LINDY®

COMPUTER CONNECTION TECHNOLOGY

KVM Extender C5 PRO-300

User Manual *English*

LINDY No. 39394

www.lindy.com

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English Manual

About this manual

LINDY KVM Extender C5 PRO-300 - Installation and Use   www.lindy.com
First Edition (September 2005)
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Safety Information

- For use in dry, oil free indoor environments only.
- Warning - live parts contained within the power adapter.
- No user serviceable parts within power adapter - do not dismantle
- Plug the power adapter into a socket outlet close to the Extender C5 unit that it is powering.
- Replace the power adapter with a manufacturer approved type only.
- Do not use the power adapter if the power adapter case becomes damaged, cracked or broken or if you suspect that it is not operating properly.
- If you use a power extension cord with the Extender C5, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure that the total ampere rating of all the devices plugged into the wall outlet does not exceed the wall outlet's ampere rating**.**

Warranty information

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1. Introduction

Thank you for purchasing the LINDY Extender C5 PRO-300. This KVM Extender set allows you to place the controlling keyboard, video monitor, mouse, audio accessories (and also a serial device) up to 300 metres from a system. The LINDY Extender C5 PRO-300 set consists of two modules: a local module that attaches to your computer system and a remote module to which the peripherals are connected. The long distance link between the two modules is made via Category 5, or higher, twisted pair cabling. There is no particular advantage in using higher specification Category 6 cables. On the contrary it may even result in unacceptable video quality if you use a) Category 6 and b) shielded cable.

Special circuitry within the remote module allows you to make adjustments to the sharpness and brightness settings to suit your own preferences. Additionally, the LINDY Extender C5 PRO-300 also features Skew adjustment to counteract the effects of uneven lengths of twisted pair cables that are used to carry the video signals.
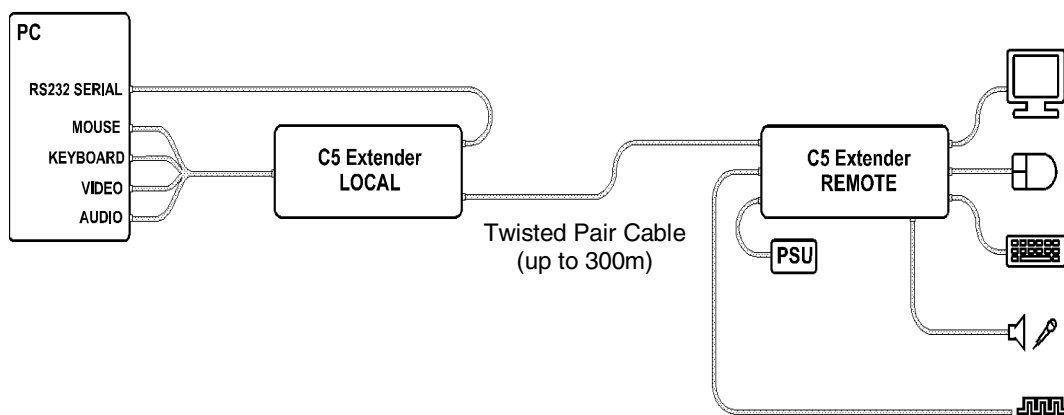
Throughout this document, the LINDY Extender C5 PRO-300 is commonly abbreviated to Extender C5

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1.1 Supplied items

Optional Power supply input

Connection from computer RS232 serial port

Switch bank to determine certain modes and functions

Connection to REMOTE module

RS-232

Remote Connection Port

Power and signal activity indicator

CPU Extender C5

COMPUTER / KVM SWITCH

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LOCAL Extender Module

Multi-cable connection from computer KVM and audio ports

Input from power supply

Connections to RS232 serial device

Switch bank to determine certain modes and functions

Connection to LOCAL module

5V DC

RS-232

Remote Connection Port

Power and signal activity indicator

Connections to microphone and speakers

CPU Extender C5

CONSOLE

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REMOTE Extender Module

Connection to video monitor

Connection to keyboard

Connection to mouse

KVM and Audio multi-cable
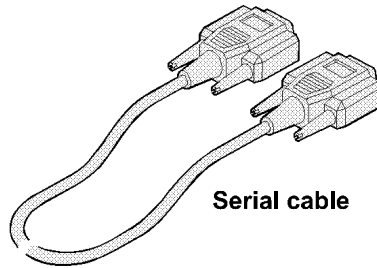
Serial cable

Power supply plus mains cable

Self-adhesive rubber feet

2. Installation

The installation of the Extender C5 set is straightforward and can best be achieved in most cases by following these stages for each module:

• Check or set the configuration switch settings
• Mount the module
• Connect the cables

2.1 Configuration switch settings

The basic operations of the LOCAL and REMOTE modules are controlled by the banks of four switches located on the side of each module. The switches are monitored at all times and may be changed when power is on or off (the only exception to this rule is switch 1 of the LOCAL module which initiates slightly different functions depending on the power state when it is switched).

OFF: Normal operation
ON: Transparent mode

OFF: Normal operation
ON: Reset LOCAL module

OFF: Normal operation
ON: Flash upgrade/reset
password modes

OFF: Microphone input mode
ON: Stereo line-in mode

LOCAL

Note: When shipped, all switches are set in the OFF positions and this will produce normal operation with normal microphone input (at the REMOTE module.)

LOCAL Switch 1

OFF: Normal operation
ON: (Before power is applied) Places the LOCAL module into flash upgrade mode so that the internal software can be changed. **(See section 6. Flash upgrade procedure)**
ON: (Whilst power is applied) Places the REMOTE module into password override mode. This allows any pre-configured passwords to be altered – particularly useful when they have been lost or forgotten. **(See section 5.5 Password override.)**

LOCAL Switch 2
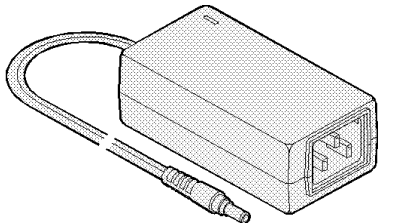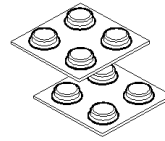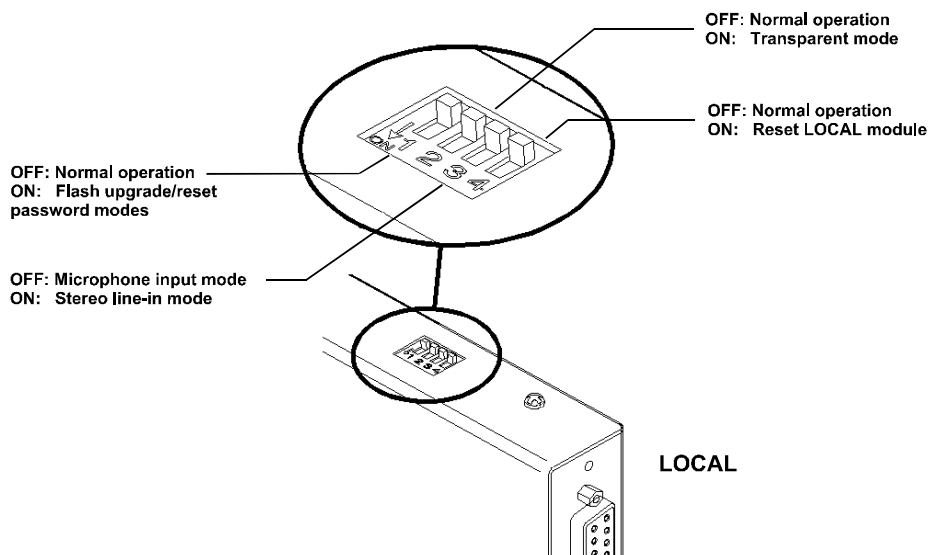
OFF: Normal operation.
ON: Set transparent mode. Use this setting if the Extender C5 modules are to be used with KVM switches that are not manufactured by LINDY Electronics. Cascaded KVM switches often use special signals to set or identify conditions. In transparent mode, the Extender C5 modules will pass the signals without attempting to interpret them.

