready to enjoy your SCSI adventure.

Because of this intelligent firmware design, you don't have to install driver to on you OS to use SCSIDE® series of products. To the OS, it acts like a SCSI device, just plug and play.

SCSIDE PLATFORM BLOCK DIAGRAM
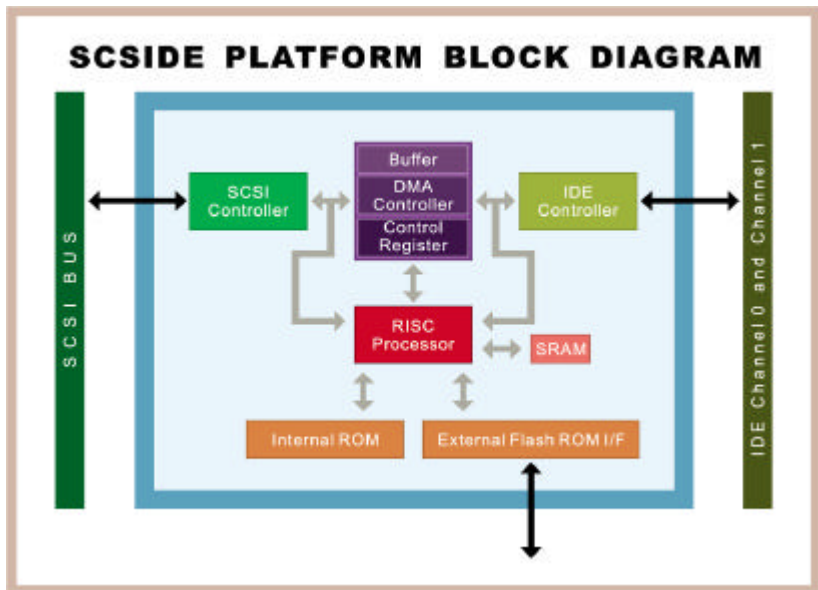
The Design Objectives of SCSIDE®:

The primary goals for ACARD's SCSIDE® technology has three folds:
1. Bring down the cost of using SCSI technology by less expensive device.
2. Create some application the people want but currently not available (50X SCSI CD-ROM, high speed SCSI DVD-ROM).
3. Transparent plug and play, no software driver needed (to installed) when converting IDE device into SCSI device.

Welcome, our new SCSIDE members and enjoy it.

Chapter 1   Introduction

1.1 Overview

The AEC7720U/UW Ultra/Wide SCSI-IDE bridge is dedicate as general-purpose bridge of SCSI (Small Computer System Interface) to IDE(Integrated Device Electronics) interface. With ACARD micro-controller core built-in, it provides more flexibility and stability for highly exploring application.
AEC7720U/UW supports IDE devices such as hard disk drive, CD-ROM, CD-R, (CD-RW with limited support ; see 2.2)DVD-ROM, etc. which can be easily attached to SCSI bus.

1.2 Feature

- On-chip high speed ACARD RISC micro-controller, SCSI controller, IDE controller and interfaces.
- SCSI host interface synchronous transfer rate up to 20 MB/sec (AEC7720U) Ultra SCSI or 40MB/sec (AEC7720UW) for Ultra wide SCSI transfer.
- Full SCSI target features support.
- Programmable IDE access modes, including PIO mode 0,1,2,3,4
  Multiword DMA mode 0,1,2
  Ultra DMA mode 0,1,2(with transfer rate up to 33.3 Mbytes/s)
- Onboard flash ROM for easy firmware upgrade.

1.3 Specification

1.3.1 Packing List

Please check the following packing list.

● AEC7720U/UW bridge adapter
● 4 pin Y splitter power cable (option)

1.3.2 Parts specification

1. **AEC7720U/UW**

   Environment   - Temperature
                   Operating 0 ℃ to 70 ℃
                   Storage   -20 ℃ to 85 ℃

   Humidity   -   15% to 90%

   Dimensions   -7720U   7720UW
               - Length: 8.8cm   12 cm
              - Width : 3.8cm   3.8 cm
              - Height: 2.5cm   2.5 cm

   AEC7720U Cable   - 50 pins female to 50 pins female round cable
   AEC7720UW Cable   - 68 pins male to 68 pins male round cable

