CAT5 ClassWork Plus
Instructor and Student Unit Kits
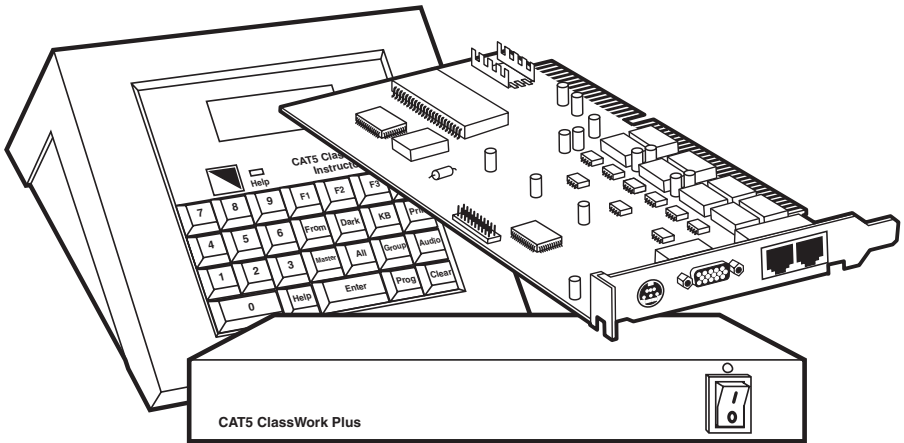
CAT5 ClassWork Plus

FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from d igital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

   A: El cable de poder o el contacto ha sido dañado; u

   B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

   C: El aparato ha sido expuesto a la lluvia; o

   D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

   E: El aparato ha sido tirado o su cubierta ha sido dañada.

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Contents

Chapter	Page

1. Specifications

Maximum Number of Student PCs: 63 with Multiloop; 31 without Multiloop

Resolution: 1280 x 1024, 75 MHz

Connectors: Instructor Interface Unit, Student Interface Card, Standalone PC Student Unit: (2) RJ-45 system ports, (1) HD15 female screen in/out, (1) 8-pin mini-DIN female for keyboard and mouse; Instructor Interface Unit also has (1) 5-pin DIN female for control and (1) 4-pin DIN female for power; Instructor Control Unit has (1) 5-pin DIN female; Multiloop: (10) RJ-45

Transmission Distance: With Multiloop: Total cable length should not exceed 980 ft. (299 m); Without Multiloop: Total cable length should not exceed 360 ft. (110 m)

System Requirements:

CPU with PS/2 style keyboard and mouse connectors;

Video: SVGA, VGA, or XGA;

Temperature: 32 to 158°F (0 to 70°C);

Humidity: Up to 85% non-condensing

System Cable Specification: RJ-45 male/RJ-45 male connector, Ethernet 100BASE-T4 CAT5 UTP/STP cable (we recommend Black Box cable part number EVMSL05)

Power: Instructor Interface Unit, Standalone PC Student Unit, Multiloop:
     Input: 120 VAC, 60 Hz, 20 watts;
     Output: 9 VAC, 1400 mA (230-VAC version is available, part number
          AC840AE-R2);
Instructor Control Unit: From the Instructor Interface Unit;
Student Interface Card: From the PCI bus;

Size: Instructor Control Unit: 3.6"H x 8.6"W x 9"D (9.1 x 21.8 x 22.9 cm);
Instructor Interface Unit: 2"H x 8.9"W x 9"D (5.1 x 22.6 x 22.9 cm);
Student Interface Card: Half card
Standalone PC Student Unit: 1.2"H x 8.9"W x 9.2"D (3.1 x 22.6 x 23.4 cm)
Multiloop: 1.2"H x 8.7"W x 5.6"D (3.1 x 22.1 x 14.2 cm)

Weight: Instructor Control Unit: 2.8 lb. (1.3 kg); Instructor Interface Unit: 2 lb. (0.9 kg); Student Interface Card: 0.3 lb. (0.14 kg)

2. Introduction

The CAT5 ClassWork Plus system gives the instructor control over every student's monitor, mouse, and keyboard in the classroom.

The CAT5 ClassWork Plus comes in two versions: an internal PCI card version and an external box version.

This guide describes the installation of both versions.

NOTE

The two CAT5 ClassWork Plus versions are fully compatible with each other.

CAT5 ClassWork Plus supports:

- IBM® compatible computers with PS/2® style keyboard and mouse connectors.

- VGA, SVGA, or XGA video standards.

- Up to 31 Student PCs in a loop without Multiloop; Up to 63 Student PCs with Multiloop.

- A transmission range of 360 ft. (110 m) without Multiloop; Up to 980 ft. (299 m) with Multiloop.

3. Overview

The basic computer equipment for the Instructor and each Student is a CPU, a keyboard, a monitor, and a mouse.

The specialized CAT5 ClassWork Plus equipment for the Instructor Unit Kit (AC840A-R2 or AC840AE-R2) includes:

- (1) keypad/LCD control unit and control cable,

- (1) Instructor Interface Unit that links the instructor's computer to the first student's computer in a loop,

- (1) power supply,

- monitor, keyboard, and mouse cables, and

- this users' manual.

The specialized CAT5 ClassWork Plus equipment for the Student Unit Kit (AC841C-R2) or Student Interface Standalone Unit (AC841A) includes:

- (1) Student Interface Card or Student Interface Standalone Unit to link one student's computer to the next student's computer in a loop,

- monitor, keyboard, and mouse cables (all necessary cables are included), and

- this users' manual.

NOTE

The Student Interface Card and the Student Interface Standalone Unit are fully compatible with each other.

The CAT5 ClassWork Plus Starter Kit (AC842A or AC842AE) includes:

- (1) keypad/LCD control unit and control cable,

- (1) Instructor Interface Unit that links the instructor's computer to the first student's computer in a loop,

- (1) power supply,

- monitor, keyboard, and mouse cables for Instructor and Student units,

- (3) Student Interface Cards to link one student's computer to the next student's computer in a loop, and

- this users' manual.

You can also order the Instructor and Student Unit Standalone boxes separately:

- For the CAT5 ClassWork Plus Instructor Unit, order part number AC845A (includes monitor, keyboard, and mouse cables; power cord; power supply; and this users' manual).

- For the CAT5 ClassWork Plus Student Unit, order part number AC846A (includes monitor, keyboard, and mouse cables; power cord; power supply; and this users' manual).

3.1 Multiloop

There are three things to consider when deciding whether to include the Multiloop (part number AC844A or AC844AE; these are covered in a separate manual) in your system.

- The number of CAT5 ClassWork Plus Student Interface Cards or Student Interface Standalone Units you'll be connecting.

- The length of the system cable.

- The screen resolutions and refresh rates.

With Multiloop, you can:

- Connect up to 63 CAT5 ClassWork Plus Student Interface Cards or Standalone Units to the CAT5 ClassWork Plus system.

- Increase the overall system cable distance up to 980 ft. (299 m).

