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NOVEMBER 1998
AC815A
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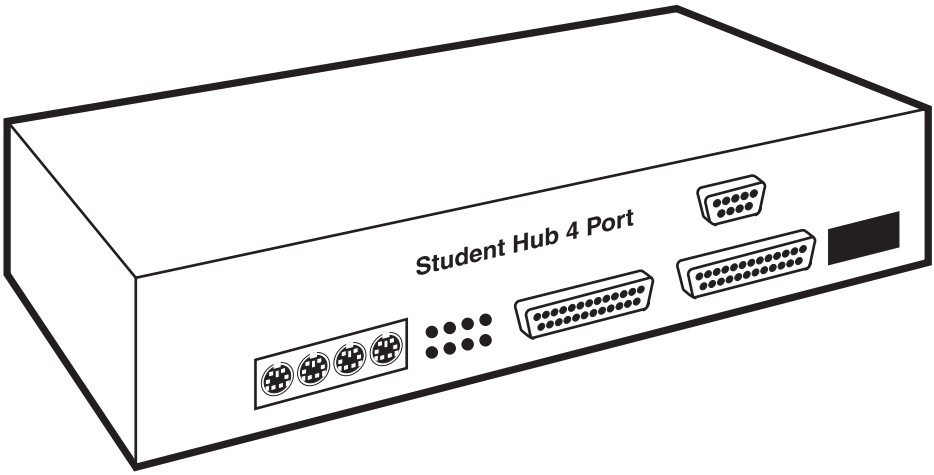
4-Port Student Hub



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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 digital 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.

TRADEMARKS

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CONTENTS

1. Specifications

1.1 Video

Bandwidth — Not less than 100 MHz

High resolution screen — Transfer of up to 1280 x 1024 pixels and full-motion video

1.2 System

Keyboard — AT or PS/2

Mouse — Serial or PS/2

1.3 4-Port Student Hub

Size — 1.8"H x 10.9"W x 5.6"D (4.6 x 27.8 x 14.3 cm)

1.4 4-Port Student Hub Cable Connectors

CPU	AT	PS/2
Computer Connector	DB25 male	DB25 male
Keyboard	5-pin DIN male	Mini 6-pin DIN male
Monitor	HD DB15 male	HD DB15 male
Mouse	DB9 female	Mini 6-pin DIN male

KVM	AT	PS/2
Station Connector	DB25 female	DB25 female
Keyboard	5-pin DIN female	Mini 6-pin DIN female
Monitor	HD DB15 female	HD DB15 female
Mouse	DB9 male	Mini 6-pin DIN female

Audio	Mini 8-pin DIN male
Com	DB9 male
System	DB25 male

2. Introduction

The ClassWork Plus 4-Port Student Hub (4SIU) connects up to four student positions and their CPUs to a single Interface Unit.

Compared to the ClassWork Plus Student Interface Unit, the 4SIU solution reduces your need for hardware units by 75%.

For example, in a classroom of sixteen students you need just four 4SIUs with one Teacher Interface Unit (TIU).

For the same classroom based solely on ClassWork Plus, with every student position requiring a ClassWork Plus Student Interface Unit, you would need an additional twelve hardware units.

So the 4-Port Student Hub solution saves valuable resources including costs and space even though you still have access to all the ClassWork Plus functions.

Figures **6-11** and **6-12** illustrate the typical setup of a ClassWork Plus 4-Port Student Hub Classroom.

2.1 Advantages of the 4-Port Student Hub

In addition to its cost effectiveness, the 4-Port Student Hub supports these features:

- Increased picture quality, since reduced bus length causes less resistance in the ClassWork Plus System.
- Reduced material, since you need less hardware units and cables.
- Ease of installation, support, and maintenance, since technical problems are easily isolated to one of the 4-Port Student Hubs.
- Linking in a daisy-chain pattern (bus) of up to 63 CPUs (99 CPUs when combined with ClassWork Plus Student Interface Units).
- A maximum bus length of 246 ft. (75 m) which can be increased using a Line Booster.

2.2 Summary of Abbreviations

- 4SIU: 4-Port Student Hub
- TCU: Teacher Control Unit
- TIU: Teacher Interface Unit

2.3 How to Use this Manual

This manual is divided into four sections:

1. Specifications (Chapter 1). This section contains reference material on technical specifications.
2. Introduction and Overview (Chapters 2 and 3). This section summarizes the setting up and configuration of the ClassWork Plus classroom.
3. The Units: The 4SIU and the TIU (Chapters 4 and 5). This section describes the 4SIU and the TIU. It also includes diagrams illustrating the front and rear panels of the units.
4. Installing the 4SIU and the TIU (Chapters 6 and 7). This section covers pre-installation recommendations, plus 4SIU and TIU installation.

3. Overview

This chapter deals with configuring the ClassWork Plus 4-Port Student Hub classroom and summarizing its operation.

3.1 4-Port Student Hub Configuration

This section discusses:

- What you need for a ClassWork Plus 4-Port Student Hub Classroom.
- The preparation and planning of the ClassWork Plus 4-Port Student Hub Classroom.
- The stages of the installation.

3.2 What You Need for a ClassWork Plus 4-Port Student Hub Classroom

Configuring the ClassWork Plus 4-Port Student Hub Classroom consists of a combination of the basic computer equipment and the specialized ClassWork Plus equipment, including:

- A TCU for each classroom.
- A TIU for each classroom.
- A 4SIU for every four students.
- A power supply for the TIU and for each 4SIU.
- Various cables.
- Desk bracket(s).

3.3 Preparation and Planning

Thorough planning is the key to successful configuration of your ClassWork Plus 4-Port Student Hub Classroom. Time spent prior to the actual installation, in preparation and planning, will prove itself time well invested.

Draw a sketch of your proposed ClassWork Plus system, taking into account the positioning of the CPUs, the 4SIUs, the TIU, and the TCU. Make provisions for:

- Electrical wall sockets—if necessary, a certified electrician should prepare enough outlets before you install the ClassWork System.

NOTE

Each outlet should have the same phase and a common ground.

- Positioning of the System Cables—allow extra cabling for inside the plastic duct installed around the classroom's walls and any frames around doorways. Minimize cabling likely to clutter the areas where students walk.
- Using Line Boosters—Black Box can preview your sketches, providing general advice and further tips where required. Call Technical Support at 724-746-5500.

3.4 Sequential Numbering

Each 4-Port Student Hub serves up to four Student Positions, 1, 2, 3, and 4: the numbering is sequential. **Figure 3-1** illustrates two solutions to the need for consecutive numbering where Table 1 has three Student Positions, Table 2 has two Student Positions, Table 3 has one Student Position, and Table 4 has four Student Positions.

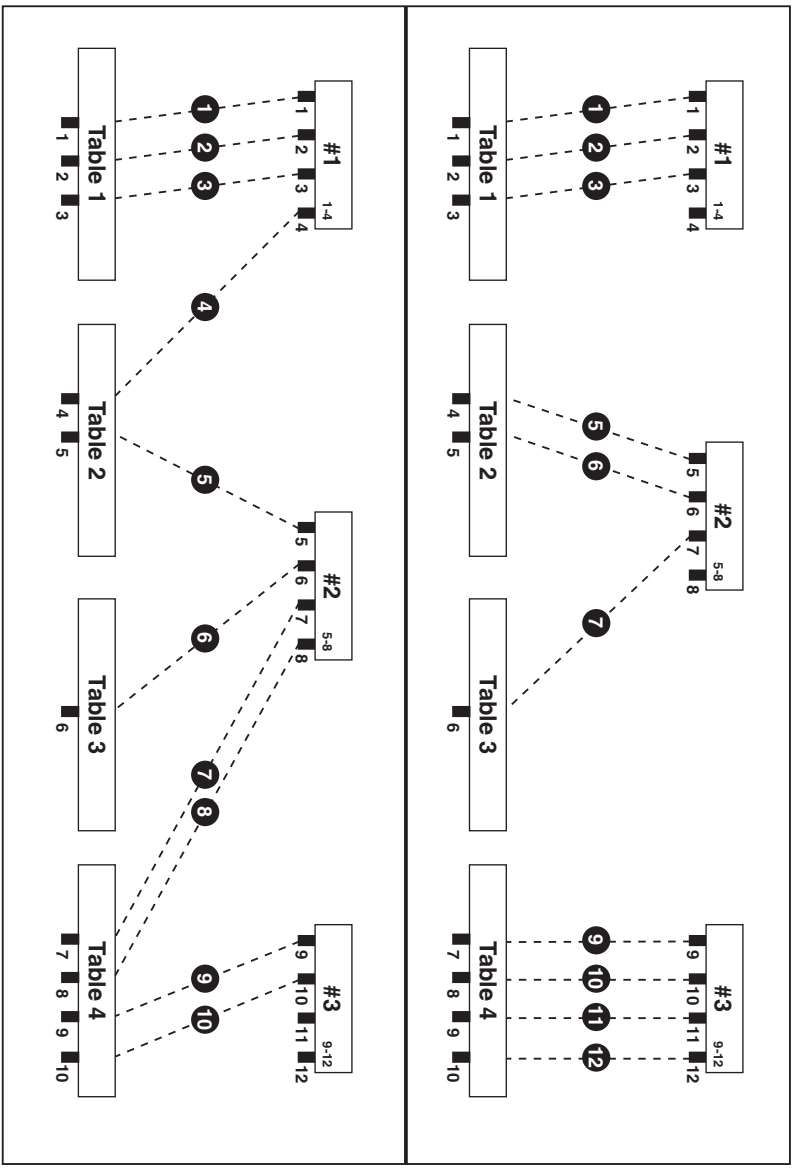

Figure 3-1. Sequential Numbering Example.

