NEURO LOGIC SYSTEMS, INC.
www.nlsdisplays.com

NetCom User Manual

Installation guide for the RFT2-17-CAT5 into a 4-post 19-inch EIA cabinet

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Box Inventory

As you unpack the kit, ensure that you have the following items included in the box:

1 – 1U LCD with Keyboard

1 – 2m IEC Power Cable

1 – Cable Management System (unless ordered without)

2 – Outer Rails (Mounting to Rack)

2 – Inner Rails (Already mounted to RFT)

1 – Mounting Hardware

4 – Zip Ties for securing cables to the back of the unit

If any of these parts are missing, please call your local distributor or NLS at +1 805.389.5435 x21, or email support@nlsdisplays.com to receive the missing parts.

Introduction

Access and control multiple multi-platform computers from one Keyboard Video Mouse (KVM) console with the NetCom system.

1. Features

- Hot-Swap - disconnect and reconnect computers without rebooting
- Scan-mode operation with variable time interval
- 1U Rack mountable
- Operate the system using an On Screen Display (OSD) keyboard hotkeys
- Create multi-level cascade arrangements. For example by cascading the NetCom with Minicom's Smart CAT5 KVM 16-Port model, connect up to up to 256 computers in the system
- The computers can be placed up to 10m/33ft from the NetCom
- Multi-platform — supports PS/2, SUN, and USB computers/servers

2. System components

The NetCom system consists of:

- NetCom 1U 17" LCD and keyboard with a digital 16-port KVM
- Remote Interface Connection cables (RICCs) – PS/2, SUN, USB
- CAT5 cables (1.5m provided)
- RS232 Serial cable
- Rack mounts for the NetCom and the RICCs

3. Compatibility

The NetCom is compatible with:

- PS/2, SUN and USB computers/servers
- VGA, SVGA, or XGA monitors
- DOS, Windows (3X, 9X, 2000, NT4, ME, XP, 2003 Server) LINUX, UNIX, QNX, SGI, FreeBSD, BeOS, Open VMS, Novell 3.12-6, Alpha UNIX, HP UX, SUN

4. Pre-installation guidelines

- Switch off all computers
- Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise
- Ensure that the maximum distance between each computer and the NetCom, does not exceed 10m/33ft

5. Connecting the NetCom system

Connect each computer to the NetCom system using the appropriate RICC and CAT5 cables. **Error! Reference source not found.** illustrates the NetCom system connections with the appropriate RICC connected to a PS/2, SUN and USB computer/server.

The RICCs

The RICCs draw their power from the computer's keyboard port (RICC PS/2, SUN) or from the USB port (RICC USB).

Connecting a PS/2 RICC

Figure 1 illustrates the RICC.

To connect the PS/2 RICC:

1. Connect the Screen connector to the computer's Video card.
2. Connect the Keyboard connector to the computer's Keyboard port.
3. Connect the Mouse connector to the computer's Mouse port.

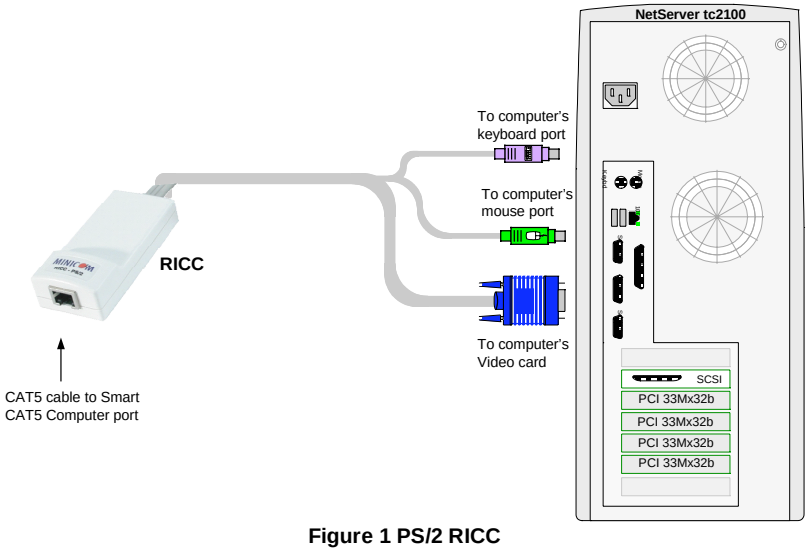

Figure 1 PS/2 RICC

Connecting a SUN Serial RICC

Above illustrates the SUN RICC and its connections.