AEC7720U Bridge Adapter
- ■ **CN1 - 40 pins female IDC IDE port**
- ■ **CN2 - 50 pins SCSI connector**
- ■ **CN3 - 4 pins power connector**
- ■ **JP1 - SCSI ID Switch connector**
- ■ **JP2 - Terminator**
- ■ **JP3 - Activity LED**
- ■ **JP4 – Terminator power supply switch, default is ON.**

JP2

Terminator Connector

JP1

SCSI ID Swith Connector

CN2

SCSI Connector

CN3

Power connector

CN1

IDE Port

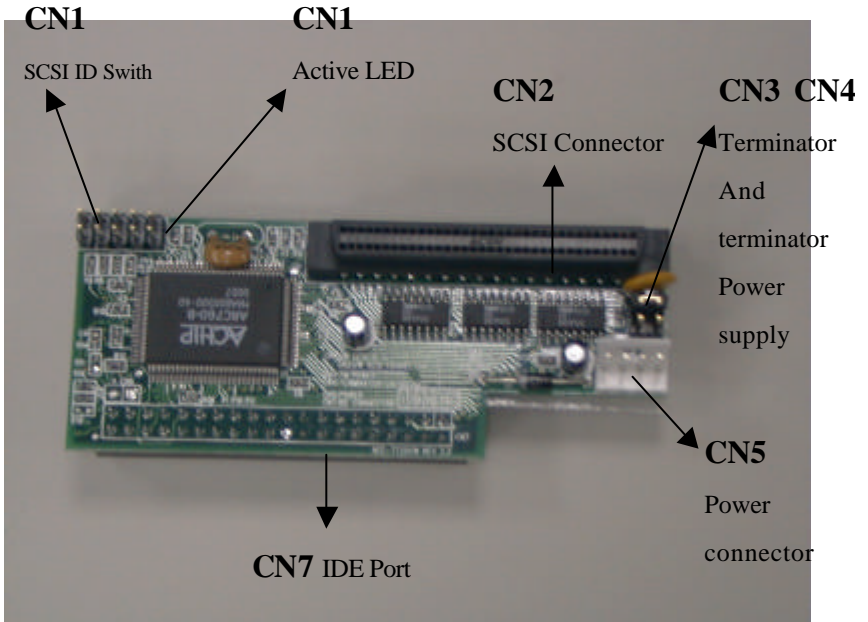**JP4** Terminator

Power supply

JP3 Active LED
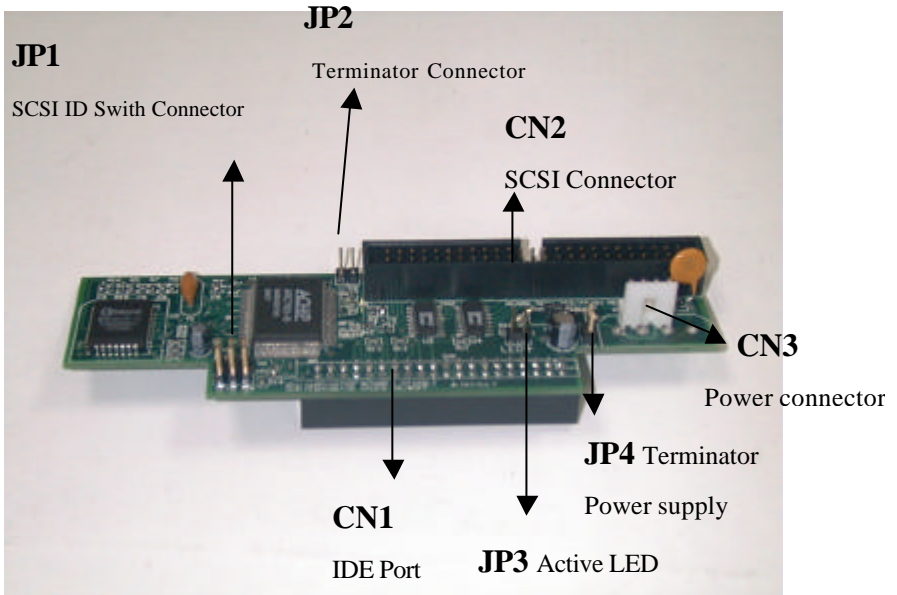
SCSI Adapter (Option)

Please refer to SCSI adapter User's manual

AEC7720UW Bridge Adapter
- ■ **CN1 - SCSI ID Switch connector & Activity LED**
- ■ **CN2 - 68 pins SCSI connector**
- ■ **CN3 – Terminator power supply switch, deault is ON.**
- ■ **CN4 - Terminator**
- ■ **CN5 - 4 pins power connector**
- ■ **CN7 - 40 pins female IDC IDE port**