Sometimes the solution to your layout is met by combining 4-Port Student Hubs with the ClassWork Plus Student Interface Units or the ClassWork Plus Board Version. Call Technical Support for details.

Figures 3-2 and **3-3** illustrate two ways to configure a classroom of forty students. **Figure 3-2** uses ten 4-Port Student Hubs.

Figure 3-3 combines eight 4-Port Student Hubs with other ClassWork Plus products. It illustrates how you set the ID Numbering for 4-Port Student Hubs and the ClassWork Plus Student Interface Units.

In **Figure 3-3**, for example, the computers are numbered 01, 02, 03, and 04. You set the 4-Port Student Hub ID Number to 01.

The ClassWork Plus computer is numbered 05. You set its ID Number to 05.

You always set the ID Number for the TIU to 0.

For further information on Setting the ID Number of the Dipswitches for the 4-Port Student Hub, and the Teacher Interface Unit, see **Sections 4.3** and **5.3**, respectively.

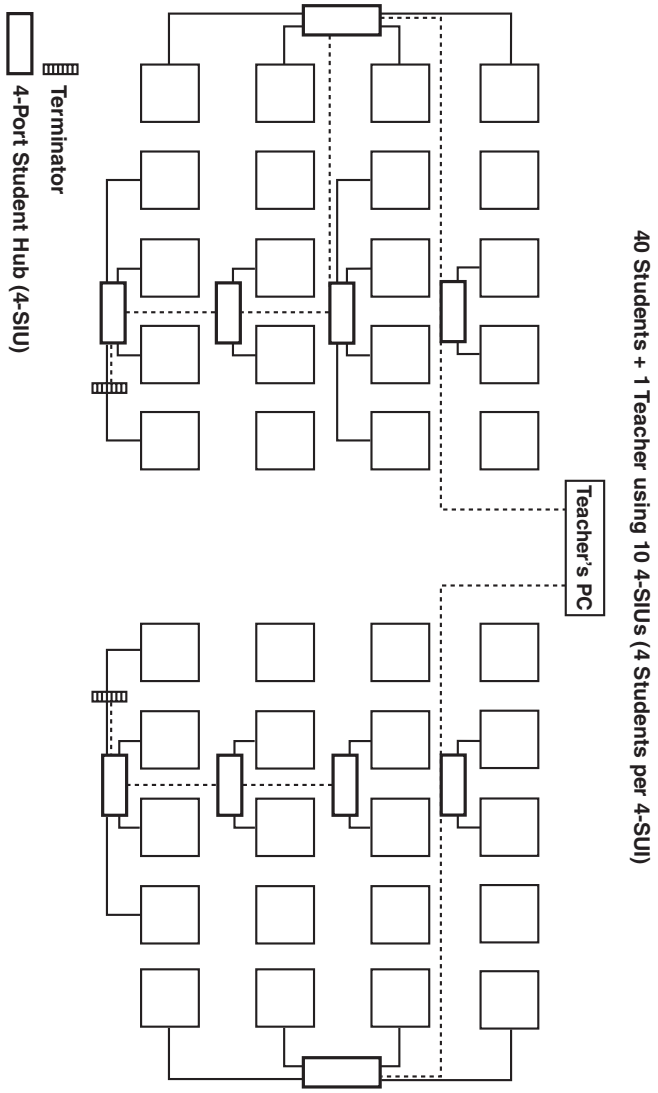

Figure 3-2. ClassWork Plus 4-Port Student Hub Configuration #1.

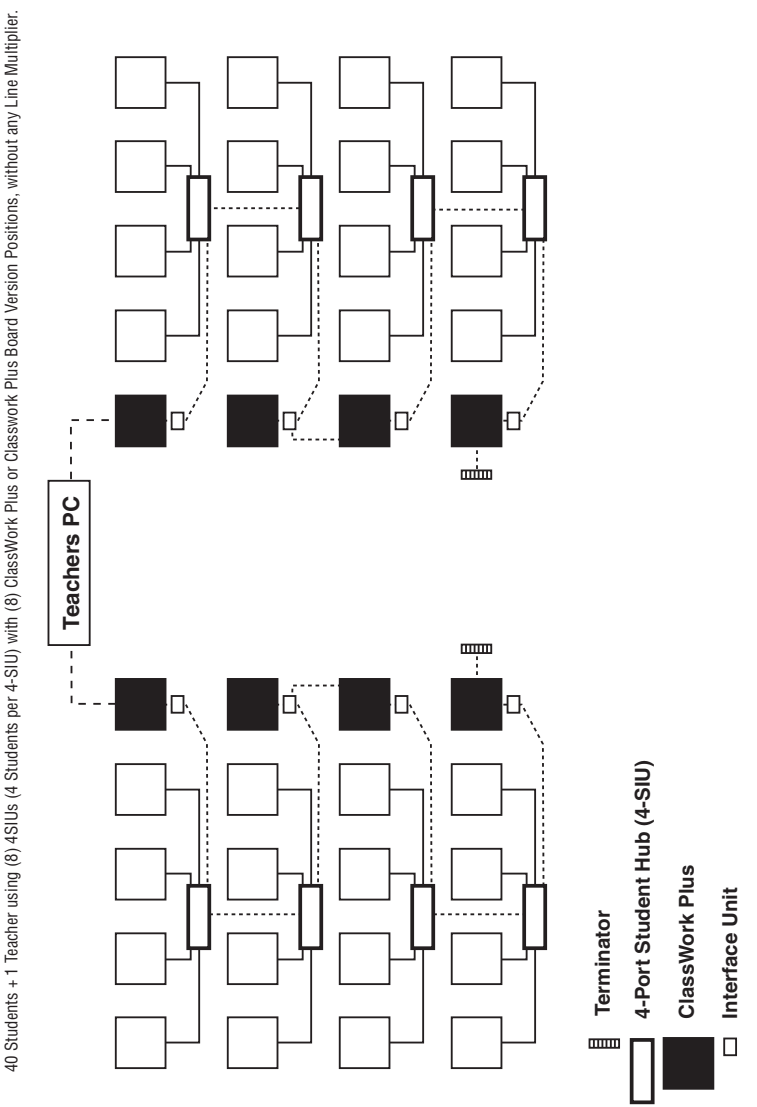

Figure 3-3. ClassWork Plus 4-Port Student Hub Configuration #2.

3.5 The Stages of the Installation

The order in which you install your ClassWork Plus system depends on common sense and convenience. Every person has his or her way of doing the same thing. Nevertheless, we do recommend the following guidelines:

- Before the day of the actual installation, check the classroom's layout: the positioning of the furniture, the lighting, electrical outlets, and that there is sufficient plastic duct attached to the walls for the system cabling. This will allow time for the classroom's administrators to carry out any rearrangements before the day of the actual installation.

- On the day of the actual installation, first make sure that the basic computer equipment listed in **Chapters 5** and **6** is fully installed and operating. Switch on all the CPUs to confirm that each workstation functions properly. Once confirmed, switch off all the CPUs.

- Determine where in the classroom you are going to place the Teacher Position. Usually the Teacher sits at the front of the class; but not always. **Figure 3-4** illustrates four different configurations for the Teacher Position.

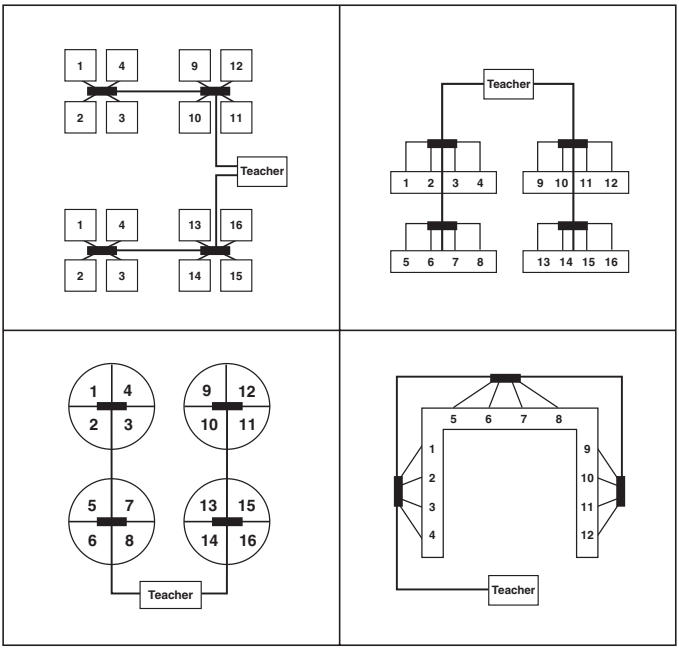

Figure 3-4. Positioning the Teacher.