To connect the SUN RICC:

1. Connect the Screen connector to the computer's Video card.
2. Connect the Keyboard connector to the computer's Keyboard port.

Connecting a USB RICC

The RICC USB supports Windows 98 SE and later, MAC, SUN and SGI illustrates the USB RICC and its connections.

To connect the USB RICC:

1. Connect the Screen connector to the computer's Video card.
2. Connect the USB connector to the computer's USB port.

Connecting the CAT5 cables

1. Connect one connector to the RICCs RJ45 port.
2. Connect the other connector to one of the NetCom's Computer ports.
3. Follow the above 2 steps for each computer.

Connecting the KVM console

To connect a KVM console to the NetCom:

1. Connect the monitor's connector to the NetCom's Monitor port.
2. Connect the keyboard's connector to the NetCom's Keyboard port.
3. Connect the mouse's connector to the NetCom's Mouse port.

6. Connecting the power supply

1. Connect the NetCom to the power supply using the Power cable provided. Use only power cord supplied with the unit.
2. Switch on the computers.

7. Resetting the Switch

Resetting can be performed through the software – explained later.

8. Avoiding general rack mounting problems

Elevated operating ambient temperature

The operating ambient temperature of the rack environment may be greater than the room ambient when installing into a closed or multi-unit rack assembly. So install the equipment in an environment compatible with the maximum rated ambient temperature.

Reduced airflow

Install the equipment in a rack in such a way that the amount of airflow required for safe operation is not compromised.

Mechanical loading

Mount the equipment in the rack in such a way that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit overloading

When connecting the equipment to the supply circuit, consider the effect that overloading of circuits might have on over-current protection and supply wiring.

Reliable earthing of rack-mounted equipment should be maintained. Give attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

9. Cascading NetCom switches

You can cascade the NetCom system. You do so by connecting the lower level NetCom Switches to RICCs. Follow the connections as illustrated in the figure below.

With the NetCom 16 Port model, connect up to up to 256 computers through cascading.

A lower level Switch must have a different hotkey to display its OSD than a higher level switch. Changing the OSD display hotkey is explained on page 12 below.

10. Operating the NetCom system

Switch between the connected computers by either

- Keyboard hotkeys
- The OSD (On Screen Display) or Control software

The OSD is also the place to adjust various settings as explained below.

When switching computers the illuminated LED of the top bank indicates which computer is currently selected.

11. The keyboard hotkeys

To switch to the next computer forwards press **Shift** then, +. Release **Shift**, before pressing +.

To switch to the next computer backwards press **Shift** then, -. Release **Shift**, before pressing -.

Note! With a US English keyboard you can use the **+** key of the alphanumeric section or of the numeric keypad. With a Non-US English keyboard only use the **+** key of the numeric keypad.

12. Displaying the OSD

To display the OSD:

Press **Shift** twice. The OSD Main window appears. See Figure 2. Lines with blue text show active computers. Lines with grey text show inactive computers.

The Type column indicates whether a computer "C" or another switch "S" is connected to the port.

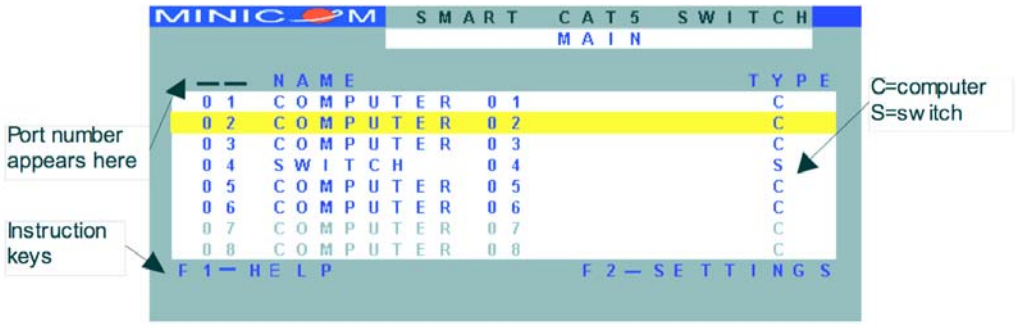

Figure 2 The OSD Main window

13. Navigating the OSD

To navigate up and down use the Up and Down arrow keys.

