

Classnet Twist



Installation Guide

Welcome to your Classnet Twist System

The Classnet Twist System produced by Minicom Advanced Systems Limited, includes features that are described later in this Installation Guide, Version 2.1 8/03.

Technical precautions

This equipment generates radio frequency energy and if not installed in accordance with the manufacturer's instructions, may cause radio frequency interference.

This equipment complies with Part 15, Subpart J of the FCC rules for a Class A computing device. This equipment also complies with the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications. These above rules are designed to provide reasonable protection against such interference when operating the equipment in a commercial environment. If operation of this equipment in a residential area causes radio frequency interference, the user, and not Minicom Advanced Systems Limited, will be responsible.

Changes or modifications made to this equipment not expressly approved by Minicom Advanced Systems Limited could void the user's warranty.

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Table of Contents

CHAPTER 1: INTRODUCTION	1-1
The Classnet Twist	1-1
CHAPTER 2: OVERVIEW	2-1
Choosing your Classnet Twist system	2-1
Recommendation	2-2
The components of the Classnet Twist system	2-2
The Teacher Control unit (TCU)	2-2
The Teacher Interface unit (TIU)	2-2
The student units	2-3
The Classnet Twist Multiloop	2-3
The classroom layout	2-3
Operating the Classnet functions	2-4
CHAPTER 3: THE CLASSNET TWIST UNITS	3-1
The Twist TIU	3-1
The Student Unit	3-1
CHAPTER 4: PRE-INSTALLATION GUIDELINES	4-1
The System cable	4-1
Ground Loop problems	4-2
Ground Loop Solutions	4-2
CHAPTER 5: INSTALLING AND CONNECTING THE CLASSNET TWIST SYSTEM	5-1
Connecting the Classnet Twist TIU	5-1
Connecting to an AT type computer	5-2
Connecting the System cable	5-2
Keyboard/Mouse In/Out cable for PS/2 type computers	5-3
Connecting the Y Screen cable	5-5
Connecting the Control cable	5-6
Connecting the Power adapter and Power cord	5-7
Installing the Card version of the Twist Student Interface unit	5-9
Connecting the Twist Student Units to the system	5-9
Connecting the System cable	5-11

Table of Contents

Connecting the Keyboard/Mouse cable for PS/2 type computers	5-11
Connecting the Screen In/Out cable	5-13
Connecting the Box version student units to the Power supply	5-14
Connecting the Classnet Twist units to AT type computers	5-17
The Adapter cables	5-17
Connecting the Mouse adapter cable	5-18
Connecting the Keyboard In adapter cable	5-18
Connecting the Keyboard Out adapter cable	5-18
CHAPTER 6: SETTING THE ID NUMBERS	6-1
The teacher's ID number	6-1
The students' ID numbers	6-2
Testing the ID numbers	6-2
CHAPTER 7: IMAGE TUNING	7-1
Transferring screen images	7-1
Tuning an image	7-1
APPENDIX A: TECHNICAL SPECIFICATIONS	A-1
APPENDIX B: CLASSNET TWIST PRODUCT LINE	B-1
APPENDIX C: CONNECTING THE TWIST MULTILoop	C-1
Mapping the classroom layout	
using the Classnet Twist Multiloop	C-4
INDEX	i


Chapter 1: Introduction

The **Classnet** system from **Minicom** gives the teacher control over every student's monitor, mouse, and keyboard in the classroom.

The Classnet Twist

The **Classnet Twist** comes in two versions. The internal **PCI Card** version, and the external **Box** version.

This Guide describes the installation of both versions.

 The two versions of the Classnet Twist are fully compatible with each other.

The **Classnet Twist** is compatible with:

- IBM PS/2 or AT or compatible computers
- VGA, SVGA, or XGA video standards

Features of the **Classnet Twist**:

- Connect up to 63 student units to the system
- A transmission range of up to 300m/980ft

Chapter 2: Overview

When using the standard Teacher Control Unit – P/N 0CL13001, the **Classnet Twist** system can connect up to 63 student units. This figure increases to 99 students when using the special Teacher Control Unit 99 – P/N 0CL13013.

The **Classnet Twist** system has a topology of one long loop for the teacher and all **Twist** Student units. When using an additional unit called the **Classnet Twist Multiloop** you can have up to five smaller loops.

Choosing your Classnet Twist system

There are 3 things to consider when deciding whether to include the **Multiloop** in your **Classnet Twist** system. These are:

- The number of **Twist** Student units to be connected
- The length of the System cable
- The screen resolutions and refresh rates

With the **Multiloop** you can:

- Connect up to 63 **Twist** Student units to the **Classnet Twist** System
- Increase the overall System cable distance up to 300m / 980 ft

Recommendation

We recommend installing the **Multiloop** when:

- There are more than 15 **Twist** Student units
- The overall cable length exceeds 110m / 360ft

This recommendation depends on the screen resolution and refresh rates of the computers. You can install the **Classnet Twist** system for more than 15 **Twist** Student units without the **Multiloop** and still achieve acceptable screen transfer results. However, if you use high screen resolutions and refresh rates then consider the **Multiloop** option.

The components of the Classnet Twist system

The **Classnet Twist** system consists of:

- A Teacher Interface unit
- A Teacher Control unit
- A **Twist** PCI card for each student

Or

A **Twist** Student box for each student

- Cabling

The Teacher Control unit (TCU)

The teacher activates the **Classnet** commands using the TCU.

The Teacher Interface unit (TIU)

The TIU is always a box regardless of the type of student units in the **Classnet** system. The TIU

connects the teacher's computer to the **Classnet** system.

The student units

Both versions of the **Twist** Student unit are described further on in this Guide.