We recommend installing Multiloop when:

- There are more than 15 Student Interface Cards or Standalone Units.

- The overall cable length exceeds 360 ft. (110 m).

This recommendation is dependent upon the screen resolution and refresh rates of the computers. You can still install the CAT5 ClassWork Plus system for more than 15 Student Interface Cards or Standalone Units without the Multiloop and still achieve acceptable screen transfer results. However, if you use high screen resolutions and refresh rates, then consider using Multiloop.

3.2 The Classroom Layout
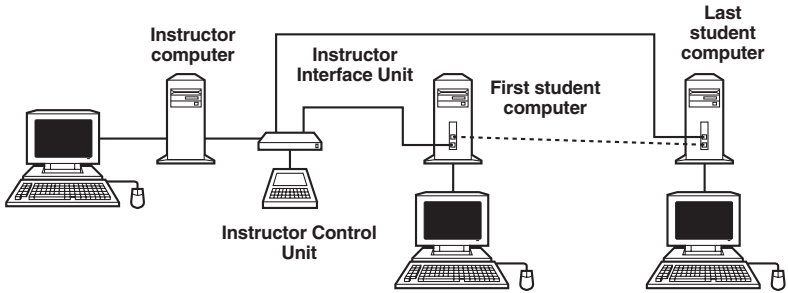
Figure 3-1. CAT5 ClassWork Plus Configuration.

4. CAT5 ClassWork Plus Components

4.1 About the CAT5 ClassWork Plus

Each CAT5 ClassWork Plus system uses:

- An Instructor Control Unit (described in **Chapter 9**).

- An Instructor Interface Unit, which is a closed box that you connect to the Instructor's position (see **Section 4.2**).

- A Student unit, which is a PCI card (you insert it in the Student's computer) or a standalone unit. (See **Sections 4.3** and **4.4.**)

CAT5 ClassWork Plus supports up to 31 student units connected in a loop (without Multiloop).

4.2 The Instructor Interface Unit

Figure 4-1 shows the Instructor Interface Unit.
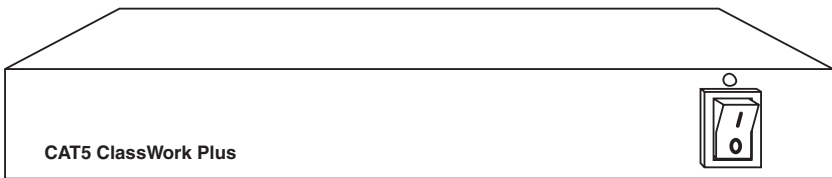
Figure 4-1. The Instructor Interface Unit.

Figure 4-2 shows the Instructor Interface Unit's rear-panel connectors.

Power   Control   KB/M   Screen I/O   Out   In
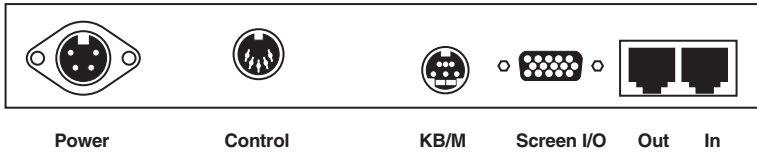
Figure 4-2. Connectors on the Instructor Interface Unit's Rear Panel.

Figure 4-3 shows all the connectors used by the Instructor Interface Unit.

Port	To Connector	To Cable
RJ-45 female	(RJ-45 male)	System In
RJ-45 female	(RJ-45 male)	System Out
HDD15 female	(HDD15 male)	Screen In/Out
8-pin mini-DIN female	(8-pin mini-DIN male)	PS/2 Mouse/Keyboard In/Out
5-pin DIN female	(5-pin DIN male)	Control
4-pin DIN female	(4-pin DIN male)	Power
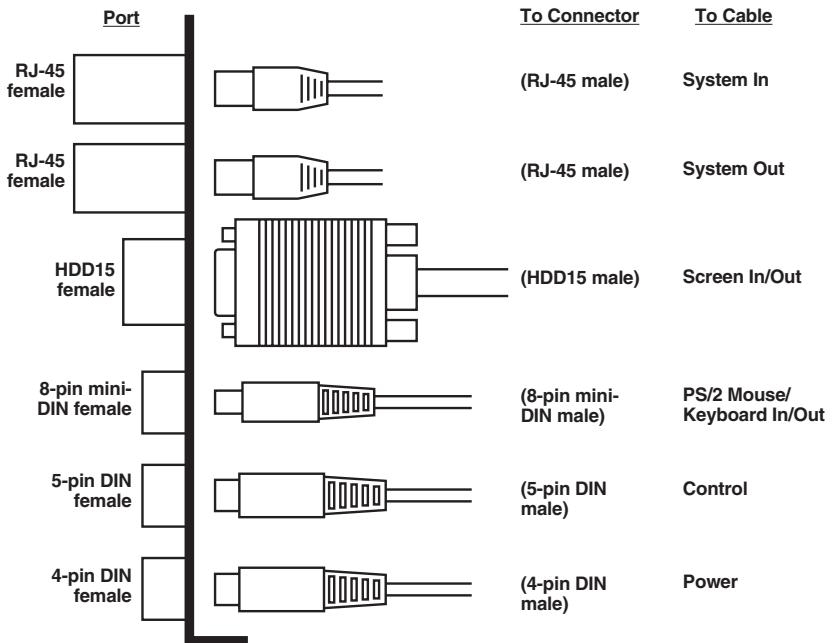
Figure 4-3. The Instructor Interface Unit's Connectors.

4.3 The Student Interface Standalone Unit
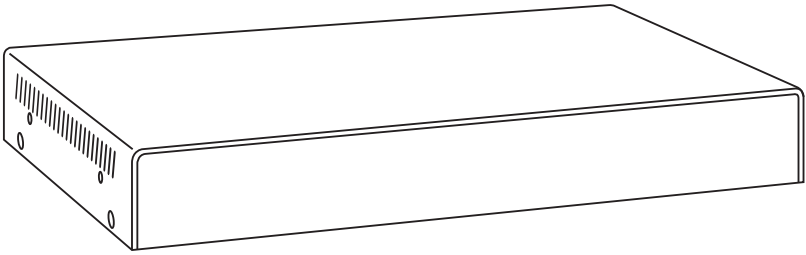
Figure 4-4. The Student Interface Standalone Unit.
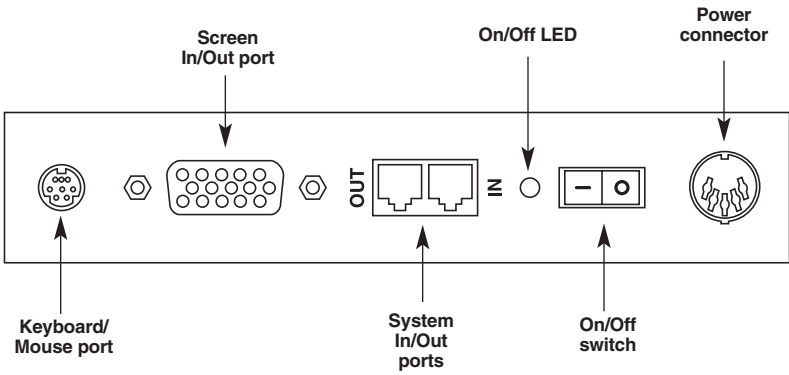
Figure 4-5. The Student Interface Standalone Unit's Connectors.

