

IP350

3U CompactPCI
ETX Base Board

USER'S MANUAL

Version 1.0

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Introduction

Product Description

The IP350 3U CompactPCI ETX baseboard is designed for ETX CPU modules as an interface platform. It packs all the PC connectors for the ETX CPU module to be a high-performance functional embedded board.

The IP350 includes the following features:

- Dual 10/100Mbps LAN or dual Gigabit LAN on board
- TI Ti2150 PCI to PCI Bridge
- LSI 53C1000 SCSI Controller (160MB/s)
- Dual Gigabit or 10/100Mbps RJ45 Connectors
- One 10/100Mbps RJ45 Connector
- Dual IDE channels
- PS/2 type Keyboard and Mouse Connectors
- DB15 VGA Connector
- LVDS Panel Signal (rear side)
- CF Card Socket for Type I Cards
- COM1 and COM2 Connectors
- 6 PCB Layers
- 160mm x 100mm Board Size

The board has three RJ45 connectors on board. One of them supports the Ethernet function featured on the ETX module that is used. Another two connectors support either two 10/100Mbps LAN or two Gigabit LAN on the baseboard.

The IP350 comes with an extension interface card that sits on top of the first layer connectors. The card is IP350R which has connectors for printer port, 3rd and 4th USB connectors, COM1 D-sub connector and COM2 serial port pin header.

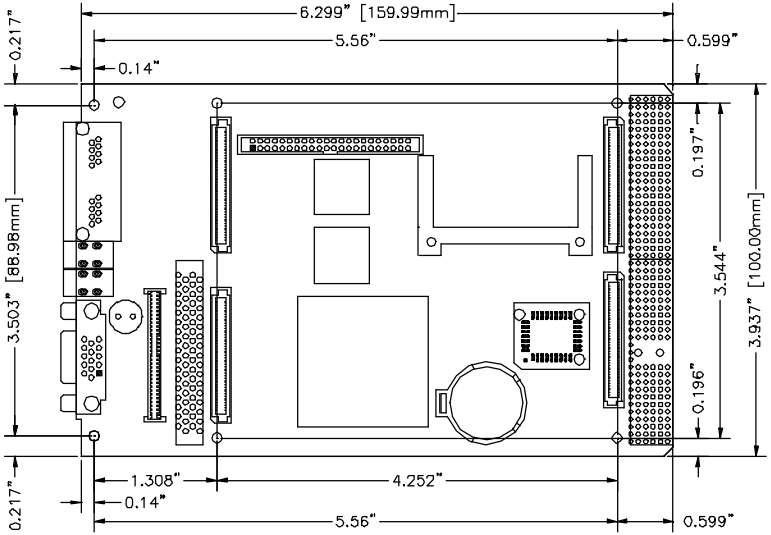
The Compact Flash connector on board is for CompactFlash Type I memory cards. A Compact Flash memory card is a solid state disk card with a 50pin connector. The pins provide a connection between the memory and the Compact Flash drive. Compact Flash cards are designed with flash technology, a non-volatile storage solution that does not lose its information once power is removed from the card. The cards contain no moving parts and are extremely rugged, providing much greater protection of data than conventional magnetic disk drives.

Checklist

Your IP350 package should include the items listed below. Damaged or missing items should be reported to your supplier.

- The IP350 3U CompactPCI Baseboard
- The IP350R Daughter Board
- One CD disk containing the necessary drivers
- Standard /optional cables such as:
 - 1 44-pin IDE Ribbon Cable
 - 1 COM Port Cable (optional)
 - 1 Printer Port Cable (optional)
 - 1 PS/2 Keyboard/Mouse Cable
 - 1 26-pin FDD Flat Cable

Board Dimensions



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Installations

This section provides information on how to use the jumpers and connectors on the IP350 in order to set up a workable system. The topics covered are:

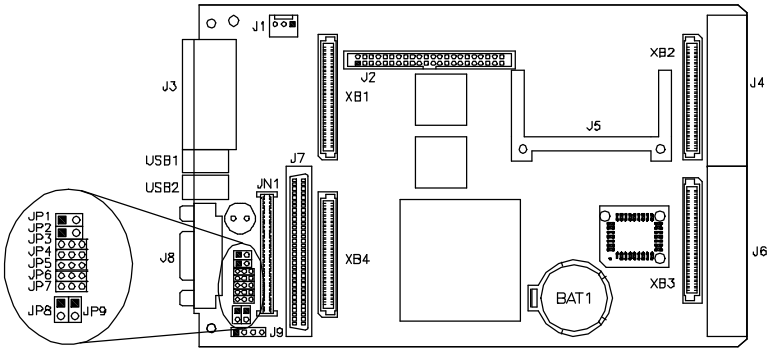
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Setting the Jumpers

Jumpers are used on the IP350 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IP350 and their respective functions.