CN1   **CN1**

SCSI ID Swith   Active LED   **CN2**   **CN3 CN4**

SCSI Connector   Terminator

And

terminator

Power

supply

CN5

Power

connector

CN7 IDE Port

SCSI Adapter (Option)

     Please refer to SCSI adapter User's manual

Chapter 2   Hardware Installation

The hardware installation may include two parts, the first part is a simple SCSI host adapter installation, you use the AEC6712U/TU/UW card (option) that come with the system. The second part is the AEC7720U/UW installation, which is also straight forward, only take about five minutes to complete. Please follow the following instruction. Before you install an IDE device into the AEC7720U/UW, please adjust the jumper setting.

You are about to connect an IDE hard drive on AEC7720U/UW, please note that if you have a old disk which already have a version of OS installed, we recommend that you *re-partition and re-install the OS* after the hardware installation. It might work even without re-install the OS at the beginning (for DOS and Windows), but the way SCSI card commands are different than the ON-Board IDE controller, it will create reading/writing error, so we recommend that after hardware installation just treat the IDE hard disk as the new disk.

2.1 Installing host adapter

For installing the host SCSI adapter, please refer to the AEC6712U/TU/UW adapter manual comes together with AEC7720U/UW kit or your original adapter supplier. Then, configure your AEC6712U/TU/UW software driver using the supplied CD-ROM disc.

Note: If you only have one CD-ROM or DVD-ROM and want to install the CD-ROM, DVD-ROM into the AEC7720U/UW and you are installing AEC 6712U/TU/UW SCSI card first time, your computer might not recognize any AEC7720U/UW because the software driver is not installed. Before the SCSI card can recognize the SCSI device, the software drive need to be installed. However, if the software driver is in the CD disc, you may have to download the driver(s) into floppy disc for ease of installation or download from our WEB site : http://www.acard.com

2.2 AEC7720U/UW Bridge Notice :

2.2.1 Compatibility list of AEC7720U/UW
AEC7720U/UW were designed specifically for DMA Harddisk and DMA CD-ROM , we have fully tested all kind of Harddisk available In our lab , the compatibility with different SCSI card even Mac and Sun workstation is very high. The support to most current model of CD-ROM is also very good.

1.The AEC7720U/UW support all DMA33/66 Harddisk include :
    IBM HDD
     MAXTOR HDD
     QUANTUM HDD
     SEAGATE HDD
     WESTERNDIGITAL HDD

2. Due to many generation and different speed of CD-ROM available on the recent market .We tested and support the following models. CD-ROM support been tested :
     AFREEY 50X, 56X
     ASUS 40X, 50X
     AOPEN 48X
     TEAC 40X

2.2.2 Special recommendation of using ACARD AEC7720U/UW bridge With CD-RW
We have expanded the support to limited model of CD-RW (Ricoh brand). To use AEC7720U/UW with CD-RW, there are special recommendation to get to best CD-Recording result.

1.CD-RW model supported :
 Due to different command set from different CD-RW vendor especially the difference between IDE and SCSI model , we have tested and picked the highest compatible CD-RW between IDE and SCSI which is the following
 Ricoh : 7060A, 7080A, 9060A

2.SCSI card supported :

Unlike the IDE HD and IDE CD-ROM which work with AEC7720U/UW with high compability to all SCSI card , IDE CD-RW with be recognized as IDE CD-RW by most CD recording software even converted into SCSI function by AEC7720U/UW. As a result the CD recording software will send out 12 byte IDE command which need special SCSI cards that can handle this properly are :
ACARD AEC 6712U
        AEC6712TU
        AEC6712UW

3. CD Recording software supported :
For IDE CD-RW converted to SCSI function to work properly not only the AEC series SCSI cards must be used, but also the software combination. At this stage only two software will work properly :
   Adaptec EasyCD-creator [®]
   ACARD DupeBoy

2.3   AEC7720U/UW installation

2.3.1   3.5" drive or 5.25 drive

Since most of hard drives have size of 3.5" and CD-ROM / CD-R/W have size of 5.25" ,AEC7720U/UW was designed for both 3.5' and 5.25" size of device without any additional mounting kit. If you have a 3.5" of device, please mount it by following figure first. Then, install it as the figure shown below.