The Classnet Twist Multiloop

See Appendix C for further details and installation instructions.

The classroom layout

Planning and preparing the classroom layout is crucial. Chapter 4 discusses this in detail.

Figure 2-1 illustrates the basic **Classnet Twist** configuration.

Operating the Classnet functions

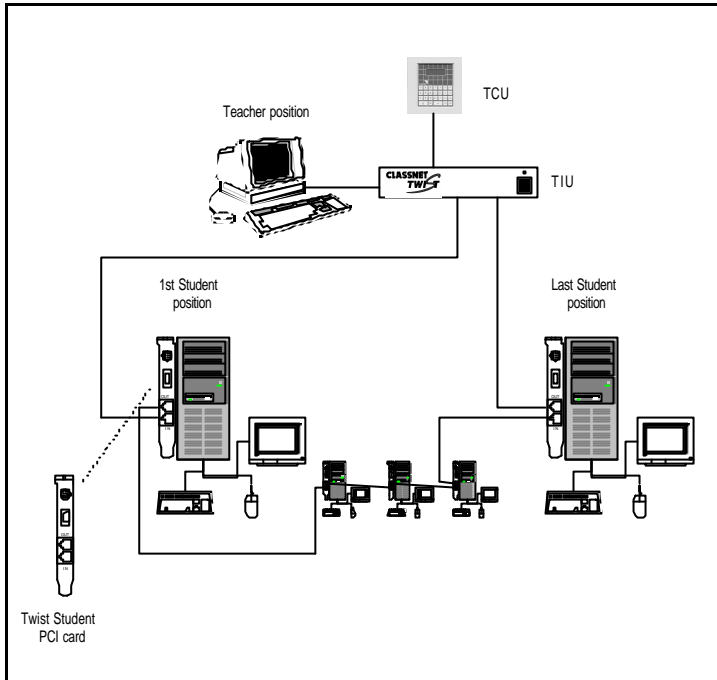


Figure 2-1 The Classnet Twist configuration

Operating the Classnet functions

You operate the **Classnet** functions using either software or hardware.

For software operation, use the **AristoClass Control Panel** software from **Minicom**.

For hardware operation, use the TCU and refer to the **Classnet Multilingual Operating Guide (For The Teacher)**.

Chapter 3: The Classnet Twist units

This chapter describes the **Twist** TIU and the **Twist** Student PCI card and Student box.

The Twist TIU

Figure 3-1 illustrates the front view of the **Twist** TIU.



Figure 3-1 The TIU front view

The Student Unit

Figure 3-2 illustrates the PCI card .

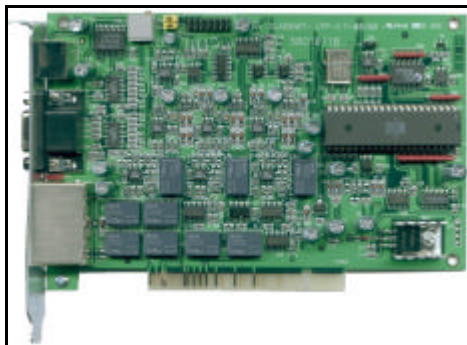


Figure 3-2 The PCI card

The Student Unit

Figure 3-3 illustrates the front view of the Student **Twist** Interface unit box.



Figure 3-3: The Student Unit box

Chapter 4: 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 either AT type or PS/2 type. You cannot have both types in the same system
- All mice, keyboard and monitors must be exactly the same type
- Ensure that the total System cable length does not exceed the maximum transmission distance – see Appendix A
- 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 the Power Poles are used.

The System cable

For the System cable use the FTP shielded 4x2x24 AWG CAT5 or CAT 5+E data cable. We strongly advise not to use patch cable because of its higher resistance and capacitance.

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

Ground Loop problems

Before installing the **Classnet Twist**, 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.

Ground Loop Solutions

- Measure the AC and DC voltages between the ground points. Ground potential differences greater than 2 volts will affect the **Classnet** system

Caution - 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 Electric 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 due to 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.

Chapter 5: Installing and connecting the Classnet Twist system

Prior to installing and connecting the **Classnet Twist** system:

- Ensure all computers are in working order
- Switch off all computers
- Disconnect all cables and power cords

Connecting the Classnet Twist TIU

Figure 5-1 illustrates the rear panel of the **Twist** TIU.

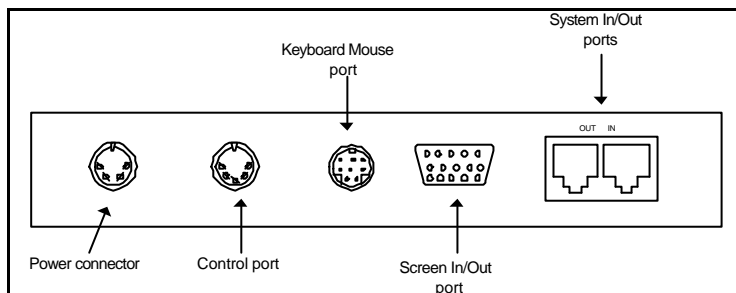


Figure 5-1 The TIU rear panel

You connect the following to the TIU:

- System cable P/N 5CB20390
- Keyboard/Mouse In/Out cable for PS/2 type computers -P/N 5CB10379
- Y Screen cable – P/N 5CB10391
- Control cable – P/N 5CB10033
- Power adapter – P/N 5PS10018/5PS20019

- Power cord – P/N 5CB60022/5CB60304

Connecting to an AT type computer

There are special Adapter cables to connect the TIU to an AT type computer. These Adapter cables are in addition to the above-mentioned cables. See page 5-16 for further details.