To jump from one column to the next (when relevant) use the Tab key.

To exit the OSD or return to a previous window within the OSD press **Esc**.

14. Selecting a computer

To select a computer:

1. Navigate to the desired computer line.

2. Press **Enter**. The selected computer is accessed. An confirmation label appears showing which computer is accessed.

Note! When the OSD is displayed you cannot select computers using the front panel Select buttons or the keyboard hotkeys.

15. The OSD settings (F2)

Press **F2**. The OSD Settings window appears see Figure 3.

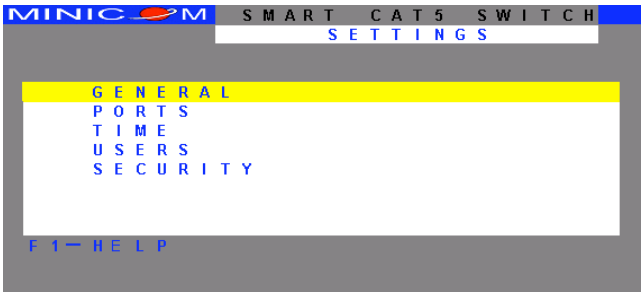

Figure 3 The Settings window

Note! When the OSD is password protected (explained below) only the Administrator has access to the **F2** settings window.

16. The General settings

With the GENERAL line highlighted, press **Enter**. The General settings window appears see Figure 4.

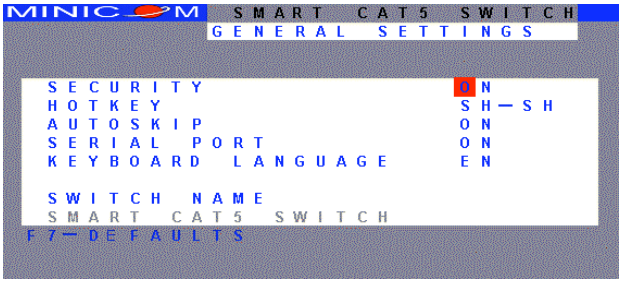

Figure 4 The General Settings window

From this window you can do the following:

Security

The OSD comes with an advanced password security system that contains 3 different security levels. Each security level has different access rights to the system.

These levels are as follows:

Administrator (Status A)

The Administrator can:

- Set and modify all Passwords and security profiles
- Fully access any computer
- Use all OSD functions

Supervisor (Status S)

The Supervisor can:

- Fully access any computer
- Access the following OSD functions only –**F4** Scan, **F5** Tune and **F6** Moving the Confirmation label.

User (Status U)

There are 6 different Users in the NetCom system. Each User has a Profile set by the Administrator that defines the access level to different computers. There are 3 different access levels; these are explained on page 15.

Activating password protection

By default OSD access is not password protected. Only the Administrator can password-protect the OSD or disable password protection.

To do so:

1. In the General settings window navigate to the Security line.
2. Press the Spacebar to toggle between Security On and Off. The password box appears.
3. Type the Administrator's password (default is "admin").
4. Press **Enter**. The new security status is set.

Displaying the OSD of cascaded switches

When you have cascaded NetCom switches, a lower level Switch must have a different OSD display hotkey than a higher level switch. (See page 8.)

The hotkeys can be any of the following:

- Shift, Shift (default)
- Ctrl, Ctrl
- Ctrl, F11
- Print Screen

To change the top level hotkey:

1. Navigate to the HOTKEY line.
2. Choose a different hotkey than the **Shift**, **Shift** hotkey of the lower level Switches. Toggle between the options using the Spacebar.