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| JP3: SCSI Terminator Enable/Disable..... | 8 |
| JP4: ETX Module Selection..... | 8 |
| JP5: PCI to PCI Bridge Enable/Disable | 9 |
| JP6: Secondary LAN Enable / Disable | 9 |
| JP7: Primary LAN Enable / Disable | 9 |
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Jumper Locations on IP350





Jumpers on IP350

- JP1: CF Socket Master/Slave Select
- JP2: Reserved
- JP3: SCSI Terminator Enable/Disable
- JP4: ETX Module Selection
- JP5: PCI to PCI Bridge Enable/Disable
- JP6: Secondary LAN Enable / Disable
- JP7: Primary LAN Enable / Disable
- JP8: Reserved
- JP9: System Power Good Enable/Disable

NOTE:



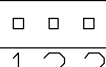
Before installing the ETX CPU module, make sure of the pin orientation of both the ETX interface connectors and the ETX module connector before plugging the module. Once the module is slightly plugged in, use an even force to fully plug in the module.

JP1: CF Socket Master/Slave Select



| JP1 | Setting | Function |
|---|--------------|----------|
|  | Short/Closed | Master |
|  | Open | Slave |

JP2: Reserved



JP3: SCSI Terminator Enable/Disable

| JP3 | Setting | SCSI Terminator |
|---|-------------------------|-----------------|
|  | Pin 1-2 Short/Closed | Enabled |
|  | Pin 2-3 Short/Closed | Auto |
|  | Pins Open | Disabled |



JP4: ETX Module Selection

| JP4 | Setting | ETX Module User |
|---|-------------------------|---------------------------------|
|  | Pin 1-2 Short/Closed | Other ETX Modules (Default) |
|  | Pin 2-3 Short/Closed | ET815 |



JP5: PCI to PCI Bridge Enable/Disable

| JP5 | Setting | PCI to PCI Bridg |
|--|-------------------------|-------------------|
|  1 2 3 | Pin 1-2 Short/Closed | Disable |
|  1 2 3 | Pin 2-3 Short/Closed | Enabled (Default) |

JP6: Secondary LAN Enable / Disable



| JP6 | Setting | Secondary LAN |
|--|-------------------------|---------------|
|  1 2 3 | Pin 1-2 Short/Closed | Enabled |
|  1 2 3 | Pin 2-3 Short/Closed | Disabled |

JP7: Primary LAN Enable / Disable

| JP7 | Setting | Primary LAN |
|---|-------------------------|-------------|
|  1 2 3 | Pin 1-2 Short/Closed | Enabled |
|  1 2 3 | Pin 2-3 Short/Closed | Disabled |

JP8: Reserved

JP9: System Power Good Enable/Disable

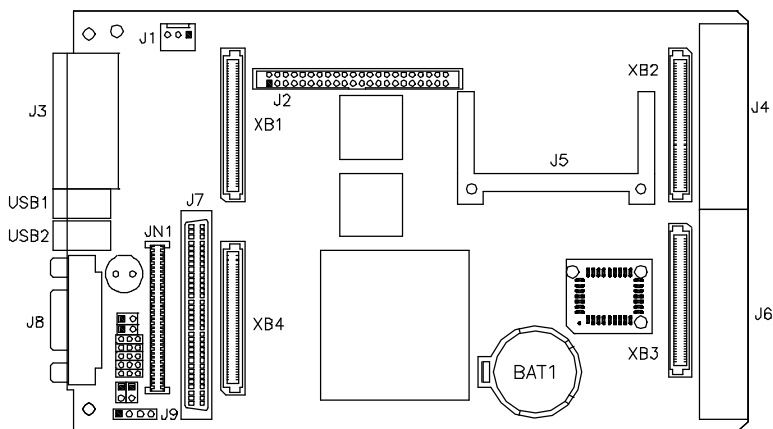
| JP9 | Setting | Function |
|--|--------------|-------------------|
|  1 2 | Short/Closed | Enabled (Default) |
|  1 2 | Open | Disabled |

Connectors on IP350

The connectors on IP350 allows you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors on IP350 and their respective functions.