LOCAL Switch 3

OFF: Microphone input on REMOTE module. Use this setting if a standard mono-channel microphone is connected to the microphone input on the REMOTE unit.
ON: Stereo line-in input on REMOTE module. Use this setting if a stereo input is applied to the microphone input on the REMOTE unit.

LOCAL Switch 4

OFF: Normal operation.
ON: Suspend operation and reset the LOCAL module. Use this setting momentarily to produce the same effect as removing and restoring power if incorrect operation has occurred. Return the switch to the OFF position to allow normal operation to continue.

REMOTE Switch 1

OFF: Normal operation.
ON: (Before power is applied) Places the REMOTE module into flash upgrade mode so that the internal software can be changed. **(See section 6. Flash upgrade procedure)**

Determines configuration of hotkeys in conjunction with switch 3

OFF: Automatic video compensation mode
ON: Manual video compensation mode

OFF: Normal operation
ON: Flash upgrade

Determines configuration of hotkeys in conjunction with switch 2
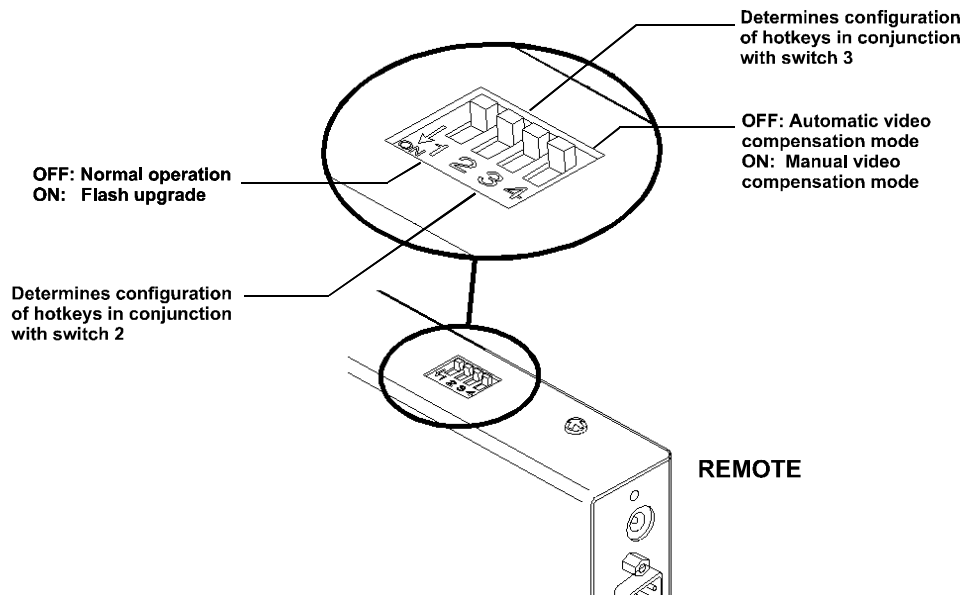
REMOTE

Note: When shipped, all switches are set in the OFF positions and this will produce normal operation.

REMOTE Switches 2 and 3

Switches 2 and 3 determine which two keyboard keys (when pressed in unison) are to be designated as 'hotkeys'. Hotkeys signal to the REMOTE module that the next key to be pressed is a special configuration command for the module and is not to be passed to the computer system.

2 OFF   Hotkeys = CTRL and SHIFT
3 OFF

2 OFF   Hotkeys = ALT and SHIFT
3 ON

2 ON   Hotkeys = CTRL and ALT
3 OFF

2 ON   Hotkeys disabled
3 ON

REMOTE Switch 4

Reserved for future use

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2.2 Mounting a module – desk or rack

The Extender C5 modules can be situated on a desk (or floor) or alternatively, for larger installations, mounted within optional rack mount chassis units.

General remark

▪ For correct operation, the local and remote units must have ground connections: At the computer end, ensure that the computer or KVM switch that the LOCAL module is connected to has a ground connection. At the keyboard/monitor/mouse end, ensure that the REMOTE module's power supply is connected to a grounded power outlet. Alternatively, a ground connection will be made via the monitor, if the monitor is itself grounded.
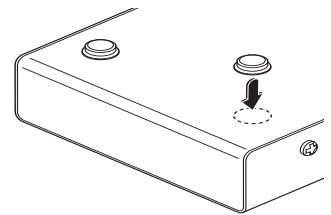
▪ Try to avoid running the interconnect cable alongside power cables where possible.

Desk mount

Apply the supplied self-adhesive rubber feet to the underside of the module(s)

Rack mount

Note: *The module switches are not accessible once it is inserted into the rack, therefore, check all settings before insertion.*

1   Place the rack securing plate (available as a separate kit) onto the front of the module and secure it with the two countersunk screws.

2   Orientate the module on its side so that its labelled face is the correct way up and the securing plate is facing away from the rack.

3   Slide the module into the required rack position. The rectangular cut-out in the front upper lip of the rack allows the two screws on the module's upper edge to slide through.

4   The rack mount chassis has a series of holes in its floor that are spaced to accommodate the two screws on the module's lower edge. Ensure that the screws correctly locate into the two holes of the chosen slot. The rack securing plate on the module should now be flush with the front of the rack mount chassis.

5   Use the third (pan-head) screw, in the top hole of the rack securing plate to fasten the module to the rack.

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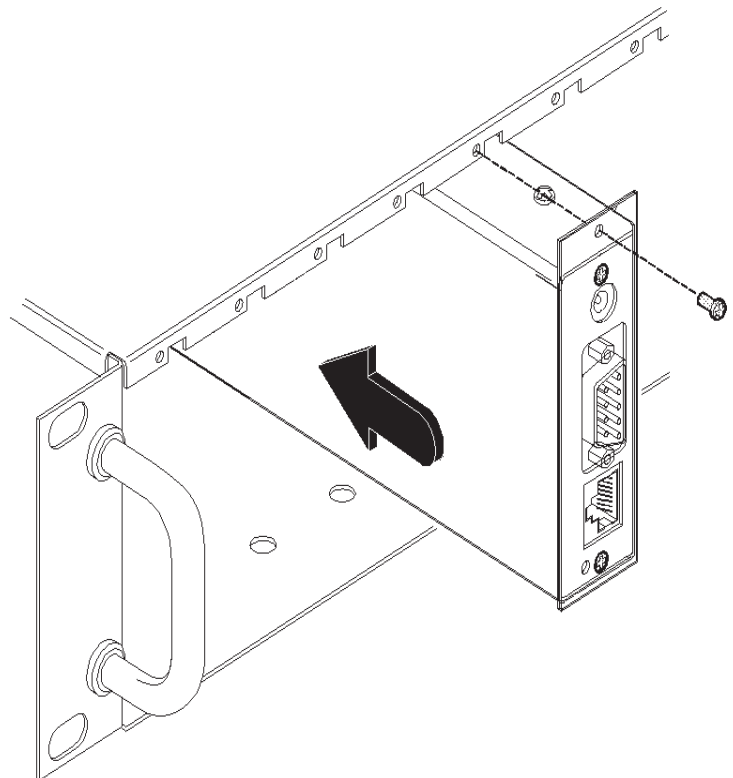
3. Connections

The naming of the LOCAL and REMOTE modules relate to their proximity to the computer system. Hence, the LOCAL module connects directly to the system, while the REMOTE is at the other end of the twisted pair cable and attaches to the keyboard, mouse, etc.

Connections at the LOCAL module

3.1 KVM+A multi-cable connection

Most of the connections between the computer system and the LOCAL module are made via the supplied multi-cable. This has a single connection to the module, is two metres in length and splits out to the keyboard, video, mouse, microphone and speaker ports of the system.