4.4 The Student Interface Card

Each Student Interface Card is a PCI (Peripheral Component Interconnect) card. Figure 4-6 shows the Student Interface Card.
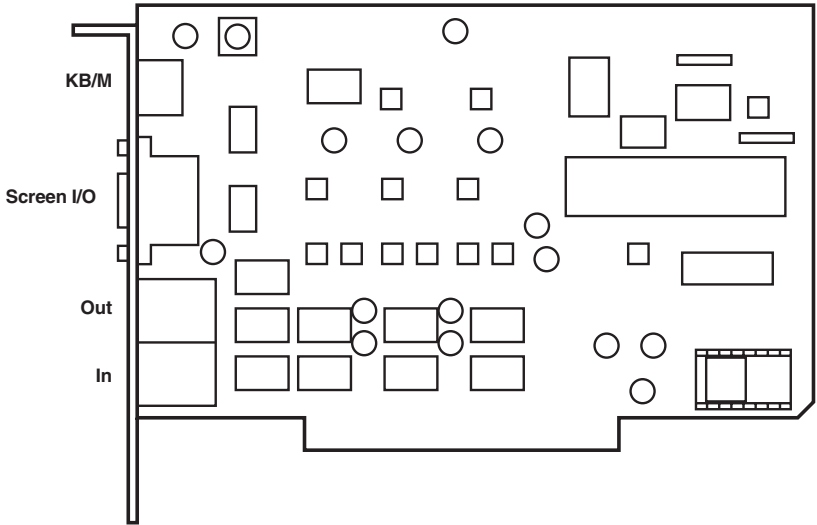
Figure 4-6. The Student Interface Card.

Figure 4-7 shows the Student Interface Card's bracket.
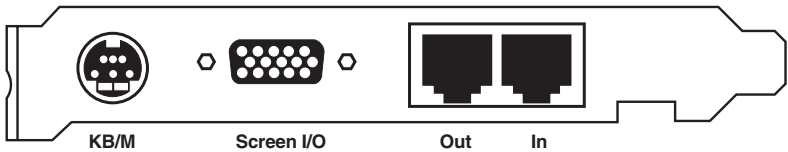
Figure 4-7. The Student Interface Card's Bracket.

Figure 4-8 shows the Student Interface Card's connectors.

Port	To Connector	To Cable
RJ-45 female	(RJ-45 male)	System In
RJ-45 female	(RJ-45 male)	System Out
HDD15 female	(HDD15 male)	Screen In/Out
8-pin mini-DIN female	(8-pin mini-DIN male)	PS/2 Mouse/Keyboard In/Out

Figure 4-8. The Student Interface Card's Connectors.

4.5 The Instructor Control Unit

Figure 4-9. The Instructor Control Unit.

5. Pre-Installation Guidelines

Please note the following:

- A certified electrician should prepare sufficient electrical wall sockets. Each outlet should have the same phase and a common ground.

- Place cables away from fluorescent lights, air conditioners, and machines that generate electrical noise.

- All the computers must be PS/2 type.

- All mice, keyboards, and monitors must be PS/2 type.

- Make sure that the total system cable length does not exceed the transmission distance.

- A raised floor in the classroom can significantly reduce the system cable length.

- Run cables through a conduit in the floor or wall where available.

- Check whether Power Poles are used.

5.1 The System Cable

For the system cable, use the FTP shielded 4 x 2 x 24 AWG CAT5 or CAT5e data cable. We strongly advise against using patch cable because of its higher resistance and capacitance.
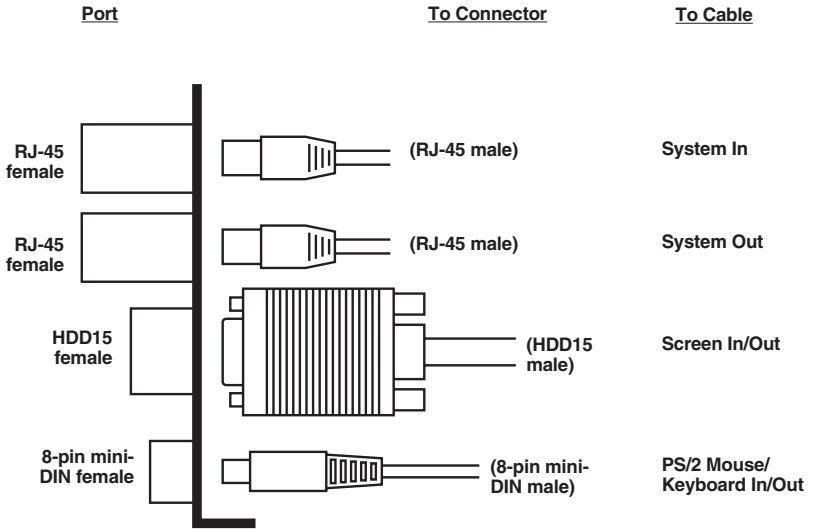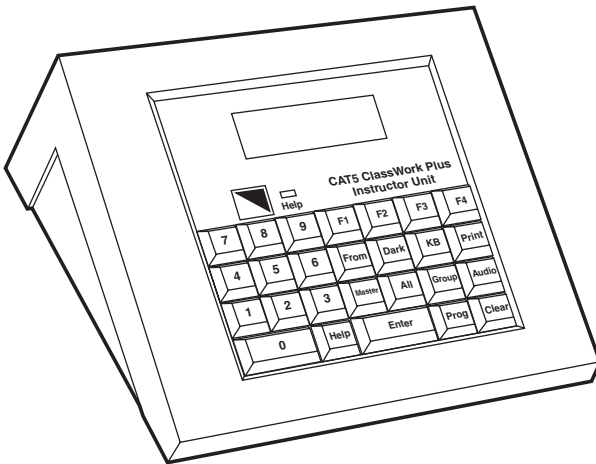
NOTE

Run the system cable as short as possible to ensure better screen transfer quality.

5.2 Ground Loop Problems

Before installing the CAT5 ClassWork Plus, check for ground loop problems. These are caused by having equipment connected to different ground points via interconnected cables. If the difference in ground potentials (voltage) is great enough, it can create a current sufficient to cause the problem. It can also weaken electronic components and be a safety hazard.

5.3 Ground Loop Solutions

- Have a qualified professional measure the AC and DC voltages between the ground points. Ground potential differences greater than 2 volts will affect the ClassWork Plus system.

WARNING

Risk of electric shock! Electrical measurements and modifications should only be attempted by qualified personnel.