3.6 Additional Guidelines

- Unpack and then position all the specialized ClassWork Plus equipment at its place of installation.
- Affix each 4-Port Student Hub firmly to the top of the desk or table, or ideally to the desk's underside using brackets. Insert a piece of rubber between the 4-Port Student Hub and the brackets to keep the Hub in place.

3.7 Operating ClassWork Plus

For hardware operation using the TCU refer to the *ClassWork Plus User's Manual*, **Chapter 5**.

4. The 4-Port Student Hub (4SIU)

This Chapter describes the front and the rear panels of the 4-Port Student Hub.

4.1 The Front Panel

Figure 4-1 illustrates the connectors, the indicators, and the DIP switches on the 4-Port Student Hub's front panel. **Table 4-1** describes them.

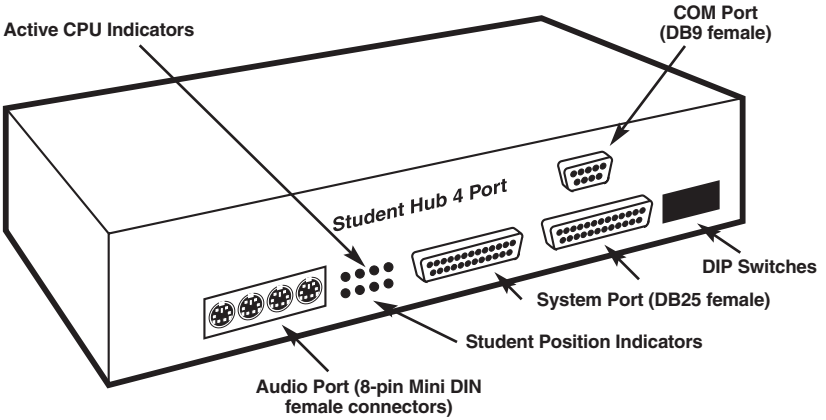

Figure 4-1. Front Panel of the 4-Port Student Hub.

Table 4-1. Front Panel Connectors, Indicators, and DIP Switches.

Title	Function
Audio Port (8-pin Mini DIN female)	Connect the Audio Cable's 8-pin Mini DIN male connector
Active CPU Indicators	Lights to identify an active CPU
Student Position Indicators	Lights to identify a Student position functioning as part of the ClassWork Plus system
System Port (DB25 female)	Connect the System Cable's DB25 male connector
Com Port (DB9 female)	Connect the Com Cable's DB9 male connector
DIP Switches	Set as required—see **Section 4.3**

4.2 The Rear-Panel Connections

Figure 4-2 illustrates the rear panel of the 4-Port Student Hub.
Table 4-2 describes the basic hardware connections.

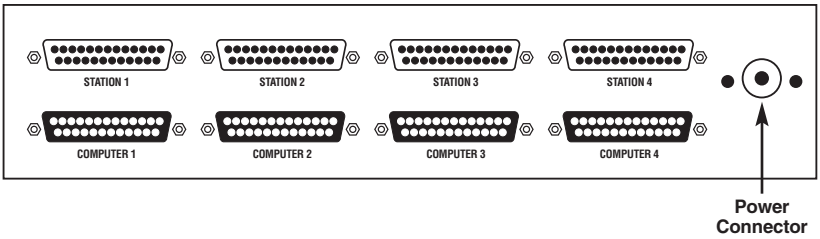

Figure 4-2. The Rear Panel of the 4-Port Student Hub.

Table 4-2. Rear-Panel Connectors.

Title	Function
Computer # (DB25 female)	Connect the CPU adapter cable's DB25 male connector to this port.
Station # (DB25 male)	Connect the KVM adapter cable's DB25 female connector to this port.
Power Connector	Connect the power supply to this connector.

4.3 Setting the DIP Switches

You set the DIP switches as follows, as **Figures 4-3** and **4-4** illustrate: When the first 4-Port Student Hub is configured as #1 (for computers 1, 2, 3, and 4), the second Hub is configured as #5 (for computers 5, 6, 7, and 8), and the third Hub is configured as #9.

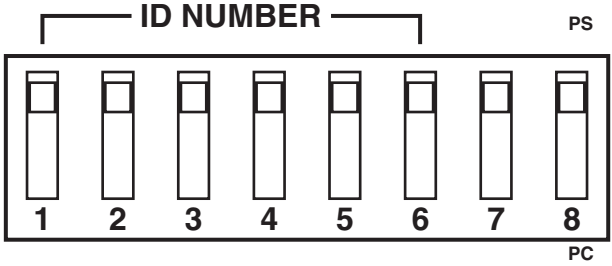

Figure 4-3. The DIP Switches on the 4-Port Student Hub.

DIP switches 1 to 6 set the ID Number (see the *ClassWork Plus User's Manual*).

4.3.1 Setting Student Unit Number

The Student Unit number is set via a DIP switch, located at the bottom of the box. Use **Table 4-3** to set the number.

Table 4-3. DIP-Switch Settings for Student Unit Number.

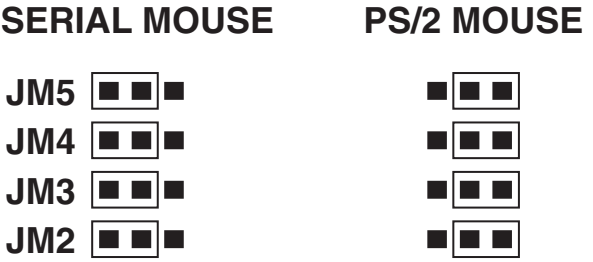

Table 4-3. DIP-Switch Settings for Student Unit Number (continued).

Address	Switch Setting					
	1	2	3	4	5	6
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
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43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						

Table 4-3. DIP-Switch Settings for Student Unit Number (continued).

Address	Switch Setting					
	1	2	3	4	5	6
55						
56						
57						
58						
59						
60						
61						
62						
63						

You set the ID number on the 4-Port Student Hub using the DIP switches 1 to 6, as follows:

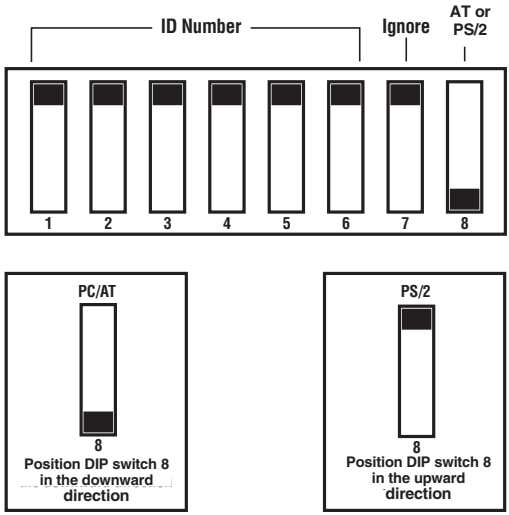

Figure 4-4. Setting the DIP Switches.

4.3.2 Setting the DIP Switch for AT or PS/2

DIP switch 7 is not connected. Ignore it. DIP switch 8 sets the 4-Port Student Hub as follows:

- AT: push downwards, or
- PS/2: push upwards.

5. The Teacher Interface Unit (TIU)

This chapter describes the front and the rear panels of the TIU (also called the Instructor Interface Unit).

5.1 The TIU Front Panel

Figure 5-1 illustrates the TIU's front-panel indicators; **Table 5-1** describes them.

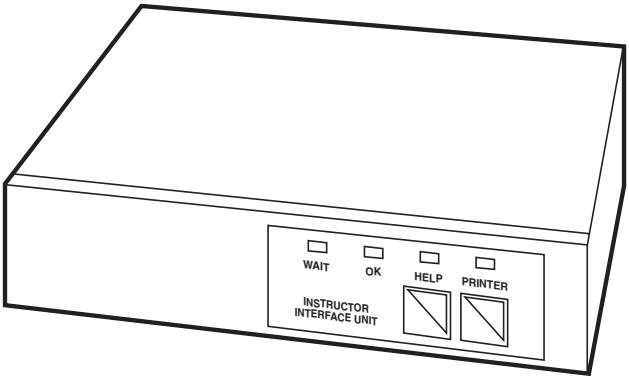

Figure 5-1. The Front Panel of the TIU.

Table 5-1. Front-Panel Indicators.

Title	Function
WAIT LED	Lights when the TIU is performing a function.
OK	Lights when the TIU is switched on.
PRINTER	Lights when the TIU is connected to the printer unit.

5.2 The Rear-Panel Connections

Figure 5-2 illustrates the TIU's rear panel. **Table 5-2** describes the rear-panel connections.