To change a lower level hotkey:

1. Connect a keyboard and monitor to the lower level Switch and press **Shift**, **Shift**. Its OSD appears.
2. Press **F2** and select GENERAL. The General settings window appears.
3. Navigate to the HOTKEY line.
4. Choose a different hotkey than the hotkey of the of the top layer switch. Toggle between the options using the Spacebar.

Note! When a lower level Switch hotkey is changed, there is an adjustment to be made in the higher level Switch's OSD: This is explained on page 14-(HKEY) hotkey - Cascading.

Autoskip

When Autoskip is on, you can only access the active computers. When Autoskip is off, you can access active and inactive computers. (This includes operating the Switch via the OSD, front panel buttons or hotkeys).

To change the Autoskip setting:

1. Navigate to the Autoskip line.
2. Toggle between the options using the Spacebar.

Serial port

The Serial port is used for the Control Management program. Serial port On means the program can be used.

To change the Serial port setting:

1. Navigate to the Serial port line.
2. Toggle between the options using the Spacebar.

Changing the Keyboard language

In the OSD the names of the computers can be written in 3 different languages – English (EN), German (DE), and French (FR). The keyboard is preset to English; this can be changed as follows:

1. Navigate to the Keyboard language line.
2. Toggle between the options using the Spacebar.

Editing the Switch name

You can substitute up to 18 characters in the line. A space constitutes a character. When there is more than one switch in the system give each Switch's OSD a different name.

17. F7 Defaults

Press F7 to return the OSD to the factory default settings. Note! All changes made will be removed.

18. The Ports settings

From the General Settings, return to the Settings window by pressing **Esc**. Navigate to the Ports line and press **Enter**. The Ports settings window appears see Figure 5.

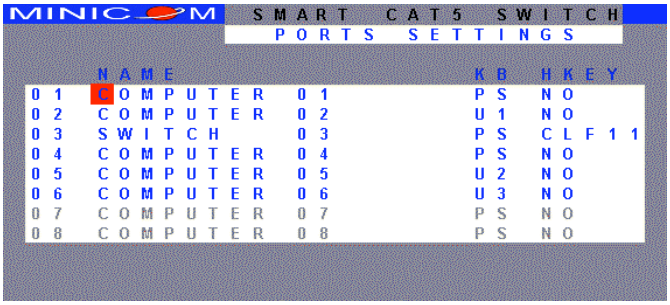

Figure 5 Ports Settings window

Editing the computer name

In this window you can edit the computer names with up to 15 characters. When you have a cascaded CAT5 KVM Switch connected to a Computer port give the switch a distinct name. See Figure 5.

To erase a character:

Select it and press the Spacebar. Blank spaces remain in place of the erased character.

To erase an entire line:

Place the cursor at the beginning of the line. Keep the Spacebar depressed until the line is erased.

Keyboard (KB)

By default the Keyboard mode is set to PS, which is suitable for Windows, Linux, MAC OS, SUN Solaris and most other operating systems.

For certain UNIX operating systems set the KB column as follows:

- U1 for HP UX
- U2 for Alpha UNIX, SGI, Open VMS
- U3 for IBM AIX

(HKEY) hotkey - Cascading

When there are cascaded switches, and the lower level Switch has had its OSD display hotkey changed, you must do the following:

Adjust the HKEY setting in the Ports Settings window of the higher level switch to reflect the lower level switch's new hotkey: E.g. in Figure 5 above a NetCom switch is connected to port #3 and its display hotkey is Ctrl, F11.

To reflect the new hotkey:

Adding/changing a hotkey (HKEY)

Cascade the NetCom by connecting another NetCom Switch to a Computer port instead of a computer, and then connecting more RICCs to the second Switch. Connect a third and fourth Switch in the same way. With the NetCom 16 Port model, connect up to up to 256 computers through cascading.

You must define a hotkey to display the OSD of each Switch. These hotkeys must be different for the top and bottom layers. The hotkeys can be any of the choices as set out above on page 12.

To add/change a hotkey:

1. On the line to which the Switch is connected, press Tab to jump to the HKEY column.
2. Toggle between the options using the Spacebar.