- The most important element in reducing ground loops is good wiring throughout the building. Faulty wiring can be lethal, as well as hazardous to equipment. Use full-size ground conductors to reduce the ground impedance. Use ground grids to equalize the ground potential. Refer to the National Electrical Code® (NEC®). The online version can be found at *http://www.necdirect.org.*

- The simplest method of controlling ground loops is to connect all equipment to the same building ground point. This is not always possible because of the physical placement of system components and the distances between them.

- Cable routing is also important. Keep cable runs as short as possible. This will keep cable resistance to a minimum. The less cable, the less ground loop voltage created.

NOTE

Cables and equipment placed in close proximity to light dimmers, motorized electronics, and electronics generating RF emissions can create noise in the system.

- If ground loop origination points are difficult to pinpoint, connect equipment chassis grounds using 8- or 10-gauge ground wire.

NOTE

Do not open equipment. External ground points should be present on most equipment.

6. Installing and Connecting the System

This chapter describes how to connect the Instructor Interface Unit, the Instructor Control Unit, and each of the Student Units; together they form the CAT5 ClassWork Plus classroom.

Before connecting the ClassWork Plus classroom:

- Make sure all computers are in working order.

- Switch off all the computers.

- Disconnect all cables and power cords.

6.1 Connecting the Instructor Interface Unit

You connect the following cables to the Instructor Interface Unit:

- System In/Out

- Monitor In/Out

- Mouse/Keyboard In/Out

- Control

- Power
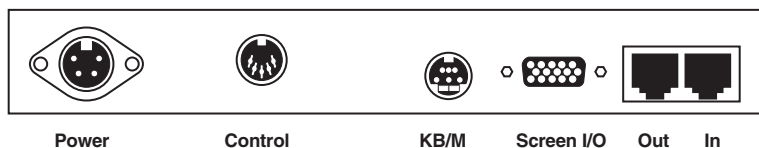
Figure 6-1. Connectors on the Instructor Interface Unit's Rear Panel.

6.1.1 CONNECTING THE SYSTEM CABLE

The system cable joins the Instructor Interface Unit and all the Student Units in the classroom in a loop.

RJ-45 male

RJ-45 male

Figure 6-2. The System Cable.

Figure 6-3 illustrates the pinout of the cable according to the 100BASE-TX standard.

1. Orange
2. White/Orange
3. Blue
4. White/Green
5. Green
6. White/Blue
7. Brown
8. White/Brown

Figure 6-3. The RJ-45 Male Connector Pinout.

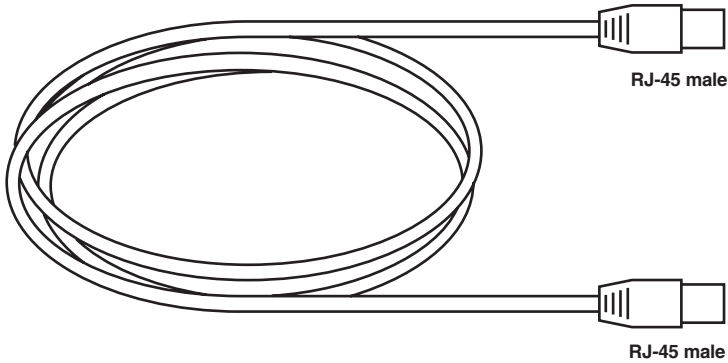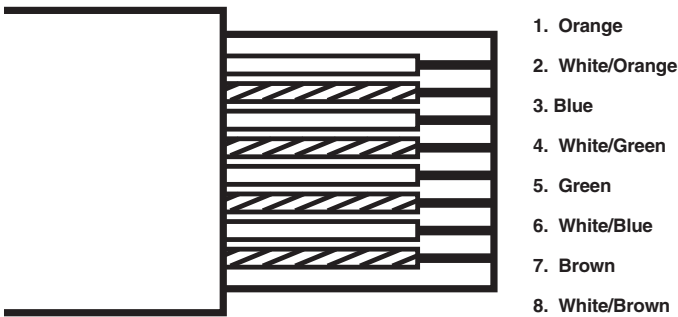*To connect the system cable to the Instructor Interface Unit:*

1. Connect one of the system cable's RJ-45 male connectors to the Instructor Interface Unit's RJ-45 female system out port.

2. Connect the system cable's other RJ-45 male connector to the RJ-45 female system in port of the first Student Unit.

3. Continue with this sequence, connecting one RJ-45 male connector to the RJ-45 female system out port of the last Student Unit in a loop and the other RJ-45 male connector to the Instructor Interface Unit's RJ-45 female system in port. The final link groups the classroom in a loop pattern.

6.1.2 CONNECTING THE MONITOR CABLE

You use the same monitor in/out cable for both the Instructor Interface Unit position and each of the Student Unit positions.

To connect the monitor in/out cable:

Connect the monitor in/out cable to the Instructor Interface Unit. Follow these steps and see Figure 6-4:

1. Connect the cable's double HD DB15 male connector to the Instructor Interface Unit's HD DB15 female monitor in/out port.

2. Connect the cable's double HD DB15 female connector to the HD DB15 male port on the instructor's monitor.

3. Connect the cable's other HD DB15 male connector to the HD DB15 female instructor's CPU's VGA port.

HDD15
female to
monitor

HDD15
male to
computer's
screen port

HDD15
male to
Instructor
Interface
Unit
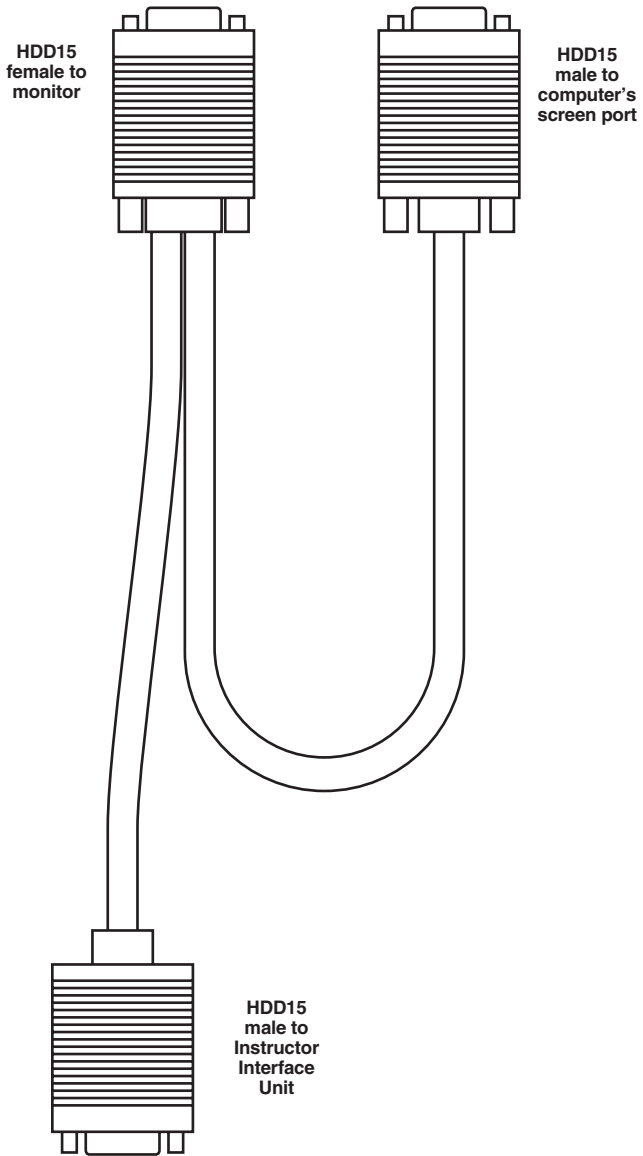
Figure 6-4. The Instructor's Monitor In/Out Cable.