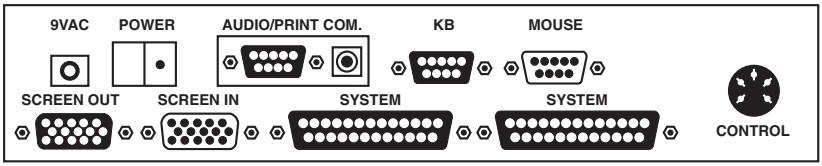

Figure 5-2. Rear Panel of the Teacher Interface Unit.

Table 5-2. Rear-Panel Connections.

Title	Function
9 VAC	Connect the 220 V or 110 V 9-VAC, 1.5-A adapter's power cable.
POWER SWITCH	Push to switch ON or OFF.
AUDIO	Connect the audio cable's DB9 male connector.
COM	Connect the COM cable's plug.
KB	Connect the KB cable's DB9 male connector.
MOUSE	Connect the mouse cable's DB9 female connector.
CONTROL	Connect the control cable's 5-pin DIN connector.
SCREEN OUT	Connect the screen's HD DB15 male connector.
SCREEN IN	Connect the screen cable's HD DB15 female connector.
SYSTEM	Connect the system cable's DB25 male connector.

5.3 Setting the DIP Switches

You set the DIP switches as follows, as **Figures 5-3** through **5-3d** illustrate:

5.3.1 Setting the ID Number

Always leave the TIU ID number set to 0. Make sure that DIP switches 1 to 6 are all in the up position.

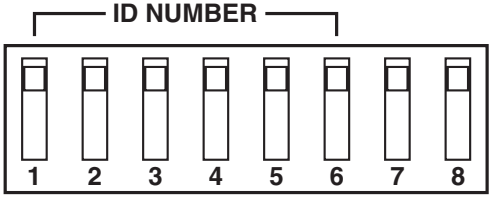

Figure 5-3. Setting the TIU's ID Numbers 1 to 6.

5.3.2 Setting the DIP Switch for AT or PS/2

You use the ID Number DIP switch 7 and 8 and the PC/PS DIP switch to set the Teacher Interface Units for AT (PC) or PS/2 (PS) as follows:

For PC, position DIP Switch 7 and 8 in the upward direction. See **Figure 5-3a** and set the PC/PS switch as shown in **Figure 5-3b**.

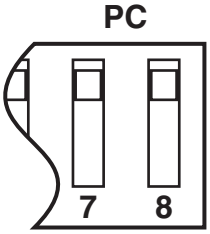

Figure 5-3a. ID Number DIP Switch.

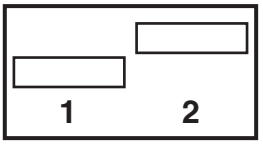

Figure 5-3b. PC DIP Switch ON.

For PS/2 (PS), position DIP Switch 7 and 8 in the downward direction. See **Figure 5-3c** and set the PC/PS switch as shown in **Figure 5-3d**.

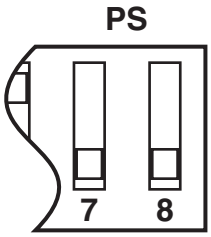

Figure 5-3c. ID Number DIP Switch

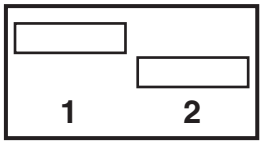

Figure 5-3d. PS DIP Switch ON.

6. Installing the 4-Port Student Hub

6.1 Pre-Installation Recommendations

- Place cables away from fluorescent lights, air conditioners, and machines that generate electrical noise.
- Switch off all CPUs before installing the system.
- Switch on the 4-Port Student Hub and the Teacher Interface Unit before you switch on the CPU.

6.2 Connecting the ClassWork Plus 4-Port Student Hub

Each Hub serves up to four student positions. Every student position includes two groups of items:

- The basic computer equipment, including a CPU, a keyboard, a screen, a mouse, and accessories like headphones or speakers.
- The specialized ClassWork Plus equipment includes a 4-Port Student Hub per four students and the required cables described in **Section 6.3**.

Connecting the student position involves rerouting the basic computer equipment via the specialized ClassWork Plus equipment.

6.3 Connecting the Cables to the 4-Port Student Hub

Connect the following to the 4-Port Student Hub's front panel:

- The Audio Cable (an optional cable)
- The System Cable
- The Com Cable (an optional cable)

6.3.1 Connecting the Audio Cable

As a ClassWork Plus option, you can connect four audio cables to each 4-Port Student Hub—one audio cable per student position. You use each audio cable to connect the headphones and the microphone to the 4-Port Student Hub. **Figure 6-1** illustrates the ClassWork Plus Audio Cable.

To connect the Audio Cable

1. Connect the audio cable's 8-pin Mini-DIN male audio connector to one of the four 4-Port Student Hub's 8-pin Mini-DIN female audio ports.

2. Connect the audio cable's *Ear* connector to the headphones.

3. Connect the audio cable's *Micro* connector to the microphone.

4. Connect the audio cable's *Aux. In* plug to the *Mic* (Microphone) port on the CPU's sound card.

5. Connect the audio cable's *Aux. Out* plug to the *Spk* (Speaker) port on the CPU's sound card. Completing these instructions, 1 to 5, connects an audio cable to the 4-Port Student Hub.

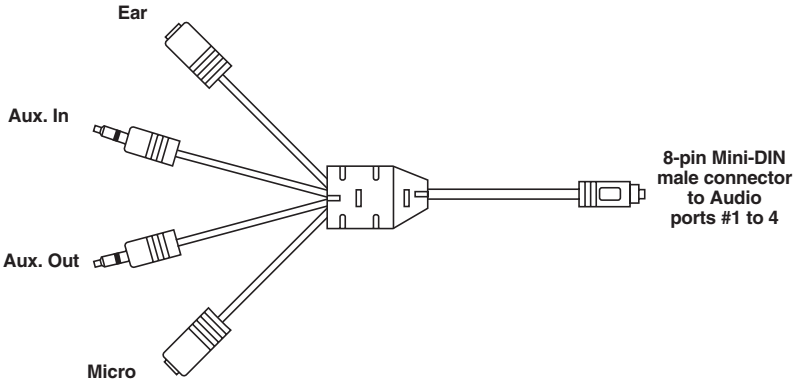

Figure 6-1. The ClassWork 4-Port Student Hub Audio Cable.

6.3.2 Connecting the System Cable

The system cable, as **Figure 7-8** on **page 48** illustrates, consists of a DB25 coaxial cable.

You use one system cable to connect the Teacher Interface Unit to a 4-Port Student Hub, and one system cable to connect one 4-Port Student Hub to another. For further information on the positioning of the system cables see **Section 3.3**.

As **Figure 6-2** illustrates, when connecting, say, two 4-Port Student Hubs, Hub #C, and Hub #D, in the daisychain, connect the system cable as follows:

To connect the System Cable:

1. Connect one of the system cable's DB25 male connectors to the Hub #C's DB25 female system port.

2. Connect the other system cable's DB25 male connector to the Hub #D's DB25 female system port.

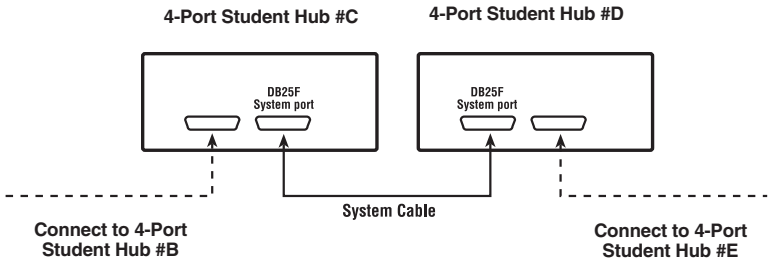

Figure 6-2. Diagram of the System Cable.

Refer to **Section 7.3.4** for details of connecting a 4-Port Student Hub to the Teacher Interface Unit.

6.3.3 Connecting the Terminator

You need to connect a terminator to the last 4-Port Student Hub in the daisychain. See **Figures 3-2** and **3-3** in **Chapter 3**, and **Section 7.3.5**, for further details.