Connecting the System cable

Figure 5-2 illustrates the System cable with RJ-45M connectors attached at each end.

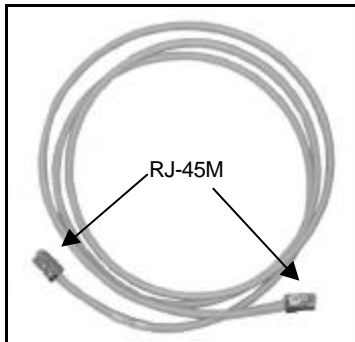


Figure 5-2 The FTP System Cable

Figure 5-3 illustrates the RJ-45M pinout of the cable according to the 100 Base-TX standard.

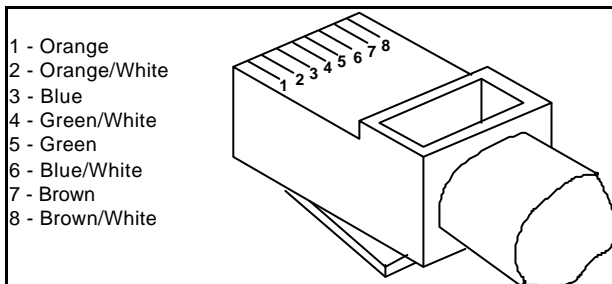


Figure 5-3 The RJ-45M Connector

To connect the System cable to the TIU:

1. Connect one of the System cable's RJ45M connectors to the TIU's System Out port.
2. Connect the other System cable's RJ45M connector to the System In port of the first Student Interface unit.

Keyboard/Mouse In/Out cable for PS/2 type computers

Figure 5-4 below illustrates the Keyboard/Mouse In/Out cable.

To connect the Keyboard/Mouse In/Out cable to the TIU:

1. Connect the cable's MiniDIN8M connector to the TIU's Keyboard/Mouse In/Out port.
2. Connect the MiniDIN6F Mouse Out connector to the mouse's MiniDIN6M connector.
3. Connect the MiniDIN6M Mouse In connector to the mouse port on the Teacher computer's rear panel.
4. Connect the MiniDIN6F Keyboard Out connector to the keyboard's MiniDIN6M connector.
5. Connect the MiniDIN6M Keyboard In connector to the Keyboard port on the Teacher computer's rear panel.

Connecting the Classnet Twist TIU

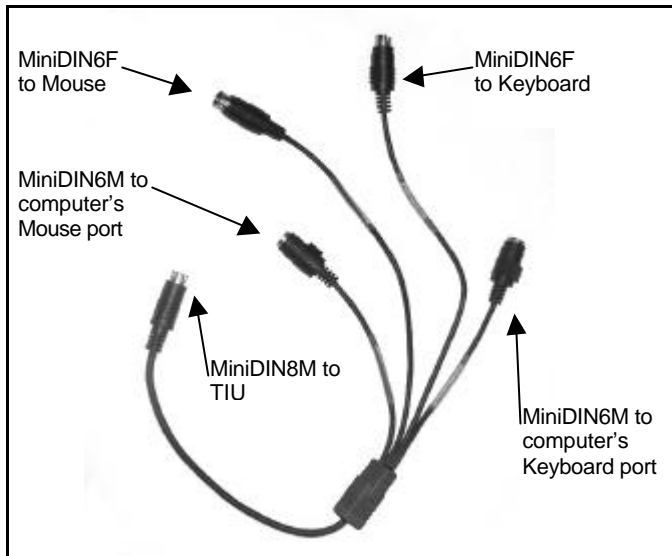


Figure 5-4 The TIU K/M In/Out cable for PS/2 type computers

Connecting the Y Screen cable

Figure 5-5 below illustrates the Y Screen cable.

To connect the Y Screen cable to the TIU:

1. Connect the cable's HDD15M connector #(1) to the TIU's Screen In/Out port.
2. Connect the cable's HDD15F connector #(2) to the teacher's monitor.
3. Connect the cable's HDD15M connector #(3) to the Screen port of the teacher's computer.

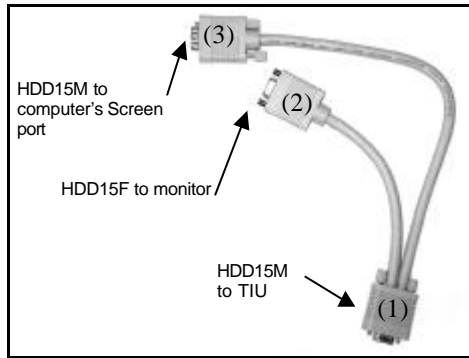


Figure 5-5 The TIU Y Screen cable

Connecting the Control cable

The Control cable connects the TIU to the TCU. Figure 5-6 illustrates the TCU, and figure 5-7 illustrates the Control cable connectors.



Figure 5-6 The TCU

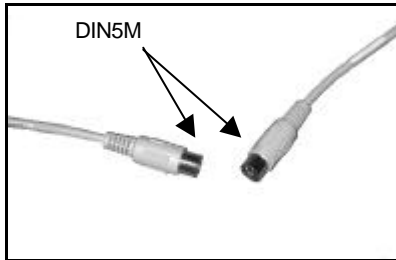


Figure 5-7 The Control cable

To Connect the Control cable:

1. Connect one DIN5M connector to the TIU's Control port.
2. Connect the other DIN5M connector to the DIN5F port on the rear of the TCU.

Connecting the Power adapter and Power cord

The Power adapter comes in two models, one for 110V and one for 220V.

To connect the Power adapter:

1. Connect the Power adapter's DIN4M connector to the TIU's Power connector.
2. Connect the Power adapter to the Power cord.
3. Connect the Power cord to a wall socket.