1.   Attach the supplied KVM+A multi-cable to the 25-way socket at the end of the LOCAL module.

2.   At the other end of the KVM+A cable, attach the keyboard, mouse and video, microphone, and speaker connectors to the appropriate sockets at the rear of the computer system. On most systems the appropriate ports should be labelled and colour coded in a similar way to the cable connectors:

Monitor	Blue
Keyboard	Purple
Mouse	Mid green
Speaker	Light green
Microphone	Pink (or maroon)

Main connector for the KVM+A multi-cable

LOCAL
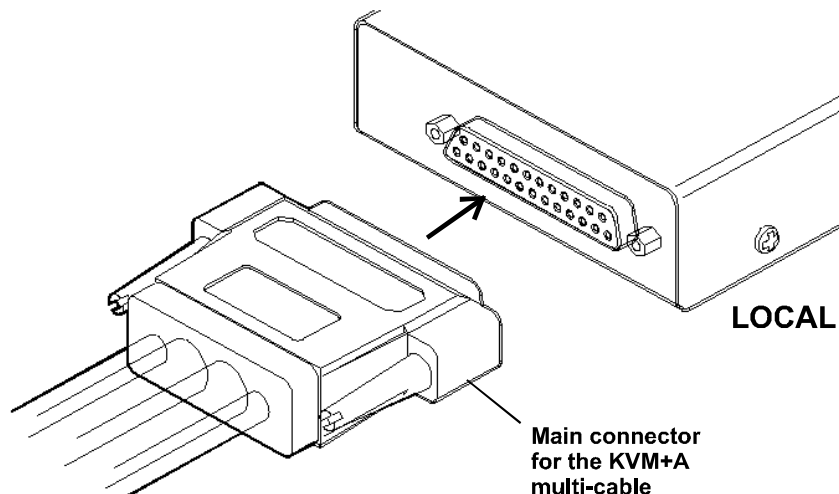
3.2 Serial cable connection

The Extender C5 set offers the option to attach an RS232 serial device (such as a touch screen input) via the remote link. The link supports software or hardware handshaking up to a maximum baud rate of 56 Kb/s. To make the serial connection between the LOCAL module and your computer system, use the supplied serial link cable.

1   Attach the male connector of the serial link cable to the 9 pin port on the LOCAL module.
2   Connect the other end of the serial link cable to the appropriate serial port of the computer system.

LOCAL

Male connector
of the serial cable
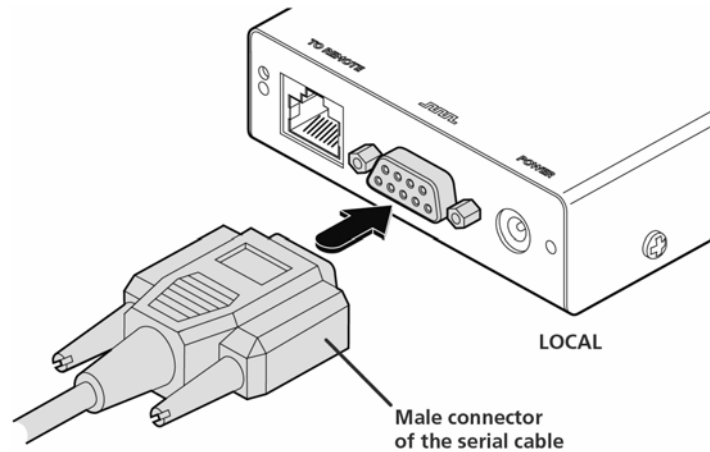
3.3 Twisted pair connection

The link between the LOCAL and REMOTE modules is made via twisted pair cable, specified to Category 5 or higher. Ensure that the total twisted pair cable length (including patch boxes) does not exceed 300 metres.

1   Insert the connector from the twisted pair cable link into the socket.

Twisted pair
cable connector
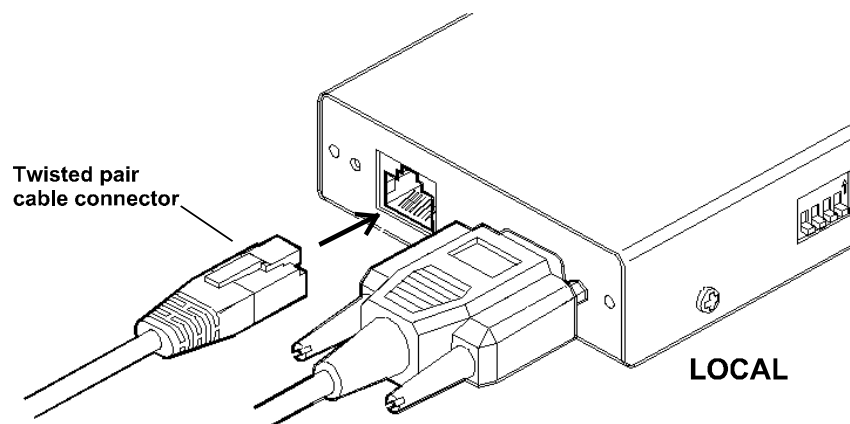
LOCAL

Optional power connection

The LOCAL module usually derives its power from the keyboard connection of the host system.
If the keyboard connection will not be used then you will need to use an external power supply
of the same type used for the REMOTE module.
These are available from your LINDY supplier.

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Connections at the REMOTE module

3.4 Keyboard, video and mouse connections

The connections to the keyboard, video monitor and mouse are all made to the sockets at one end of the REMOTE module.

1   Attach the lead from the monitor to the blue D-type socket on the REMOTE module.
2   Connect the keyboard lead to the purple mini-DIN socket on the REMOTE module.
3   Insert the keyboard lead into the green mini-DIN socket on the REMOTE module.

Connection from video monitor

REMOTE

Connection from mouse

Connection from keyboard
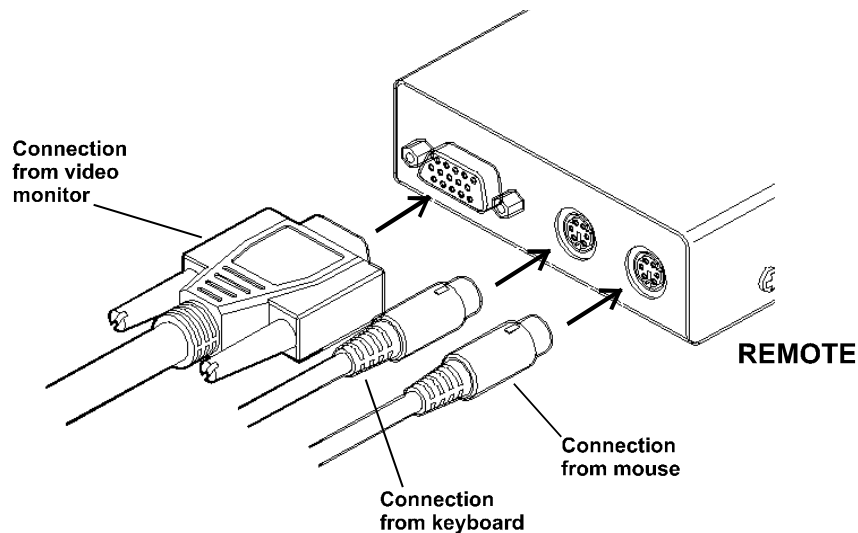
3.5 Twisted pair, power and serial connections

1   Insert the connector from the twisted pair cable link into the RJ-45 socket.
2   Attach the output connector of the power supply to the socket at the front edge of the REMOTE module.
3   Insert the IEC connector of the supplied power lead into the corresponding socket of the power supply. Connect the other end of the power lead into a nearby mains socket.
4   If the serial connection to be used, attach the lead from your serial device to the 9 way male connector on the REMOTE module.