6.1.3 CONNECTING THE KEYBOARD/MOUSE CABLE

You use the same keyboard/mouse in/out cable for both the Instructor position and each of the Student positions.

To connect the keyboard/mouse in/out cable:

Connect the keyboard/mouse in/out cable to the Instructor Interface Unit as Figure 6-5 illustrates. Follow these steps:

1. Connect the cable's 8-pin mini-DIN male connector to the 8-pin mini-DIN female on the Instructor Interface Unit.

2. Connect the pigtail cable's 6-pin mini-DIN male mouse end to the 6-pin mini-DIN female connector on the computer.

3. Connect the pigtail cable's 6-pin mini-DIN female mouse end to the 6-pin mini-DIN male from the mouse.

4. Connect the pigtail cable's 6-pin mini-DIN male keyboard end to the 6-pin mini-DIN female port on the computer.

5. Connect the pigtail cable's 6-pin mini-DIN female keyboard cable end to the 6-pin mini-DIN male port from the keyboard.

6-pin mini-DIN male to computer's mouse port

6-pin mini-DIN male to computer's keyboard port

6-pin mini-DIN female to mouse

6-pin mini-DIN female to keyboard

8-pin mini-DIN male to Instructor Interface Unit
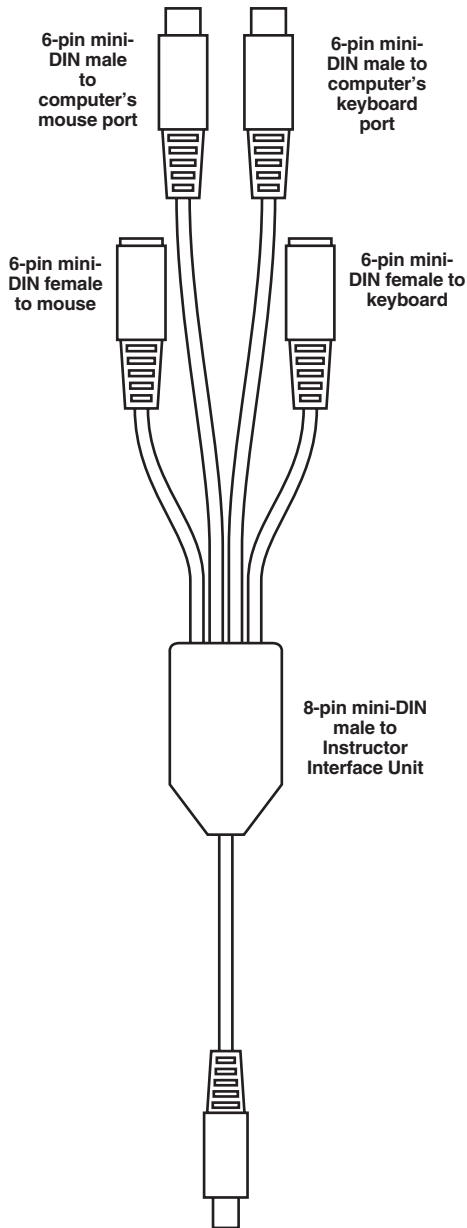
Figure 6-5. The Instructor's Keyboard/Mouse In/Out Cable.

6.1.4 CONNECTING THE CONTROL CABLE

The control cable connects the Instructor Interface Unit to the Instructor Control Unit. Figure 6-6 shows the Instructor Control Unit.
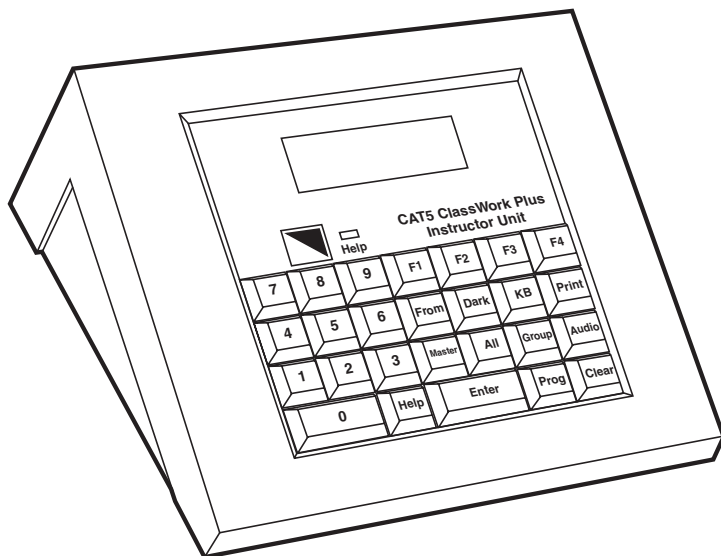
Figure 6-6. The Instructor Control Unit.

To connect the control cable:

Connect the control cable (see Figure 6-7) to the Instructor Units. Follow these steps:

1. Connect one of the cable's 5-pin DIN male connectors to the Instructor Interface Unit's 5-pin DIN female control port.

2. Connect the cable's other 5-pin DIN male connector to the Instructor Control Unit's 5-pin DIN female port.

5-pin DIN male connector

5-pin DIN male connector
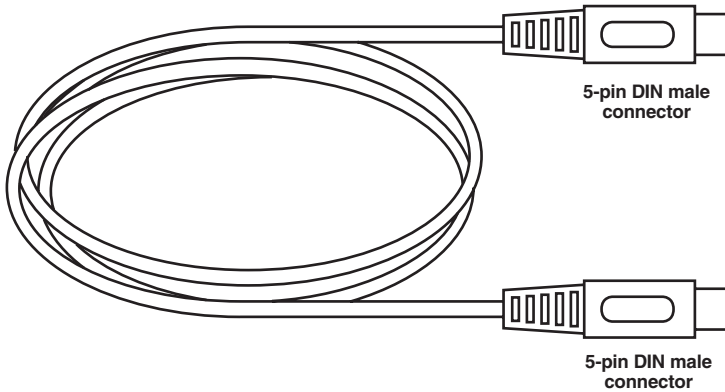
Figure 6-7. The Control Cable.

