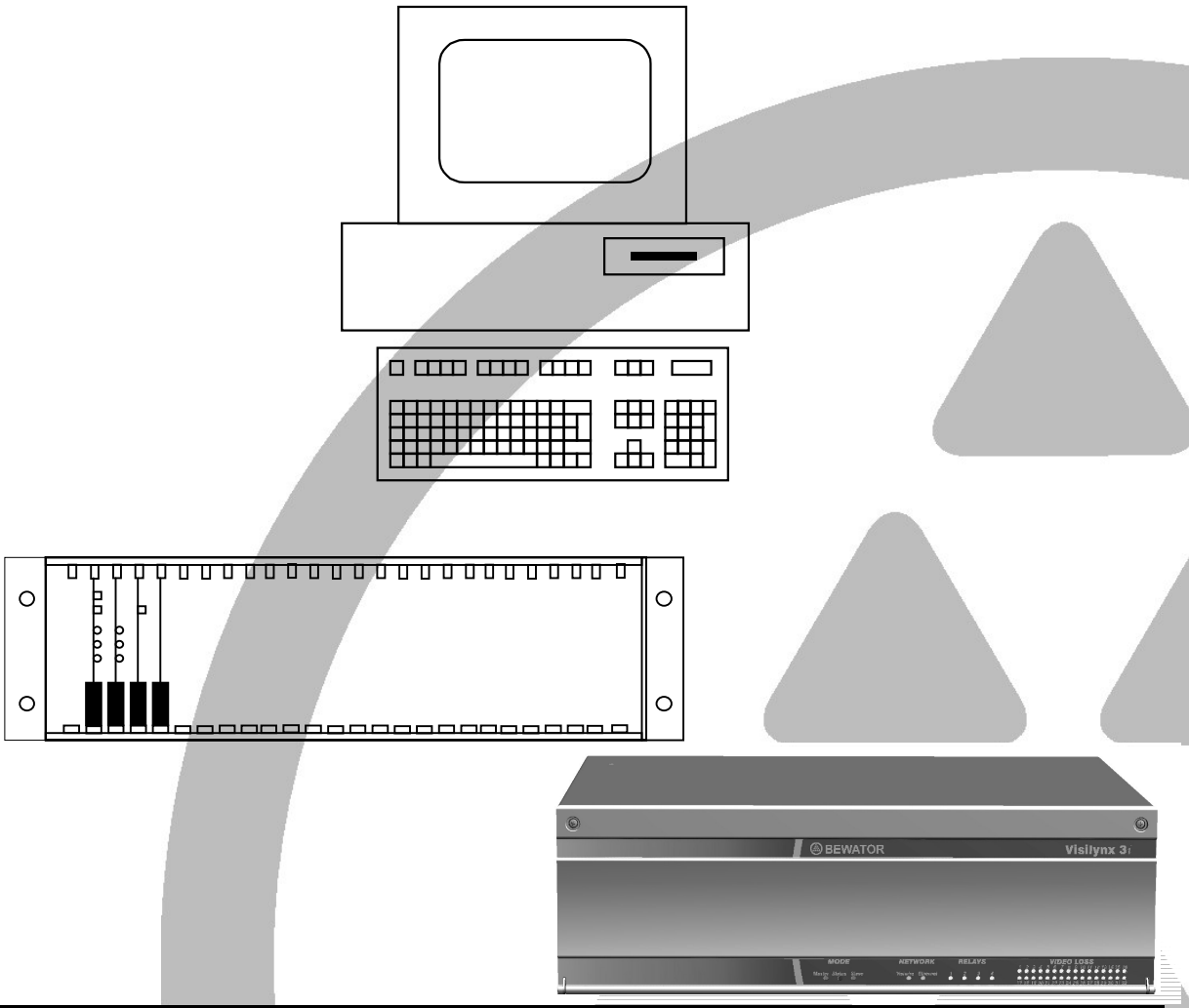
BEWATOR

Uniclass L7626	EPIC M231
CI/SfB (64.11) X	

Visilynx 3 Matrix Switcher
VisiPC Software Version 2.01
Part 2 – Visilynx 3 Tester & Simulator



USER MANUAL

Manual : INS00237 Issue 2

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1 INTRODUCTION

Visilynx 3 (V3) and Visilynx 3 Modular (or V3M) are modular CCTV systems designed to provide up to 32 users with control of up to 511 fully functional cameras. A smaller special-purpose V3 rack system is used for trainborne applications.

Visilynx 3 Integrated (V3i) is a 32 loop-through input by 8 output full cross-point video matrix node contained in a 19" wide by 3U high unit.

Visilynx 3 is supplied with a CD-ROM package containing configuration and test software called VisiPC, which should be installed onto a suitable PC.

VisiPC runs under the industry standard Microsoft Windows 95, 98, 2000 and NT operating systems. It is both user friendly, and comprehensive, and forms the heart of the system's configuration and test capability.

The User Manual for VisiPC software is provided in two parts:

a) Part 1 (Bewator Limited document INS00231) describes the "Visilynx 3 Configurator" sub-program.

b) Part 2 (this document) describes the "Visilynx 3 Tester & Simulator" sub-program.

The VisiPC Configurator sub-program includes features to aid the creation and adjustment of "Configuration Files" (.V3) for an installed V3 system.

The VisiPC Visilynx 3 Tester & Simulator sub-program includes features for the function testing of V3 systems. This sub-program includes features that are used only used in maintenance operations on a trainborne CCTV system (see Annex A).

Further features were included for use during the development phase of a trainborne V3 CCTV system and which may prove useful when performing detailed fault finding activities on any V3M system (see Annex B)

The VisiPC software also includes additional features for use with the RX3 receiver to aid:

a) Upgrading the software.

b) Functional testing.

These operations are detailed in the RX3 Receiver Installation and Maintenance Manual (Bewator Ltd. document INS00271) and are therefore not included in this document.

1.1 Principles of Operation

The main principles of operation of VisiPC are:

- A PC COM port is chosen at the “Options/Comm. Port” menu.
- The PC port is connected to a Visilynx 3 system “test and config” port using an RS-232 cable.
- Figure 1 shows the installation requirements for V3 system set-up and testing.
- Figure 2 shows the installation requirements for V3i set-up and testing.

Figure 1 V3/V3M Installation Requirements

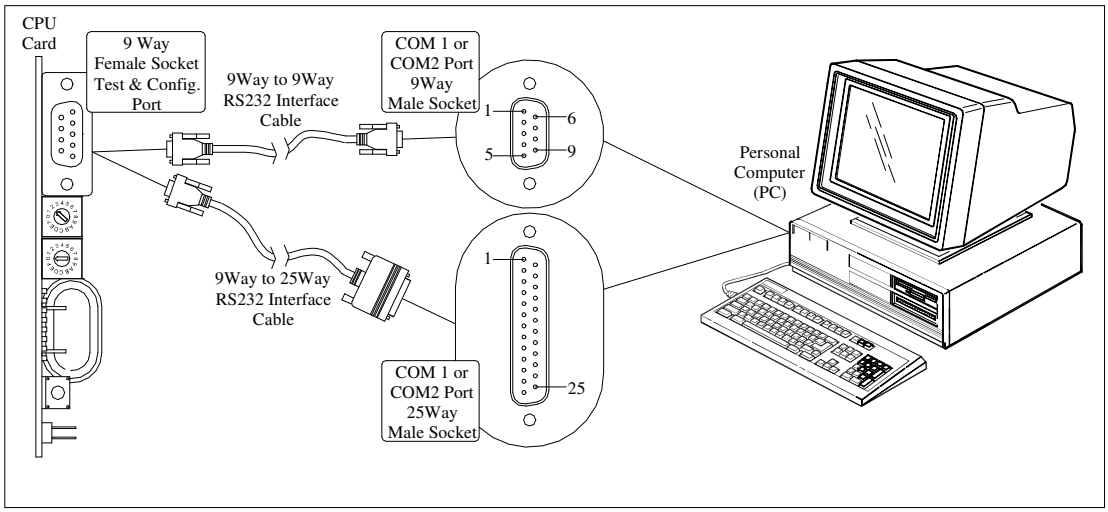
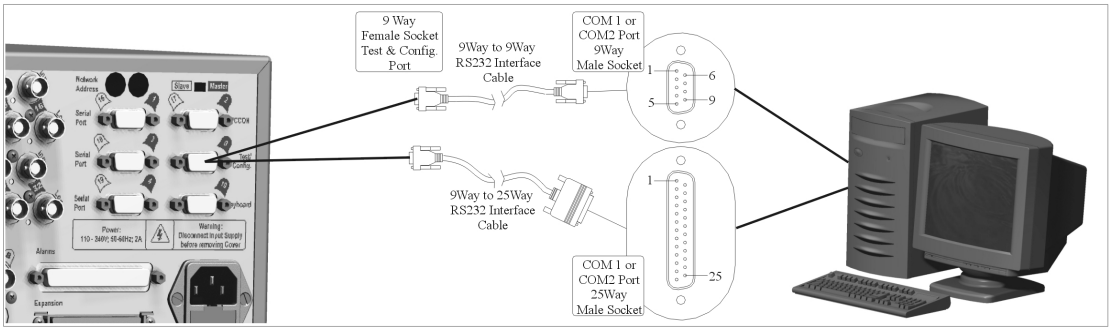


Figure 2 V3i Installation Requirements



2 GETTING STARTED

2.1 Hardware Interconnection – RS232 Interface

All Visilynx 3 systems incorporate an RS232 "test and config" port which allows Visilynx 3 to be connected, via a 9-way to 9-way interface lead, to an external PC for system set-up and testing. A suitable interface lead (Bewator Ltd. part number VC-3CONFIG) is supplied with each V3 Integrated System Unit.

Please refer to the diagrams on the previous page. If the serial port on your PC is a 25-way connection, you will need to purchase a suitable 9-way to 25-way 'D' type pre-wired interface lead to connect to your CPU card. *(V3 train rack systems use a special cable to connect the PC to the rack PTE port.)*

Tables 1 and 2, shown below, are for reference and give details of the pin-outs used for RS232 transmission.

Note that the 25 to 9-way option is wired differently to the 9-way to 9-way cable. If attempting to manufacture this lead, you must observe these pin-outs.

Table 1 Cable Wiring for 9-Way PC COM Port

PC	V3 Test/Config Port
9-Way 'D' Female	**9-Way 'D' Male**
2	2
3	3
5	5

Table 2 Cable Wiring for 25-Way PC COM Port

PC	V3 Test/Config Port
25-Way 'D' Female	**9-Way 'D' Male**
2	3
3	2
7	5

2.2 Minimum PC Requirements

- Windows® 95, 98, NT, 2000, XP
- 64Mb RAM
- Pentium® 233MHz
- One serial port
- 10Mb of hard disk space
- CD-ROM drive.

Warning: If the PC is slower than listed above, or if it is fitted with a network card that is not connected to a live network, then communications errors may occur when transferring new software to a Visilynx 3 system.

2.3 Software Installation

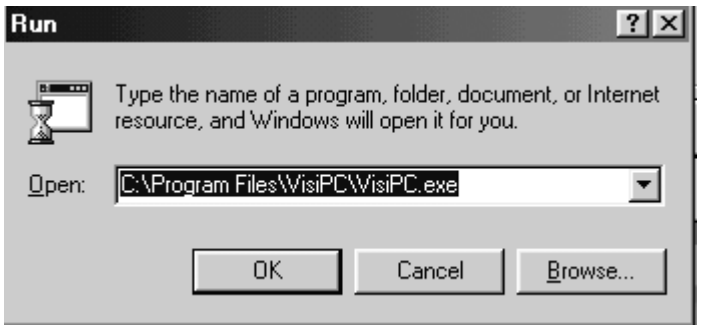
1. Insert the CD-ROM containing VisiPC into your CD drive. Windows® 95, 98, 2000 or NT should all automatically run the installation set-up procedure.
2. If your CD drive is not set to auto-run, you will need to run the software installation from within "**My Computer**". Simply right-click on the CD drive and select **Auto Play**.
3. If that option is not available, run the **Setup.exe** program on the CD.
4. The installation program will install VisiPC into the default folder **C:\Program Files\VisiPC**, but you may choose a different folder if you prefer.
5. Once the installation procedure is finished, Windows may prompt you to restart your PC to complete the installation.
6. If you want to create a desktop shortcut, right-click on the **Start** button and choose 'Explore'. Navigate down to **Programs/VisiPC**. Right-click and select 'Copy'. Go the desktop and right-click. Select ' Paste' to create the shortcut.
7. Following installation, this CD must be stored in a safe place as a backup in the unlikely event that the software becomes corrupted.

2.4 Software Start-Up

Three methods can be used to run the software. Either:

- Double click on your newly created shortcut (by far the quickest method).
- Use the **Start** menu to view the **Programs** menu, where **VisiPC** can be found.
- Use the **Run…** command in the **Start** menu and **Browse…** through the program files on your C: drive. When you find **VisiPC.exe** click on **Open** and then click on **OK** in the Run window, as shown below.