REMOTE

Power supply connection

Twisted pair cable connection

Connection from serial device
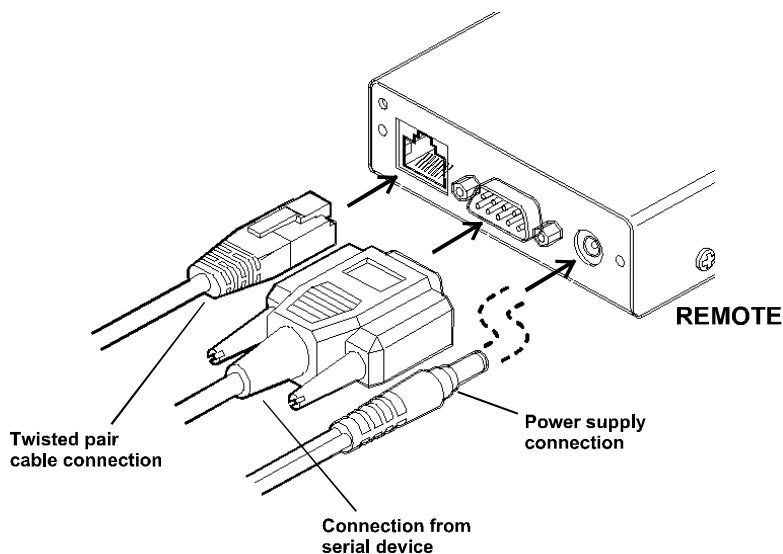
3.6 Audio connections

*Audio connections are available at the two 3.5" jack sockets mounted
on the side (same side as the switch bank) of the REMOTE module.*

Note: The microphone input has a dual function whereby it can either support a mono-channel microphone or alternatively receive stereo line input. Switch 3 on the LOCAL module controls the setting of this port: LOCAL switch 3 OFF - microphone, LOCAL switch 3 ON - stereo line in.

**Microphone (for
stereo line-in)
connection**

**Speaker
connection**
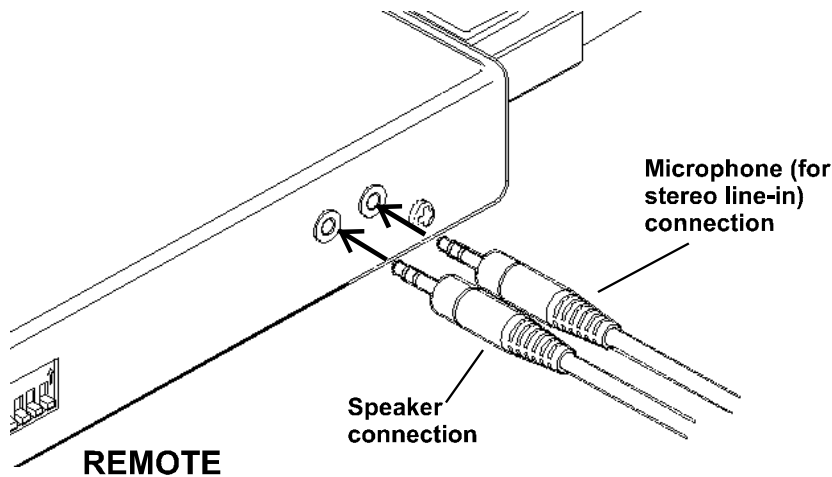
REMOTE

1   Connect the microphone (or stereo line input) plug into the REMOTE module microphone socket.
     *(Note: Ensure that the setting of switch 3 on the LOCAL module matches the input to this socket:
      OFF - microphone; ON – stereo line input)*
2   Connect the speaker plug to the REMOTE module speaker socket.

**Audio connections
made after mounting
and removed before
attempting to slide
the module out**
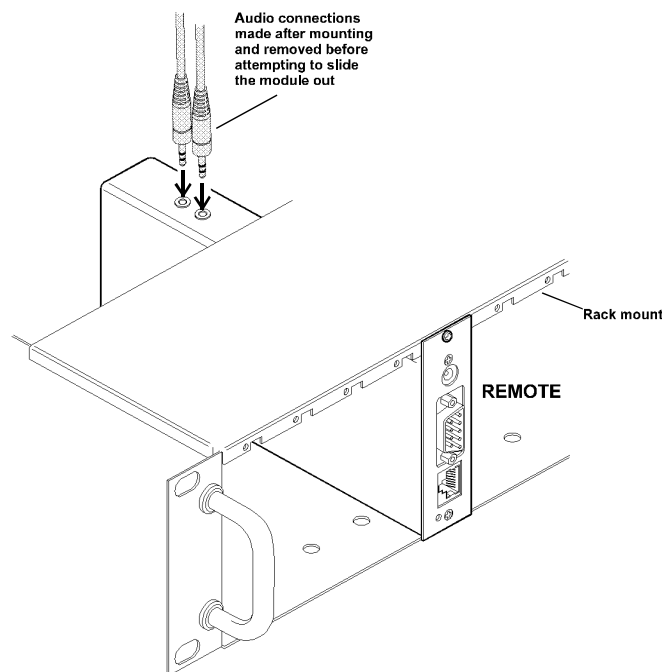
Rack mount

REMOTE

*Note: When the REMOTE module is rack mounted, the audio connections must be made
after the module has been fixed in place. Access is required to the rear and above the rack.
Remember to remove the audio connections before attempting to slide out the REMOTE
module.*

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4. Operation

4.1 Power and activity indicators

On the front panel of both modules are small recessed indicators which provide confirmation of power and activity, as follows:

- Constant red – *power applied no communication activity.*

- Flickering red - *power applied, mouse or keyboard activity occurring.*

- Slow flashing red – *module is in flash upgrade mode.*

Note: Both modules contain internal automatic cut-out fuses to protect against power surges. To reset, remove power (or, for the LOCAL module, the keyboard connection) from the module for one second and then reconnect.

General Use

In use, the Extender C5 modules should be transparent - the system and its peripherals should operate exactly as normal, the only difference being that they are now up to 300 metres apart.

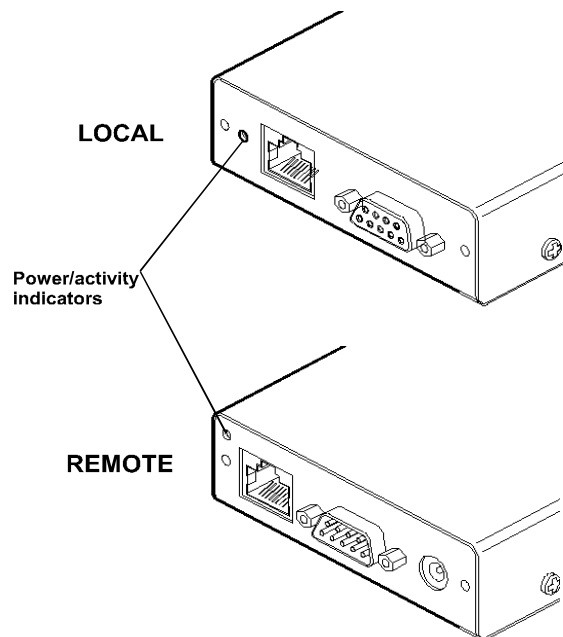In some installations, you may see some 'shadows' to the right of high contrast screen characters. This can be caused by an incorrectly selected sharpness setting and it may be necessary to make adjustments to correct this. Please see 'Image controls - sharpness and brightness' in the 'Special configuration' section.

4.2 Locking and unlocking the system

In situations where the computer system (and the LOCAL module) can be locked away the Extender C5 set offers a viable security system to deter unauthorised use. Once a password has been set, a simple key sequence allows the system to be quickly and securely detached from its peripherals. Only the correct password will reconnect the remote and local modules.

To lock the system

1   First set a password. For further details, please refer to **section 5.4 'Password setting.'**

2   Simultaneously press the currently configured hotkeys (by default, <CTRL> and <SHIFT> along with <L>.

The screen will go blank and the three keyboard indicators will begin alternately flashing between the 'Num Lock' and 'Scroll Lock', and 'Caps Lock'. This sequence indicates that a password is required.
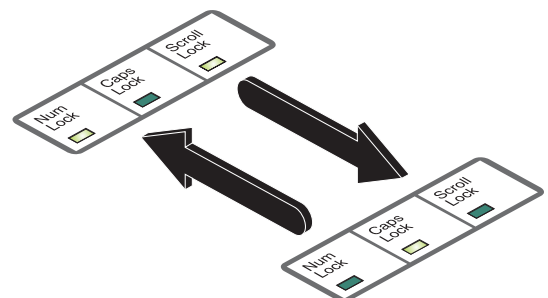
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To unlock the system

1   Enter the correct password and press <RETURN>.
Note: Passwords are NOT case sensitive.

Note: If an invalid password has been entered and the keyboard indicators are not flashing as described above press <RETURN> to clear the incorrect attempt.