3. Return to the Settings window by pressing **Esc**.

19. The Time settings

In the Settings window navigate to the Time line and press **Enter**. The Time settings window appears see Figure 6.

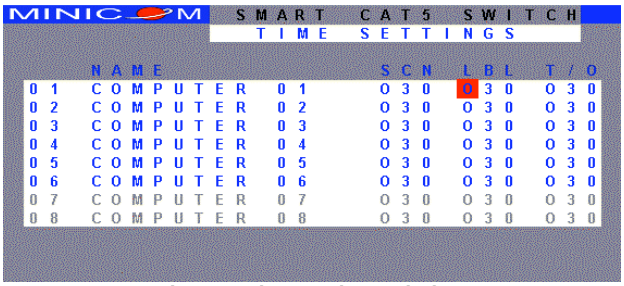

Figure 6 Time settings window

Scan (SCN) - Label (LBL) - Time out (T/O)

SCN - In the **SCN** column, change the scan period.

LBL - In the **LBL** column, change the display period of the OSD label showing which computer is currently accessed.

T/O - When password protection is activated you can automatically disable the Management keyboard, mouse and screen after a preset time of non-use. Set this Timeout period in the **T/O** column.

To set the above periods:

1. On the desired line press Tab to jump to the desired column.
2. Place the cursor over one of the 3 digits and type a new number. Enter a leading zero where necessary. For example, type 040 for 40 seconds.

   Typing 999 in the **LBL** column displays the label continuously. Typing 000 – the label will not appear.

   Typing 999 in the **T/O** column disables the Timeout function. Warning! Typing 000 causes the Timeout function to work immediately. Minimum time should be not less than 005 seconds.

   Typing 999 in the **SCN** column displays the screen for 999 seconds. Typing 000 – the computer screen is skipped.

20. Users

In the Settings window navigate to the Users line and press **Enter**. The Users settings window appears see Figure 7.

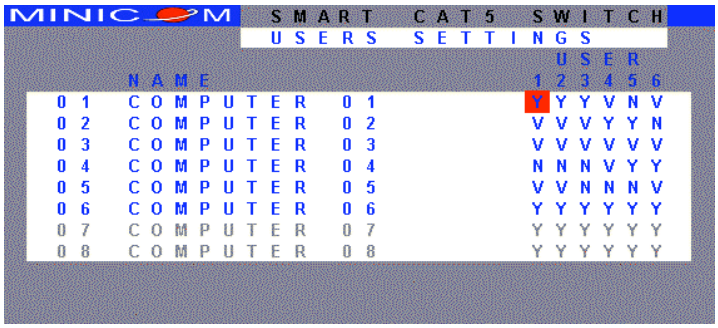

Figure 7 The Users settings window

There are 3 different access levels. These are:

- Y – Full access to a particular computer. Plus access to the **F4**, **F5** and **F6** OSD functions
- V –Viewing access only, to a particular computer (No keyboard/mouse functionality)
- N – No access to a particular computer – A TIMEOUT label appears if access is attempted

To give each user the desired access level:

1. Navigate to the desired computer line and User.
2. Toggle between the options using the Spacebar.

21. Security

In the Settings window navigate to the Security line and press **Enter**. The Security settings window appears see Figure 8.

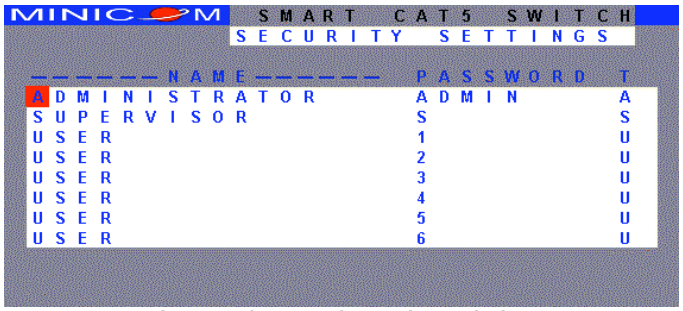

Figure 8 The Security settings window

The 'T' column on the right hand side stands for Type of password.

There can only be 1 Administrator password, 1 Supervisor password, and 6 User passwords.