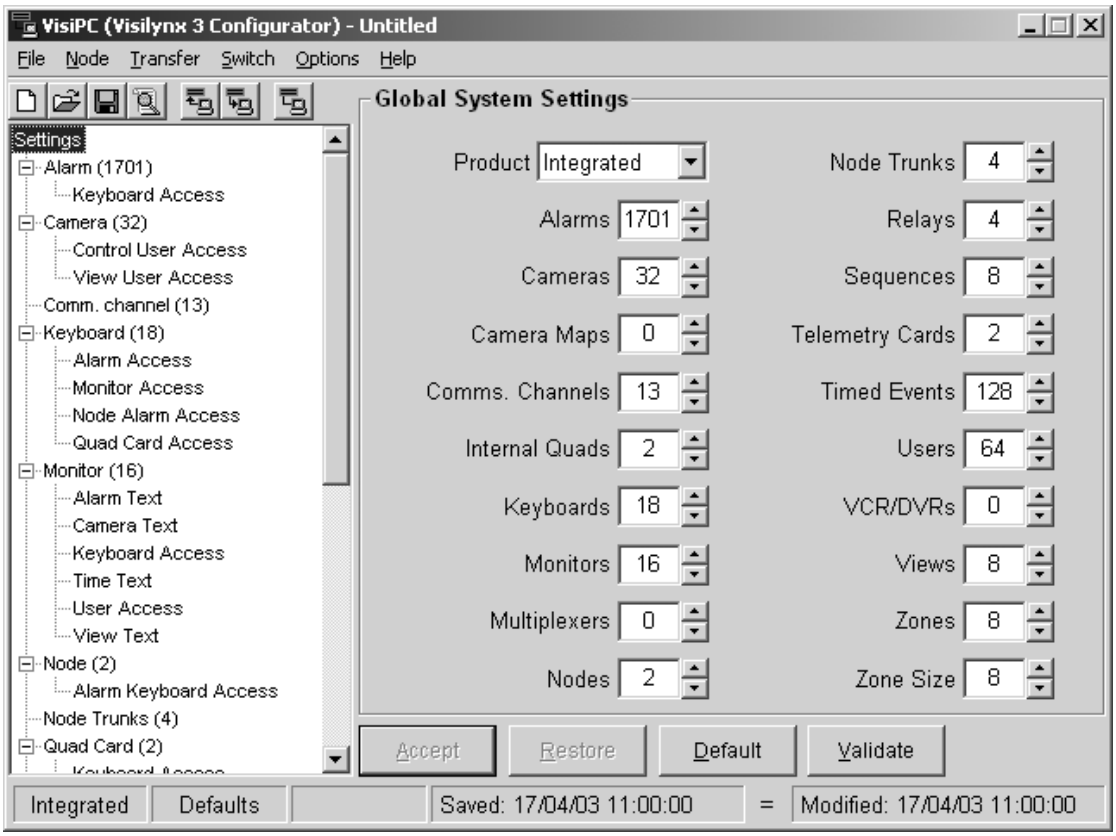
Figure 3 'Run' Command



The first screen visible when running the software for the first time is the VisiPC (Visilynx 3 Configurator) "Global System Settings" screen for the Integrated product, shown in Figure 4.

On all subsequent uses, the VisiPC program starts-up in the sub-program in which it was shut down.

Figure 4 Visilynx 3 Configurator Global System Settings Screenshot

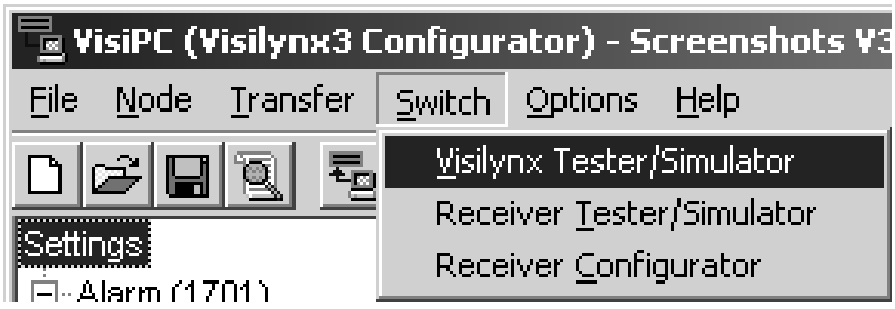


2.5 Switch to Visilynx 3 Tester & Simulator

Switching to the Visilynx 3 Tester & Simulator sub-program can be achieved in two ways; either by using the Switch Menu or the shortcut on the Toolbar.

2.5.1 Switch Menu

Figure 5 Switch Menu

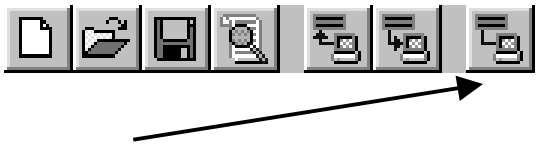


Select the 'Visilynx Tester/Simulator' option to switch to the Visilynx 3 Tester & Simulator sub-program.

2.5.2 Toolbar Shortcut

Seven toolbar buttons, in three groupings, provide shortcuts to commonly used functions.

Figure 6 Switch to Visilynx 3 Tester/Simulator

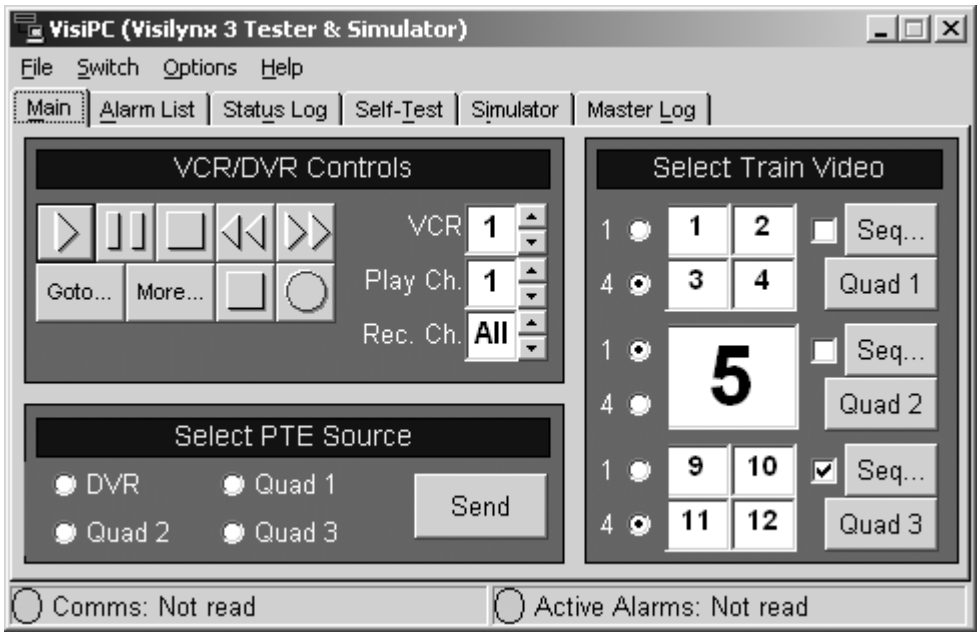


The rightmost toolbar button switches from the Visilynx 3 Configurator sub-program to the Visilynx 3 Tester & Simulator sub-program.

2.6 Tester & Simulator Main Tab Screen

When Visilynx 3 Tester/Simulator is selected, VisiPC will disappear for a few seconds while the Visilynx 3 Tester & Simulator sub-program loads.

Figure 7 Visilynx 3 Tester & Simulator Main Tab Screenshot



2.7 Settings for communicating with Visilynx 3

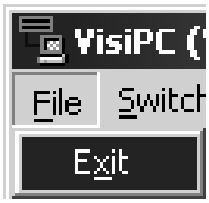
A Baud rate of 38400 is required for communication between the PC and the “test and config” port on the Visilynx 3 system. The communication Baud rate is selected using the Options Menu (see Page 10).

3 MENU BAR

The Visilynx 3 Tester & Simulator screen menu bar provides access to the menu commands, in the normal Microsoft Windows® fashion.

3.1 File Menu Commands

Figure 8 File Menu



3.1.1 Exit Command

Shortcut keys: **Alt-F4**

Use this command to close the VisiPC software.

3.2 Switch Menu Commands

Figure 9 Switch Menu

3.2.1 Visilynx Configurator Command

Shortcut keys: **Alt-SV**

Select this option to switch to the Visilynx 3 Configurator sub-program. VisiPC will disappear for a few seconds while the Visilynx 3 Configurator Global System Settings screen loads.

3.2.2 Receiver Tester/Simulator Command

Shortcut keys: **Alt-ST**

Select this option to switch to the RX3 Receiver Tester & Simulator sub-program. VisiPC will disappear for a few seconds while the RX3 Receiver Tester & Simulator "Status Log" tab screen loads.

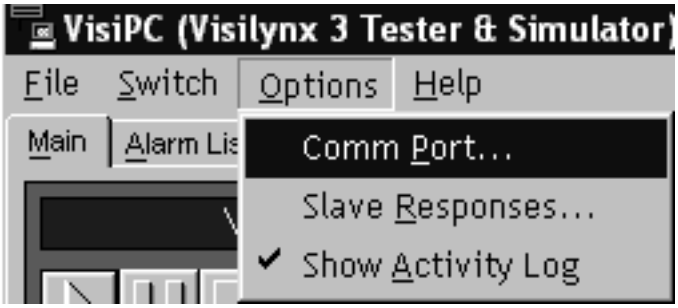
3.2.3 Receiver Configurator Command

Shortcut keys: **Alt-SC**

Select this option to switch to the RX3 Receiver Configurator sub-program. VisiPC will disappear for a few seconds while the RX3 Receiver Configurator screen loads.

3.3 Options Menu Commands

Figure 10 Options Menu

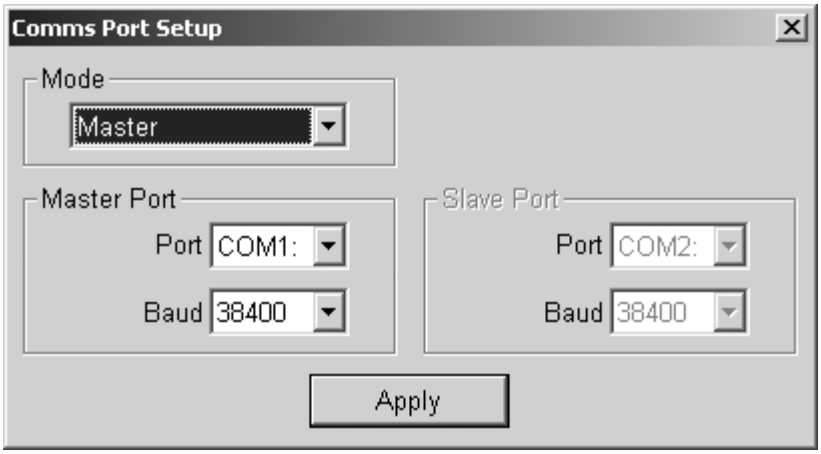


3.3.1 Comm. Port… Command

Shortcut keys: **Alt-OP**

Selecting 'Comm. Port…' brings up the Comms Port Setup box.

Figure 11 Comms Port Setup Dialog Box



The 'Mode' selector selects whether the VisiPC program is acting as a Master, Slave or both. 'Master' Mode should be selected. The 'Port' and the 'Baud' rate are selected independently for both the Master and the Slave ports, as required. The 'Master Port' or the 'Slave Port' selection box is greyed out if the selected mode does not use it.

There are up to 4 serial communication ports (COM1 to COM4) available on most PCs. All four ports are listed, whether or not they are fitted. Baud is the rate of data transfer between the PC and Visilynx 3, sometimes known as the port speed. Both the Master and Slave Port Baud rates are set to 38400 baud on the first start-up of the program after installation. Other port parameters are fixed (8 data bits, 1 stop bit, no parity).

Pressing the **Apply** button applies the selected values to the ports.

The Comm Port Setup dialog box won' t close when the **Apply** button is pressed if the port configuration is invalid; i.e. one or both ports cannot be initialised. If only one port is available, select a mode that uses only one port and select the unused port. If no ports are available, the dialog box can still be closed by clicking the cross in the top right corner of the dialog box. This will close the dialog box although the settings are invalid. All comms functionality will be disabled.

3.3.2 Slave Responses… Command

Shortcut keys: **Alt-OR**

Note: The 'Slave Responses' option is only available if either 'Slave' or 'Master & Slave' Mode field has been selected in Comms Port Setup (see above).

The 'Slave Responses' option is not normally used, but see Annex B.

3.3.3 Show Activity Log Command

Shortcut keys: **Alt-OA**

Selecting 'Show Activity Log' shows a separate window in which a summary of the Master messages sent and received is recorded.

Figure 12 Activity Log Window

It opens immediately below the main VisiPC window. The size and position of the window can be changed by the user.

The 'Activity log' can be copied by clicking on the Activity Log window and then pressing Ctrl-C to copy the contents to the clipboard from where they can be pasted into any text editor or word processor.

3.4 Help Menu Commands

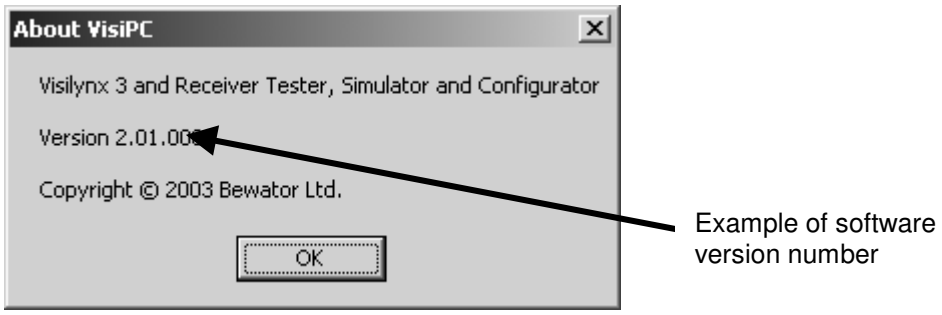
Figure 13 Help Menu

3.4.1 About… Command

Shortcut keys: **Alt-HA**

Selecting 'About…' brings up the About VisiPC message box.