2.3.2 Power Connection
Internal Power Connection

There are two different sizes of internal power connectors for device and AEC 7720U/UW circuit board. Most of IDE devices use the connector of bigger size, and the AEC7720U/UW board uses the connector smaller size of. Please see the figures below for the way of connection.

2.3.3 **Cable Connection**

Before you connect AEC7720U/UW board to your device, recognize the different interface connectors of SCSI and IDE on the board. The longer connector (AEC7200U CN2 ; see Page 8 / AEC7720UW CN2 ;see Page 9) on circuit board, which has 50 pins/68 pins, is the SCSI connector. The shorter one (AEC7720U CN1 ; see Page 8 / AEC7720UW CN7 ; see Page 9) on opposite side with 40 pins is the IDE connector. Inside the cabinet, there is only one SCSI ribbon cable connection unused. Please note this connector will be connected to AEC7720U/UW.

Step 1. Find out pin 1 of 40-pin IDE connector on AEC7720U/UW board.

Step 2. Find out pin 1 of connector on your IDE device.

Step 3. Connect these two connectors aligning with pin 1 to pin 1.

Step 4. Find out pin 1 of 50-pin SCSI connector on AEC7720U/UW board.

Step 5. Find out a color line of the internal SCSI ribbon cable indicating pin 1 of connector.

Step 6. Connect the internal SCSI cable toAEC6712U/TU/UW aligning with pin-1 to pin-1.

Step7. Connect 4-pin power cable to AEC7720U CN3,;see Page 8

AEC7720UW CN5 ; see Page 9 .

2.3.4 Configuring your AEC7720U/UW
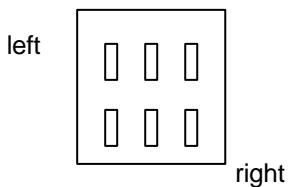## Jumper Setting Power
Connection

There are three configurations have to be set upon AEC7720U/UW,

terminator enable / disable, terminator power on / off, and SCSI ID

number setup. Terminator power and SCSI ID number setup are

combined together as a module, which you can find

behind the back of enclosure. And, you can see

terminator by just enable / disable jumper JP2 / JP4.

Please follow the instruction below and decide your

suitable jumper setting.

```
OFF   ON
```
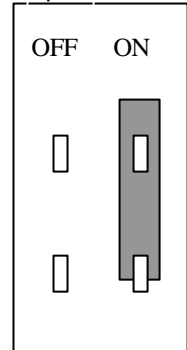
1 **Terminator Enable / Disable.** Generally, when
   your device is at the end of the SCSI bus cable
   or there is only one device on this cable, you
   should set the terminator as enable. The default value is enable.
   AEC7720U   JP2
   AEC7720UW   JP4

2 **SCSI ID Number.** For every unique device on one SCSI adapter
   card, there is a unique ID number indicating that device. Follow
   the instruction attached on enclosure to set an ID number until
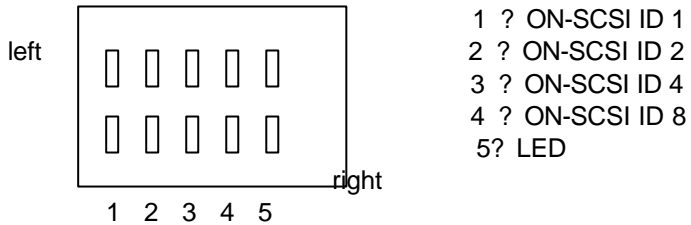   your IDE device get a unique number.

AEC7720U

left

right   Default :All Off

1 ➜ON-SCSI ID 4
2 ➜ON-SCSI ID 2
3 ➜ON-SCSI ID 1

1 2 3

AEC7720UW

left

```
□ □ □ □
□ □ □ □
```
right

1 2 3 4 5

1 ? ON-SCSI ID 1
2 ? ON-SCSI ID 2
3 ? ON-SCSI ID 4
4 ? ON-SCSI ID 8
5? LED

Default: All Off

3   **Terminator Power.** Default setting is on. However, you can turn it on or off depends on different applications.

Chapter 3   Troubleshooting

3.1   Basic troubleshooting

If you install your *AEC7720U/UW* and it doesn't function properly, follow the basic troubleshooting below.

1.   Check host adapter.

Verify the adapter card is seated in its slot on the motherboard.