To change a user name or password:

1. Navigate to the desired line and column.
2. Type a new user name / password. User authentication is done solely via the password there is no security significance to the names.

By default the User Profile settings are full access.

22. The OSD HELP window – F1

To access the HELP window press **F1**. The HELP window appears see Figure 9.

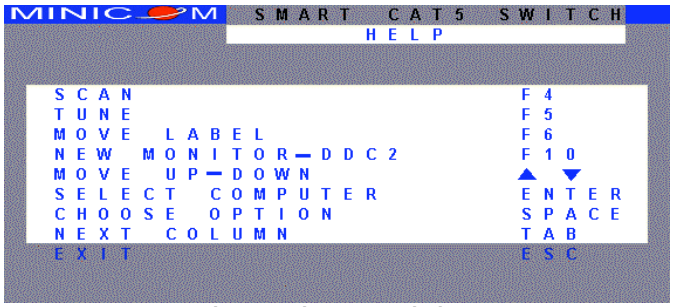

Figure 9 The HELP window

Please note! All the functions set out in the Help window are performed from the Main window. The Help window is merely a reminder of the hotkeys and their functions.

23. Scanning computers– F4

Where necessary adjust the scan time in the Time Settings window, see above.

To activate scanning:

1. Press **Shift** twice to open the OSD.
2. Press **F4**. Your screen displays each active computer sequentially, with the Scan label appearing in the top left corner.

To deactivate scanning:

Press **F4**.

24. Tuning – F5

You can tune the image of any remote computer screen from the Select Computer window.

To adjust the screen image:

1. Navigate to the remote computer you wish to adjust.
2. Press **F5**. The screen image of the selected computer appears, together with the Image Tuning label.
3. Adjust the image by using the **Right** and **Left** Arrow keys.
4. When the image is satisfactory, press **Esc**.

Note! Picture quality is relative to distance. The further away a remote computer is from the NetCom, the lower the image quality, and the more tuning needed. So place the higher resolution computers closer to the manager unit.

25. Moving the label – F6

Position the OSD label anywhere on the screen.

To position the label from the Main window:

1. Navigate to the desired computer using the **Up** and **Down** arrow keys.
2. Press **F6**. The selected screen image and Identification label will appear.
3. Use the arrow keys to move the label to the desired position.
4. Press **Esc** to save and exit.

26. USB / SUN Combo keys

The connected PS/2 keyboard does not have a special SUN keypad to perform special functions in the SUN Operating System environment. So when a RICC USB or SUN is connected to a SUN computer, the RICC emulates these SUN keys using a set of key combinations called Combo keys. See the table below.

SUN key	Combo key
Stop	Left **Ctrl** + **Alt** + **F1**
Props	Left **Ctrl** + **Alt** + **F3**
Front	Left **Ctrl** + **Alt** + **F5**
Open	Left **Ctrl** + **Alt** +**F7**
Find	Left **Ctrl** +**Alt** + **F9**
Again	Left **Ctrl** + **Alt** + **F2**
Undo	Left **Ctrl** + **Alt** + **F4**
Copy	Left **Ctrl** + **Alt** + **F6**
Paste	Left **Ctrl** + **Alt** + **F8**
Cut	Left **Ctrl** + **Alt** + **F10**
Help	Left **Ctrl** + **Alt** + **F11**
Compose	Application key or Left **Ctrl** + **Alt** + Keypad *****
Crescent	**Scroll Lock**
Volume Up	Left **Ctrl** + **Alt** + Keypad **–**
Volume Down	Left **Ctrl** + **Alt** + Keypad **+**
Mute	Left **Ctrl** + **Alt** + **F12**
Sun Left ◊ key	Left **Windows** key
Sun Right ◊ key	Right **Windows** key
Alt-Graph	Right **Alt** or **Alt Gr**
Stop A	Left **Ctrl** + **Alt** +1

27. Technical specifications

Operating systems and Platforms	DOS, Windows, LINUX, UNIX, QNX, SGI, FreeBSD, BeOS, Novell 3.12-6, SUN
Mouse	PS/2, Wheel mouse, Intellimouse, 5-button mouse
Resolution	1600x1200@75Hz
System cable	CAT5/ 5E/ 5+/ 6/ or 7 cables. FTP or UTP 2x4x24 AWG solid wire
Transmission distance	Up to 10m/33ft