Figure 14 About VisiPC Message Box



'About VisiPC' offers the following information, for reference:

- Software name.
- Software version number.
- Copyright information.

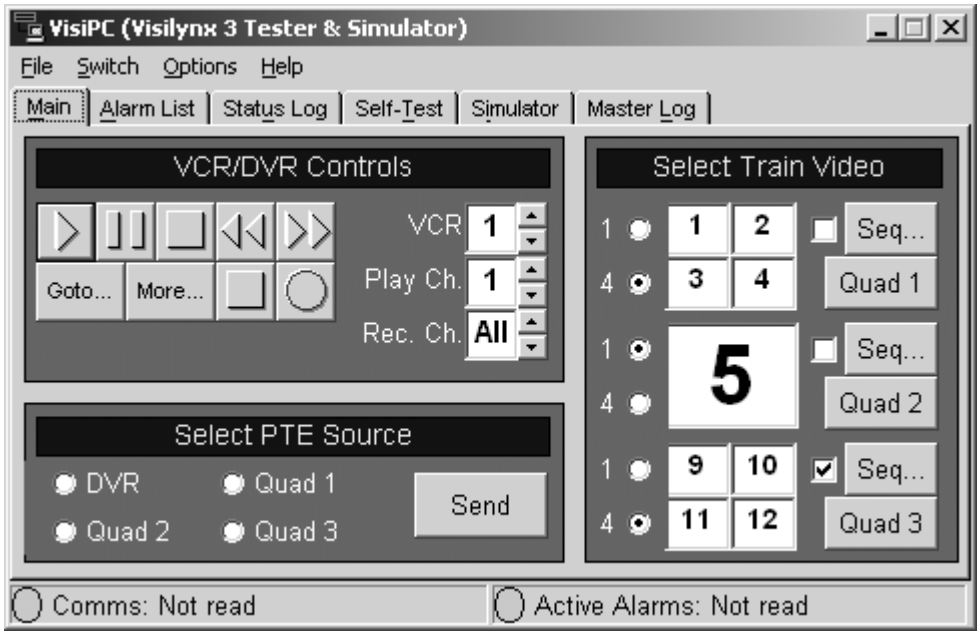
Pressing the **OK** button closes the pop-up window.

4 TAB WINDOWS

4.1 Main Tab

The VisiPC (Visilynx 3 Tester & Simulator) sub-program consists of a maximum of six tab windows, with the Master Mode selected. The sub-program defaults to the "Main" tab window (see below), which has been specifically designed to include the majority of the controls for a V3 train rack system.

Figure 15 Main Tab Screenshot



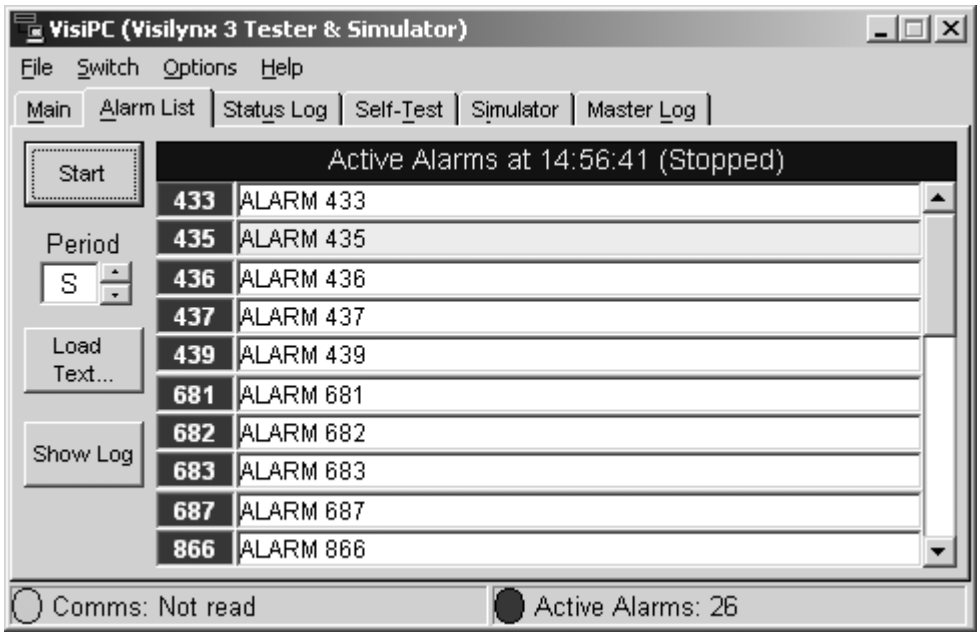
4.2 Master Mode Option

The Master Mode should be selected in the "Options" Menu (see Section 3.3). This allows the VisiPC program to simulate a Master node sending commands to the V3 system and to display status information returned from the V3 system.

A description of the five tab windows used during V3 system testing and maintenance operations follows.

4.3 Alarm List Tab

Figure 16 Alarm List Tab Screenshot



This tab screen displays the current active Alarm List, including self-test alarms, or the Alarm & Action Log and provides control over the frequency of updates to the V3 system.

The **Start/Stop** button will alternately start and stop the alarm polling process. On program start-up, the Alarm polling is in the stopped state. The button text indicates the next action that will occur when the button is pressed.

The **Period** box value determines how often the list is updated: either 'S' (press Start to initiate each update) or '0.5' to '30' seconds for regular automatic updates.

The **Load Text** button allows a new set of text descriptions to be read in from a configuration file. When the "VisiPC (Visilynx 3 Tester & Simulator)" is run, the last loaded file used by the "VisiPC (Visilynx 3 Configurator)" sub-program will be loaded, unless it has since been changed by selecting a new file with the **Load Text** button.

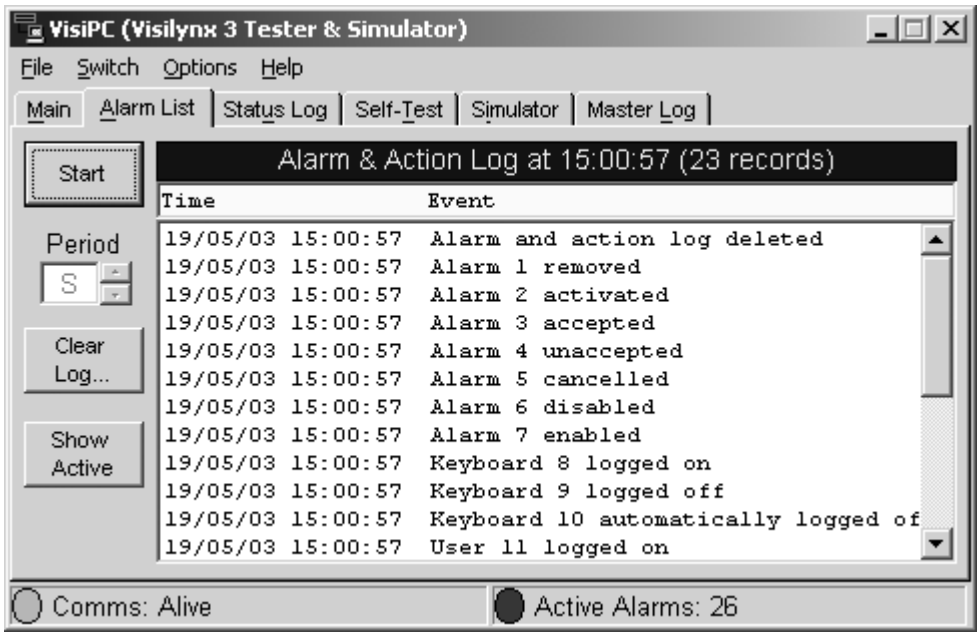
The right hand side of the tab window will show up to ten active alarms with a scroll bar to show more.

If the user wishes to monitor a particular alarm, it can be selected by clicking on the alarm description box, which will then be highlighted in yellow. Thereafter, if it is active, the selected alarm will always be shown, or the next lowest alarm will be in view so that it is obvious that the selected alarm is not present in the list. To clear this monitoring function, click on the highlighted alarm again to remove the yellow highlight, or click on another alarm twice (once to select the new alarm and once to cancel the new selection).

The caption at the top of the list indicates the time at which the alarm list was last updated and it will change to indicate the current mode of operation – 'Stopped' or 'Updating'. If no alarms are active, this area will be blank, except for the caption.

The **Show Log** button changes the screen to display the Alarm & Action Log and provides a log clear facility. The Alarm & Action Log shows a time-stamped list of the events in the V3 system, like users logging on, alarm status changing, etc. The caption at the top of the list indicates the time at which the list was last updated and the number of records listed.

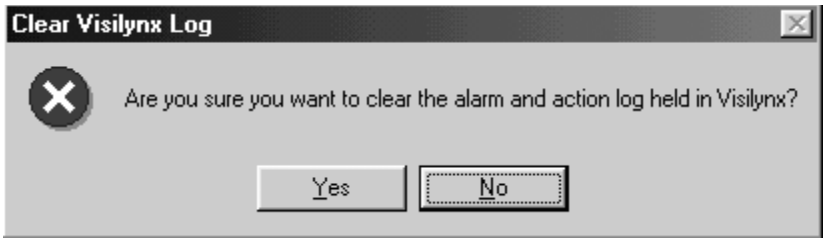
Figure 17 Alarm & Action Log Screenshot



The **Start** button displays the Alarm & Action Log.

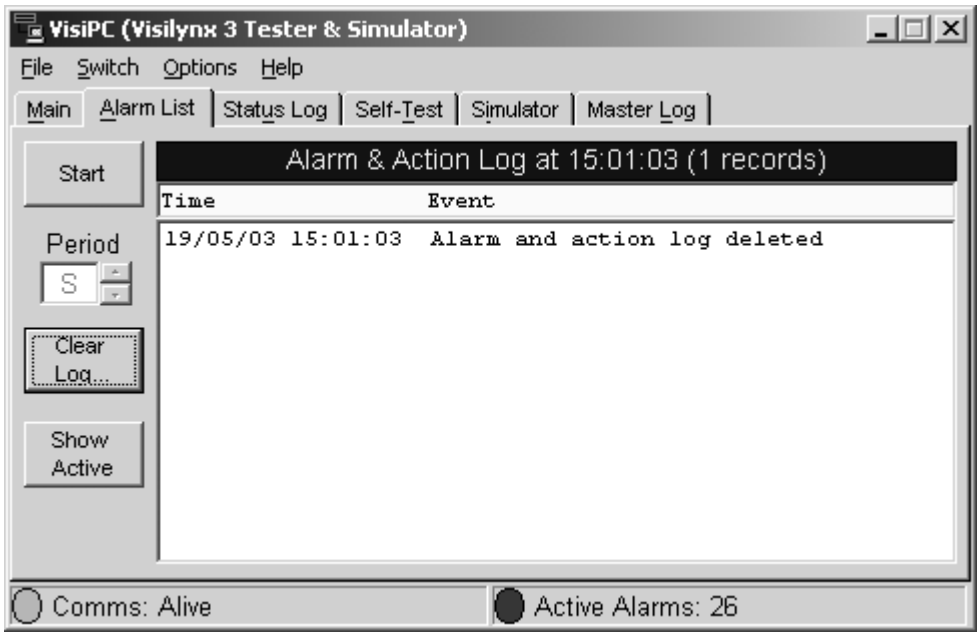
Pressing the **Clear Log…** button shows a warning window prompt, which must be acknowledged before a command is sent to the V3 system to clear the stored log information.

Figure 18 Clear Log Warning



The log will then be re-read and will show the “log deleted” message stored in the log.

Figure 19 Alarm and Action Log Deleted Screenshot



The **Show Active/Show Log** button swaps the display between the Alarm & Action Log and the Active Alarm List.

4.3.1 Status Line

The Status Line along the bottom of the screen contains two panes showing some status information. The Status Line is visible on all of the tab windows.

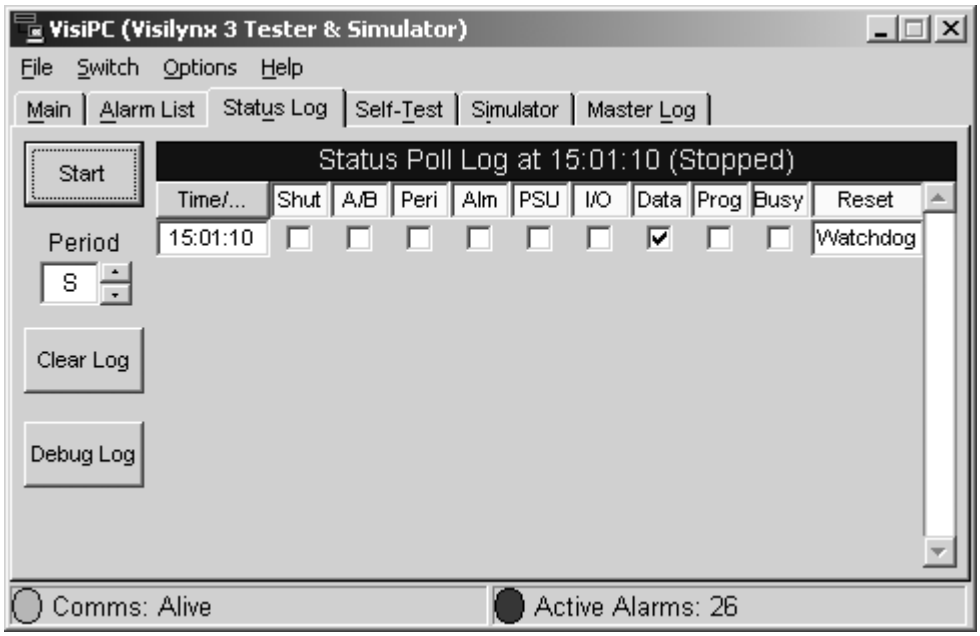
The left-hand pane indicates the current state of the communications. This is updated every time a message is sent to the V3 system by a manual operation on one of the control buttons, or by the background Alarm or Status polling, if enabled:

'Alive'	(green) indicates that the last message sent has received a valid response.
'Wait'	(yellow) indicates that a request has been sent, but the response has not yet arrived.
'Dead'	(red) indicates that the response never arrived.
'Not read'	(cyan) indicates that the last transmission was approximately 5 seconds ago, so the link has not been tested and the state is no longer known. The 'Not read' state is not shown when either Alarm or Status polling is active, even when the transmission period is greater than 5 seconds.