Figure 5-8 illustrates the connections of the teacher position.

Connecting the Control cable

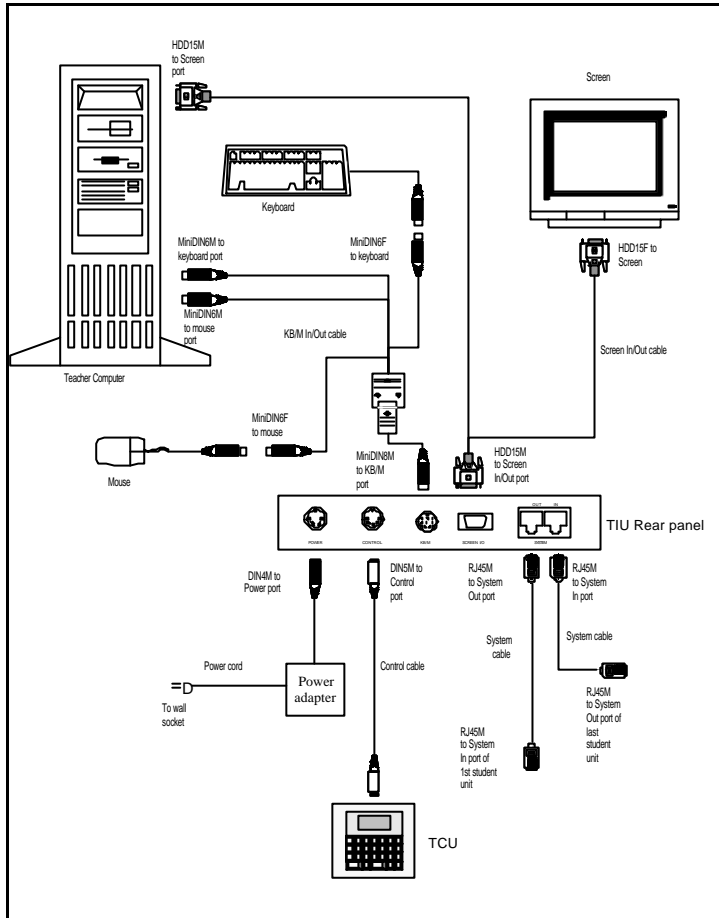


Figure 5-8 The teacher position connections

Installing the Card version of the Twist Student Interface unit

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 **Twist** Student card into each student's computer:

1. Remove computer covers.
2. Insert a Student card into any available PCI slot of each computer.
3. Replace computer covers.

Connecting the Twist Student Units to the system

Figure 5-9 illustrates the **Card** version connectors.

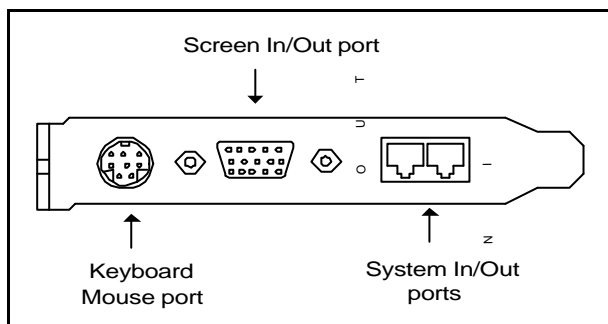


Figure 5-9 The Card version connectors

Figure 5-10 illustrates the ports on the **Box** version connectors.

Connecting the Twist Student Units to the system

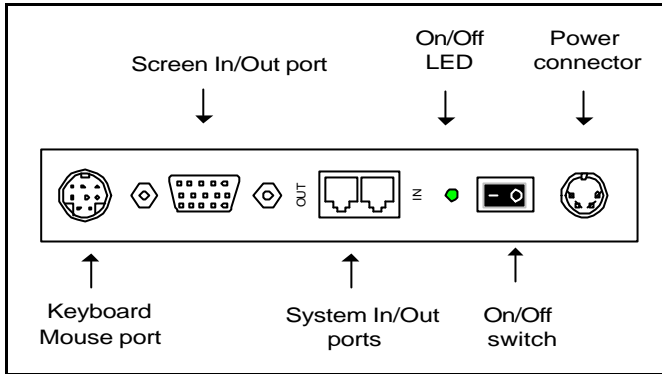


Figure 5-10 The Box version connectors

Both versions of the Student unit use the following 3 cables:

- System cable P/N 5CB20390
- Keyboard/Mouse cable for PS/2 type computers – **Card** version P/N 5CB10041. **Box** version P/N 5CB10379
- Y Screen cable – **Card** version P/N 5CB10047. **Box** version P/N 5CB10391

The latter two cables are longer for the **Box** version than for the **Card** version.

Only the **Box** Version of the Student unit uses the following:

- Power adapter– P/N 5PS10018/5PS20019
- Power cord – P/N 5CB60022/5CB60304

Connecting the System cable

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

To connect the System cable:

1. Connect one of the System cable's RJ45M connectors to the System Out port of one Student unit.
2. Connect the other System cable's RJ45M 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 Teacher unit's System In port.

Connecting the Keyboard/Mouse cable for PS/2 type computers

Figure 5-11 below illustrates the Keyboard/Mouse cable for PS/2 type computers.

To connect the Keyboard/Mouse In/Out cable to each student position:

1. Connect the cable's MiniDIN8M connector to the Student unit's KB/M port.
2. Connect the MiniDIN6F Mouse Out connector to the mouse's MiniDIN6M connector.
3. Connect the MiniDIN6M Mouse In connector to the Mouse port on the Student computer's rear panel.
4. Connect the MiniDIN6F Keyboard Out connector to the keyboard's MiniDIN6M connector.