NetCom Switch	
System	RJ45
Serial	RJ11
Operating / Recommended ambient temperature	0ºC to 40ºC/32ºF to 104ºF
Storage temperature	-40ºC to 70ºC/-40ºF to 158ºF
Humidity	80% non-condensing relative humidity

RICCs	PS/2	USB	SUN
Connections			
VGA	HDD15	HDD15	HDD15
Keyboard/Mouse	MiniDin6	USB	MiniDin8
System	RJ45	RJ45	RJ45
Power	From computer's Keyboard port	From USB port	From computer's Keyboard port

28. Upgrading the NetCom firmware

With the NetCom Update software program you can upgrade the firmware for the:

- OSD
- Manager
- RICCs

NetCom Update enables you to add new features and fix bugs in a quick and efficient manner.

You can install the NetCom Switch Update on any computer, even one not part of the NetCom system.

The NetCom Update software and latest firmware is on the NLS website. To obtain the latest firmware for your system go to **www.NLSdisplays.com/support/NetCom**.

29. System requirements for the NetCom Update software

- Pentium 166 or higher with 16 MB RAM and 10 MB free Hard Drive space.
- Free Serial port.
- Windows 98 and later.

30. Connecting the NetCom system

To update the firmware the NetCom system must be connected and switched on.

31. Connecting the RS232 Serial cable

To run the software, connect the RS232 Serial cable to the computer containing the software, and to the NetCom Switch..

32. Installing the software

To install the NetCom Switch Update software, simply download the software to your computer and run the installer.

33. Starting and configuring the NetCom Update

1. Start the NetCom Update software. The NetCom Update window appears. See Figure 10.

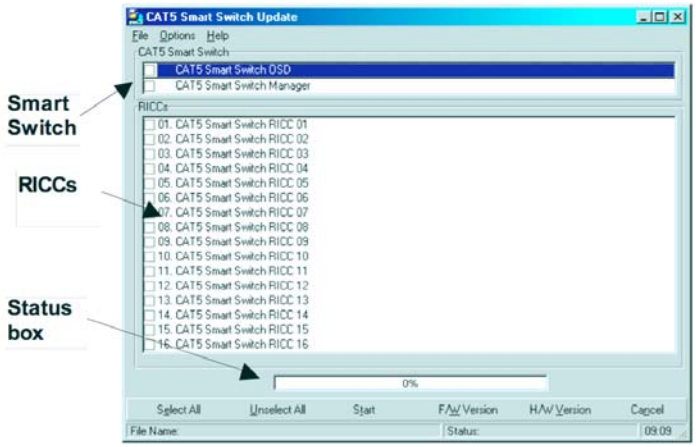

Figure 10 The NetCom Switch Update window

The table below explains the functions of the buttons and boxes in the NetCom Switch Update window.

Button or Box	Function
Select All	Selects all RICCs
Unselect All	Unselects selected RICCs
Start	Starts firmware download
F/W Version	Displays the firmware version number
H/W Version	Displays the hardware version number
Cancel	Cancels selected function
10:06	System time
Status:	Displays download status
File Name:	Name of Update file

2. From the Options menu choose Com Port. The Com Port box appears. See Figure 11.

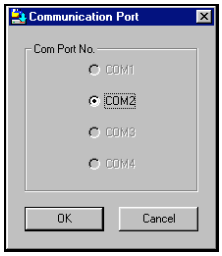

Figure 11 The Com Option box

3. Choose an available Com Port and click OK.

Note! The RS232 Serial cable must be connected to the selected Serial port.

34. Verifying the version numbers

Before upgrading the firmware, you must first verify which firmware and hardware versions you have.

The OSD version number

To verify the OSD version number:

1. Open the NetCom Switch Update program.
2. In the **Switch Unit** box, check the OSD option. See Figure 10.
3. Click F/W Version. The version number appears in the **Switch** box.

The H/W Version button is grayed out, as there is no hardware relevant to the OSD.