2   If the correct password is entered, the screen will be restored and normal operation can continue.

To enable the video

Simultaneously press the currently configured hotkeys (by default, <CTRL> and <SHIFT> along with <1>). This command will be required to restore the video if <CTRL> and <SHIFT> along with <L> is used when no password has been set.

To disable the video

Simultaneously, press the currently configured hotkeys (by default, <CTRL> and <SHIFT> along with <0>).

5. Special configuration

5.1 Configuration

You can alter the way that the Extender C5 modules operate to suit your requirements. This is done using the configuration mode and you can affect the following settings:

- *Password setting* – allows you to lock the remote module to prevent unauthorized system access.
- *Mouse restoration and settings* – allows you to restore mouse operation and also to change the mouse type.
- *Image controls - sharpness & brightness – allows you to manually adjust the video image to ensure that it is crisp and bright.*
- *Skew adjustment – allows you to manually compensate for possible video errors introduced by long, uneven cable connections.*
- *Miscellaneous* functions

5.2 What are hotkeys?

Hotkeys are two normal keyboard keys that, when pressed simultaneously with a third key, signal to the Extender C5 modules that you are sending a message specifically to them and not to the computer. The hotkeys are ordinarily <CTRL> and <SHIFT>, while the third key determines what you want the modules to do.

If the standard <CTRL> and <SHIFT> hotkeys are also needed for computer tasks, you can change them for another combination using switches 2 and 3 on the REMOTE module:

   2 OFF   Hotkeys = <CTRL> and <SHIFT> (default setting)
        3 OFF

        2 OFF   Hotkeys = <ALT> and <SHIFT>
        3 ON

        2 ON   Hotkeys = <CTRL> and <ALT>
        3 OFF

        2 ON   Hotkeys disabled
        3 ON

5.3 Entering, using and exiting configuration mode

To enter and use configuration mode:

1   Simultaneously press the currently configured hotkeys
(by default, <CTRL> and <SHIFT>) along with <RETURN>
*The three keyboard indicators ('Num Lock', 'Caps Lock'
and 'Scroll Lock') will now begin to flash in sequence to
show that you are in configuration mode.*

2   Press the first letter of the required configuration option,
for instance <F>
All three keyboard indicators will illuminate continuously.

3   Press the number of the required configuration option, for
Instance <8>
*The 'Scroll Lock' indicator will extinguish, leaving the 'Num Lock' and
'Caps Lock' indicators lit.*

4   Press <RETURN> to confirm your option
*The three keyboard indicators ('Num Lock', 'Caps Lock' and
'Scroll Lock') will now begin to flash in sequence again.*
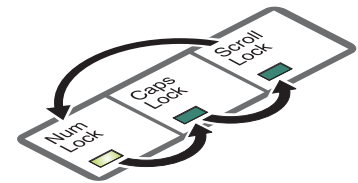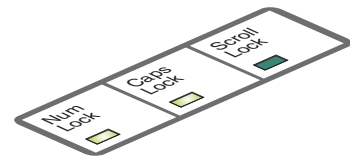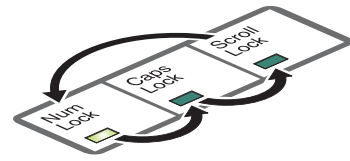
To exit from the configuration mode:

1   Within configuration mode, the three keyboard indicators should be flashing in sequence to show that
the module is ready to receive a new command.

2   Press <RETURN>.
The three indicators will return to their normal states.

5.4 Password setting

Password protection allows you restrict access to the system only to authorised personnel. A password first
needs to be set and then, using the keyboard attached to the REMOTE module, a simple key sequence allows
the system to be quickly and securely detached from its peripherals.

To set a password

1   Simultaneously, press the hotkeys (by default, <CTRL> and <SHIFT>) along with <RETURN> to enter
configuration mode.

2   Press <P> followed by <RETURN>.
3   Now enter your new password, within the following constraints:
- Passwords are NOT case sensitive,
- Passwords may be any length from 1 character to a maximum of forty characters,
- The following keys may NOT be used: <CTRL>, <ALT>, <SHIFT>, <RETURN>
4   When you have entered the password, press <RETURN> to signal its completion.

5   Press <RETURN> once more to exit configuration mode.

For full details about how to lock and unlock the system using your password, please
see **section 4.2 'Locking and unlocking the system.'**

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5.5 Password override

This mode allows you to override the password that has been set at the REMOTE module and place it into configuration mode so that a new one may be set. This feature is particularly useful when passwords have been lost or forgotten.

To override the REMOTE password

1   Remove power from the REMOTE module.

2   With power to the system and LOCAL module still applied, change LOCAL switch 1 to the ON position.

3   Re-apply power to the REMOTE module. The REMOTE module will go directly into configuration mode so that the old password can be cleared and a new one set.
- **To clear a password:** (within configuration mode) Press <P> followed by <RETURN>and followed by <RETURN>again.
- You can now enter a new password using the procedure outlined in steps 2 to 5 of **section 5.4 'Password setting'**, or press <RETURN> to exit configuration mode.

4   Return LOCAL switch 1 to it's OFF position.
Note: If switch 1 remains ON, then the REMOTE module will enter configuration mode whenever it is repowered and will not operate normally.

5.6 Hot plugging and mouse restoration

It is strongly recommended that you switch off the computer system before attempting to connect it via the Extender C5 modules. However, if this is not possible then you need to 'hot plug' the Extender C5 modules while power is still applied to the system. There is not normally a danger of damage to the system, however, when mouse communications are interrupted, often they fail to reinitialise when reconnected. Extender C5 modules provide a feature to reinstate mouse communications once the necessary connections have been made.

There are two main types of data formats used by current PC mice; these are the older 'PS/2' format and the more recent 'IntelliMouse' format introduced by Microsoft. These use slightly different data arrangements and it is important to know which type was being used before you hot-plugged the Extender C5 modules. The previous setting depends both on the type of mouse and the type of driver as various combinations of PS/2 and IntelliMouse are possible. Using the incorrect restore function may produce unpredictable results and require the system to be rebooted.

Which restore setting do I use?

The general rule is that unless both the mouse and the driver are both IntelliMouse compatible then you need to restore the mouse as 'PS/2'.

Recognising an IntelliMouse style mouse

The IntelliMouse format was introduced to support, among other features, the scroll wheel function. If your mouse has a scroll wheel, then it is likely to support the IntelliMouse format. If you have a Microsoft mouse, then it will usually state that it is an IntelliMouse on its underside label.

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Recognising an IntelliMouse driver

Before hot plugging your Extender C5 (or afterwards using only keyboard control), access the Windows Control Panel and select either the Mouse option (on Windows NT, 2000 and XP) or the System option (on Windows 95, 98, ME). Look for the name of the driver, which will usually include the words PS/2 or IntelliMouse.

To restore mouse operation when hot plugging:

1 Carefully connect the Extender C5 modules to the system and its keyboard, mouse, monitor, audio and serial device.

2 Simultaneously, press the hotkeys (by default CTRL> and <SHIFT>) along with <RETURN> to enter configuration mode.

3 Enter the appropriate restore function code:
   - *PS/2* – press <M> <6> <RETURN>
   - *IntelliMouse* – press <M> <7> <RETURN>

4 To exit configuration mode, press <RETURN>.

5 Move the mouse a short distance and check for appropriate onscreen cursor movement. If the mouse cursor darts erratically around the screen, then cease moving the mouse. This is an indication that the chosen restore function is incorrect. Try again using the other restore function.
   Note: The restore functions predict the likely mouse resolution settings but may not restore the exact speed or sensitivity settings that were originally set.

Microsoft and Logitech – specific mouse settings

In certain installations some Logitech mouse drivers may lose the action of the mouse buttons when used with the standard 'Microsoft compatible' signalling protocol used between the modules. To solve this problem, select the 'Logitech compatible' mouse signalling protocol.