6.3.4 Connecting the Com Cable

As a ClassWork Plus option, you can connect the Com Cable, as **Figure 6-3** illustrates. The Com cable connects the 4-Port Student Hub to the Com port on each of the four CPUs. You connect the Com cable as follows:

1. Connect the Com cable's DB9 male connector to the DB9 female Com port on the 4-Port Student Hub's front panel.

2. Connect the Com 1 Cable's DB9 female connector to the DB9 male Com port on Student # l's CPU.

3. Connect the Com 2 cable's DB9 female connector to the DB9 male Com port on Student #2's CPU.

4. Connect the Com 3 cable's DB9 female connector to the DB9 male Com port on Student #3's CPU.

5. Connect the Com 4 cable's DB9 female connector to the DB9 male Com port on Student #4's CPU.

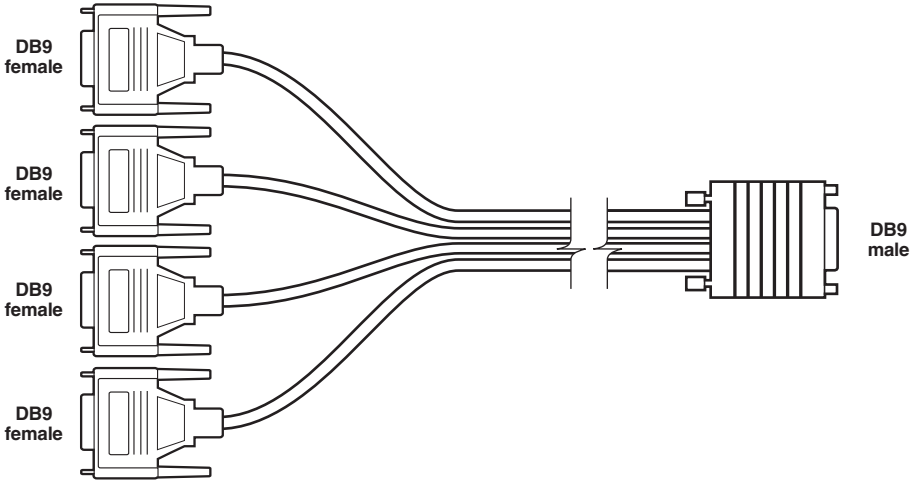

Figure 6-3. The ClassWork Plus Com Cable.

Connect the following to the 4-Port Student Hub's rear panel:

- The KVM Adapter Cable for AT or PS/2
- The CPU Adapter Cable for AT or PS/2
- The Power Supply

6.3.5 Connecting the KVM Adapter Cable

You connect up to four AT or up to four PS/2 KVM Adapter Cables to the 4-Port Student Hub.

Connecting the AT KVM Adapter Cable

To connect each AT KVM Adapter Cable to the 4-Port Student Hub, do the

following, as **Figure 6-4** illustrates:

1. Connect the KVM Adapter Cable's DB25 female station connector to the QIU's DB25 male station port.

2. Connect the KVM Adapter Cable's 5-pin DIN female keyboard connector to the keyboard's 5-pin DIN male connector.

3. Connect the KVM Adapter Cable's HD DB15 female screen connector to the monitor's HD DB15 male connector.

4. Connect the KVM Adapter Cable's DB9 male mouse connector to the mouse's DB9 female connector.

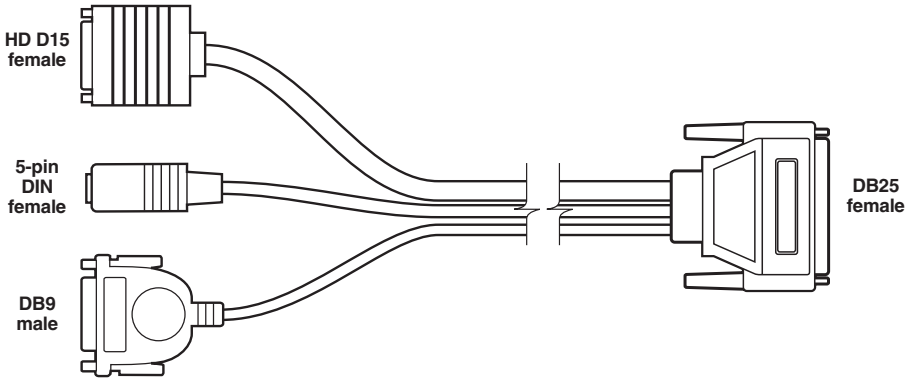

Figure 6-4. The 4-Port Student Hub's AT KVM Adapter Cable.

Connecting the PS/2 KVM Adapter Cable

To connect each PS/2 KVM Adapter Cable to the 4-Port Student Hub, do the following, as **Figure 6-5** illustrates:

1. Connect the KVM Adapter Cable's DB25 female station connector to the 4-Port Student Hub's DB25 male station port.

2. Connect the KVM Adapter Cable's 6-pin Mini-DlN female keyboard connector to the keyboard's 6-pin Mini-DlN male connector.

3. Connect the KVM Adapter Cable's HD DB15 female screen connector to the screen's HD DB15 male connector.

4. Connect the KVM Adapter Cable's 6-pin Mini-DIN female mouse connector to the mouse's 6-pin Mini-DIN male connector.

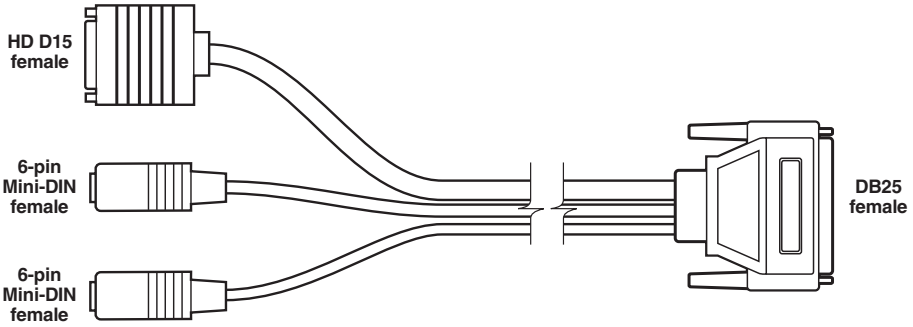

Figure 6-5. The 4-Port Student Hub's PS/2 KVM Adapter Cable.

6.3.6 Connecting the CPU Adapter Cable

You connect up to four AT or up to four PS/2 CPU Adapter Cables to the 4-Port Student Hub.

Connecting the AT CPU Adapter Cable

To connect each AT CPU Adapter Cable to the 4-Port Student Hub, do the following, as **Figure 6-6** illustrates:

1. Connect the CPU Adapter Cable's DB25 male computer connector to the 4-Port Student Hub's DB25 female computer port.

2. Connect the CPU Adapter Cable's 5-pin DIN male keyboard connector to the CPU's 5-pin DlN female keyboard port.

3. Connect the CPU Adapter Cable's HD DB15 male screen connector to the CPU's HD DB15 female screen port.

4. Connect the CPU Adapter Cable's DB9 female mouse connector to the CPU's DB9 male mouse port.

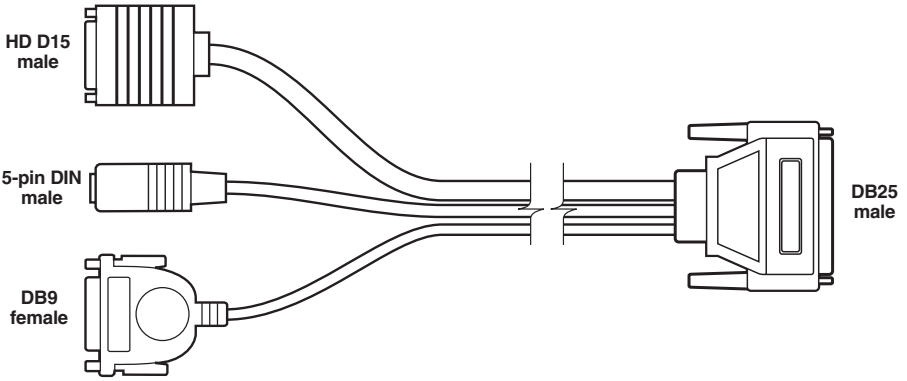

Figure 6-6. The 4-Port Student Hub's AT CPU Adapter Cable.

Connecting the PS/2 CPU Adapter Cable

To connect each PS/2 CPU Adapter Cable to the 4-Port Student Hub, do the following, as **Figure 6-7** illustrates:

1. Connect the CPU Adapter Cable's DB25 male Computer connector to the 4-Port Student Hub's DB25 female Computer port.

2. Connect the CPU Adapter Cable's 6-pin Mini-DIN male keyboard connector to the CPU's 6-pin Mini-DIN female keyboard port.

3. Connect the CPU Adapter Cable's HD DB15 male screen connector to the CPU's HD DB15 female screen port.

4. Connect the CPU Adapter Cable's 6-pin Mini-DIN male mouse connector to the CPU's 6-pin Mini-DIN female mouse port.

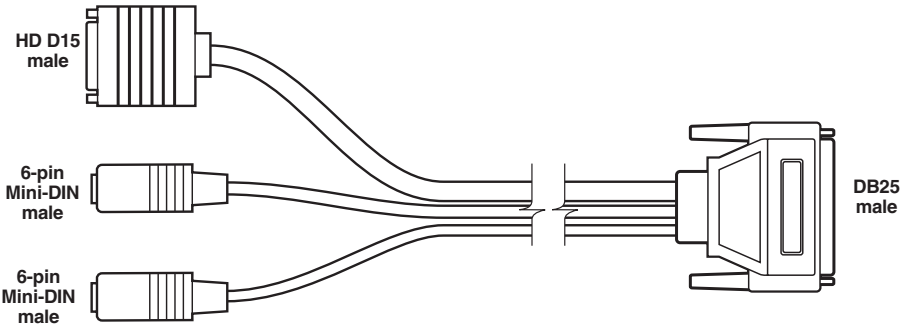

Figure 6-7. The 4-Port Student Hub's PS/2 CPU Adapter Cable.