2.   Check all connectors and cables.

Check bridge power connector, internal SCSI connector, internal IDE connector, device power connector, and ribbon cable are connected well. Ribbon cables are easily damaged because of un-proper fold. You can try a new cable known to be good. Make sure no connector pins are bent. Verify pin 1 on the interface cable is aligned with pin 1 on the drive and host adapter.

3.   Verify the jumper setting.

Start over the section Configuring your *AEC7720U/UW* (Jumper Setting and power connection) to check if the jumper setting is correct.

4.   SCSI ID conflict.

If you have multiple SCSI devices, please make sure that ID of the SCSI device do not duplicate. To reduce the chance the ID switch malfunction, it is recommended to test it individually.

5.   Poor external cable problems.

This may happen if you daisy chained many SCSI device and some of the external cables are not the high density 50 pins (or 68pins UW-SCSI) cables. The 25pin to 50 pins SCSI cable has weak grounding, so if you daisy chained more SCSI device to MAC through the 25/50 pins SCSI cable and having intermittent failure, it is recommended that you change this cable with another better quality one.

3.2   Advanced Troubleshooting

Let's use an example of installing a IBM DTTA-351010 hard drive into
AEC7720U/UW to show a proper way of software troubleshooting
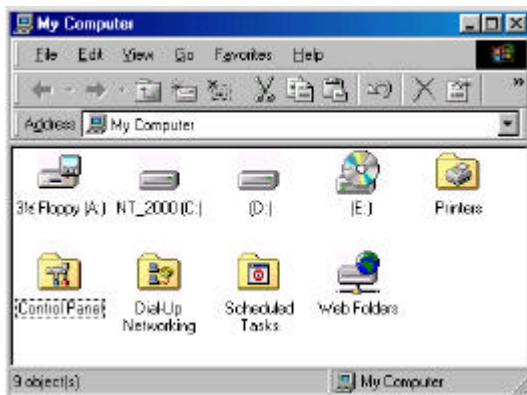(configuration). Assume that we set an SCSI ID number "0" to
AEC7720U/UW.

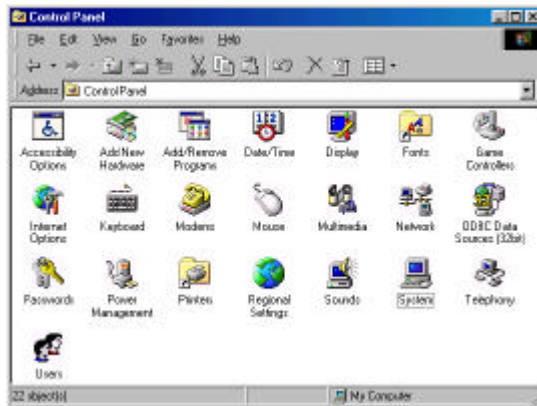## 3.2.1   For Windows 95 System

1.   Verify the SCSI host adapter.

Check the device name shown on the list of devices to see if the
device name of SCSI adapter is exact the one you have installed with
AEC7720U/UW.
The method of entering **"Device Manger"** is shown below.

Step 1. Enter **"My Computer"**.

Step 2. Double click on **"Control Panel"**.