To change mouse signalling protocols

1 Simultaneously, press the hotkeys (by default, <CTRL> and <SHIFT> along with <RETURN> to enter configuration mode.

2 Enter the appropriate protocol code:

   - *Microsoft compatible* – press <M> <3> <RETURN>
   - *Logitech compatible* – press <M> <4> <RETURN>

3 To exit configuration mode, press <RETURN>

## 5.7 Video compensation, Image controls - sharpness and brightness

The Extender C5 incorporates special controls to compensate for losses incurred within long cable links. Using these controls you can adjust the picture sharpness and brightness to improve your remote picture quality. The need for image control adjustment is best discovered when viewing high contrast images with vertical edges, such as black lines on a white background. When doing so, if you notice that the screen image is 'fuzzy' or 'dark' then the image controls may be able to solve this condition.

Note: If the high contrast images exhibit shadows with separate colours, then there may be a skew problem which requires a different image adjustment - see the 'Skew adjustment' section for details.

To display a suitable high contrast image

The best way to clearly view the effects of compensation is to display a high contrast image, with vertical edges, on the screen.

- Open a word processor, type the capital letter 'H', or 'M' and increase the point size to 72 or higher. For best results, the background should be white and the character should be black.
- A BLACK shadow on the right of the character indicates UNDER compensation.
- A WHITE shadow on the right of the character indicates OVER compensation.

High contrast black character on white background

White or black shadow on right side - indicates the need for compensation
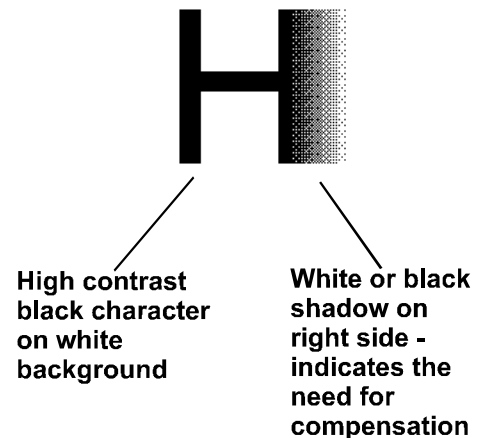
To use the image controls

1. Simultaneously, press the hotkeys (by default, <CTRL> and <SHIFT> along with <RETURN>) to enter configuration mode.
   The three keyboard indicators ('Num Lock', 'Caps Lock' and 'Scroll Lock') will now begin to flash in sequence. The speed of the sequence indicates the level of the sharpness adjustment currently applied: the slower the rate, the lower the level of sharpness being applied.

2. While viewing the displayed high contrast screen image, use the following keys to adjust the controls:

Sharpness:
User *CURSOR UP* and *DOWN* for fine adjustment, and *PAGE UP* and *DOWN* for coarse adjustment.
There are 255 sharpness levels (one coarse step jumps 10 levels).
To autoset sharpness: Press **<F> <2> <RETURN>** to make the module calculate and apply an automatic compensation level - you can use this as a starting point for your fine tuning.

*Note: If the monitor goes blank and switches off (due to oversetting the sharpness adjustment) press the **<HOME>** key to restore.*

Restore default sharpness and brightness settings — Sharpness increase (coarse) — Sharpness decrease (coarse) — Sharpness increase (fine) — Brightness increase — Exit image controls and save settings — Brightness decrease — Sharpness decrease (fine)

Brightness: User *CURSOR LEFT* and *RIGHT* for adjustment.
There are 255 brightness levels.
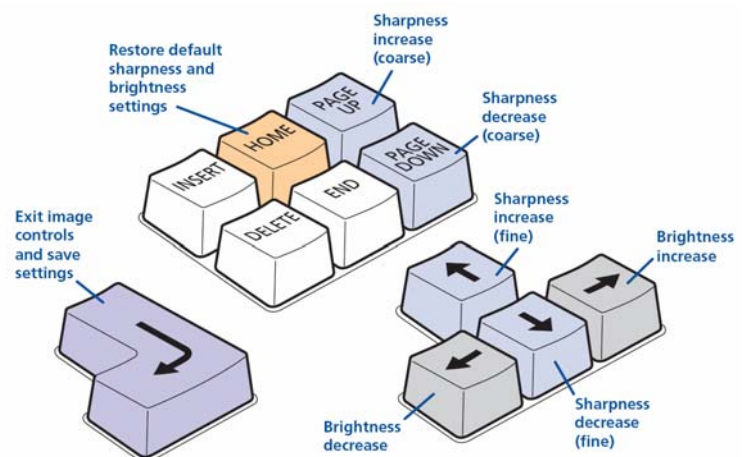
3. When no shadows are visible and the displayed images have crisp edges, press <RETURN> to exit configuration mode and permanently save all settings. The new compensation setting will be stored, even when power is removed or if a complete reset is initiated. The setting should not require further changes unless the cabling arrangement is altered.

> **If the image controls cannot provide a crisp image**
> *If, after adjusting the image controls, the screen image remains fuzzy or has coloured shadows you may need to use the Skew adjustment feature. Please see the next section for details.*

5.8 The Skew Compensation Adjustment

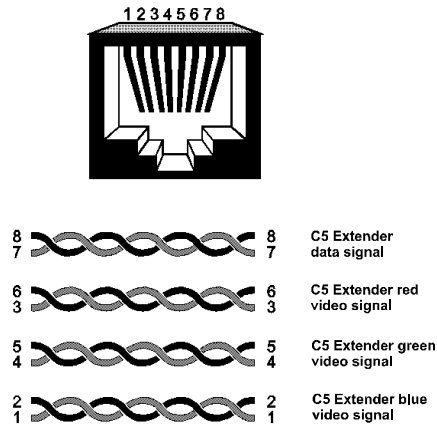The twisted pair cabling supported by the Extender C5 set (category 5, or higher) consists of four pairs of cables. Three of these pairs are used by the modules to convey red, green and blue video signals to the remote video monitor. Due to the slight difference in twist rate between these three pairs, the red, green and blue video signals may not arrive at the monitor together. This is visible as separate colour shadows on high contrast screen images. This effect is particularly apparent when using higher screen resolutions and some types of category 6 and STP cables and in such instances, if possible, we recommend you use CAT5e UTP cable.

1 2 3 4 5 6 7 8		
8 7	8 7	C5 Extender data signal
6 3	6 3	C5 Extender red video signal
5 4	5 4	C5 Extender green video signal
2 1	2 1	C5 Extender blue video signal

However, the Extender C5 provides internal skew adjustment that can help to rectify the situation. The skew adjustment works by delaying or advancing the timing of any of the red, green or blue colour signals so that they are all delivered to the monitor at precisely the same time. For best results a test pattern is provided and this should be displayed when using skew adjustment.

To use skew adjustment

1   Insert the supplied Installation CD-ROM into the CD player of the computer.

2   Within Windows, use the My Computer option (usually available as a desktop icon or within the Start menu) to view the contents of the CD-ROM. Double-click the Skew entry to display the standard test pattern. If necessary maximise the application window so that the image fills the screen.
The screen will show a series of fine red, green and blue crosses which should all be in line, vertically and horizontally. Skew affects the horizontal placement of the colours and using this pattern it is much easier to discover which, if any, colours are being adversely affected by the twisted pair cable run.
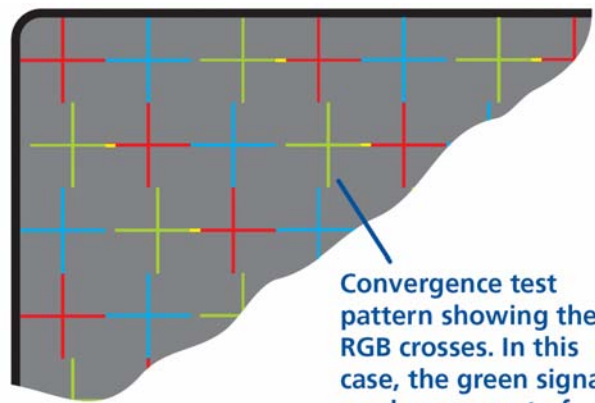

Convergence test pattern showing the RGB crosses. In this case, the green signal can be seen out of line with the other two colours.

3   Simultaneously, press the hotkeys (by default, <CTRL> and <SHIFT> along with <RETURN>) to enter configuration mode.

The three keyboard indicators ('Num Lock', 'Caps Lock' and 'Scroll Lock') will now begin to flash in sequence.