Connecting the Twist Student Units to the system

5. Connect the MiniDIN6M Keyboard In connector to the Keyboard port on the Student computer's rear panel.

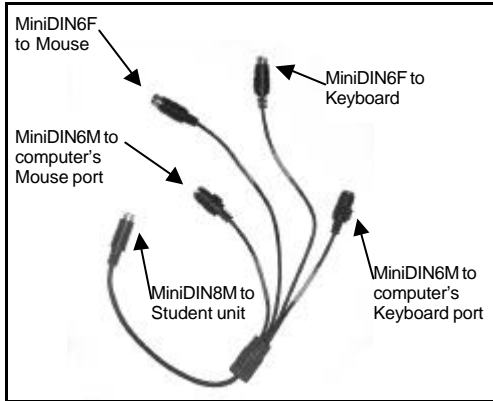


Figure 5-11 The Student's KB/Mouse In/Out Cable for PS/2 type computers

Connecting the Screen In/Out cable

Figure 5-12 below illustrates the Screen In/Out cable.

To connect the Screen In/Out cable to each Student unit:

1. Connect the cable's HDD15M connector #(1) to the unit's Screen In/Out port.
2. Connect the cable's HDD15F connector #(2) to the student's monitor.
3. Connect the cable's HDD15M connector #(3) to the Screen port of the student's computer.

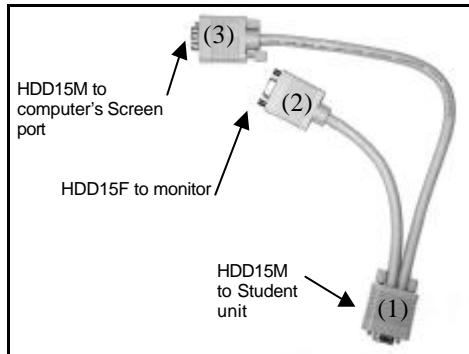


Figure 5-12 The Screen In/Out cable

Connecting the Box version student units to the Power supply

There is a Power adapter that comes in two models, one for 110V and one for 220V.

To connect the Power adapter:

1. Connect the Power adapter's DIN4M 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 5-13 and 5-14 on pages 5-14 and 5-15 illustrate the connections of the Classnet Twist Student unit **Card** and **Box** versions respectively.