Step 3. Double click on **"System"** Enter **"Device Manager"**. Click once on **"SCSI controllers"** to check whether you installed your ACARD AEC6712U/TU/UWS adapter properly.
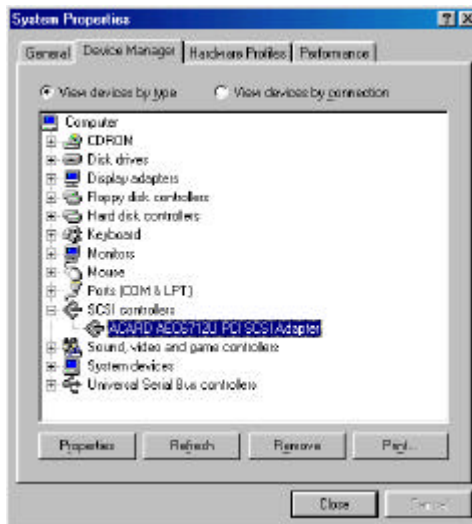
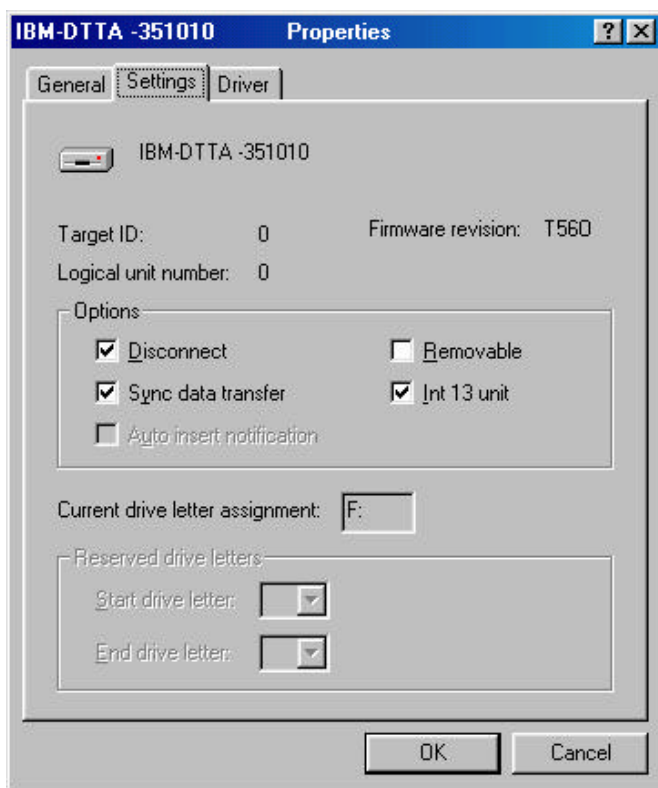### 2. Verify your IDE device.

If you can find your IDE device name which you install with *AEC7720U/UW* on **"Device Manger"**, then you have installed your *AEC7720U/UW* successfully. If you can't find your device name but find a yellow question mark "?" on head of device named SCSI-IDE Bridge-No Device, check the internal IDE connector of *AEC7720U/UW*. It could be caused by unsuitable connection or malfunction IDE device. Follow the instruction below to see how to check your IDE device.

Step 1. Click on **"Disk drives"** to show your hard disk drives and floppy disk drives.
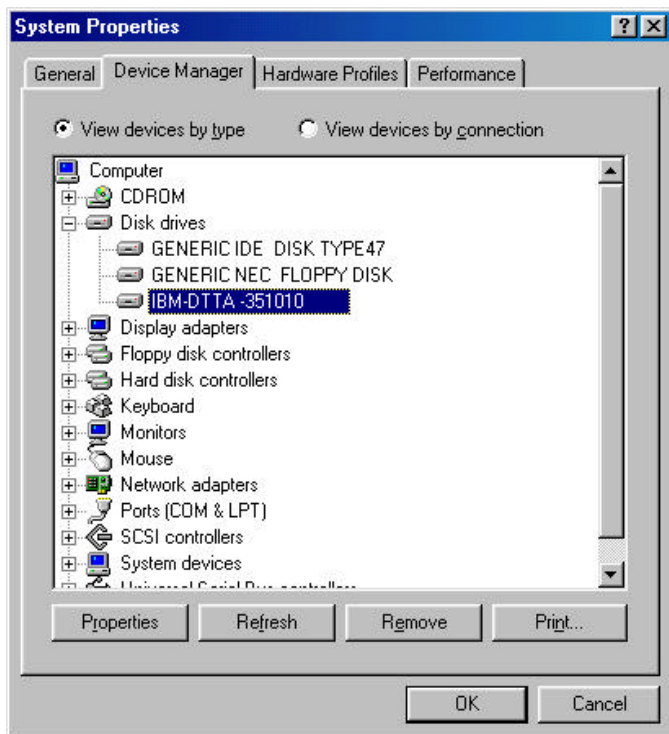
Step 2. Click on **"Properties"**. Then, choose **"Setting "** see if the **"Target ID"** is right number and the **"INT 13 UNIT"** is enable.
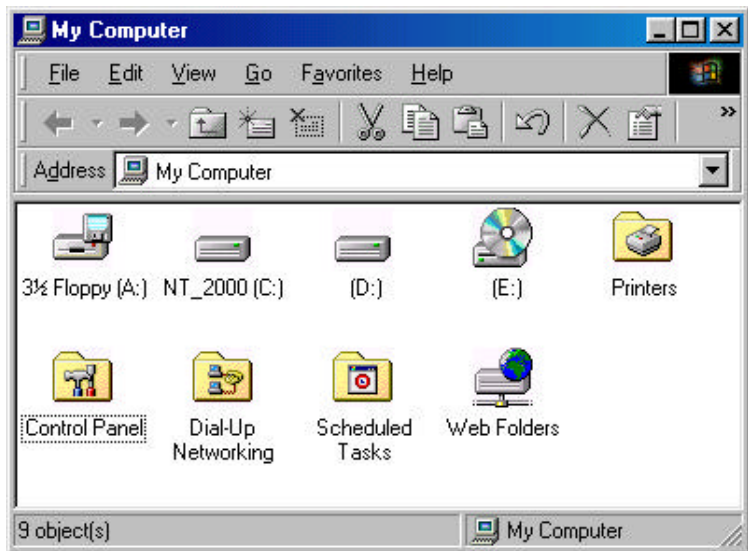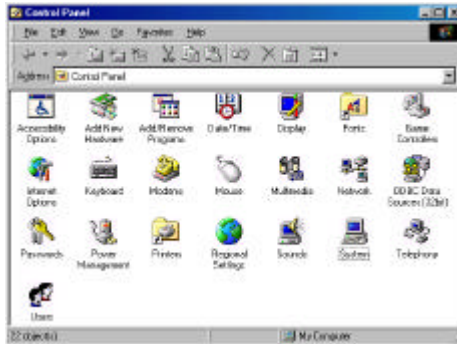
3.2.2. For Windows 98 System