6.1.5 CONNECTING THE POWER CABLE

1. Connect the power adapter cable to the Instructor Interface Unit by plugging the power adapter cable's 4-pin DIN male connector into the Instructor Control Unit's 4-pin DIN female power connector.

2. Connect the power adapter to the power cord.

3. Connect the power cord to the wall socket.
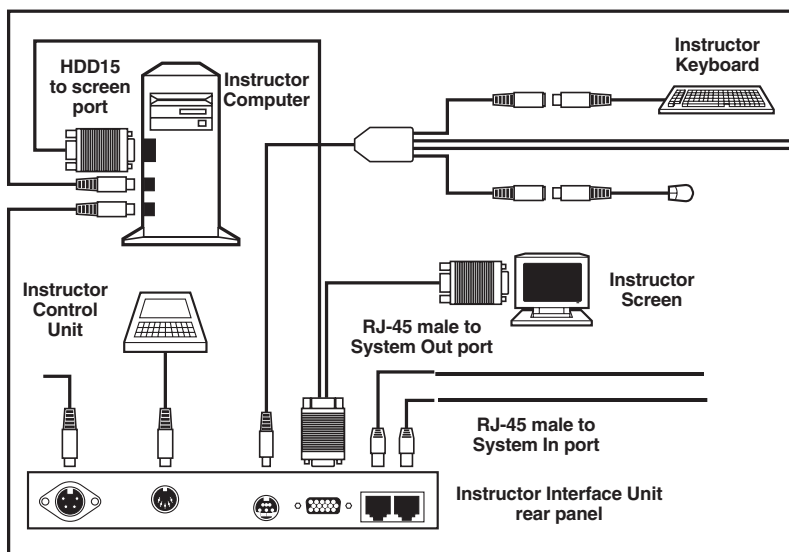
Figure 6-8. CAT5 ClassWork Plus Instructor Configuration.

6.2 Installing the Student Units

In order to avoid electrostatic damage to the card, discharge any static electricity you may be carrying. You can do this by touching any grounded object.

To install a Student Interface Card into each student's computer:

1. Remove the computer covers.

2. Insert a Student Interface Card into any available PCI slot of each computer.

3. Replace the computer covers.

6.2.1 CONNECTING THE STUDENT UNITS TO THE SYSTEM

Figure 6-9 shows the Student Interface Card's connectors.

Figure 6-9. The Card Connectors.

Figure 6-10 shows the ports on the Student Interface Standalone Unit's connectors.

Figure 6-10. The Standalone Unit's Connectors.

Both versions of the Student unit use the following three cables:

- System cable

- Keyboard/Mouse cable

- Y screen cable

The latter two cables are longer for the standalone version than for the card version.

Only the standalone version uses a power adapter and power cord.

6.2.2 CONNECTING THE SYSTEM CABLE

The System cable links the Student units to the Instructor unit in a loop.

To connect the system cable:

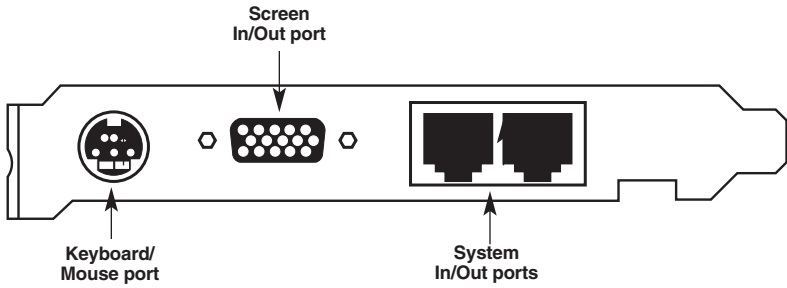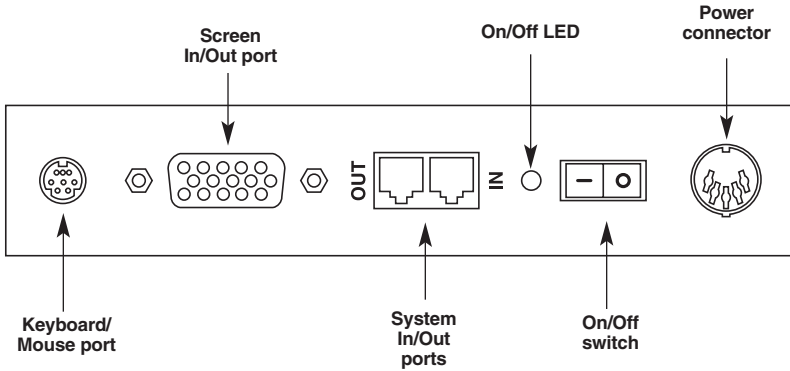1. Connect one of the system cable's RJ-45 male connectors to the system out port of one Student unit.

2. Connect the other system cable's RJ-45 male connector to the system in port of the next Student unit.

3. Complete the loop by connecting a system cable to the last Student unit's system out port and the Instructor unit's system in port.

6.2.3 CONNECTING THE KEYBOARD/MOUSE CABLE

Figure 6-11 shows the keyboard/mouse cable.

To connect the keyboard/mouse in/out cable to each student position:

1. Connect the cable's 8-pin mini-DIN male connector to the Student unit's keyboard/mouse port.

2. Connect the 6-pin mini-DIN female mouse out connector to the mouse's 6-pin mini-DIN male connector.

3. Connect the 6-pin mini-DIN male mouse in connector to the mouse port on the Student computer's rear panel.

4. Connect the 6-pin mini-DIN female keyboard out connector to the keyboard's 6-pin mini-DIN male connector.

5. Connect the 6-pin mini-DIN male keyboard in connector to the keyboard port on the Student computer's rear panel.

6-pin mini-DIN male
to computer's
mouse port

6-pin mini-DIN male
to computer's
keyboard port

6-pin mini-DIN
female to mouse

6-pin mini-DIN
female to keyboard

8-pin mini-DIN male
to student unit
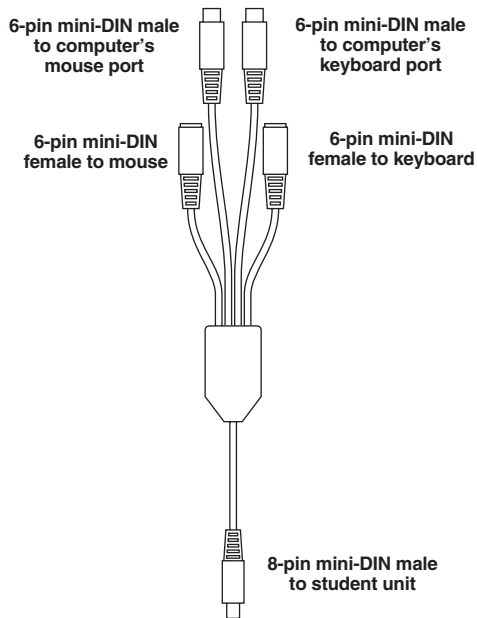
**Figure 6-11. The Student's Keyboard/Mouse In/Out Cable
for PS/2 Type Computers.**

6.2.4 CONNECTING THE SCREEN IN/OUT CABLE

Figure 6-12 shows the screen in/out cable.