Installing and connecting the Classnet Twist system

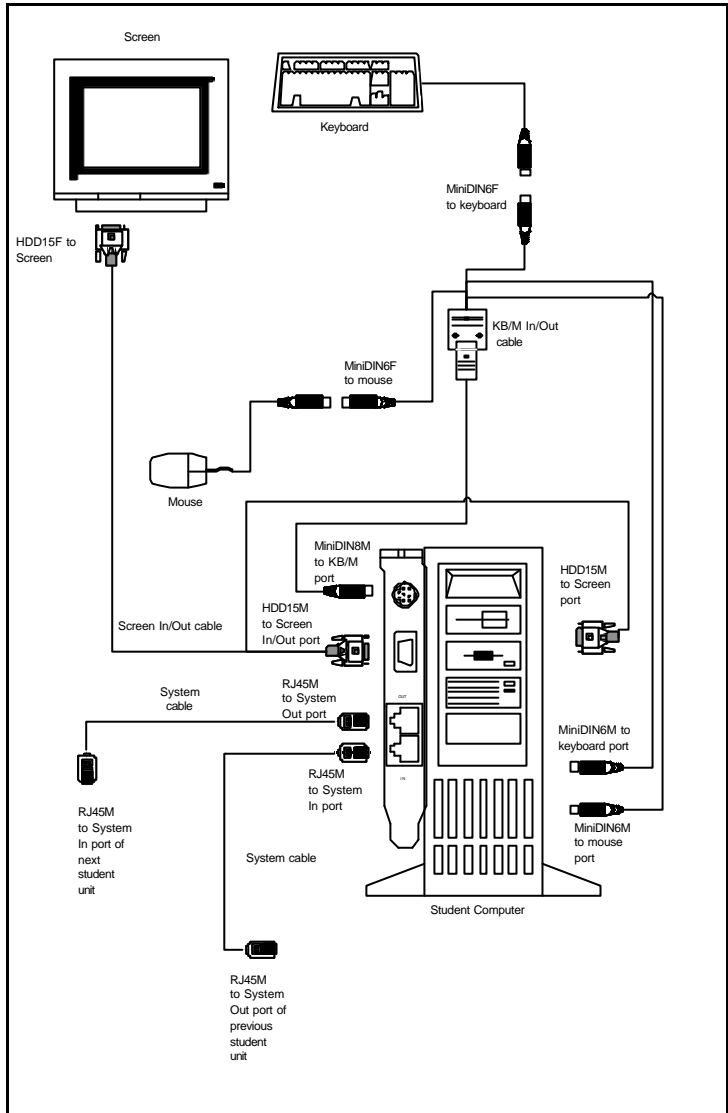


Figure 5-13 The Student unit Card connections

The Student Box connections

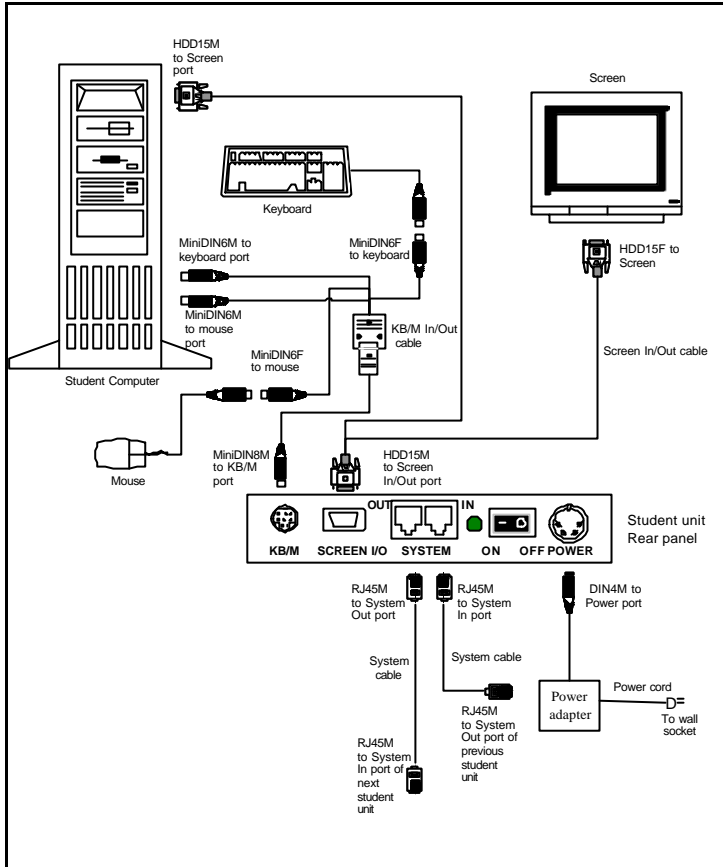


Figure 5-14 The Student unit Box connections

Connecting the Classnet Twist units to AT type computers

You can connect the Teacher unit and both the **Card** and **Box** versions of the Student unit, to an AT type computer.

There are three adapter cables to connect.

Note! You must always use a PS/2 type mouse.

The Adapter cables

The cables are:

- Mouse adapter cable – P/N 1SU41002 - See Figure 5-15
- Keyboard In adapter cable – P/N 5CB10119 - See Figure 5-16
- Keyboard Out adapter cable – P/N 5CB10243 - See Figure 5-17

All three cables connect to the Teacher or Student unit's Keyboard/Mouse In/Out cable. When ordering the AT kit, this cable has P/N 5CB10382.

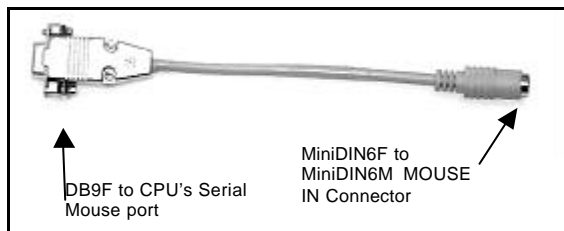


Figure 5-15 The Mouse adapter cable

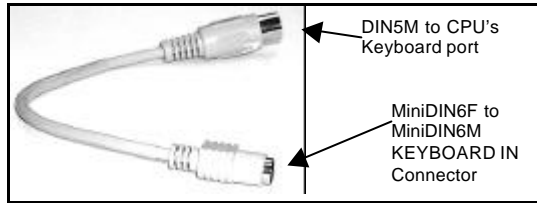


Figure 5-16 The Keyboard In adapter cable

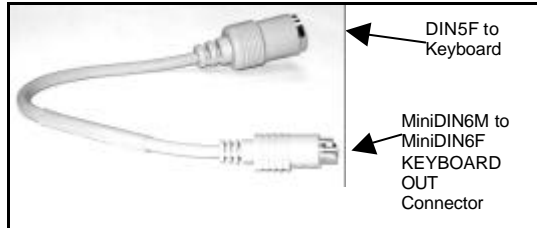


Figure 5-17 The Keyboard Out adapter cable

Connecting the Mouse adapter cable

Connect the Mouse adapter cable's:

1. MiniDIN6F to the Keyboard/Mouse In/Out MiniDIN6M Mouse In connector.
2. DB9F to the computer's Serial Mouse port.

Connecting the Keyboard In adapter cable

Connect the Keyboard In adapter cable's:

1. MiniDIN6F to the Keyboard/Mouse In/Out MiniDIN6M Keyboard In connector.
2. DIN5M to the computer's Keyboard port.

Connecting the Keyboard Out adapter cable

Connect the Keyboard Out adapter cable's:

1. MiniDIN6M to the Keyboard/Mouse In/Out cable's MiniDIN6F Keyboard Out connector.
2. DIN5F to the keyboard.

Chapter 6: Setting the ID numbers

After installing and connecting all the Classnet Twist units, you set the ID numbers of the teacher and all students using the TCU and each computer's keyboard.

To set the ID numbers:

1. Switch on the computers of the teacher and all students.
2. On the TCU press the following keys:

Print – All – Enter.

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

The teacher's ID number

3. On the teacher's keyboard press the following keys:

Shift – Shift – F1 – 0 – 0 – 0

Note! Only use the keyboard numbers above the alphabet keys, and not those to the right of the keyboard.

When you press **Shift – Shift**, the local mouse is disabled.

4. Press **ESC** to save the teacher ID number and exit the teacher's computer.

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. So ID number 1 is 001. ID number 2 is 002 and so on.

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

Shift – Shift – F1 – 0 – 0 – 1 – Esc

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

Shift – Shift – F1 – 0 – 0 – 2 – Esc.

And so on for each student.

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.

Testing the ID numbers

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

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

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.

Setting the ID numbers

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

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

To exit: Press **Print** on the TCU.

Chapter 7: Image tuning

With the Classnet system you can 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.

Transferring screen images

You can transfer screen images in the following 3 ways. From:

- The teacher to a student or students
- A student to the teacher
- A student to another student or students

Tuning an image

To tune an image:

1. Switch on all the classroom's computers.
2. On the TCU press **Print – All – Enter**.
3. Transfer the required screen image.