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Connector Locations on IP350 / IP350R

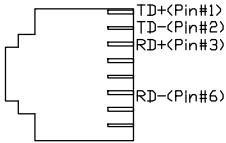


Connectors on IP350

- J1: 10/100M RJ45 Connector (on IP350R)
- J2: Keyboard/Mouse Connector (on IP350R)
- J3: TV Out Connector (on IP350R)
- J4: Printer Port Pin Header (on IP350R)
- J5: USB2/USB3 Pin Header (on IP350R)
- J6, J7: COM1 / COM2 Serial Ports (on IP350R)
- J1: System Fan Power Connector
- J2: IDE Connector
- J3: Dual LAN Connectors
- J5: Compact Flash (CF) Socket
- J7: SCSI Connector (Optional)
- J8: VGA CRT Connector
- USB1, USB2: 1st and 2nd USB Connectors
- J1, J2: CompactPCI Slot Connector

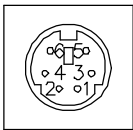
J1: 10/100M RJ45 Connector (on IP350R)

J1 is the RJ45 connector beside the keyboard/mouse PS/2 connector on the IP350R interface daughter board. See below for the respective pin assignments.



J2: Keyboard/Mouse Connector (on IP350R)

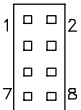
J2 is used with a Y-cable with dual D-connectors to support a PS/2 keyboard and a PS/2 mouse.



J2

| Pin # | Signal Name |
|-------|----------------|
| 1 | Keyboard data |
| 2 | Mouse data |
| 3 | Ground |
| 4 | Vcc |
| 5 | Keyboard Clock |
| 6 | Mouse Clock |

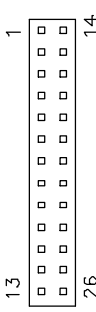
J3: Optional TV Out Connector (on IP350R)



| Signal Name | Pin # | Pin # | Signal Name |
|-------------|-------|-------|-------------|
| Comp | 1 | 2 | Ground |
| S-Y | 3 | 4 | S-C |
| NC | 5 | 6 | NC |
| Comp | 7 | 8 | NC |

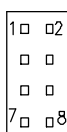
NOTE: This connector usable only depending on the system board if the TV out function is supported or not.

J4: Printer Port Pin Header (on IP350R)



| Signal Name | Pin # | Pin # | Signal Name |
|----------------------|-------|-------|-------------|
| Line printer strobe | 1 | 2 | AutoFeed |
| PD0, parallel data 0 | 3 | 4 | Error |
| PD1, parallel data 1 | 5 | 6 | Initialize |
| PD2, parallel data 2 | 7 | 8 | Select |
| PD3, parallel data 3 | 9 | 10 | Ground |
| PD4, parallel data 4 | 11 | 12 | Ground |
| PD5, parallel data 5 | 13 | 14 | Ground |
| PD6, parallel data 6 | 15 | 16 | Ground |
| PD7, parallel data 7 | 17 | 18 | Ground |
| ACK, acknowledge | 19 | 20 | Ground |
| Busy | 21 | 22 | Ground |
| Paper empty | 23 | 24 | Ground |
| Select | 25 | 26 | N/A |

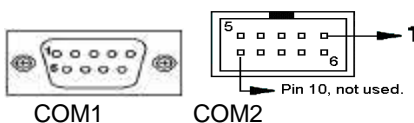
J5: USB2/USB3 Pin Header (on IP350R)



| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| Vcc | 1 | 2 | Ground |
| USB2- | 3 | 4 | USB3- |
| USB2+ | 5 | 6 | USB3+ |
| Ground | 7 | 8 | Vcc |

J6, J7: COM1 / COM2 Serial Ports (on IP350R)

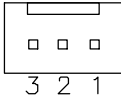
J6 (COM1) is a DB-9 connector, while J7 (COM2) is a pin header connector. Refer to the table below for their pin assignments.