The right-hand pane of the Status Line indicates a red circle and the number of alarms that were active the last time the V3 system was polled for alarms. If no alarms are active, the pane shows a green circle and zero active alarms. The list of alarms can be viewed on the "Alarm List" tab (see Section 4.3).

4.4 Status Log Tab

Figure 20 Status Log Tab Screenshot



This screen displays the log of status polling changes since the sub-program was run (no previous history is stored) and provides control over the frequency of updates and a log clear facility. On start-up, the status polling is in the Stopped state.

The **Start/Stop** button will alternately start and stop the status polling process. The button text indicates the next action that will occur when the button is pressed.

The **Period** box value determines how often the log is updated: either 'S' (press Start to initiate each update) or '0.5' to '30' seconds for regular automatic updates.

Pressing the **Clear Log** button will clear the content of the log.

The right side of the display shows a list area (Status Poll Log), where the log entries are listed, oldest first. This list only adds an entry when it differs from the previous one. The list is limited to about 200 lines, with the oldest entries being removed to make way for new entries. The scroll bar is used to display the full list.

Time…/Date… button indicates the time or the date at which the entry was made. Pressing the button will toggle between displaying the date and time. The button indicates the current choice.

'Shut' V3 rack is shut down - *only used by V3 train rack systems*.

'A/B' When ticked, indicates that the B direction is set; when clear, the A direction is set - *only used by V3 train rack systems*.

'Peri' Ticked when a peripheral device (such as a VCR or Multiplexer) has an active failure alarm.

'Alm' Ticked when one or more alarms are active. The "Alarm List" tab shows which alarms are active (see Section 4.3).

'PSU' Ticked when the internal PSU on the V3 system is out of tolerance.

'I/O' Ticked when some part of the matrix system has failed its self-test.

'Data' Ticked when the configuration memory has failed a validity test.

'Prog' Ticked when the program memory has failed a validity test.

'Busy' Ticked when the V3 system is busy and cannot respond to other commands.

'Reset' The cause (Power-up, Watchdog, DFT/STD or INI) of the last reset is shown here.

The possible causes of the V3 system being busy are:

1. Self-test command in progress (Self-Test tab command, or TST command on Simulator tab).
2. Configuration is being transferred to the V3 system.
3. DFT or INI Simulator tab commands are in progress.
4. V3 train system returning 'Busy' in response to a 'WAK' command, waiting for DVR to respond or time out or finish self-test (not implemented) or come out of reset.
5. V3 train rack system being woken up by 'WAK' command, after 'WAK' command has already been accepted.
6. V3 train rack system DVR itself returning 'Busy'.

Notes on Busy Status

a) V3 systems in general do not report 'Busy' if their VCRs do not respond; only V3 train rack systems do this.

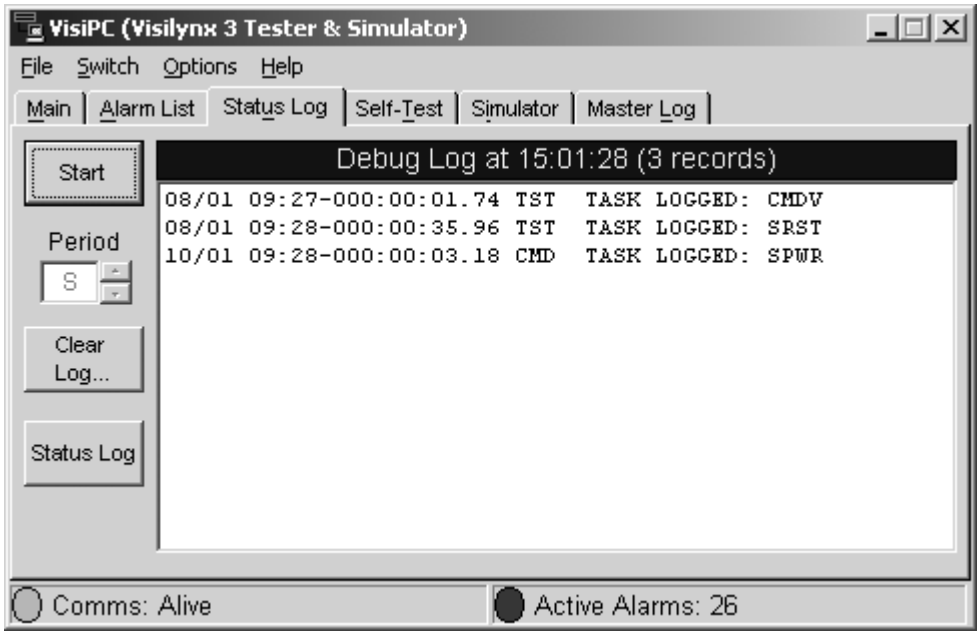
b) The DVR response timeout period depends on configured VCR timeout.

c) The 'Busy' condition reported on one serial port could also be caused by commands received on other ports; i.e. one port's action can make all ports appear busy for the duration of the action.

The caption at the top of the list indicates the time at which the status log was last updated and will change to indicate the current mode of polling operation – '(Stopped)' or '(Updating)'.

Pressing the **Debug Log** button displays the Debug Log, showing a time-stamped list of internal messages in the V3 system. This may be used by technical support in case of problems.

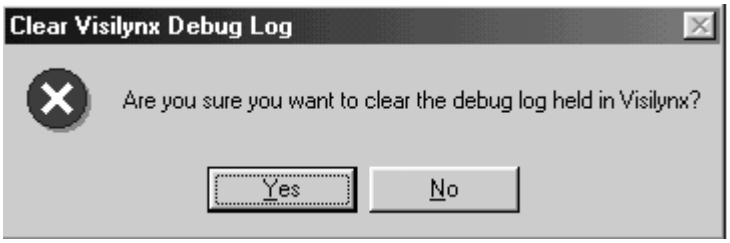
Figure 21 Debug Log Screenshot



Pressing the **Start** button displays the Debug Log.

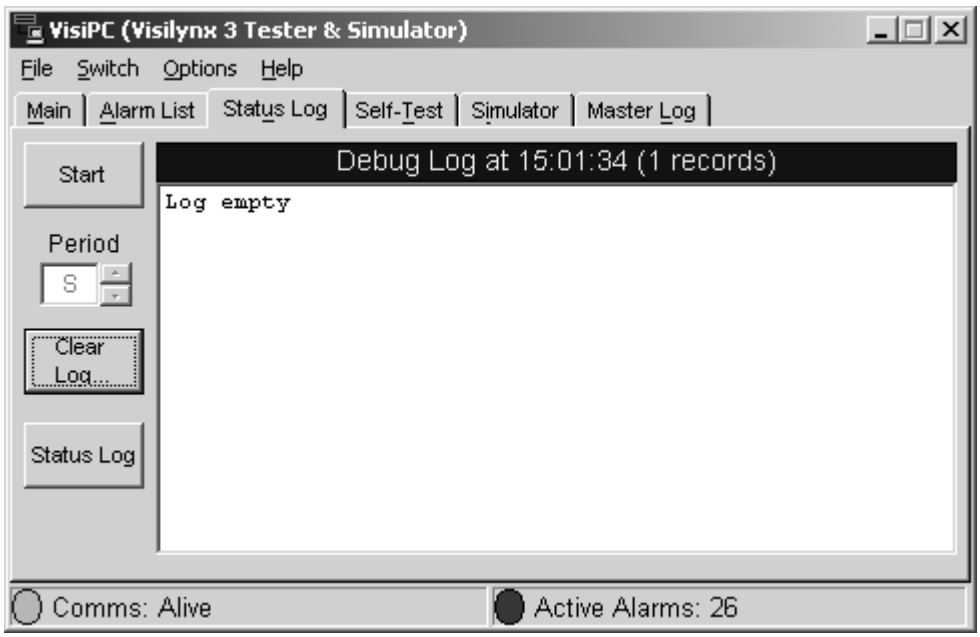
Pressing the **Clear Log…** button shows a warning window prompt, which must be acknowledged before a command is sent to the V3 system to clear the stored log information.

Figure 22 Clear Debug Log Warning



The log will then be re-read and will show the “Log empty” message stored in the log.

Figure 23 Debug Log Empty Screenshot

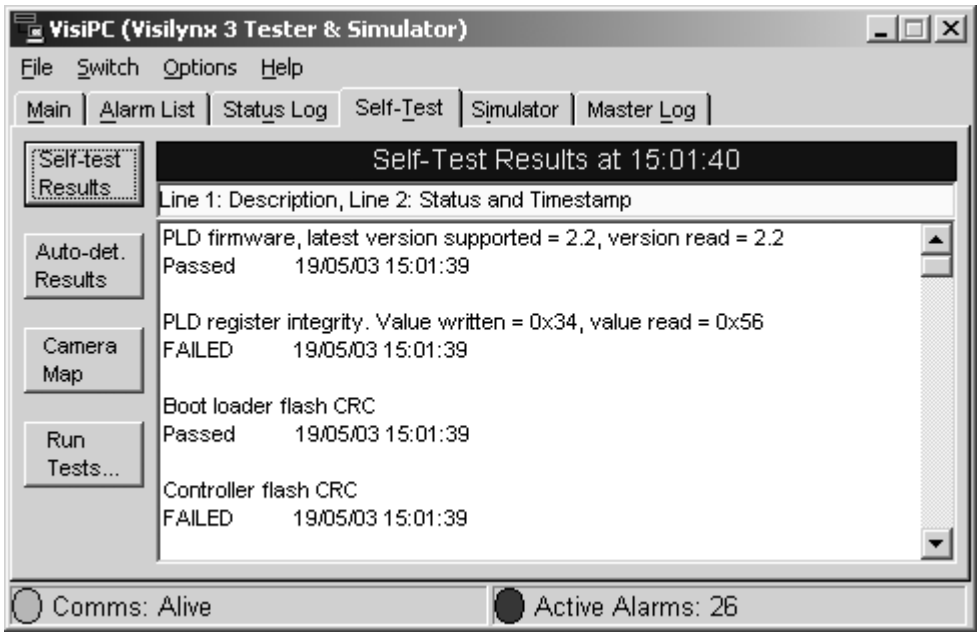


The **Status Log**/**Debug Log** button switches between the Status Log and the Debug Log screens.

The Status Line at the bottom of the screen is described in Section 4.3.1 (Page 16).

4.5 Self-Test Tab

Figure 24 Self-Test Tab Screenshot

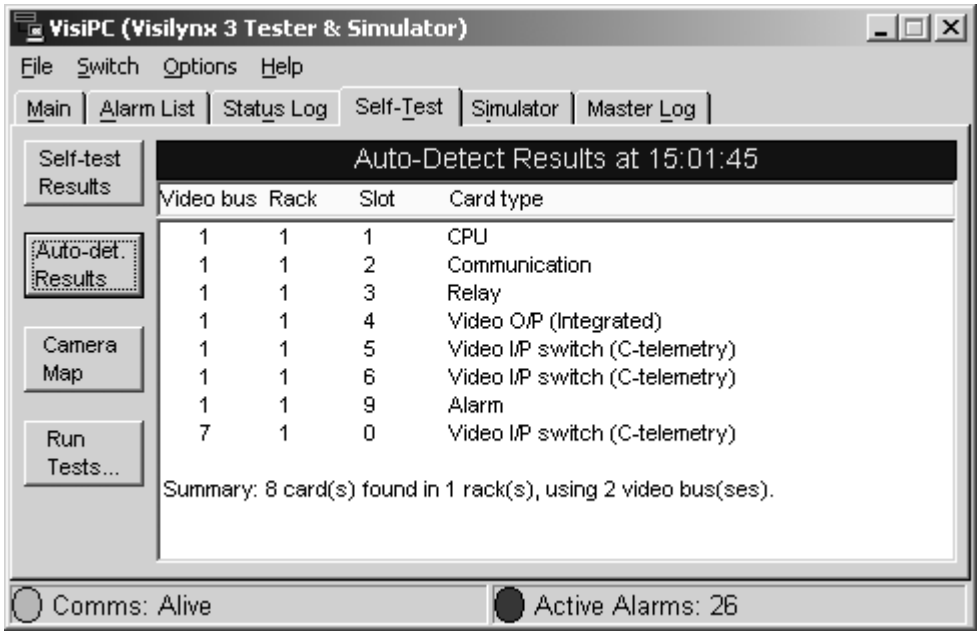


This screen provides buttons to request the self-test or auto-detection results and displays the results on the right.