The NetCom Manager version number

To verify the NetCom version number:

1. Open the NetCom Switch Update program.
2. In the **Switch Unit** box, check the **NetCom Manager** option**.**
3. Click F/W Version. The firmware version number appears in the **Switch Unit** box.
4. Click H/W Version. The hardware version number appears in the **Switch Unit** box.

Verifying the RICC version number

Before you can check a RICC, you must uncheck the **Switch Unit** box options.

To verify the RICC version number:

1. Open the NetCom Switch Update program.
2. Check one or more or all of the RICCs.
3. Click F/W Version. The firmware version number appears after the RICC number.
4. Click H/W Version. The hardware version number appears after the RICC number.

When "**Not responding**" appears, there is no computer connected, or it is switched off.

35. Obtaining new firmware

Download the latest firmware for your system from **www.NLSdisplays.com/support/NetCom**

36. Updating the firmware

Warning!

Never switch off any computer connected to the NetCom system during the updating process.

To update the firmware:

1. Open the NetCom Switch Update program.
2. In the NetCom Switch Update window, check the appropriate option in the **Switch Unit** box or the desired RICC.
3. From the **File** menu, choose **Open**. The **Open** box appears. See Figure 12.
4. Navigate to the folder that contains the firmware update file. You may only see the files that match the file selection mask.

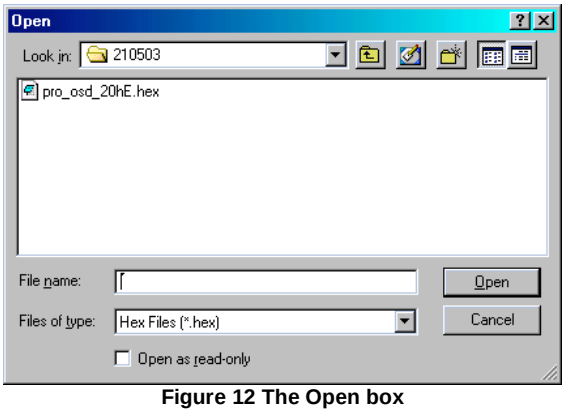

Figure 12 The Open box

5. Open the file.

6. Click **Start**. The NetCom Switch Update flashes the firmware. On completion the firmware version number appears.
7. Check that the updated version number is correct by pressing F/W Version.

Firmware Update generates one log file per session that displays a chronological list of actions. You can read the log file in any ASCII text editor. The log file is located in the Windows directory.

37. Reset

Reset the software for the NetCom Manager or RICCs when for example the unit hangs or when the mouse fails to work properly. Resetting is done via the Serial port, and avoids the need to shut down the computer.

NOTE! The Reset function does not affect the parameters of the unit settings.

Resetting the Switch or RICC units

To reset the Switch or RICC units:

1. For the Switch, check the NetCom Switch option in the **Switch Unit** box.

   For the RICCs, check one or more RICCs in the **RICC Units** box.
2. From the Options menu choose **Advanced** / **Reset**. The units reset. The system should now be operational.

38. RICC SUN keyboard emulation

By default the RICC SUN supports US English keyboard emulation. It also supports German and Swiss German keyboard emulation. You can download the appropriate keyboard emulation firmware from **www.NLSdisplays.com/support/NetCom** Other language keyboard emulations will be posted on the NLS Web site as they become available.

39. Troubleshooting tips

When using Firmware Update software you may sometimes get a Communication Error message.

When updating a unit and a Communication Error message appears, do the following:

1. Check that the RS232 Serial cable's RS232 connector is connected to the Switch's Communication port.
2. Check that the RS232 Serial cable's DB9F connector is connected to the DB9M Serial port on the CPU's rear panel.
3. Restart the download process.

Electricity failure

When the electricity fails while updating the NetCom firmware, do the following:

If the electricity fails during the firmware update of the Switch, a **Communication Error** message appears. Simply resume the firmware update by opening the folder that contains the firmware update file and continue from there.

If the electricity fails during the firmware update of the RICCs a **Not Responding** or **Upgrade Error** message appears. Restart the upgrade from the beginning.