4   As appropriate, press either the R,
      G or B keyboard keys to select the
      appropriate colour channel. The
      corresponding keyboard indicators
      will flash rapidly to show which
      channel is currently selected for
      adjustment: Num Lock for Red,
      Caps Lock for Green and Scroll
      Lock for Blue.
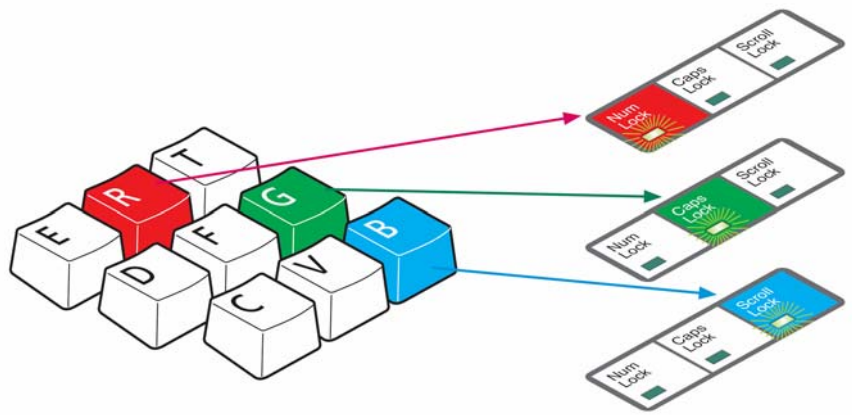
5   Press the *CURSOR LEFT* and
      RIGHT and keys to retard or
      advance the timing of the selected
      colour channel respectively. On screen you will see a change in the position of the selected colour crosses
      in relation to the other two.

6   When the selected colour crosses are correctly positioned, press **<RETURN>** to exit that colour channel.
      The keyboard indicators will return to flashing in sequence.

7   If required, repeat steps 4 to 6 to select and adjust any colour channel until the vertical lines of the red,
      green and blue crosses are all aligned.

8   When all colours are correctly aligned,
      press **<RETURN>** to exit configuration
      mode and permanently save all settings.
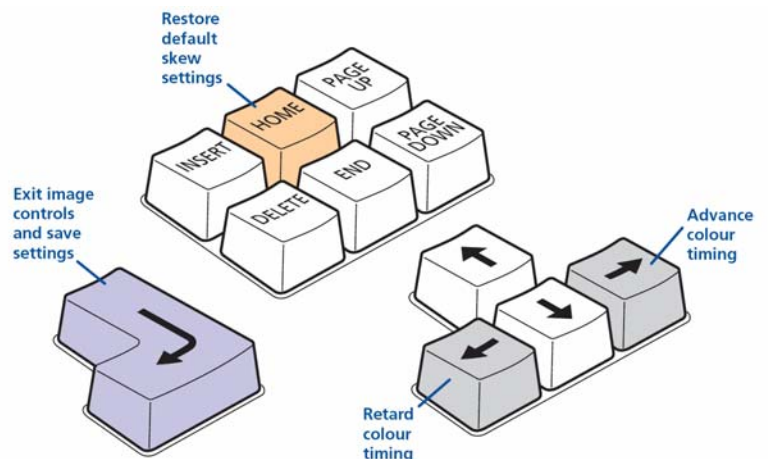
      *Note: Once you have made a skew
      adjustment, it may be necessary to re-
      adjust the image controls to attain an
      optimum screen image.*

5.9 Miscellaneous settings

The following are configuration settings within the modules that are not covered in other sections of
this guide. These can be achieved once within configuration mode by pressing the indicated keys:

Report Extender C5 firmware version - <F> <1> <RETURN>
Before initiating this command, ensure that the system is running an application that can display
typed keys as screen characters - e.g. a word processor or Windows Notepad. The current firmware
version will be written to the application in the form of the letter 'V' followed by three numbers - for
example V201 means version 2.01.

Reset all configuration options to default states – <F> <8> <RETURN>
Returns all user configurable options to the settings that are installed at manufacture. The password
will be cleared; however, the current video compensation setting will not be reset.

6. Flash upgrade procedure

As part of the continual development and improvement process across the range of LINDY products, software upgrades are occasionally made available. The LOCAL and REMOTE modules both contain internal flash memory and LINDY's unique keyboard-link upgrade technique allows you to utilise software upgrades in a straightforward manner.

Note: *It is important to upgrade both the LOCAL and REMOTE modules together so that they are both running the same new version of software.*

Note: *To upgrade the REMOTE module, a special keyboard connection cable is required. This cable must have 6pin mini-DIN male to 6pin mini-DIN male plugs with all lines connected - this is a common cable used with KVM switches.*

Do a flash upgrade ONLY when you experience problems!
To perform a flash memory upgrade, you need to perform the following stages:

- Get the upgrade files from the LINDY technical support team
- Create a startup diskette and copy the files to it
- Reconfigure the LOCAL module connections and begin
- Reconfigure the REMOTE module connections and begin
- Return all connections to their usual states

6.1 Get the upgrade files from LINDY Technical Support

Please contact the LINDY Support team in your country by email, telephone or contact form from the LINDY website. See www.LINDY.com for all LINDY offices and contact information world wide.

Decompress the file you have received from LINDY. Depending on the chosen option, there will be collection of suitable files.

> As a minimum, there should be the following files:
>
> AUTOEXEC.BAT – directs the computer to run the upgrade programs.
> XKVMV2.EXE – this is the upgrade program that automatically determines which module is connected and sends the appropriate firmware file.
> XKVM.DAT – this file contains information about firmware versions and is used by the XKVMV2.EXE to select the appropriate one.
> X2GDLxxx.HEX, X2SLLxxx.HEX, X2STLxxx.HEX – these are the firmware files for the LOCAL module.
> X2GDRxxx.HEX, X2SLRxxx.HEX, X2STRxxx.HEX – these are the firmware files for the REMOTE module.
>
> Where xxx is the upgrade version number.

6.2 Create a startup disk

For this stage you will need a blank 3½'' floppy diskette that is either blank or has existing contents that are no longer required. Depending on your operating system, use one of the following to create a startup disk:

To create a startup disk in Windows XP

1   Insert a disk into the floppy disk drive.
2   Select 'Start' and then 'My Computer'.
3   Right mouse click on the '3½ Floppy (A:)' icon and select 'Format'.
4   Check the 'Create an MS-DOS startup disk' box and select 'Start'.

To create a startup disk in Windows 95/98/Me

1   Insert a formatted disk into the floppy disk drive.
2   Select 'Start', then 'Settings' and then 'Control Panel'.
3   Double click on the 'Add/Remove Programs' icon.
4   Select the 'Startup Disk' tab.
5   Click 'Create Disk' and follow the instructions.

To create a startup disk in Windows 95/98 (alternative method)

1   Insert a disk into the floppy disk drive.
2   Right mouse click on the '3½ Floppy (A:)' icon and select 'Format'.
3   Select the 'Full format' option and ensure that the 'Copy system files' box is checked.
4   Select 'Start' to format the disk.

### To create a startup disk from MS-DOS or a DOS window within Windows 95/98

1   Insert a disk into the floppy disk drive and check that the drive is configured as drive A (it usually is).
2   At the DOS prompt (C:\>) type:
        `FORMAT A: /S`
        and follow the instructions given by DOS.

Copy the downloaded files to the disk

Once the diskette has been formatted, using Windows Explorer or the My Computer option, copy the downloaded and decompressed files from your computer to the floppy diskette.

6.3 Reconfigure the LOCAL connections and begin

1   On the computer from which you will run the upgrade, ensure that its BIOS settings will allow it to boot from the floppy disk drive, rather than booting immediately from the hard drive.

2   Switch off the computer and disconnect the twisted pair cable from the LOCAL module.

3   On the KVM+A multi-cable, leave the keyboard connector attached to the keyboard port of the computer. Disconnect the KVM+A multi-cable video and mouse connectors from the ports on the computer.

4   So that you can check the upgrade progress, connect a monitor directly to the video port of the computer.

5   On the LOCAL module, change switch 1 to the ON position. Ensure that the upgrade disk is in the floppy disk drive of the computer.