The **Self-test Results** button sends a request to the V3 system for it to return the results of the last self-test, which are displayed in the list area.

The **Auto-det. Results** button sends a request to the V3 system for it to return the results of the last auto-detection, which are displayed in the list area. The results displayed match the card positions present, not necessarily the positions in use.

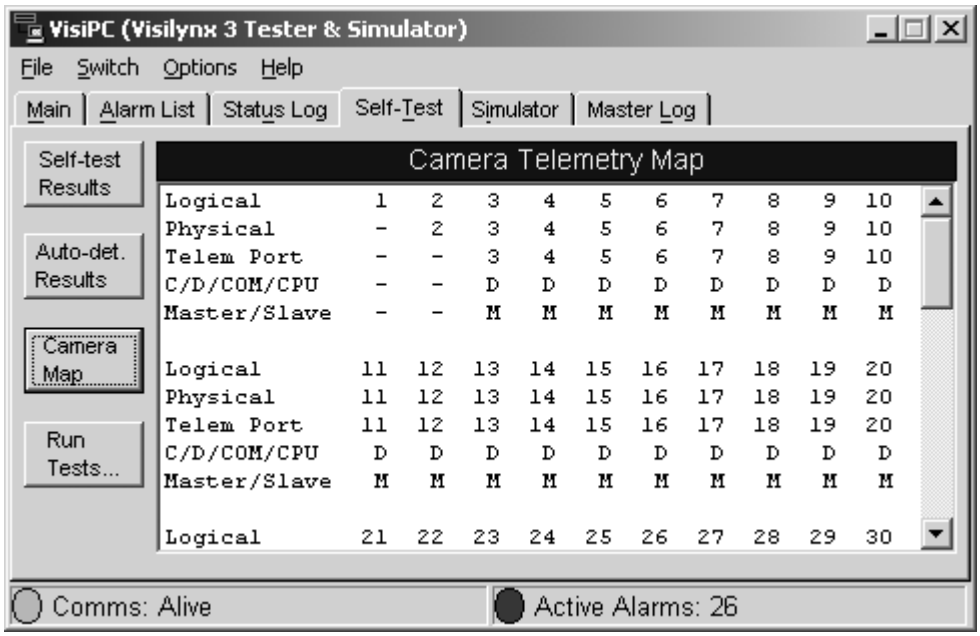
Figure 25 Auto-detect Results Screenshot



Auto-detection is the process where the positions and types of all installed electronic sub-systems (i.e. cards in a V3M system) are found at every start up, or when the Auto-detect self-test command is run. This in turn determines the numbering of all channels connected to the sub-systems. These settings are saved in Flash memory when a new User Configuration is downloaded to the V3 system, to preserve channel numbering if cards are moved or develop faults. A test, reported at the end of the self-test results, shows if the auto-detection results displayed do not match those in use by the software, because sub-systems (cards) have been moved or changed.

Pressing the **Camera Map** button provides a list describing, for each logical camera, the physical camera number and on which port its associated telemetry can be found.

Figure 26 Camera Telemetry Map Screenshot



This example shows Camera 3 assigned to physical camera input 3, with its telemetry selected to D-type on port 3 of the V3i Master unit.

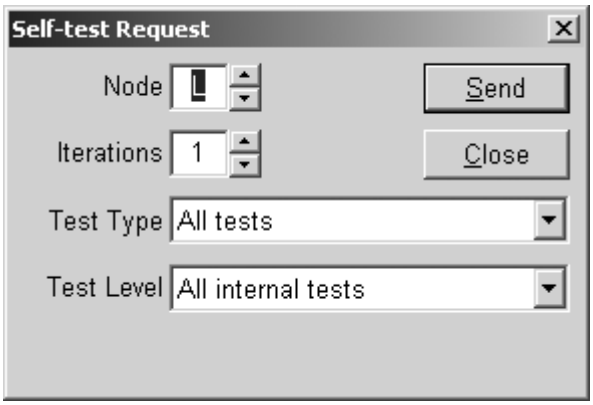
On V3i, C refers to a C-type port, while on V3M it refers to a port on a C-type telemetry card. Likewise, D refers to a D-type telemetry port or card, depending on the product.

On V3M only, COM refers to a Comms card and CPU refers to a port on the CPU card. Two additional lines show the telemetry card slot and port numbers.

On V3i only, Master/Slave refers to whether the port is on the Master or Slave unit.

The **Run Tests…** button brings up the Self-test Request pop-up dialog box which allows various types of tests and levels to be selected and sent to the V3 system (see Figure 27).

Figure 27 Self-test Request Dialog Box



The Self-test Request Dialog box allows more in-depth tests to be carried out than are run when the Visilynx system is switched on.

The **Test Type** and **Test Level** fields determine the extent of the test to be carried out. Available options for V3i and V3/V3M systems are listed in detail in Table 3 and Table 4, together with any additional hardware required for conducting the tests. The **Node** field currently only supports the Local node, and **Iterations** should be left at 1, unless diagnostic soak testing is required.

The selected tests are started by pressing the **Send** button.

While the test is being run, automatic status polling is carried out. This is indicated in the Activity Log window (see Section 3.3.3). The Status Log tab, described in Section 4.4, will also show a Busy status during a test. A test has finished when these poll messages stop and the V3 system ceases to be Busy. After a test has finished, its results are automatically retrieved.

The Status Line at the bottom of the screen is described in Section 4.3.1 (Page 16).

The main part of the tab window is a list area, where the self-test results are displayed.

The caption at the top of the list indicates the time at which the Self-Test Results were last read from the V3 system.

Tips

If any line is longer than the width of the list area, hovering the mouse over the line will show the whole line entry in a fly-over help box.

The Self-Test Results can be copied by pressing Ctrl-C to copy the contents to the clipboard.

Table 3 V3i System Self-tests

VisiPC Settings		*Hardware Required*	*Precautions*	*Description*
Test Type	***Test Level***			
All tests	All startup tests	None		Repeats all startup test
	All internal tests	None	Serial input signals should be removed or disabled during testing	Tests all internal devices
	All external tests	Loopback connectors fitted to all serial ports	See Table 5	Tests serial ports via loopbacks

VisiPC Settings		***Hardware Required***	***Precautions***	***Description***
Test Type	***Test Level***			
Address decoder	*Unused*	None		
Flash	All Flash areas	None		Tests all the following areas
	FBL software	None		Test Flash Boot Loader software
	Controller software	None		Tests Controller software
	FPGA data	None		Tests FPGA data
	User Config data	None		Tests Fixed, Variable and Default configuration data.
	Note: A failure of User Config data is indicated if config data has not been loaded – this does not indicate hardware fault.			
Auto-detect hardware	Do not save results	None		Re-detects option cards
	Save results to flash	None	Required if cards have been changed and config data not reloaded	Re-detects option cards and saves results to Flash.
	Tip: Saving auto-detection results to flash is a quicker way of registering changes in option card positions than re-loading configuration data, but has the same effect.			
SRAM	*Unused*	None		Tests all static RAM memory
Battery-backed SRAM	*Unused*	None		Tests all battery-backed SRAM, used for holding matrix state while powered down
	Note: A failure of Battery-Backed SRAM is indicated after loading new config data – this can be ignored. Press the rear panel CPU reset button and repeat the test.			
Serial ports	Internal loopback	None	Serial input signals should be removed or disabled during testing	Tests all serial ports using internal loopback switching
	External loopback	Loopback connectors fitted to all serial ports	See Table 5	Tests all serial port connections via external loopback connectors
Real-time clock	*Unused*	None		Tests the real-time clock device
SCB registers	*Unused*	None		Tests the internal Serial Control Bus communication system
Cards	All cards	None		Tests all the following internal card types
	Video input switch with C telemetry	None		Tests camera inputs
	V3i video output	None		Tests monitor outputs
	Alarm input	None		Tests alarm inputs
	Relay output	None		Tests relay outputs
	Communications	None		Tests internal serial ports used for IP Video card
	Quad option card	None		Test Quad card (if fitted)
	IP Video option card	None		Tests IP Video card (if fitted)

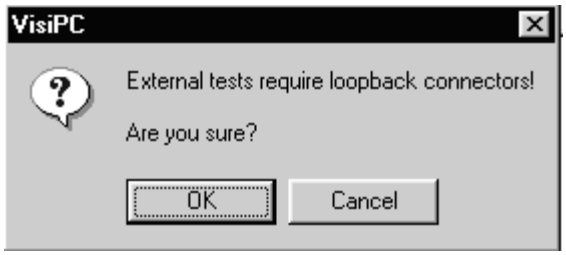
VisiPC Settings		***Hardware Required***	***Precautions***	***Description***
Test Type	***Test Level***			
Telemetry Cards	Internal loopback	None		Tests all D-type and C-type ports using internal loopback switching
	External loopback	Loopback connectors fitted to all D-type ports	See Table 7	Tests all D-type port connections via external loopback connectors
Video Routing	*Unused*	One or more external sources of video connected to camera inputs	Video sources must be good quality such as direct camera video	Tests video routing from connected cameras to internal monitor outputs

Table 4 V3 and V3M System Self-tests

Test Description		**Hardware Required**	**Precautions**	**Permissible Errors**
Test Type	**Test Level**			
All tests	All startup tests	None		
	All internal tests	None	Serial input signals should be removed or disabled during testing	
	All external tests	Loopback connectors fitted to all serial ports	See Table 7	
Address decoder	*Unused*	None		
Flash	All Flash areas	None		
	FBL software	None		
	Controller software	None		
	FPGA data	None		
	User config (fixed)	None		Failure indicated if config data has not been loaded – does not indicate hardware fault
	User config (variable)	None		
	User config (default)	None		
Auto-detect hardware	Do not save results	None		
	Save results to flash	None	Required if cards have been changed and config data not reloaded	
SRAM	*Unused*	None		
Battery-backed SRAM	*Unused*	None		Failure indicated after loading new config data – can be ignored. Press CPU reset button and repeat test.
Serial ports	Internal loopback	None	Serial input signals should be removed or disabled during testing	
	External loopback	Loopback connectors fitted to all serial ports	See Figure 28 and Table 7	
Real-time clock	*Unused*	None		
SCB registers	*Unused*	None		
Cards	All cards	None		

Test Description		Hardware Required	Precautions	Permissible Errors
Test Type	**Test Level**			
	Video I/P switch card	Connector card must be fitted		
	Video O/P card	None		
	Backplane expansion O/P	None		
	Backplane expansion I/P	None		
	Control expansion card	None		
	Alarm card	None		
	Relay card	None		
	Communication card	None		
Cards	D-type telemetry card	None		
	Quad card	None		
Video Routing	*Unused*	See Figure 29	See Figure 29	

Figure 28 Self-test – External Loopback Test Warning



4.5.1 External Loopback Connectors

The Self-test External loopback tests confirm that the serial ports are working correctly. To conduct this test requires special test plug connectors to be fitted to each of the serial ports. The test connectors are wired to feed back the transmitted output as a receiver input. Table 5 and Table 6 identify the wiring requirements for each of the test plug connectors to be use on a V3i system. Table 7 identifies the wiring requirements for each of the test plug connectors for use on a V3 and a V3M system.

Table 5 V3i Serial Port Loopback Test Connectors (1)

Loopback type	*Plug*	*Pins linked on connector*	*Pins linked on connector*	*Number required on Master unit*	*Number required on Slave unit*
RS-232 Male	9-pin male D	2-3		4	3
RS-232 Female	9-pin female D	2-3		1	1
RS-485	9-pin male D	4-5	8-9	4	3
RS-232 TTL	96-pin DIN41612	A17-C17	A18-C18	1	1

To fully test the serial ports that are wired for both RS-232 and RS-485, two separate external loopback tests are required, using different loopback connectors for each test, as shown in Table 6.