| Signal Name | Pin # | Pin # | Signal Name |
|--------------------------|-------|-------|----------------------|
| DCD, Data carrier detect | 1 | 6 | DSR, Data set ready |
| RXD, Receive data | 2 | 7 | RTS, Request to send |
| TXD, Transmit data | 3 | 8 | CTS, Clear to send |
| DTR, Data terminal ready | 4 | 9 | RI, Ring indicator |
| GND, ground | 5 | 10 | Not Used |

J1: System Fan Power Connector

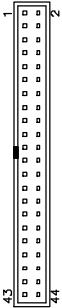
J1 is a 3-pin header for the system fan. The fan must be a 12V fan.



| Pin # | Signal Name |
|-------|--------------------|
| 1 | Ground |
| 2 | +12V |
| 3 | Rotation detection |

J2: IDE Connector

J2 is the 44-pin IDE connector that can connect to your IDE devices.



| Signal Name | Pin # | Pin # | Signal Name |
|---------------|-------|-------|---------------|
| Reset IDE | 1 | 2 | Ground |
| Host data 7 | 3 | 4 | Host data 8 |
| Host data 6 | 5 | 6 | Host data 9 |
| Host data 5 | 7 | 8 | Host data 10 |
| Host data 4 | 9 | 10 | Host data 11 |
| Host data 3 | 11 | 12 | Host data 12 |
| Host data 2 | 13 | 14 | Host data 13 |
| Host data 1 | 15 | 16 | Host data 14 |
| Host data 0 | 17 | 18 | Host data 15 |
| Ground | 19 | 20 | Key |
| DRQ0 | 21 | 22 | Ground |
| Host IOW | 23 | 24 | Ground |
| Host IOR | 25 | 26 | Ground |
| IOCHRDY | 27 | 28 | Host ALE |
| DACK0 | 29 | 30 | Ground |
| IRQ14 | 31 | 32 | No connect |
| Address 1 | 33 | 34 | No connect |
| Address 0 | 35 | 36 | Address 2 |
| Chip select 0 | 37 | 38 | Chip select 1 |
| Activity | 39 | 40 | Ground |
| Vcc | 41 | 42 | Vcc |
| Ground | 43 | 44 | N.C. |

J3: Dual LAN Connectors

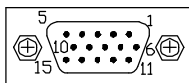
The two LAN connectors, supporting either two 10/100 Mbps LAN or two Gigabit LAN controller, are on board the IP350 baseboard side by side to each other.

J5: Compact Flash (CF) Socket

J7: SCSI Connector (Optional)

J8: VGA CRT Connector

The pin assignments of the J8 VGA CRT connector are as follows:



J8

| Signal Name | Pin | Pin | Signal Name |
|-------------|-----|-----|-------------|
| Red | 1 | 2 | Green |
| Blue | 3 | 4 | N.C. |
| GND | 5 | 6 | GND |
| GND | 7 | 8 | GND |
| N.C. | 9 | 10 | GND |
| N.C. | 11 | 12 | N.C. |
| HSYNC | 13 | 14 | VSYNC |
| NC | 15 | | |

USB1, USB2: 1st and 2nd USB Connectors

The USB1 and USB2 USB connectors are on the IP350 base board and situated between the Gigabit LAN connectors and the VGA CRT connector. USB 1.1 data transfer rate is supported.

J1, J2: CompactPCI Slot Connector

J1 CompactPCI Connector

| | |
|------|---------------------|
| Type | 2mm (IEC1076-4-101) |
| | 110 |
| | J1 |