6.3.7 Connecting the 4-Port Student Hub to the Power Supply

There is no Power Switch on a 4-Port Student Hub; unlike the Teacher Interface Unit. See **Section 7.4** for general information on connecting the Power Supply.

Figure 6-8 illustrates the 4-Port Student Hub's Switching Power Supply suitable for the USA and Europe, which you connect as follows:

1. Connect the Switching Power Supply's Power connector (labeled Power Connector #A in **Figure 6-8**) to the Power Cord's Power connector.

2. Connect the Switching Power Supply's Power connector (labeled Power Connector #B in **Figure 6-8**) to the 4-Port Student Hub's Power connector.

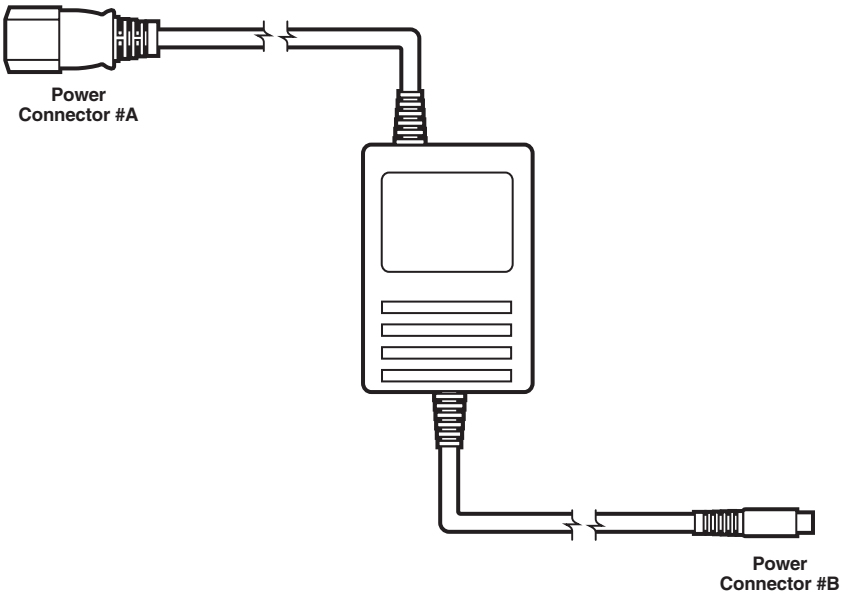

Figure 6-8. The 4-Port Student Hub's Power Supply for USA and Europe.

You connect the Power Cord to the Power Supply's Power Connector #A, which **Figure 6-9** illustrates.

1. Connect the Switching Power Supply's Power Connector #A to the Power Cord's Power connector.

2. Connect the Power Cord's other connector to the wall socket.

Figures 6-10 and **6-11** illustrate the 4-Port Student Hub Cable Diagram for AT and PS/2.

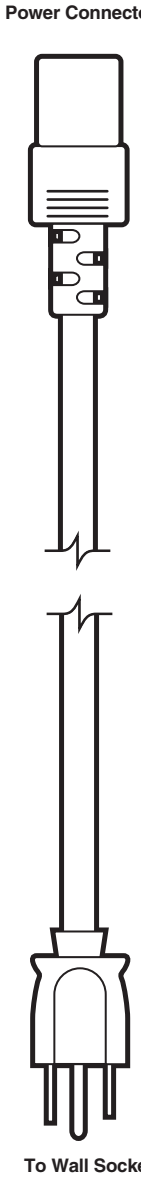

Figure 6-9. The 4-Port Student Hub's Power Cord for USA.

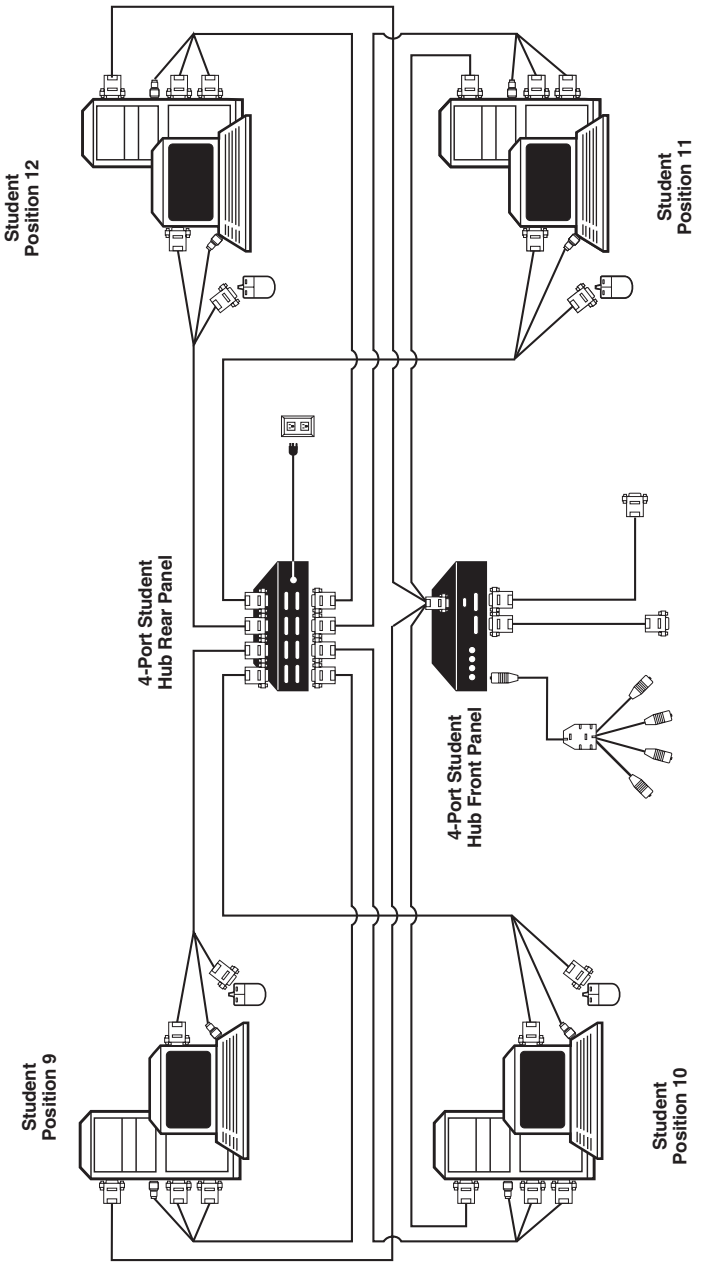

Figure 6-10. The 4-Port Student Hub Cable Diagram for AT.

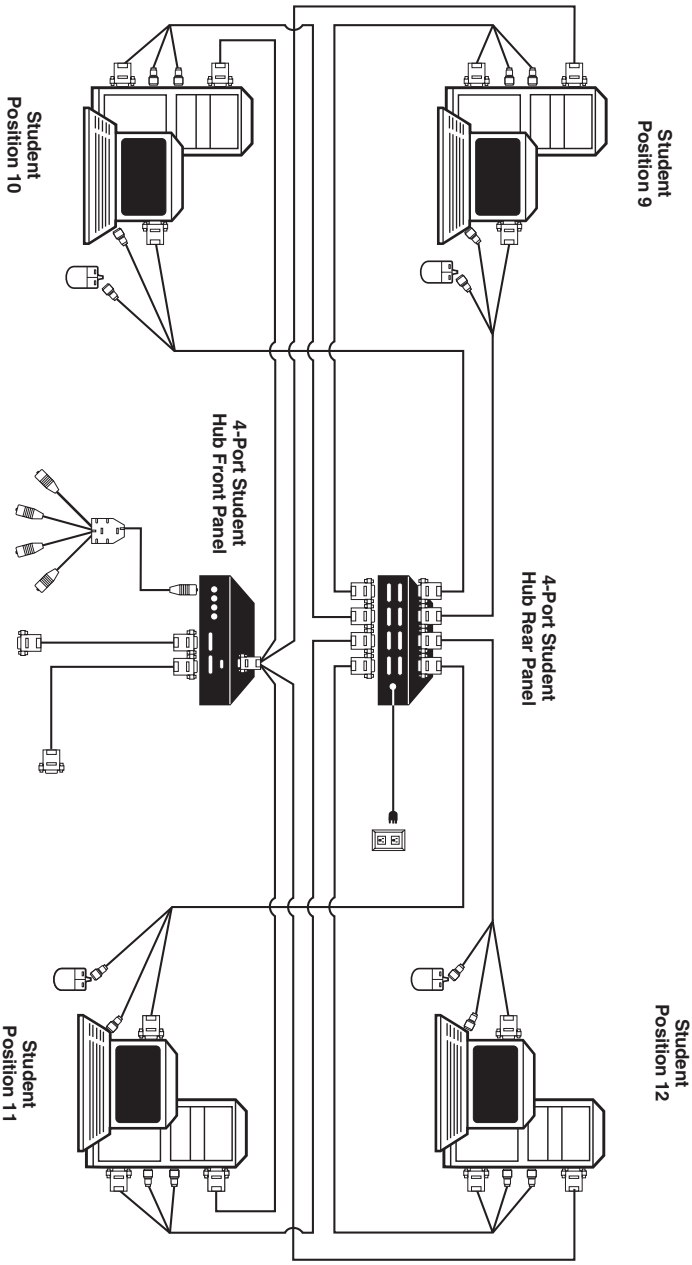

Figure 6-11. The 4-Port Student Hub Cable Diagram for PS/2.