Table 6 V3i Serial Port Loopback Connectors (2)

Unit	*Connector Name*	*Interface*	*Loopback type for first test*	*Loopback type for second test*
Master or standalone	Serial Port 1	RS-232/485	RS-232 Male	RS-485
	PCCON Port 2	RS-232	RS-232 Female	
	Serial Port 3	RS-232/485	RS-232 Male	RS-485
	Serial Port 4	RS-232/485	RS-232 Male	RS-485
	Test/Config Port 9	RS-232	(None – connected to VisiPC)	
	Keyboard Port 10	RS-485	RS-485	
	Option card ports 12 & 13	RS-232	RS-232 TTL	
Slave	Serial Port 16	RS-232/485	RS-232 Male	RS-485
	PCCON Port 17	RS-232/485	RS-232 Female	
	Serial Port 18	RS-232/485	RS-232 Male	RS-485
	Serial Port 19	RS-232/485	RS-232 Male	RS-485
	Option cards ports 20 & 21	RS-232	RS-232 TTL	

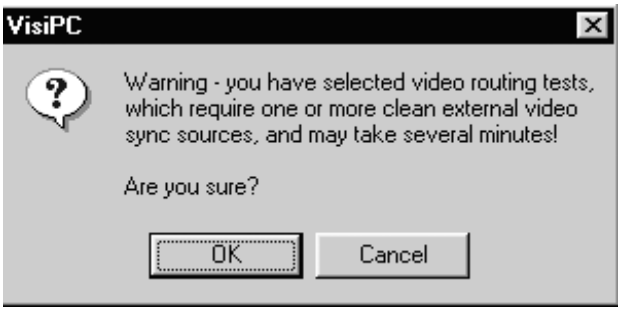
Table 7 V3 and V3M Serial Port Loopback Connectors

Card	*Port*	*Interface*	*Plug*	*Link*	*Link*	*Link*
CPU	Network	RS-485	D9M	4-5	8-9	
CPU	Remote	RS-232	D9F	2-3	4-6-1-9	7-8
CPU	A-E	RS-485	D9M	4-5	8-9	
CPU	Debug (CN5 on PCB)	RS-232	IDC10	3-5		
CPU	Data Log	RS-232	D9F	2-3		
CPU	Test & config	RS-232	D9M	2-3		
COMM	1-4	RS-232	D9F	2-3	4-6	7-8
COMM	1-4	RS-485	D9M	4-5	8-9	

Notes

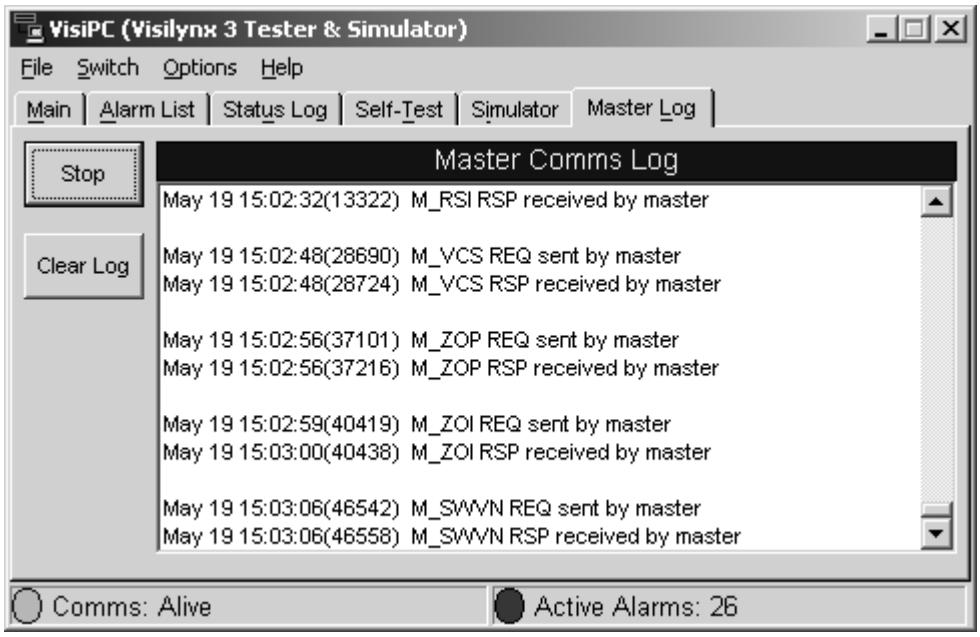
1. The keyboard port on the CPU is not tested by loopback.
2. Each channel on a Communication card should have both RS-232 and RS-485 loopbacks fitted.

Figure 29 Self-test – Video Routing Test Warning



4.6 Master Log Tab

Figure 30 Master Log Tab Screenshot



This screen displays a log of the messages sent and received by VisiPC when in Master mode, and serves as a general indication of communications activity.

The **Start/Stop** button will alternately start and stop the logging process. The button text indicates the next action that will occur when the button is pressed. Stopping the logging process allows time to analyse the contents; however, events occurring while logging is stopped will be lost.

Pressing the **Clear Log** button will clear the content of the log.

The Status Line at the bottom of the screen is described in Section 4.3.1 (Page 16).

The right hand side of the tab window shows a list area, where the log entries are displayed. Each line is time stamped and the list is limited to 300 lines, with the oldest entries being removed to make way for new entries.

If the list exceeds the screen space, a scroll bar allows access to the whole list.

If any line is longer than the available box width, hovering the mouse over the line will show the whole line in a fly-over help box.

The contents of the log can be copied to the clipboard by pressing Ctrl-C.

ANNEX A TRAIN SYSTEMS

VisiPC contains features that are specifically intended for use with V3 train rack systems, which are described in this Annex.

A1 Mode Selection

The Master Mode should be selected using the "Options" Menu (see Section 3.3). This allows the VisiPC program to simulate a Master node sending commands to the V3 train rack system and to display status information returned from the V3 train rack system. The main functions available include Digital Video Recorder (DVR) control, train video selection, status, and alarm and test logs.

A2 Sub-program

The VisiPC (Visilynx 3 Tester & Simulator) sub-program consists of a maximum of six tab windows, with the Master Mode selected. The sub-program defaults to the "Main" tab window (see Section A4), which has been specifically designed to include the majority of the controls for a train video system.

A3 Tab Windows

A description of the tab window functions used exclusively during trainborne operations follows.

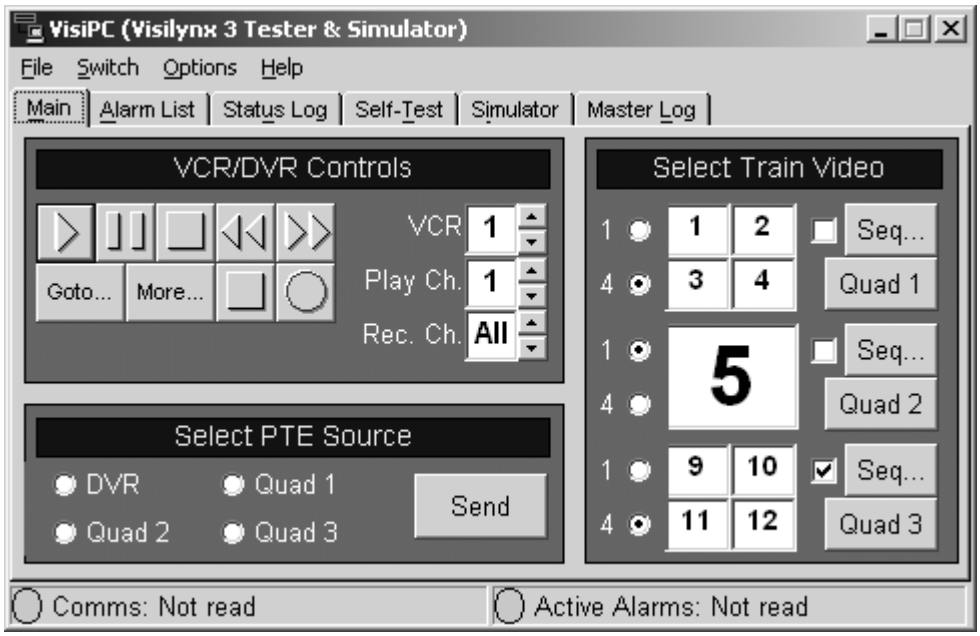
The first operations to be conducted on a V3 train rack system are:

- Selecting Main Mode operation.
- Selection of the Comm Port Baud Rate.

These operations are carried out in the "Options" Menu (see Section 3.3).

A4 Main Tab

Figure A1 Main Tab Screenshot Dialog Box



The Main tab provides the principal V3 train rack system controls:

- VCR/DVR Function Controls (VFN) – *can be used with non-train VCRs*.
- Select Portable Test Equipment Source (PTE) – *only works on train rack system*.
- Select Train Video (STV) – *only works on train rack system*.

A4.2 Main Tab DVR Options

The 'VCR/DVR Controls' section of the main tab controls the DVR, with the main control buttons (Play, Pause, Stop, Rewind, Forward and Record) immediately accessible and the less common options available on the **Goto…** or **More…** buttons.

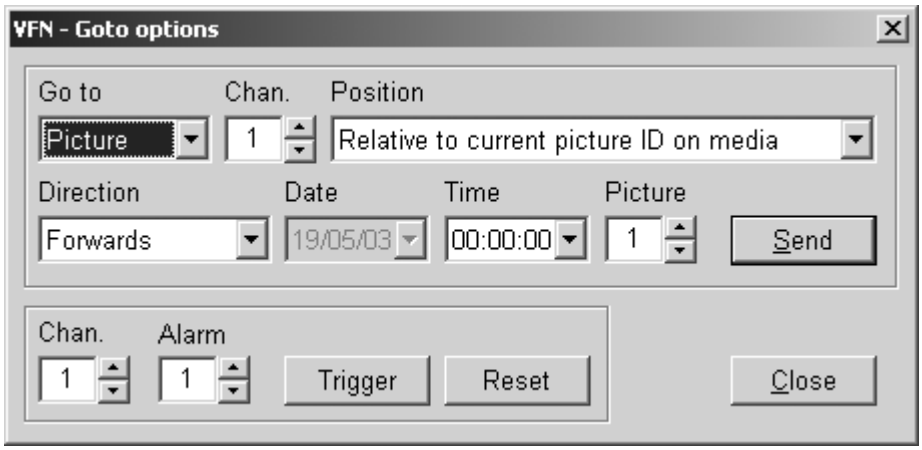
VCR: Type 1 for DVR1 (etc.) into this field.

Play Ch.: Type the DVR channel number (1 to 6, or All) you want to view into this field. This setting is ignored by a VCR, as its playback channels are determined by its associated Multiplexer.

Rec. Ch.: Type the DVR channel number (1 to 6, or All) you want to record into this field. This setting is ignored by a VCR, which always records on all channels.

The **Goto…** button provides access to the "VFN - Goto options" pop-up dialog box which allows you to search for pictures at specific times or alarm events and allows you to trigger alarm events manually (triggering is mostly just for testing). This option is really only useful with DVRs which support advanced search capabilities.

Figure A2 VFN - Goto options



1) To search for an event using VFN - Goto:

In the 'Go to' drop-down menu, select whether you want to search for a picture (i.e. a specific data/time) or an alarm. The DVR marks a change to fast recording speed as an alarm. To use these functions, ensure that the DVR is not recording or playing.

2) For the Go to 'Picture' VFN options:

a) Select the channel number 'Chan' you want to view. Channel numbers depend on the DVR configuration.

b) Selecting the 'Time' or 'Date' drop down menu brings up a calendar, which identifies today's date, to simplify the set-up process.

c) Select the 'Position' of the recording you want to view.

You have the following choices:

i) 'Relative to current picture ID on media': You type a time offset that you want in hh:mm:ss format, e.g. 1 minute (00:01:00) and the direction, forwards or backwards. This is most useful when reviewing a recording and wanting to skip on or back by a pre-selected amount. Use it when the DVR is paused in the play mode.

ii) 'Relative to start of media', or 'end of media' allows you to set a time offset in a similar way to (a) above; but the search is relative to the start or the end of the disk, as opposed to the current playback location.

iii) 'Relative to current picture ID on recording' is the same as (i), but limits the search to the current recording, as opposed to the whole disk.

iv) 'Relative to start of recording', or 'end of recording' allows you to set a time offset in a similar way to (iii) above, but the search is relative to the start or end of the recording, as opposed to the current playback location.

v) 'Absolute', perhaps the most useful function, will try to find a picture at the specified date and time, regardless of where it is on disk. If it exists on the disk, this search will find it. The search defaults to the current date/time. The date is changed using the calendar in the 'Date' drop-down menu.

Warning: If the DVR clock is adjusted (by changing the V3 train rack system clock) after recordings have been made, the disk may contain more than one recording with the same timestamp, so the search may not locate the 'correct' recording.

d) Select the 'Picture' (i.e. frame) within the 1 second interval specified above (each second of recording may contain up to 30 pictures in a full performance, single channel DVR, but most are limited to 1 or 5 pictures per second).

e) Press the **Send** button and the DVR searches for the required event. If it fails, an error message is shown on the DVR playback screen. Otherwise, the required picture is immediately shown.

3) For the 'Go to Alarm' VFN options:

Select the channel number you want to view, and select the position options as above. 'Absolute' and time options are not available, and the 'Picture' option is replaced by an 'Alarm' option. The DVR may have different alarm numbers recorded on disk corresponding to different alarm inputs. This option allows you to search for the next or previous alarm event of the specified alarm number.

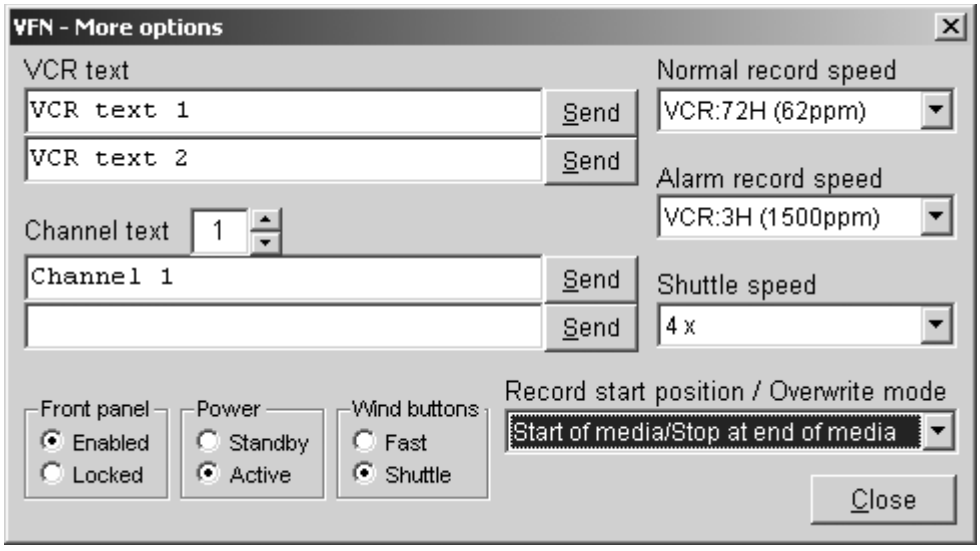
It should also be remembered that alarms are specific to channels - i.e. alarm 5 may be triggered on channel 1, but not on channel 2 etc..