Transferring the teacher's image to all students

On the TCU press:

From – Mastr – All – Enter

The screen transfers.

4. Go to each student's position and look at the projected screen image. Now see point 5 below.

Transferring each student's image to the teacher

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

From – 0 – 1 – Mastr – Enter

The screen transfers.

4. Look at the projected screen image. Now see point 5 below.

Transferring each student's image to another student

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

From – 0 – 1 – 1 – 2 – Enter

The screen transfers.

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

Shift – Shift – F2.

6. Press the Left or Right Directional Arrow keys until the image quality is satisfactory.
7. Press **Esc**. This saves the adjustment.
8. When all the images are satisfactory go to the TCU and exit the image adjustment mode by pressing **Print**.

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

Appendix A: Technical Specifications

Maximum distance

Without the Multiloop - 110m/360ft.
With the Multiloop - 5 x 60m/200ft each loop.

System

Resolution	Up to 1280 x 1024 @ 85Hz
Operating systems	DOS, Windows (3x, 9x 2000, NT, ME, XP), Linux
Mouse support	PS/2, Wheelmouse
Video	VGA, SVGA, or XGA
Operating temperature	0° to 40° C /32° to 104° F
Storage temperature	-40° C to 70° C/-40° to 158° F
Humidity	80% non-condensing relative humidity

Dimensions

Dimensions

Teacher Box	230.0 x 223.0 x 30.0 mm 9.17 x 8.86 x 1.20"
Student Card	167.64 x 104.14 mm 6.5 x 4.1"
Student Box	182.0 x 173.0 x 25.4 mm 7.2 x 6.8 x 1"
Multiloop	222.0 mm x 141.0 mm x 31.0 mm 8.74 x 5.55 x 1.22"
Teacher Control unit	91 x 218 x 229 mm 3.58 x 8.58 x 9.0"

Power

Teacher Interface unit	AC Adapter 230V/9V 2A; 120V/9V 2A
Student	Card - Internal Box - AC Adapter 230V/9V 2A; 120V/9V 2A
Multiloop	2 x 9 Vac, 2 x 1 A from AC/AC adapter
Teacher Control unit	9 Vac, 1.5 A from AC/AC adapter

Appendix B: Classnet Twist product line

Order code	Details & description
0CL42001	CLASSNET TWIST TEACHER PS/2 220V
1CL42001	Classnet Twist Teacher Interface unit
5CB10379	KM I/O cable PS2
5CB10391	Y Screen cable
5CB60022	Power cord Europe 220V
5PS10018	Power supply 220V/9VX2 -AC 2A
5AC00160	In Line Coupler 8P8C
5CB20390/?	FTP CAT5 System cable with RJ45 connectors ?m/?ft
0CL42002	CLASSNET TWIST TEACHER PS/2 110V
1CL42001	Classnet Twist Teacher Interface unit
5CB10379	KM I/O cable PS2
5CB10391	Y Screen cable
5CB60304	Power cord USA 110V
5PS20019	Power supply 110V/9VX2 -AC 2A
5AC00160	In Line Coupler 8P8C
5CB20390/?	FTP CAT5 System cable with RJ45 connectors ?m/?ft
0CL41005	CLASSNET TWIST AT KIT
1SU41002	PS/2-AT Mouse adapter
5CB10119	PS/2-AT KB In Adapter cable
5CB10243	PS/2-AT KB Out Adapter cable
5CB10382 REVC	KM I/O cable

Classnet Twist product line

Order code	Details & description
0CL41001	CLASSNET TWIST STUDENT CARD PS/2
1CL41001	Classnet Twist Student Interface unit card
5CB10041	KM I/O cable PS2
5CB10047	Y Screen cable
0CL41003	CLASSNET TWIST STUDENT BOX PS/2 220V
1CL41004	Classnet Twist Student Interface unit box
5CB10379	KM I/O cable PS2
5CB10391	Y Screen cable
5CB60022	Power cord Europe 220V
5PS10018	Power supply 230V/9V -AC 1.4 A
0CL41004	CLASSNET TWIST STUDENT BOX PS/2 110V
1CL41004	Classnet Twist Student Interface unit box
5CB10379	KM I/O cable PS2
5CB10391	Y Screen cable
5CB60304	Power cord USA 110V
5PS20019	Power supply 110VAC/9V -AC 1.4A
0CL41005	CLASSNET TWIST AT KIT
1SU41002	PS2-AT Mouse adapter
5CB10119	PS2-AT KB In Adapter cable
5CB10243	PS2-AT KB Out Adapter cable
5CB10382	KM I/O cable

REVC

Classnet Twist product line

Order code	Details & description
0CL41009	CLASSNET TWIST MULTILOOP 220V
1CL41005	Classnet Twist Multiloop unit
5PS10018	Power supply AC/AC 230VAC/9V -AC
5CB60022	Power cord EUROPE 220V
5AC10170	Rack mount set for Multiloop
0CL41010	CLASSNET TWIST MULTILOOP 110V
1CL41005	Classnet Twist Multiloop unit
5PS20019	Power supply AC/AC 120VAC/9V -AC
5CB60304	Power cord USA 110V
5AC10170	Rack mount set for Multiloop

0CL13001	TEACHER CONTROL UNIT
1CL13004	Teacher Control Unit
5CB10033	TCU Control cable
0CL13013	TEACHER CONTROL UNIT 99
1CL13004	Teacher Control Unit up to 99 students
5CB10033	TCU Control cable

Appendix C: Connecting the Classnet Twist Multiloop

Before connecting the **Multiloop**, set up the classroom by evenly dividing the Student stations between all five loops.

The maximum number of **Classnet Twist** Units in each loop should not be more than 16.