To connect the screen in/out cable to each Student unit:

1. Connect the cable's HDD15 male connector to the unit's screen in/out port.

2. Connect the cable's HDD15 female connector to the student's monitor.

3. Connect the cable's HDD15 male connector to the screen port of the
   student's computer.

HDD15 male to
student unit

HDD15 female
to monitor

HDD15 male to
computer's
screen port
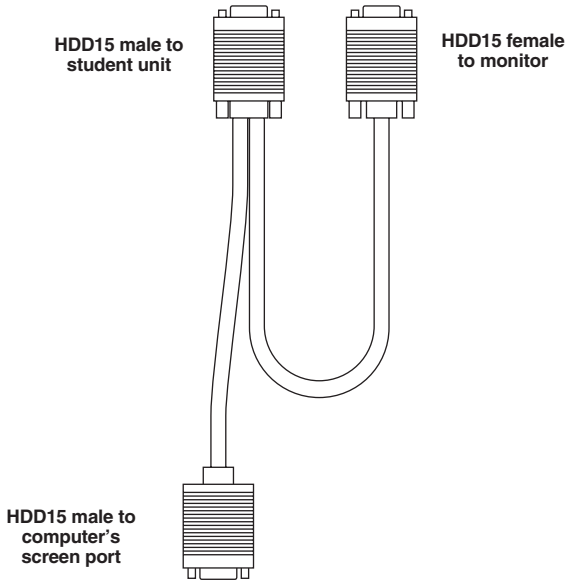
Figure 6-12. The Screen In/Out Cable.

6.2.5 CONNECTING THE STUDENT INTERFACE STANDALONE UNIT TO THE POWER SUPPLY

The power adapter comes in two models: one for 110 V and one for 220 V.

To connect the power adapter:

1. Connect the power adapter's 4-pin DIN male connector to the Student unit's power connector.

2. Connect the power adapter's power connector to the power cord.

3. Connect the power cord to the wall socket.

Figures 6-13 and 6-14 illustrate the connections of the Student Interface Card and Student Interface Standalone Unit, respectively.
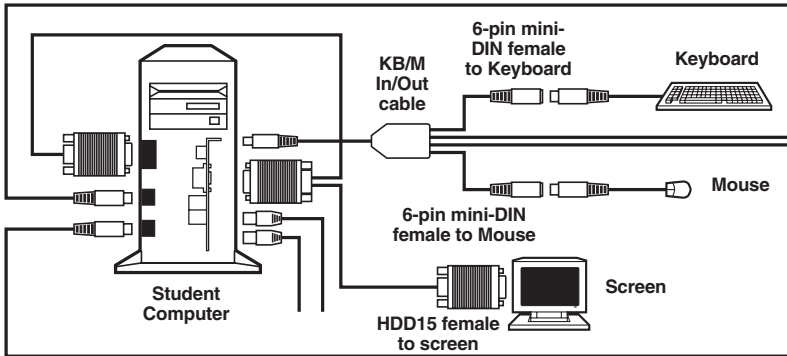
Figure 6-13. The Student Interface Card Connections.

Figure 6-14. The Student Interface Standalone Unit Connections.

6.3 Connecting the System to the Power

Each Student Card draws its power from its computer's motherboard (after you switch on that computer). The Student Interface Standalone Unit and the Instructor Interface Unit, on the other hand, have a power adapter.

7. Setting the ID Numbers

After installing and connecting all the CAT5 ClassWork Plus units, set the ID numbers for the Instructor and all Students using the Instructor Control Unit and each computer's keyboard.

To set the ID numbers:

1. Switch on all computers.
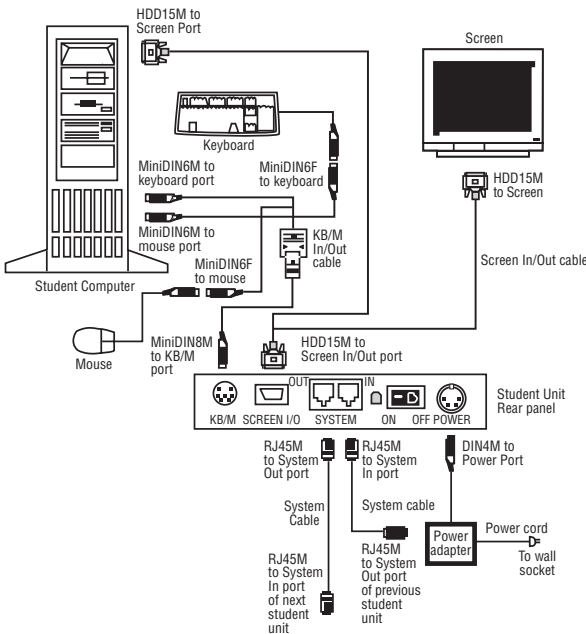
2. On the Instructor Control Unit, press the following keys:

    Print   All   Enter.

You can now program the ID numbers into the computers via the keyboards.

7.1 The Instructor's ID Number

1. On the Instructor's keyboard, press the following keys:

    Shift   Shift   F1   0   0   0

NOTE
Only use the keyboard numbers above the alphabet keys, and not the keypad to the right of the keyboard.

When you press Shift twice, the local mouse is disabled.

2. Press **ESC** to save the instructor ID number and exit the instructor's computer.

7.2 The Students' ID Numbers

The procedure is the same for all students. Make sure that each student has a unique ID number.

NOTE
All ID numbers must contain 3 digits. ID Number 1 is 001, ID number 2 is 002, etc.

1. On the first student's keyboard, press the following keys:

    Shift   Shift   F1   0   0   1   Esc

2. On the second student's keyboard, press the following keys:

Shift   **Shift**   **F1**   **0**   **0**   **2**   **Esc**

Continue assigning IDs until each student computer has one.

NOTE

The ID numbers do not have to be sequential. For example, the first two students in the class can have ID numbers 15 and 7.

7.3 Testing the ID Numbers

Test the ID numbers by transferring each student screen to the instructor's computer. This ensures that the ID numbers are set correctly.

To transfer student ID number 1's screen to the instructor:

Press   **From**   **0**   **1**   **Mastr**   **Enter**

The screen transfers.

To cancel the screen transfer, press **From**.

If the screen does not transfer, the ID number is not set correctly. Reset the ID number.

Test the rest of the student ID numbers by transferring each student screen to the instructor.

When all the ID numbers are set and verified, exit the setting ID numbers function.

To exit, press **Print** on the Instructor Control Unit.

8. Image Tuning

The CAT5 ClassWork Plus system lets you transfer screen images from one computer to another. When a screen image is transferred, it may not be clear and sharp. You can tune the projected image in the method described below (see **Section 8.2**).