1. Verify the SCSI host adapter.

Check the device name shown on the list of devices to see if the device name of SCSI adapter is exact the one you have installed with AEC7720U/UW. The method of entering **"Device Manger"** is shown below.
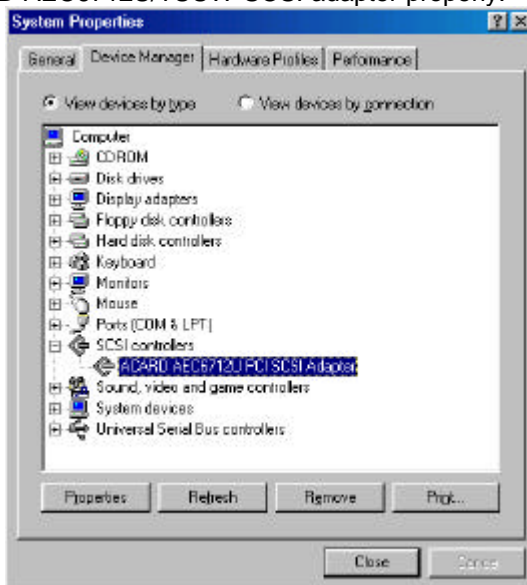
Step 1. Open **"My Computer"** window.

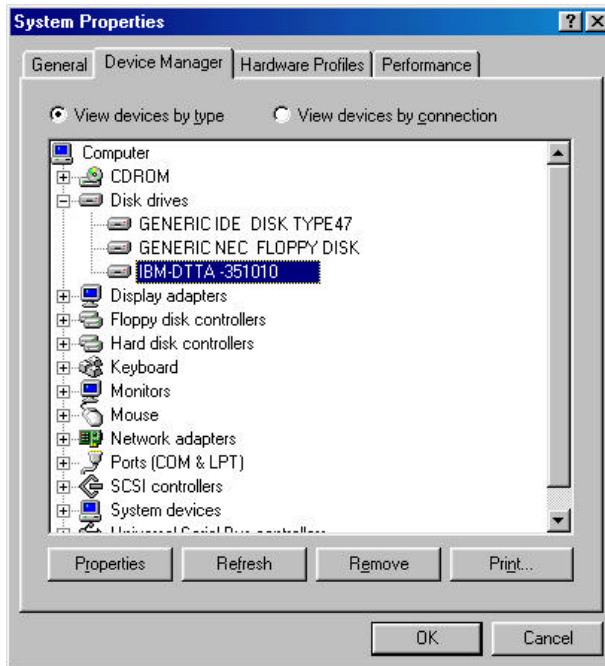Step 2. Double click on **"Control Panel"**.

Step 3. Double click on **"System".** Enter **"Device Manger"**. Click once on **"SCSI controllers"** to check whether you installed your ACARD AEC6712U/TUUW SCSI adapter properly.