The maximum length of the System cable in each loop should be less than 60m / 200 ft.

Note! The Teacher Unit must always be in Loop 1.

Figure C-1 illustrates the **Multiloop** front view.

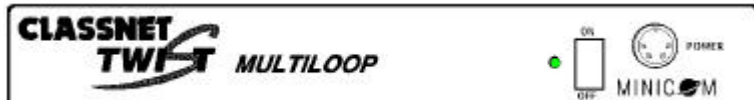


Figure C-1 The Multiloop front view

Figure C-2 illustrates the **Multiloop** rear view.

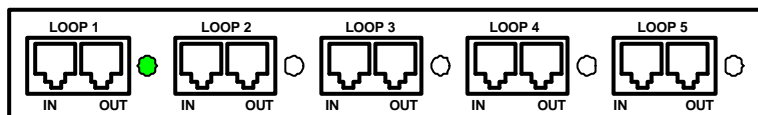


Figure C-2 The Multiloop rear view

Figure C-3 below illustrates the **Classnet Twist Multiloop** configuration installed in a classroom of one teacher and 63 students.

Mapping the classroom layout using the Classnet Twist Multiloop

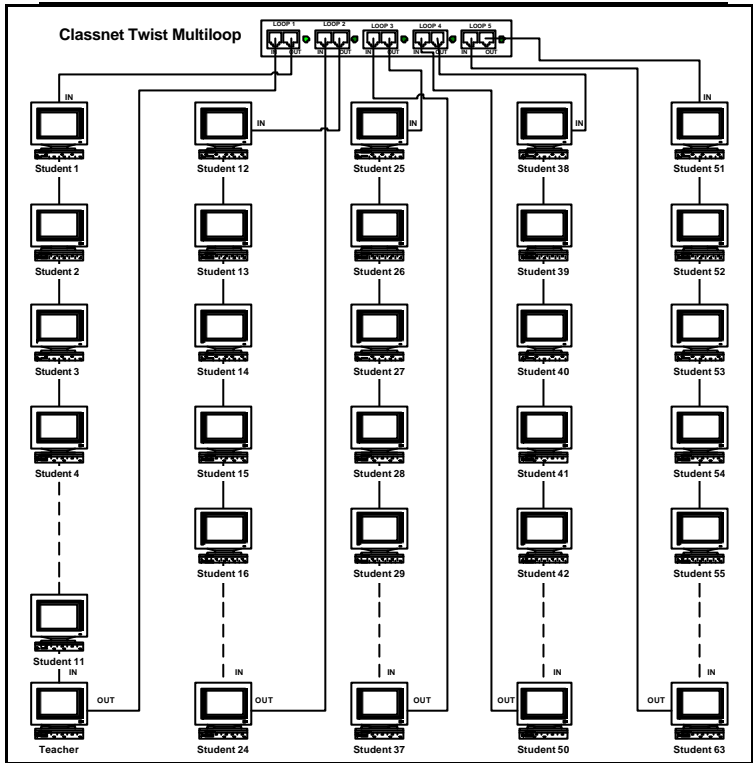


Figure C-3 The Classnet Twist Multiloop configuration

To connect the **Multiloop**:

1. Place the **Multiloop** away from florescent lights, strong magnetic and electromagnetic fields and all other sources of electrical noise.
2. Connect the 9VAC power adapter to the power connector on the front panel of the **Multiloop** and plug the cord into a wall socket.
3. Connect the loops using standard CAT 5 FTP Solid Wire 2 x 4 x 24 AWG System cable as follows:
 - Connect the Out port of loop 1 of the **Multiloop** to the In port of the first **Twist** unit.
 - Connect the Out port of the last **Twist** unit in the loop to the In port of loop 1 of the **Multiloop**. For best performance, connect the Teacher unit as the last station in loop 1.
 - Connect the other loops to the rest of the **Twist** units, as above.
4. Set the Student units ID numbers according to your classroom layout. To set the ID numbers, see chapter 6.

Mapping the classroom layout using the **Classnet Twist Multiloop**

When the Multiloop is installed, you need to map the classroom layout before operating the **Classnet Twist** system.

To map the classroom layout:

1. Switch on all computers and **Classnet Twist** units.
2. On the TCU press the following keys:

Print – Mastr – Enter – Print – Print – 5 – 5 – Enter

During the mapping, all five green LEDs on the rear panel of the **Multiloop** illuminate. Once the mapping finishes, it is saved in the memory, and all the LEDs darken.

3. Wait for 30 seconds, then press **PRINT**. The **Classnet Twist System** is now operational.

<p>Note! Each time you switch on the Classnet Twist Multiloop, press the Reset button located on the rear panel of the TCU.</p>
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When a **Classnet** command is sent to a loop, the green LEDs near the RJ45 connectors of that loop illuminate.

Index

A

AT type computers, 5-2,
5-17

C

Cable distance, 2-1
Choosing system, 2-1
Compatibility, 1-1
Control cable, 5-6

G

Ground Loop problem, 4-
2

I

ID numbers, 6-1
Image tuning, 7-1
Installing the card, 5-9

M

Multiloop, A-1, C-1
Mapping class layout,
C-5

O

Operating functions, 2-4

P

PCI card, 3-1
Power supply, 5-14
Power Supply, A-1

R

Resolution, A-1

S

Student box, 3-2, A-1
Student card, A-1
Student unit cables, 5-10
System cable, 4-1, 5-2, 5-
11
System components, 2-2

T

Teacher Control unit, 2-2
Teacher Interface unit,
2-2, 3-1
Teacher unit, A-1
Technical Specifications,
A-1
TIU cables, 5-1
Transmission distance, 4-
1, A-1
Transmission Distance,
1-1