8.1 Transferring Screen Images

You can transfer screen images in the following three ways.

- From the instructor to a student or students.

- From a student to the instructor.

- From a student to another student or students.

8.2 Tuning an Image

To tune an image:

1. Switch on all of the classroom's computers.

2. On the Instructor Control Unit, press **Print   All   Enter**.

3. Transfer the required screen image.

8.2.1 TRANSFERRING THE INSTRUCTOR'S IMAGE TO ALL STUDENTS

First, perform steps 1 through 3 in **Section 8.2**. Next, on the Instructor Control Unit, press:

From   Mastr   All   Enter

1. Go to each student's position and look at the projected screen image.

2. If the image is not satisfactory, then on the keyboard of the projected image position, press

   Shift   Shift   F2

8.2.2 TRANSFERRING EACH STUDENT'S IMAGE TO THE INSTRUCTOR

For example, to transfer the screen image from Student ID number 1 to the instructor, press:

From   0   Mastr   Enter

Look at the projected screen image. If the image is not satisfactory, then on the keyboard of the projected image position, press

Shift   Shift   F2

8.2.3 TRANSFERRING EACH STUDENT'S IMAGE TO ANOTHER STUDENT

1. For example, to transfer the screen image from Student ID number 1 to Student ID number 12, press:

From   0   1   1   2   Enter

2. Look at the projected screen image. If the image is not satisfactory, then on the keyboard of the projected image position, press:

Shift   Shift   F2

3. Press the left or right arrow keys until the image quality is satisfactory.

4. Press **Esc**. This saves the adjustment.

5. When all the images are satisfactory, go to the Instructor Control Unit and exit the image adjustment mode by pressing **Print**.

NOTE

Image adjustment is relative to distance. The farther the screen image is transferred, the more adjustment it requires.

9. Operating the Instructor Control Unit

9.1 Overview

Use the Instructor Control Unit to control your computerized classroom. Functions include screen transfer, scanning, darkening screens, keyboard and mouse transfer, and audio/intercom transmission.

9.1.1 SCREEN TRANSFER

From the Instructor position, you can transfer the image on the Instructor screen to:

- a particular student,

- all the students, or

- a group of students.

Moreover, transfer flows in both directions. From the Instructor position, you can transfer the image on a particular student screen to:

- a different student,

- all other students,

- a group of students, or

- the Instructor.

9.1.2 SCANNING

From the Instructor position, you can scan at sequential intervals:

- all the students, or

- a group of students.

9.1.3 DARKENING SCREENS

From the Instructor position, you can darken the screen image of:

- a particular student,

- all the students, or

- a group of students.

9.1.4 KEYBOARD AND MOUSE TRANSFER

From the Instructor position, you can transfer control of the keyboard and mouse of:

- a particular student to the Instructor,

- a particular student to a different student, or

- the Instructor to a particular student.

9.1.5 AUDIO/INTERCOM TRANSMISSION

From the Instructor position, you can transmit:

- from the Instructor to all the students,

- from the Instructor to a group of students,

- from the Instructor to a particular student,

- from a particular student to the Instructor, or

- between a particular student and another student (in both directions).

9.2 About the Instructor Control Unit

The Instructor Control Unit, which comes without a 9-VAC power port or On/Off switch, is for use with the CAT5 ClassWork Plus.

The Instructor Control Unit has a function display panel and a keyboard with the following keys:

Table 9-1. Function Display Panel.

7	8	9	F1	F2	F3	F4
4	5	6	From	Dark	KB	Print
1	2	3	Master	All	Group	Audio
0		Help	Enter		Prog	Clear

9.3 Instructor Control Unit Functions

The Instructor can perform the following functions:

- Screen Transfer

- Keyboard and Mouse Control

- Scan Control

- Dark Function

- Macro Keys

- Help Call

9.3.1 SCREEN TRANSFER

To transfer the Instructor's screen to all students:

Press: <From><Mastr><All><Enter>

To cancel, press: <From>

To transfer the Instructor's screen to Group #2:

Press: <From><Mastr><Group><2><Enter>

To cancel, press: <From>

To transfer student #3's screen to student #1:

Press: <From><03><01><Enter>

To cancel, press: <From>

To transfer student #4's screen to the Instructor:

Press: <From><04><Mastr><Enter>

To cancel, press: <From>

To transfer student #4's screen to Group #2:

Press: <From><04><Group><2><Enter>

To cancel, press: <From>

9.3.2 KEYBOARD AND MOUSE CONTROL
To transfer student #3's keyboard control to the Instructor:

Press: <KB><03><Enter>

To cancel, press: <KB>

To transfer the Instructor's keyboard to student #3:

Press: <KB><Mastr><03><Enter>

To cancel, press: <KB>

To transfer student #3's keyboard to student #6:

Press: <KB><03><06><Enter>

To cancel, press: <KB>

9.3.3 SCAN CONTROL

To scan all students' screens:

Press: <From><All><Enter>

To cancel, press: <From>

NOTES

"MS" appears automatically with the number of the first active student in the loop.

Student number flashes.

30 seconds is the default time lapse between scanning two student screens.

Press <Enter> to temporarily stop scanning; the student number stops flashing.

Press <Enter> again to continue scanning.

Press <Enter> twice to scan the next student, bypassing the time lapse.

To alter the time lapse between screens:

Press: <From><All><*xx*><Enter>

xx = Enter the time, in seconds (a maximum of two digits)

9.3.4 DARK FUNCTION

To darken all students' screens:

Press: <Dark><All><Enter>

To cancel, press: <Dark>

To darken student #3's screen:

Press: <Dark><03><Enter>

To cancel, press: <Dark>

To darken the screens of Group #2:

Press: <Dark><Group><2><Enter>

To cancel, press: <Dark>

9.3.5 MACRO KEYS

To program a function in memory using keys F1 through F4:

For example, darken students' screens by programming:

<Prog><F2><Dark><All><Enter><Prog>

NOTE

To perform the dark function next time, press <F2> instead of <Dark><All><Enter>.

9.3.6 HELP CALL

To identify which student is asking for help when the Help LED glows on the Instructor

Control Unit, press <Help>.

To exit from this screen and erase all calls, press: <Clear><All>.

To exit from this screen without erasing all calls, press: <Help>.

To erase student #3's call, press: <Clear><03>.

NOTE
The display panel # identifies the student.

9.3.7 GENERAL

- Wait for the blinking cursor to appear after each command before continuing.

- The Instructor can operate more than one function simultaneously. For example, using the screen transfer or keyboard and mouse control functions— but only when activated on the same student position.

9.4 Instructor Option: Projector Unit

To transmit the Instructor screen to a projector:

Press: <From><Mastr><61><Enter>

To cancel, press: <From>

To transmit student #3's screen to a projector:

Press: <From><03><61><Enter>

To cancel, press: <Enter>

NOTE
The projector's default number is 61.

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