2. Verify your IDE device.

If you can find your IDE device name which you installed with *AEC7720U/UW* on **"Device Manger"**, then you have installed your *AEC7720U/UW* successfully. If you can't find your device name but find a yellow question mark on head of device named SCSI-IDE Bridge-No Device, check the internal IDE connector of *AEC7720U/UW*. It could be caused by unsuitable connection or malfunction IDE device. Follow the instruction below to see how to check your IDE device.

Step 1. Click on **"Disk drives"** to show your hard disk drives and floppy disk drives.

Step 2. Click on **"Properties"**, Then, choose **"General"** to check
the **"Device Status"** to see if the device is working properly.

Step 3 Double click on "**System**" Enter "**Device Manager**".Click once
on "**SCSI controllers**" to check whether you have intalled your

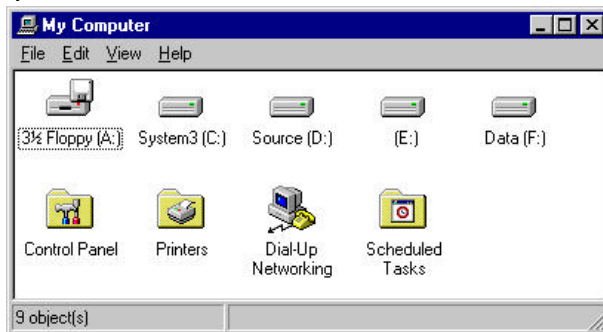ACARD AEC6712U/TU/UW adapter properly.

3.2.3. For Windows NT System

1.   Verify the SCSI host adapter.

Check the device name shown on the list of devices to see if the device name of SCSI adapter is exact the one you have installed with *AEC7720U/UW*. The method is shown below.
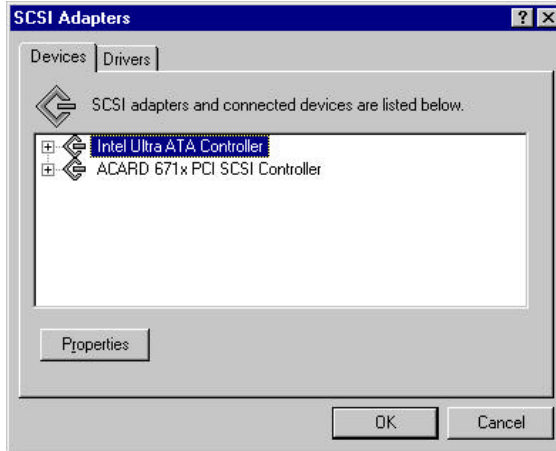
Step 1. Double click on **"My computer"**. Then enter the **"Control Panel"**.

Step 2. Double Click on **"SCSI Adapter"**.

Step 3. Enter **"Devices"** to check if the SCSI Controller is correct.

2. Verify your IDE device.

Click on "ACARD 671x PCI SCSI Controller" to check the device you connect to *AEC7720U/UW.* If you can find your IDE device model name which you install with *AEC7720U/UW* on **"Device Manger"**, then you have installed your *AEC7720U/UW* successfully. If you cannot find your device name but find a yellow question mark "?" on head of device named SCSI-IDE Bridge-No Device, check the internal IDE connector of *AEC7720U/UW*. It could be caused by unsuitable connection or malfunction IDE device.
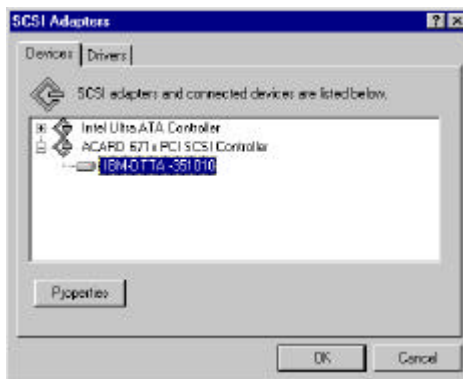
Appendix 1
Technical Support Form

Email: **support@mail.acard.com**

http://www.acard.com

Model :	AEC7720U/UW		F/W version:	
System Configuration				
Main Board vender				
BIOS version				
SCSI adapter				
Chipset				
Memory				
Display card				
Other I/O card				
OS version				
Hard Disk Configuration				
Hard Disk Model / type				
Capacity				
Firmware version				
IDE Device Connect				
CD-ROM model				
CD-R model				
MO or Removable HDD				
Others				
Problem Description				