J1 Pin Assignment

| Pin # | A | B | C | D | E | (F) |
|-------|----------|---------|--------|--------|----------|-----|
| 25 | 5V | REQ64# | ENUM# | 3.3V | 5V | GND |
| 24 | AD[1] | 5V | V(I/O) | AD[0] | ACK64# | GND |
| 23 | 3.3V | AD[4] | AD[3] | 5V | AD[2] | GND |
| 22 | AD[7] | GND | 3.3V | AD[6] | AD[5] | GND |
| 21 | 3.3V | AD[9] | AD[8] | M66EN | C/BE[0]# | GND |
| 20 | AD[12] | GND | V(I/O) | AD[11] | AD[10] | GND |
| 19 | 3.3V | AD[15] | AD[14] | GND | AD[13] | GND |
| 18 | SERR# | GND | 3.3V | PAR | C/BE[1]# | GND |
| 17 | 3.3V | SDONE | SBO# | GND | PERR# | GND |
| 16 | DEVSEL# | GND | V(I/O) | STOP# | LOCK# | GND |
| 15 | 3.3V | FRAME# | IRDY# | GND | TRDY# | GND |
| 12-14 | KEY AREA | | | | | |
| 11 | AD[18] | AD[17] | AD[16] | GND | C/BE[2]# | GND |
| 10 | AD[21] | GND | 3.3V | AD[20] | AD[19] | GND |
| 9 | C/BE[3]# | IDSEL | AD[23] | GND | AD[22] | GND |
| 8 | AD[26] | GND | V(I/O) | AD[25] | AD[24] | GND |
| 7 | AD[30] | AD[29] | AD[28] | GND | AD[27] | GND |
| 6 | REQ# | GND | 3.3V | CLK | AD[31] | GND |
| 5 | BRSVP1A5 | BSVP1B5 | RST# | GND | GNT# | GND |
| 4 | BRSVP1A4 | GND | V(I/O) | INTP | INTS | GND |
| 3 | INTA# | INTB# | INTC# | 5V | INTD# | GND |
| 2 | TCK | 5V | TMS | TDO | TDI | GND |
| 1 | 5V | -12V | TRST# | +12V | 5V | GND |

J2 CompactPCI Connector

| | |
|------|---------------------|
| Type | 2mm (IEC1076-4-101) |
| | 110 |
| | J2 |

J2 Pin Assignment

| Pin # | A | B | C | D | E | (F) |
|-------|-----------|----------|----------|---------|----------|-----|
| 22 | GA4 | IDE-D7 | IDE-D15 | FPVDDEN | GA0 | GND |
| 21 | CLK6 | GND | IDE-D14 | FPEN | RSV | GND |
| 20 | CLK5 | GND | IDE-D13 | GND | IDE-RST | GND |
| 19 | GND | GND | IDE-D12 | YTX2- | IDE-ACTP | GND |
| 18 | YTXC- | IDE-D6 | IDE-D11 | GND | IDE-DIAG | GND |
| 17 | YTXC+ | GND | IDE-D10 | REQ6# | GNT6# | GND |
| 16 | BRSVP2A16 | IDE-D5 | IDE-D9 | GND | IDE-A2 | GND |
| 15 | BRSVP2A15 | GND | IDE-D8 | REQ5# | GNT5# | GND |
| 14 | Reserved | IDE-D4 | K/B-CLK | GND | IDE-A1 | GND |
| 13 | Reserved | GND | V(I/O) | YTX2+ | IDE-A0 | GND |
| 12 | RI1- | IDE-D3 | K/B-DAT | GND | IDE-CS3 | GND |
| 11 | TXD1 | GND | V(I/O) | YTX1- | P66D | GND |
| 10 | CTS1- | IDE-D2 | M/S-CLK | GND | IDE-CS1 | GND |
| 9 | DSR1- | GND | V(I/O) | YTX1+ | IRQ14 | GND |
| 8 | DCD1- | IDE-D1 | M/S-DAT | GND | IDE-DACK | GND |
| 7 | DTR1- | GND | V(I/O) | YTX0+ | IDE-RDY | GND |
| 6 | RTS1- | IDE-D0 | Reserved | GND | IDE-IOR | GND |
| 5 | RXD1 | GND | V(I/O) | YTX0- | IDE-IOW | GND |
| 4 | V(I/O) | BRSVP2B4 | Reserved | GND | IDE-DRQ | GND |
| 3 | CLK4 | GND | GNT3# | REQ4# | GNT4# | GND |
| 2 | CLK2 | CLK3 | SYSEN# | GNT2# | REQ3# | GND |
| 1 | CLK1 | GND | REQ1# | GNT1# | REQ2# | GND |

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Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98, Windows NT 4.0 and Windows 2000. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

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| SCSI Driver Installation for Windows 2000..... | 22 |
| SCSI Driver Installation for Windows NT | 23 |

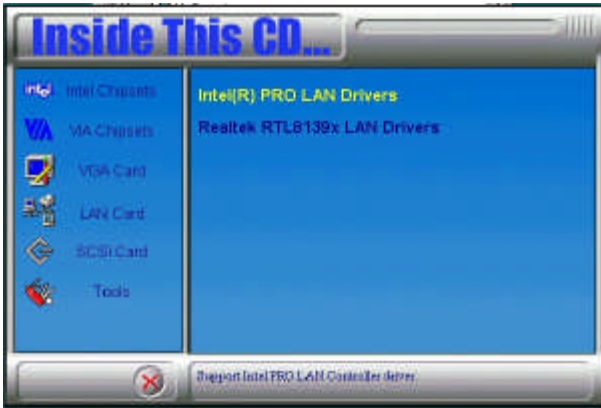
IMPORTANT NOTE:

After installing your Windows operating system (Windows 98/98SE/ME/2000/XP), you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

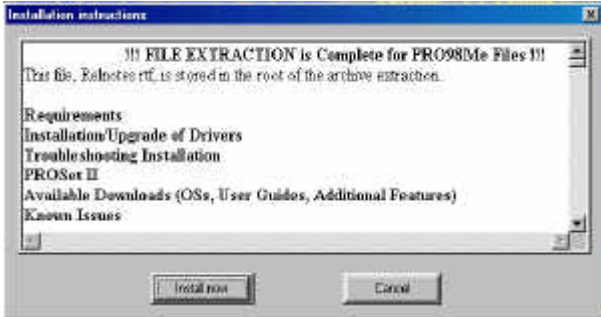
Intel PRO LAN Drivers Installation

The Intel PRO LAN drivers support both Intel® PRO/100 and PRO/1000 drivers. Follow the steps below to complete the installation.

1. Insert the CD that comes with the motherboard and the screen below would appear. Click on LAN Card on the left side to make the LAN drivers selection. Click on Intel(R) PRO LAN Drivers.



2. Click Install Now.



3. Click Restart now to restart the computer and new settings to take effect.



SCSI Drivers Installation

Execute the steps below if your system supports the SCSI function.

Installing SCSI Driver for Windows 95/98

A: New Windows 95/98 installation:

1. Run SETUP.EXE from the Windows 95/98 CD-ROM and follow the directions on the screen.
2. After a Windows 95/98 session is established, select My Computer/Control Panel/System/Device Manager/Other devices/PCI SCSI Bus Controller from the Windows 95/98 desktop.
3. Click the Driver tab, then click the Change Driver tab.
4. Double click SCSI controllers, then click the Have Disk button.
5. Insert the CD disc that has been bundled with your IBD100 card. The location of the SCSI drivers is in the following directory of the CD you received : \SCSI\LSI1000R\WIN9X.
6. Use this as the location of the drivers and follow the instructions on the screen to finish the drivers installation.

SCSI Driver Installation for Windows 2000

Before starting with the installation of the SCSI drivers, you need to copy the necessary files from the CD disc bundled with the card into a floppy diskette. The location of the necessary files in the CD is \SCSI\LSI1000R\WIN2000. Copy all the files in this directory into a floppy diskette.

When you install the Windows 2000 operating system, insert the diskette containing the necessary files.

To install Windows 2000 from your CDROM drive, make sure that your start up boot drive as set in the BIOS is the CDROM drive. Insert the Windows 2000 CD disc into the CDROM drive and start the system.

When the blue setup screen appears, press F6 to install the SCSI drivers. Setup will start to load files.

After loading files is finished, press Enter. The screen will prompt you to insert the diskette containing the drivers to Drive A.

Make sure that the diskette containing the driver files is in Drive A and press Enter.

When the system has found the drivers, press Enter to continue. Setup will show a screen saying that it will load support for the massive storage device found. Press Enter to continue. Setup will now load files and continue with the operating system setup.

SCSI Driver Installation for Windows NT

Before starting with the installation of the SCSI drivers, you need to copy the necessary files from the CD disc bundled with the card into a floppy diskette. The location of the necessary files in the CD is \SCSI\LSI1000R\WINNT. Copy all the files in this directory into a floppy diskette.

When you install the Windows NT operating system, insert the diskette containing the necessary files.

To install Windows NT from your CDROM drive, make sure that your start up boot drive as set in the BIOS is the CDROM drive. Insert the Windows NT CD disc into the CDROM drive and start the system.

When the blue setup screen appears, press F6 to install the SCSI drivers. Setup will start to load files.

After loading files is finished, press Enter S. The screen will prompt you to insert the diskette containing the drivers to Drive A.

Make sure that the diskette containing the driver files is in Drive A and press Enter.

When the system has found the drivers, press Enter to continue. Setup will show a screen saying that it will load support for the massive storage device found. Press Enter to continue. Setup will now load files and continue with the operating system setup.

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