7. Installing the Teacher Interface Unit (TIU)

This chapter describes connecting the Teacher Position, which includes two groups of items:

- The basic computer equipment, including a CPU, a keyboard, a screen, a mouse, and accessories like headphones and speakers.
- The specialized ClassWork Plus equipment including a Teacher Control Unit (TCU), a Teacher Interface Unit (TIU) (also called an Instructor Control Unit), and the required cables referred to in this chapter. You incorporate ClassWork Plus into your computerized classroom by rerouting the basic computer equipment via the specialized ClassWork Plus equipment.

7.1 Connecting the Teacher Control Unit (TCU)

The Teacher Control Unit (TCU) lets you type in the ClassWork Plus functions. **Figure 7-1** illustrates the TCU.

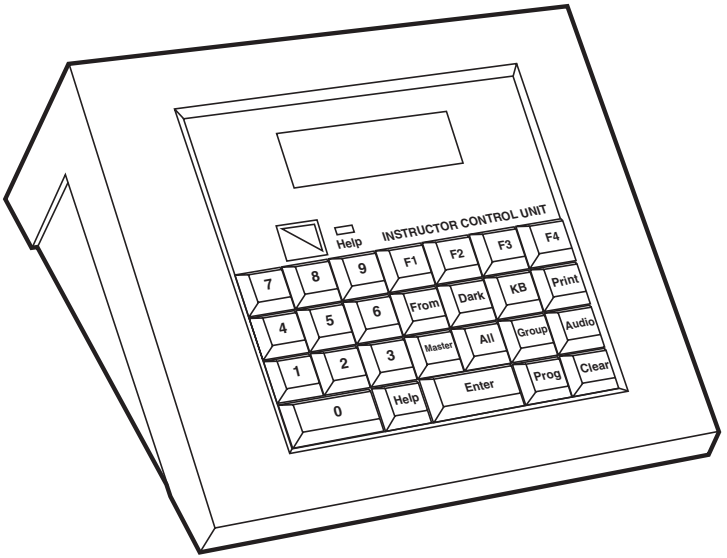

Figure 7-1. The Teacher Control Unit (TCU).

You connect the TCU by connecting the control cable between the TCU and the TIU. The control cable is a single cable with two 5-pin DIN male connectors, as **Figure 7-2** shows.

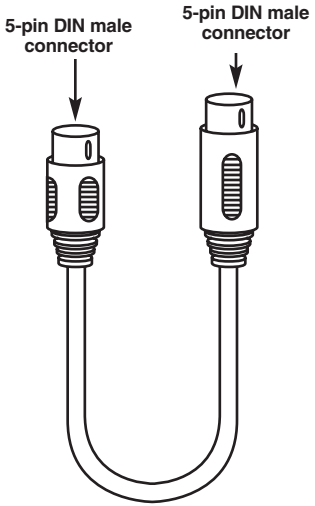

Figure 7-2. The ClassWork Plus Control Cable.

After connecting and then switching on the ClassWork Plus 4-Port Student Hub system, the TCU draws its power from the TIU via the control cable. The TCU for ClassWork Plus Board Version differs: It also has an On/Off switch and a 9-VAC power port.

To connect the TCU:

1. Connect one of the control cable's 5-pin DIN male connectors to the 5-pin DIN female control port on the TIU's rear panel.

2. Connect the other Control Cable's 5-pin DIN male connector to the TCU's 5-pin DIN female port on the TCU's back panel.

7.2 Preparing the Teacher Interface Unit (TIU)

The Teacher Interface Unit (TIU) connects the Teacher's CPU to the ClassWork Plus System. **Figure 7-3** illustrates the TIU.

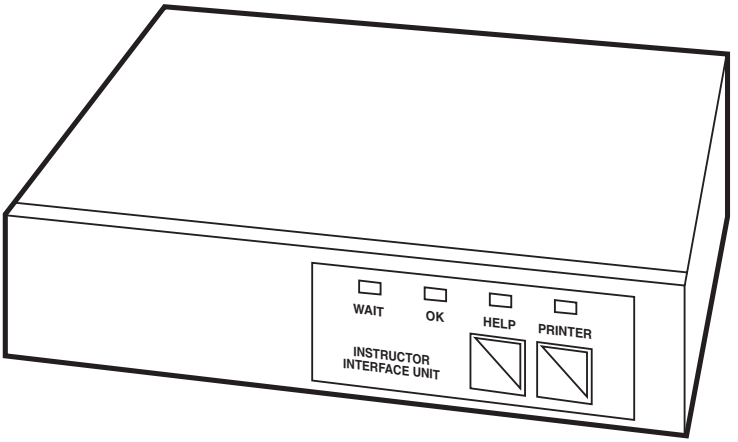

Figure 7-3. The Teacher Interface Unit (TIU).

Before connecting the cables to the TIU's rear panel (see **Figure 5-2**), you need to set the DIP switches for AT or PS/2 as **Section 5.3** describes.

7.3 Connecting the Cables to the TIU

Connect the following to the TIU's rear panel:

- The Control Cable
- The Mouse Cable for either AT or PS/2
- The Keyboard Cable for either AT or PS/2
- The System Cable
- The Terminator
- The Screen
- The Power Supply

Refer to the *ClassWork Plus User's Manual* for details of connecting the following ClassWork Plus options:

- The Com port.
- The Audio port .

7.3.1 Connecting the Control Cable

Refer to the *ClassWork Plus User's Manual* .

7.3.2 Connecting the Mouse Cable

You use the Mouse Cable to connect the TIU to the CPU and the Teacher's mouse. There is a different Mouse Cable for AT or PS/2, as **Figures 7-4** and **7-5** illustrate.

To connect the Mouse Cable for AT:

1. Connect the Mouse Cable's main DB9 female connector to the TIU's DB9 male Mouse port.
2. Connect the Mouse Cable's DB9 male short-portion connector to the mouse's DB9 female connector.
3. Connect the Mouse Cable's DB9 female long-portion connector to the CPU's DB9 male Mouse port.

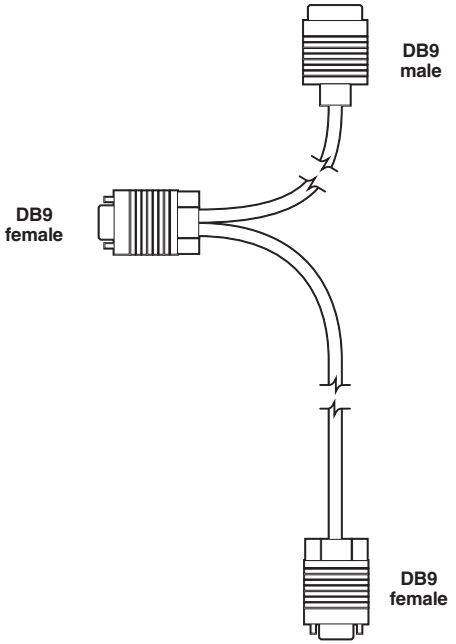

Figure 7-4. The ClassWork Plus Mouse Cable AT.

To connect the Mouse Cable for PS/2:

1. Connect the Mouse Cable's DB9 female connector to the TIU's DB9 male Mouse port.

2. Connect the Mouse Cable's 6-pin Mini-DIN female short-portion connector to the mouse's 6-pin Mini-DIN male connector.

3. Connect the Mouse Cable's 6-pin Mini-DIN male long-portion connector to the CPU's 6-pin Mini-DIN female Mouse port.

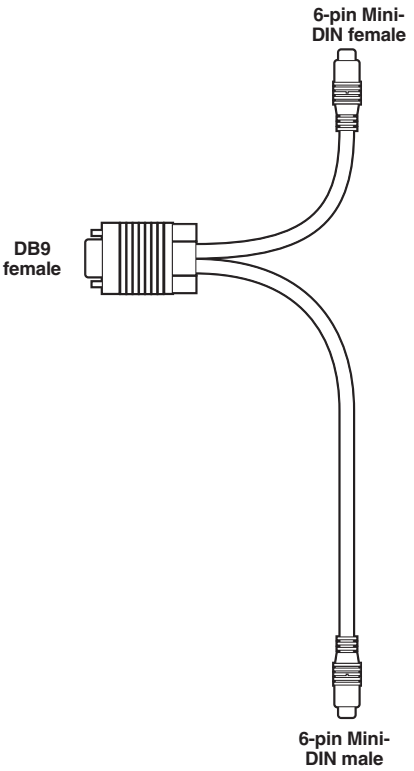

Figure 7-5. The ClassWork Plus Mouse Cable PS/2.