6   Switch on the computer. The upgrade process will start automatically and confirmation will be given on screen.

7   Switch off the computer and disconnect the KVM+A multi-cable. Leave the monitor connected and the upgrade disk in the floppy disk drive.
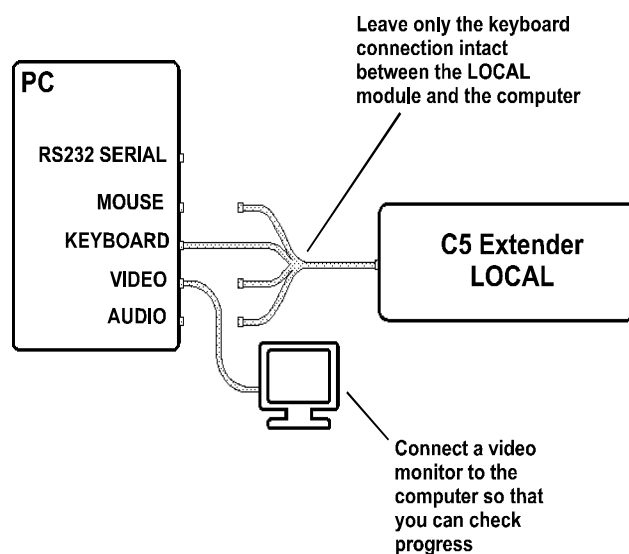
6.4 Reconfigure the REMOTE connections and begin

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1   Disconnect all cables from the REMOTE module and take it to the computer.

2   Use a 'KVM switch-type' keyboard
        cable (6 pin mini-DIN male to 6 pin
        mini-DIN male plugs with all lines
        connected) – not supplied. Attach
        one end of the cable to the keyboard
        port of the computer. Connect the
        other end of the cable to the
        keyboard port of the REMOTE
        module. This is the only connection
        required.

3   On the REMOTE module, change
        switch 1 to the ON position.

4   Attach the power supply unit to the
        POWER input of the REMOTE
        module and connect the mains lead
        to a nearby wall socket.

5   Switch on the computer. The upgrade
        process will start automatically and confirmation will be given on screen.

6   Switch off the computer and disconnect the REMOTE module. Return REMOTE switch 1 to the OFF
        position.
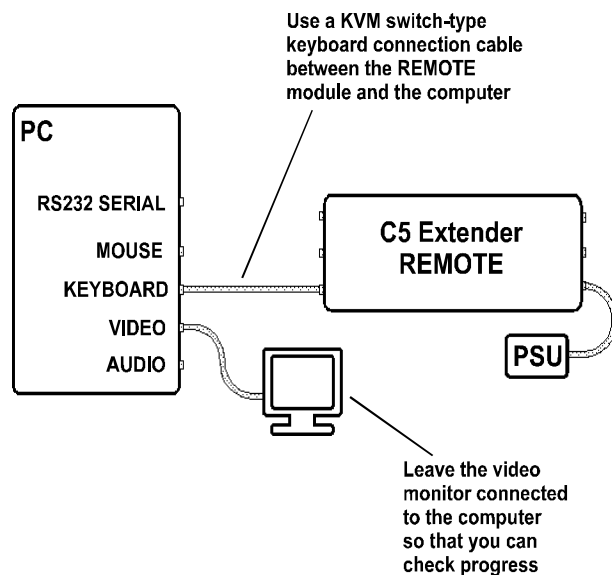
6.5 Return all connections to their usual states

Once the upgrade process has been completed, perform the following to return the system to its previous state.

1   Ensure that switch 1 on both the LOCAL and REMOTE modules is set to the OFF positions.

2   Refer to **section 3 'Connections'** for detailed instructions on correctly connecting the LOCAL and
        REMOTE modules to the computer, its peripherals, the REMOTE power supply and the twisted-pair
        cable.

3   Remove the diskette from the system and reboot. The upgrade process is now complete.

English Manual

7. Troubleshooting

If you experience problems when installing or using the Extender C5 modules please check through this section for a possible solution.

Video image at the REMOTE module is distorted or shadows appear to the right of displayed objects.

Adjustments are required to compensate for the length of the twisted pair cable being used. If video problems persist:

- Please refer to 'Image controls - sharpness and brightness' section in the 'Special Configuration' chapter.

- If the overall video image is 'fuzzy' and/or has coloured shadows you may need to use the optional C5 Series Skew adjustments. This procedure allows you to finely tune the red, green and blue video signal timings to overcome most colour separation problems. Please refer to the 'Skew adjustment' section in the 'Special Configuration' chapter.

- If possible try using Cat5/5e UTP cable. There is no particular advantage in using higher specification Category 6 cables. On the contrary it may even result in unacceptable video quality if you use a) Category 6 and b) shielded cable.

No video image is received at the REMOTE module

- Check that the power/activity indicators are lit on the LOCAL and REMOTE modules - if they are not, then there is a power problem. The LOCAL module gains its power either from the computer's keyboard socket or by using an optional power supply. When keys are pressed or the mouse is moved, check that the indicators flicker – if they do not then there could be a twisted pair link problem or a problem with one of the modules.

- Check that the Category 5 (or higher) cable is wired correctly as per the diagram in the **section 5.8 'Skew Compensation'.**

- If possible, try using an alternative twisted pair connection between the modules.

- If the sharpness control is set too high, the monitor may not be able to display a picture. Try reinstating the factory default sharpness settings. Please refer to the 'Image controls - sharpness and brightness' section in the 'Special Configuration' chapter.

- Temporarily disconnect the video link to the LOCAL module, connect a monitor directly to the computer video port and check for a correct video image output.

The keyboard indicators are flashing between the Caps Lock and the Num Lock/Scroll Lock and the computer does not respond to any keyboard or mouse inputs.

- The modules are currently locked and require a valid password to be entered. Please refer to the section 'Locking and unlocking the system' for details.

Power is applied via the power supply but REMOTE module operation has stopped.

- Each module has an internal automatic cut-out fuse to protect against power surges. To reset, remove power from the module for one second and then reconnect.

The on-screen mouse pointer does not respond to mouse movements

- The mouse connection may have been interrupted. Either, reboot the system and re-power the REMOTE module power supply, or try using the mouse restoration command. Please refer to **section 5.6 'Hot plugging and mouse restoration.'**

Sound from the microphone cannot be heard or is very quiet

- Check the setting of LOCAL switch 3 – if a microphone is connected at the REMOTE module, the switch should be set to OFF.

Sound input from the stereo line input is distorted and only one channel is working

- Check the setting of LOCAL switch 3 – if a stereo line input is connected at the REMOTE module, the switch should be set to ON.

8. Extender C5 Accessories

The following related C5 Series items are available:

LINDY C5 Series Rack mount chassis (Part No. 39388)
This 19" chassis allows multiple C5 Series modules to be neatly arranged within a standard cabinet. Securing plates and screws are supplied separately.

LINDY C5 Series Power distribution module (Part No. 39386)
Provides power for up to four C5 Series modules to reduce mains power socket requirements.

LINDY C5 Series Rack mount securing plates
For Extender C5 PRO-300 Local module **(upon request)**
C5 Series Skew Compensator **(Part No. 39389)**
For C5 Series Skew Compensator **(Part No. 39369)**
C5 Extender Junior **(Part No. 39390)**
C5 Single Blanking Plate **(Part No. 39361)**
C5 Quad Blanking Plate **(Part No. 39362)**

Radio Frequency Energy and Compliance Declaration

A Category 5 (or better) twisted pair cable must be used to connect the LINDY Extender C5 units in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All other interface cables used with this equipment must be shielded in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

European EMC directive 89/336/EEC
This equipment has been tested and found to comply with the limits for Information Technology Equipment in accordance with the specifications in the European standard EN55022 and EN55024.

FCC Compliance Statement (United States)
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 and television reception . 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 may 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.

However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to correct the interference with one or more of the following measures: (a) Reorient or relocate the receiving antenna. (b) Increase the separation between the equipment and the receiver. (c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. (d) Consult the supplier or an experienced radio / TV technician for help.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Canadian Department of Communications RFI statement
This equipment does not exceed the class A limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

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 radioélectriques publié par le ministère des Communications du Canada.

CE

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