7.3.3 Connecting the Keyboard Cable

You use the Keyboard Cable to connect the TIU to the CPU and the Teacher's keyboard. There is a different Keyboard Cable for AT or PS/2, as **Figures 7-6** and **7-7** illustrate.

To connect the Keyboard Cable for AT:

1. Connect the keyboard cable's main DB9 male connector to the TIU's DB9 female keyboard port.

2. Connect the keyboard cable's 5-pin DIN female short-portion connector to the keyboard's 5-pin DIN male connector.

3. Connect the keyboard cable's 5-pin DIN male long-portion connector to the CPU's 5-pin DIN female Keyboard port.

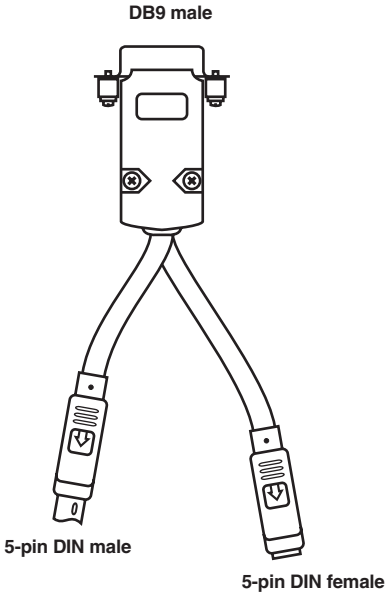

Figure 7-6. The ClassWork Plus Keyboard Cable AT.

To connect the keyboard cable for PS/2:

1. Connect the keyboard cable's DB9 male connector to the TIU's DB9 female KB port.

2. Connect the keyboard cable's 6-pin Mini-DIN female short-portion connector to the keyboard's 6-pin Mini-DIN male connector.

3. Connect the keyboard cable's 6-pin Mini-DIN male long-portion connector to the CPU's 6-pin Mini-DIN female keyboard port.

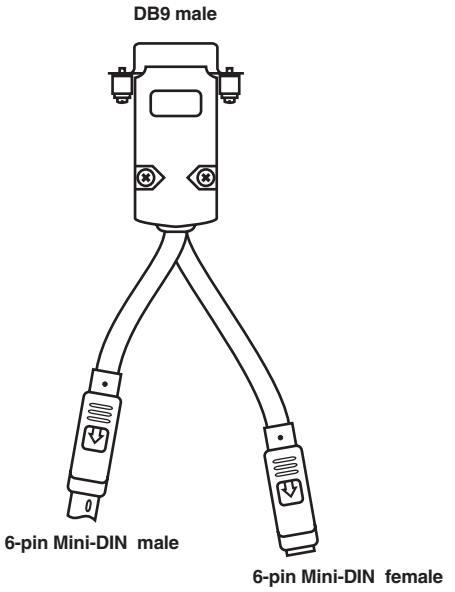

Figure 7-7. The ClassWork Plus Keyboard Cable PS/2.

7.3.4 Connecting the System Cable

The system cable, as **Figure 7-8** illustrates, consists of a DB25 coaxial cable. You use the same system cable for both AT and PS/2.

You use a system cable to connect the Teacher Interface Unit to the 4-Port Student Hub(s), and to connect one 4-Port Student Hub to another. When using a system cable to connect the Teacher Interface Unit to a 4-Port Student Hub, do the following:

1. Connect one of the system cable's DB25 male connectors to the Teacher Interface Unit's DB25 female system port.

2. Connect the system cable's other DB25 male connector to the DB25 female system port on the 4-Port Student Hub's rear panel.

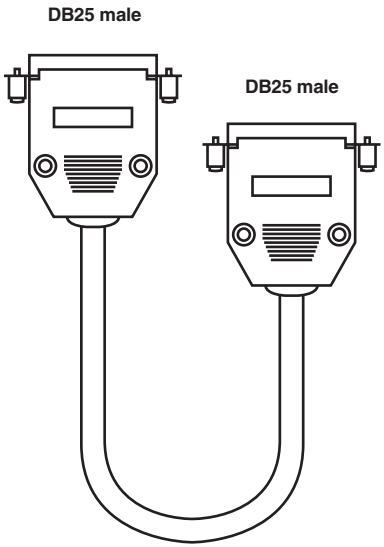

Figure 7-8. The System Cable.

7.3.5 Connecting the Terminator

A terminator, which **Figure 7-9** illustrates, should be installed at both ends of the system line. A terminator is by definition a connector that includes 75-ohm resistors, which absorb any signals that reach the end of the cable and prevent them reflecting back into the cable and causing interference.

To connect the terminators:

1. Connect a terminator's DB25 male connector to the DB25 female system port on the Teacher Interface Unit's rear panel; and

2. Connect a terminator's DB25 male connector to the DB25 system port on the 4-Port Student Hub's front panel.

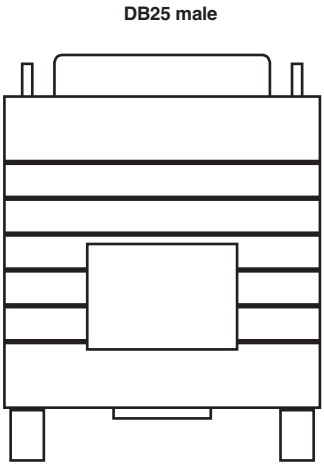

Figure 7-9. The Terminator.

7.3.6 Connecting the Monitor

The monitor cable, as **Figure 7-10** illustrates, consists of an HD DB15 male connector attached at one end, and an HD DB15 female connector attached at the other end.

To connect the screen cable:

1. Connect the monitor's HD DB15 male connector to the Teacher Interface Unit's HD DB15 female screen out port.
2. Connect the monitor cable's HD DB15 male connector to the HD DB15 female monitor port of the Teacher's CPU.
3. Connect the monitor cable's HD DB15 female connector to the Teacher Interface Unit's HD DB15 male Screen In port.

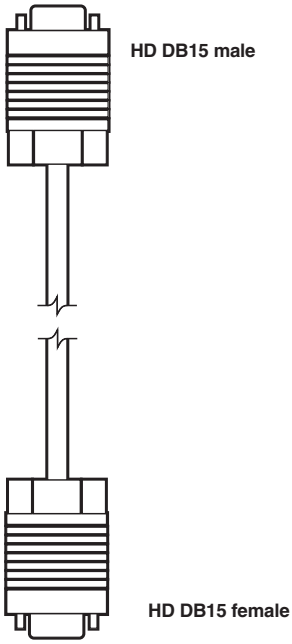

Figure 7-10. The Screen Cable.

7.4 Connecting the TIU to the Power Supply

You connect all the ClassWork Plus 4-Port Student Hub classroom's hardware items to the power supply, including the basic computer equipment and the specialized ClassWork Plus equipment, as **Section 6.3.7** explains.

This section deals with connecting the TIU to the power supply. To connect a 4-Port Student Hub to the Power Supply see **Section 6.3.7**.

Switch on the TIU and the 4-Port Student Hubs before you switch on the CPU. On the TIU, press the power switch inwards. There is no switch on a 4-Port Student Hub—each Hub is powered automatically once connected.

The TIU's power supply is external and nonswitching. **Figure 7-11** illustrates the TIU's power supply suitable for the USA. This power supply contains the power connector and the adapter plug all in one.

A power supply often consists of a separate power connector and a separate adapter plug. In such cases (for example, the European Power Cord and the Israeli Power Cord), you connect the power cord's connector to the Adapter's Power

Connector. For certain destinations, including Italy, Cyprus, and the UK, you require different Power Adapters.

To connect the TIU to the Power Supply:

1. Connect the Power Adapter Cable's plug to the TIU's 9VAC connector.
2. Connect the Power Cord's connector to the wall socket. This connects the TIU to the Power Supply.

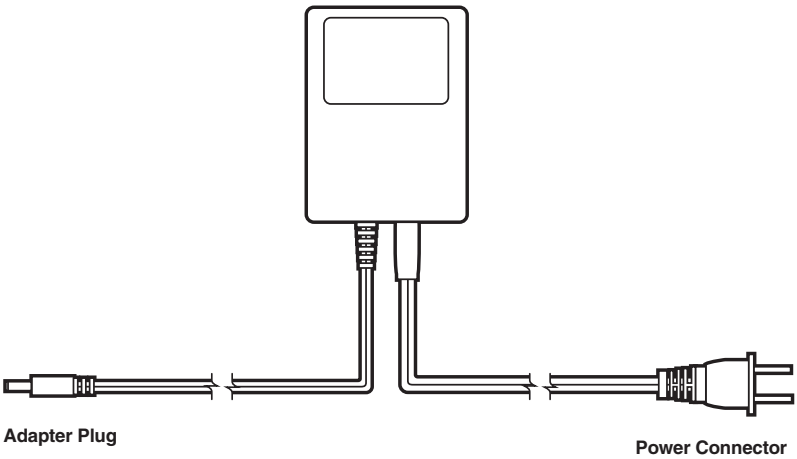

Figure 7-11. The TIU's Power Supply suitable for the USA.

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