4) To trigger an alarm using VFN Goto:

You can manually trigger an alarm that will cause the DVR to record in high-speed mode, on all channels (default), or a specific channel, using the **Trigger** button at the bottom of the dialog box. Pressing the **Reset** button will clear the alarm and return to normal recording speed. The DVR must be already recording before these functions can be used.

The **More…** button provides access to the "VFN – More options" pop-up dialog box, where Normal and Alarm speed (for the DVR record, rewind and forward operations), record channel list and self-test can be selected.

Figure A3 VFN – More options Dialog Box



The "VFN – More options" pop-up dialog box allows you to do several important things.

1) Normal and Alarm recording speeds can be set for the VCR and the DVR in the 2 'record speed' drop down menus. If the VCR or DVR does not support the selected speed, the nearest is selected. The changes are immediately sent to the DVR and the VCR when the selection is made.

2) 'Shuttle speed' can be selected for DVRs and VCRs that support differing shuttle (fast play/fast reverse play) speeds. Again, the nearest is selected if the speed is not supported by the VCR/DVR, or no action is taken if the VCR/DVR does not support this function.

3) For VCRs and DVRs that support the function, the front panel can be locked or enabled (unlocked). The changes are immediately sent to the DVR and the VCR when the selection is made.

4) For VCRs and DVRs that support the function, the whole unit can be put in standby or active mode. The changes are immediately sent to the DVR and the VCR when the selection is made.

5) The '<<' and '>>' VCR/DVR Controls on the "Main" tab screen can be configured so that they operate as Fast Forward and Rewind controls ('Wind buttons' = 'Fast'), or as shuttle controls, where the shuttle speed is used (selected as described above) and the pictures are viewable during wind operations ('Wind buttons' = 'Shuttle').

6) The 'Record start position / Overwrite mode' drop down menu allows selection of the following options. (**Note**: not all options may be supported by all VCR/DVRs.) The changes are immediately sent to the DVR and the VCR when the selection is made:

   a) 'Start of media/Stop at end of media':

   This makes the VCR/DVR start recording at the start of disk/tape and stop when it reaches the end. When the end of media is reached, an "End Of Media" alarm is raised.

   b) 'Current Picture/Stop at end of media':

   This makes the VCR/DVR start recording at the current tape/disk position and stop when it reaches the end. When the end of media is reached, an "End Of Media" alarm is raised.

   c) 'Start of media/Overwrite from start':

   This makes the VCR/DVR start recording at the start of disk/tape and overwrite the tape/disk when it reaches the end.

   d) 'Current Picture/Overwrite from start':

   This makes the VCR/DVR start recording at the current tape/disk position and overwrite the tape/disk when it reaches the end.

7) To clear a DVR disk, you can use option 6) a) above. Select this mode and make a brief recording, using the VCR/DVR Controls on the "Main" tab. This has the effect of resetting the start position of the recordings to the start of the disk, and though it does not actually securely erase any previous recordings, old recordings will not be viewable once this procedure has been used.

A4.5 Main Tab PTE Options

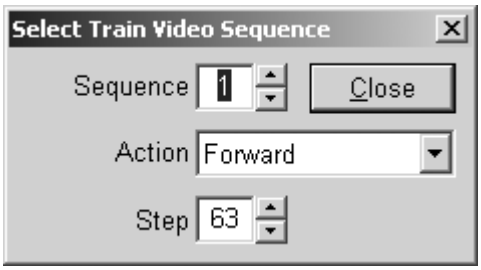
The 'Select PTE Source' section allows selection of the required picture source to the PTE port, which is fed to the video capture card in the PC. Only one input can be selected. Pressing the **Send** button sends the command to the V3 train rack system.

A4.6 Main Tab Quad Options

The 'Select Train Video' section shows the three Quads on the display and selects the quad picture inputs and full screen or 4-way selection. Each Quad has a '1' or '4' selector to choose whether one or four pictures are selected.

The **Seq…** button provides access to the "Select Train Video Sequence" pop-up dialog box that allows the sequence number and action to be selected for the chosen Quad. Once the sequence dialog box has been configured and closed, the adjacent tick box chooses whether the sequence data is to be sent.

Figure A4 Select Train Video Sequence Dialog Box



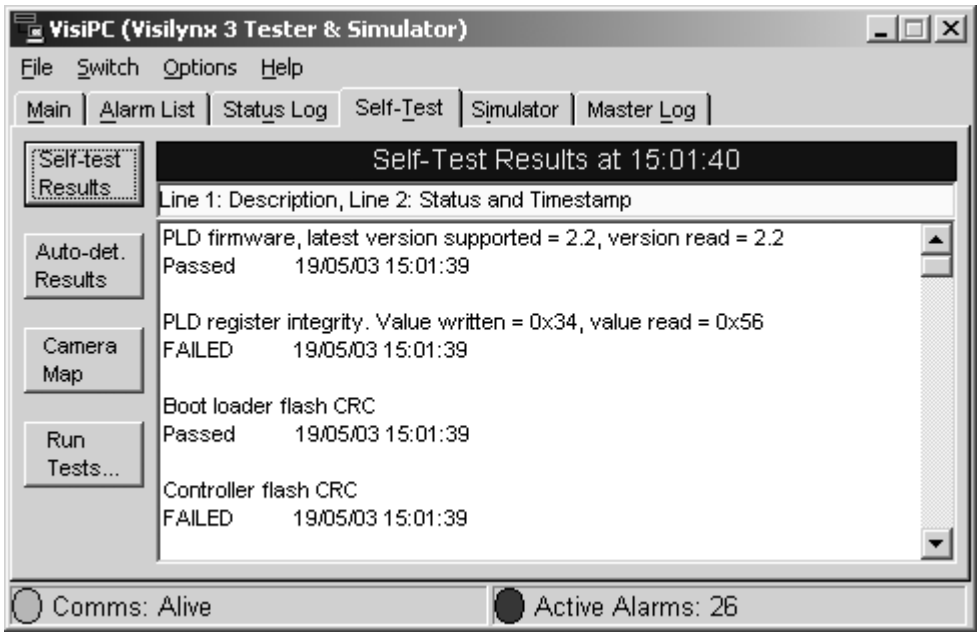
Press the **Quad 1** button, or one of the other Quad buttons, to send the selected details to the V3 train rack system.

Each Quad is controlled in the same way, with its own set of controls and display boxes.

It is recommended that, during all testing operations with a V3 train rack system, the 'Show Activity Log' window box is ticked on the "Options" Menu (see Section 3.3). The "Activity Log" window (see Section 3.3.3) is automatically positioned just below the main VisiPC tab windows. The size and position of the "Activity Log" window can be changed to suit user requirements.

A5 Self-Test Tab

Figure A5 Self-Test Tab Screenshot



This screen provides buttons to request the self-test or auto-detection results and displays the results on the right hand side of the tab window. See Section 4.5 for a description of the tab functions and test execution.

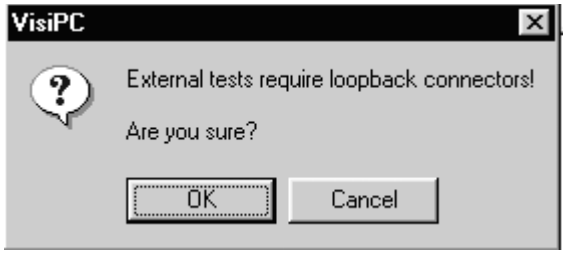
The selectable Self-tests, from the 'Self-test Request' pop-up dialog box, that are valid for use on V3 train rack systems are identified in Table A1, together with the requirements for additional hardware to conduct the tests.

Table A1 V3 Train Rack System ~ Self-tests

Test Description		***Hardware Required***	***Precautions***	***Permissible Errors***
Test Type	**Test Level**			
All tests	All startup tests	None		
	All internal tests	None	Serial inputs should be removed or disabled during test	
	All external tests	Loopback connectors for all serial ports	See Table 7	
Address decoder	*Unused*	None		
Flash	All flash areas	None		
	FBL software	None		
	Controller software	None		
	FPGA data	None		
	User config (fixed)	None		Failure indicated if config data not loaded – does not indicate hardware fault
	User config (variable)	None		
	User config (default)	None		

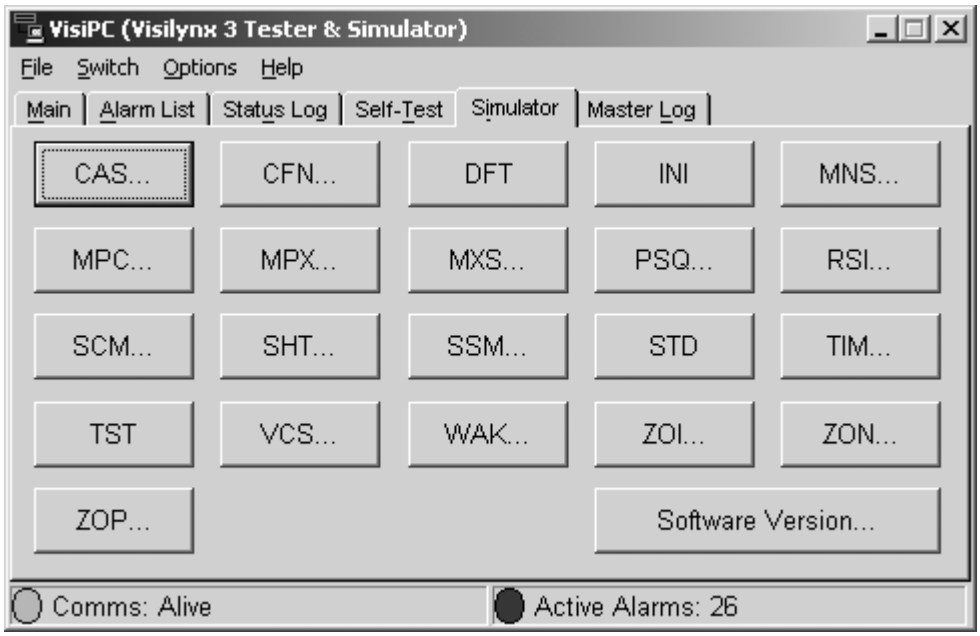
Test Description		***Hardware Required***	***Precautions***	***Permissible Errors***
Test Type	**Test Level**			
Auto-detect hardware	Do not save results	None		
	Save results to flash	None	Required if cards have been changed and config data not reloaded	
SRAM	*Unused*	None		
Battery-backed SRAM	*Unused*	None		Failure indicated after loading new config data – can be ignored
Serial ports	Internal loopback	None	Serial inputs should be removed or disabled during test	
	External loopback	Loopback connectors	See Figure A4	
Real-time clock	*Unused*	None		
SCB registers	*Unused*	None		
Cards	All cards	None		
	Quad card	None		
	Trainborne input card	None		
	Trainborne interface card	None		

Figure A6 Self-test – External Loopback Test Warning



A6 Simulator Tab

Figure A7 Simulator Tab Screenshot



This screen provides access to all the available commands not covered on other screens. Each button will send the named command to the V3 train rack system. Some buttons (with "…") will open a pop-up dialog box to allow the user to select values before sending the command.

The buttons used for V3 train rack system maintenance operations are:

Table A2 V3 Train Rack System ~ Simulator Tab Buttons

Button	***Command***
CAS…	Return camera status
DFT	Switch default cameras to all monitors
INI	Initialise (unswitch) all monitors
PSQ…	Program Basic Sequence
RSI…	Return Sequence Information
SCM…	Select Camera and Monitor
TIM	Set Time and Date
TST	Initiate Self-Test
VCS…	Return VCR Status
SHT…	Shutdown
WAK…	Wakeup

Screenshots of the pop-up dialog boxes corresponding to the buttons identified in Table A2 follow:

Figure A8 CAS... Dialog Box

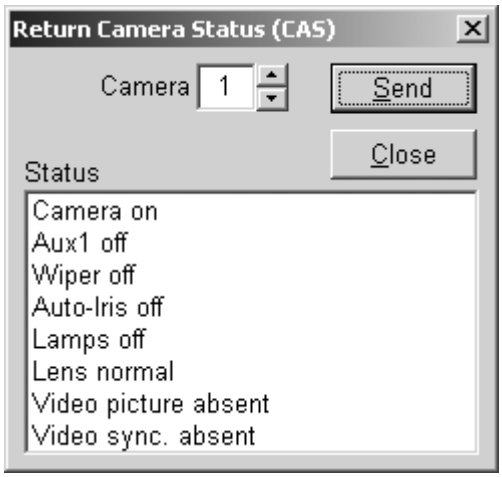


Figure A9 PSQ... Dialog Box

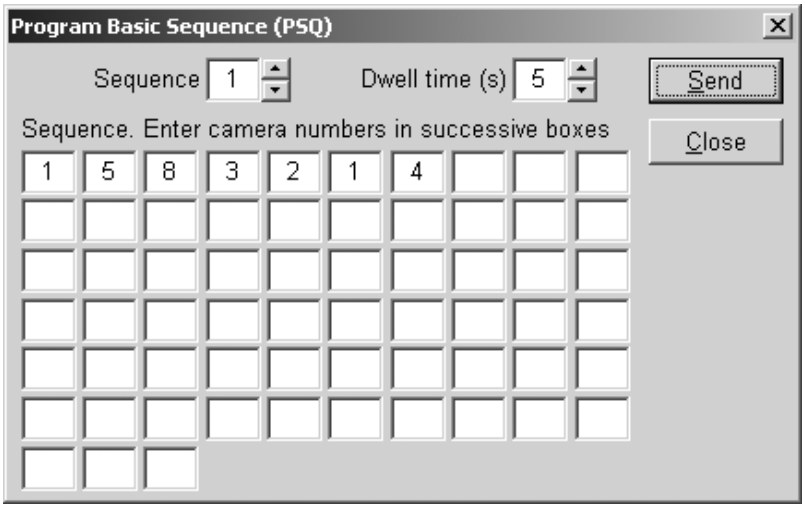


Figure A10 RSI... Dialog Box

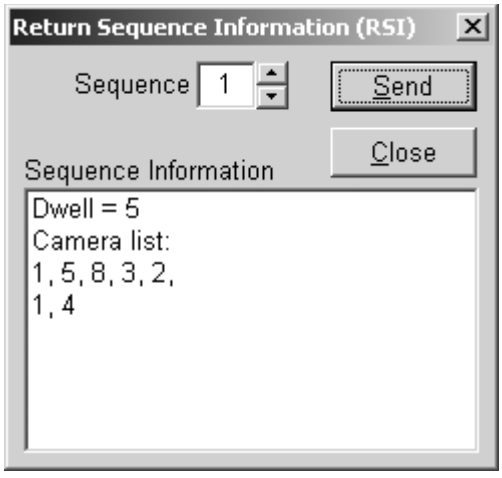


Figure A11 SCM... Dialog Box

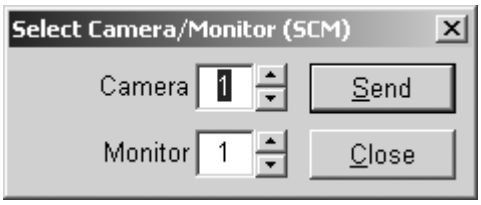


Figure A12 VCS... Dialog Box

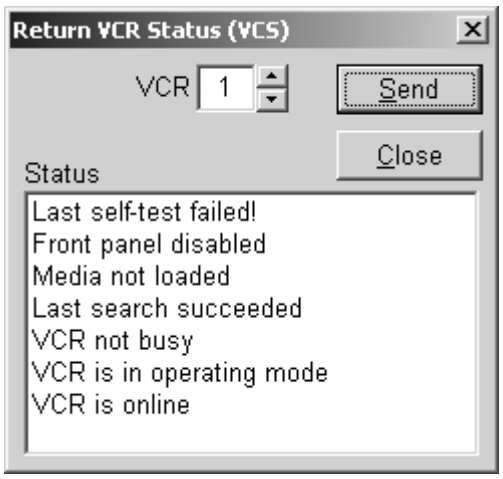
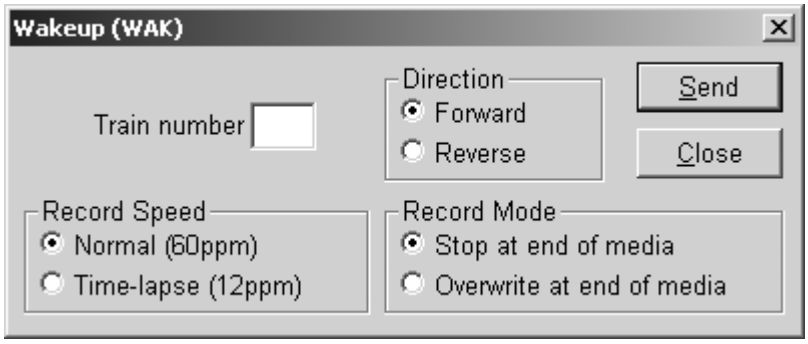


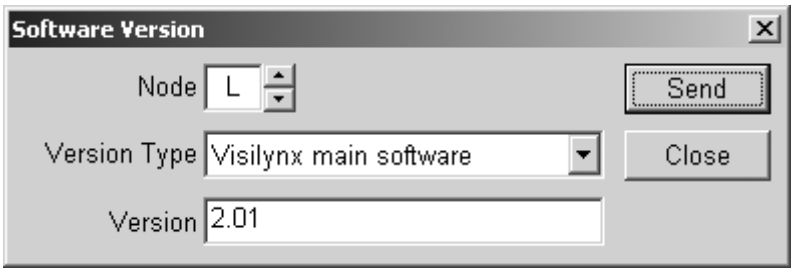
Figure A13 SHT... Dialog Box

Figure A14 WAK... Dialog Box



The **Software Version…** button brings up the "Software Version" pop-up dialog box.

Figure A15 Software Version Dialog Box



Each of the four software and firmware 'Version Type' options can be set in turn, and sent, using the **Send** button, to the V3 train rack system. Each one returns the corresponding Version number from the V3 train rack system, as shown in Table A3.

Table A3 Software Version Types

Version Type	***Description***
Visilynx main software	The version of the main controller software.
Visilynx FPGA firmware	The version of the FPGA firmware on the CPU card.
Visilynx flash boot loader	The version of the flash boot loader software.
Visilynx configuration	The version of the user configuration format. This is fixed in the current main controller software, and is used by VisiPC to see if the configuration format is compatible for transferring to or from the V3 train rack system.
Visilynx font	NOT applicable to V3 train rack systems

The Version Types are then checked against the Visilynx 3 system "Software Release Notes" document, to see if new software or firmware needs to be transferred to the V3 train rack system.

ANNEX B DEVELOPMENT USE

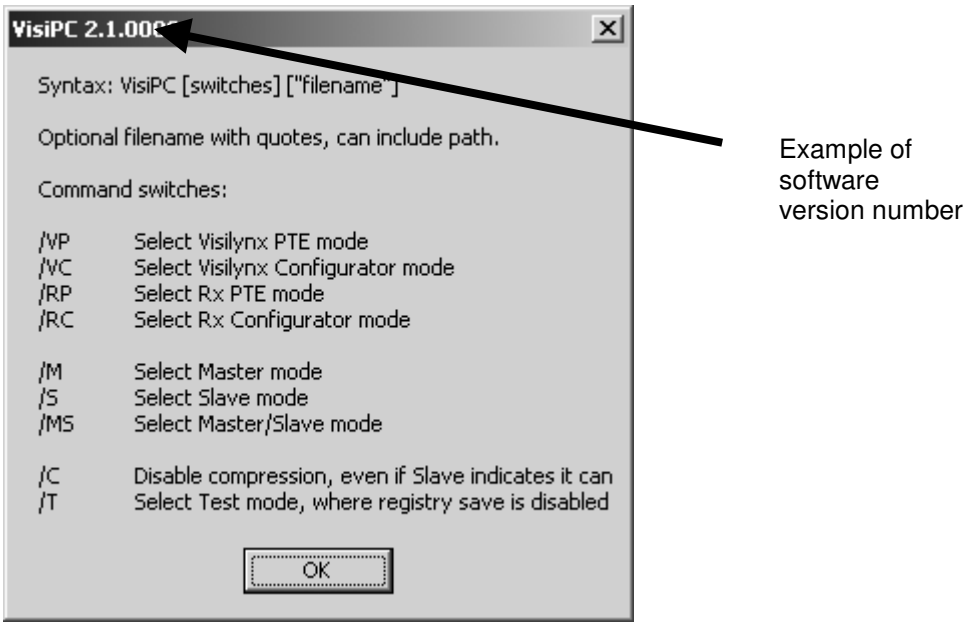
VisiPC can be used as a versatile test tool during the development phase of host systems that communicate with V3 systems using the same protocol as VisiPC. Technical details of this protocol are available on request.

The “Simulator” tab is used to send commands to the V3 system in Master mode. Slave mode is used to allow VisiPC to take the place of a V3 system when connected to a host system under development.

B1 Software Start-up

When running the software sub-program using the **Run** command in the **Start** menu (see Section 2.4) nine command line switches are available to allow the sub-program to start-up in a particular mode, rather than “the last one used”. Setting the **Run** target to e.g. “C\Program Files\VisiPC\VisiPC.exe” /? provides help on the use of the command switches.

Figure B1 Command switches



Four command switches determine which sub-program the software starts up in. They are /VP, /VC, /RP and /RC for V3 Tester & Simulator, V3 Configurator, Rx Tester & Simulator and Rx Configurator, respectively.

Three command switches determine which communication mode the sub-program starts up in. They are /M, /S and /MS for Master, Slave and Master & Slave mode, respectively.

Note: Choose not more than one option from each of the above option groups.

In addition, adding a file name with “quotes” around it to the command switch will load the (.V3) configuration data file into the sub-program at software start up.

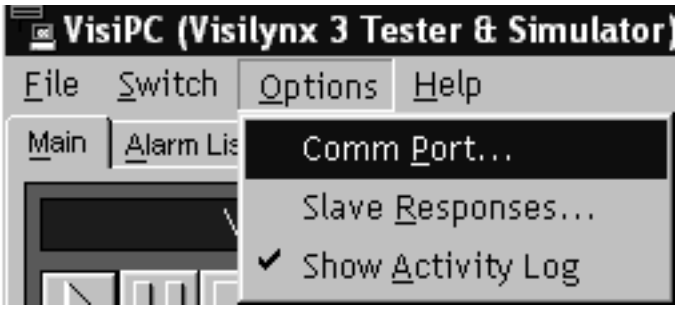
The two command switches (/C and /T) are only used for software development and users should therefore avoid using them.

Desktop shortcuts could be created for each, with the **Run** target set to e.g. “C\Program Files\VisiPC\VisiPC.exe” /VC.

B2 Mode Selection

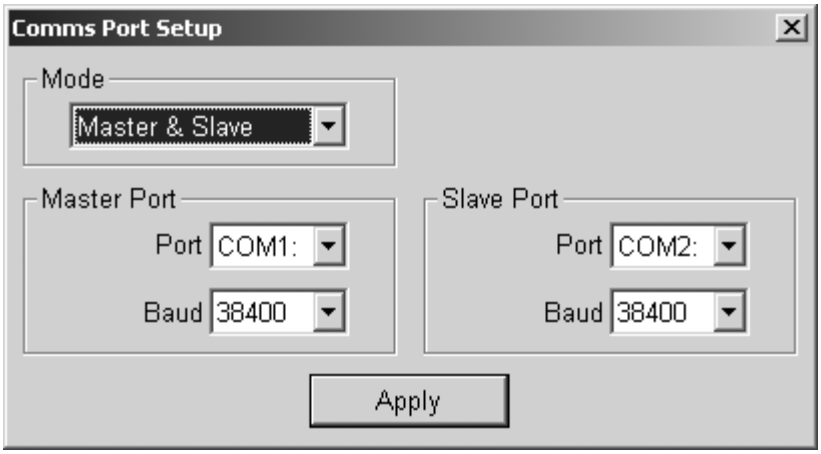
All three communication modes (Master, Slave and Master and Slave) are available during development testing and are selected in the "Options" Menu.

Figure B2 Options Menu



Selecting **Comm. Port…** brings up the "Comms Port Setup" dialog box.

Figure B3 Comms Port Setup Dialog Box



B2.3 Master Mode

The Master mode allows the VisiPC program to simulate a Master sending commands to the V3 system and to display status information returned from the V3 system. The main functions available include Digital Video Recorder (DVR) control, train video selection, status, alarm and self-test logs.

B2.4 Slave Mode

The Slave mode allows the VisiPC program to simulate a V3 system for testing a new Master system, by responding to any command received from the Master and providing a suitable response. Wherever possible the response data is based on the received data. In other cases, the response data is randomly generated.

B2.5 Master & Slave Mode

In this standalone mode, VisiPC can be used to both generate commands and to provide responses, thus demonstrating the operation of the program without the need for a V3 system to respond to the commands. In this mode, a null-modem

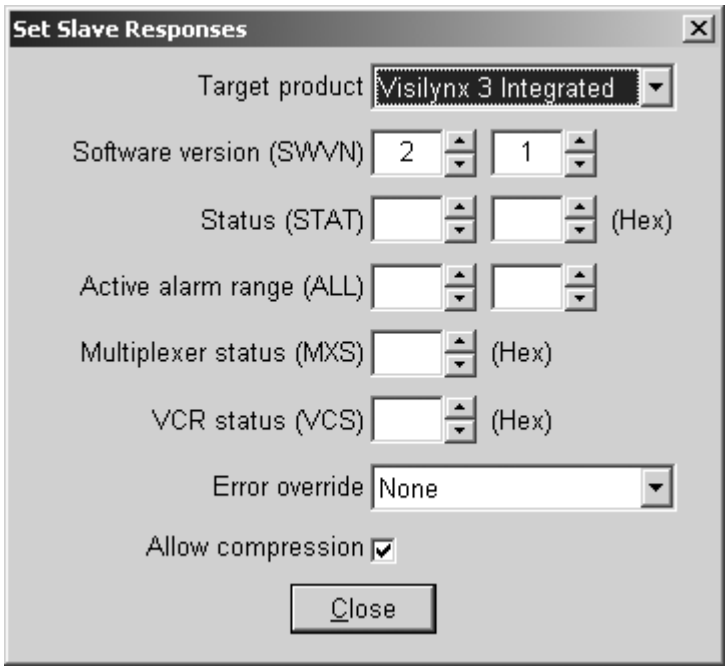
serial test lead is required to link between the selected PC Master and Slave COM ports.

B2.6 Slave Responses…

The 'Slave Responses' option is only available if either 'Slave' or 'Master & Slave' Mode field has been selected in Comms Port Setup (see above).

Selecting **Slave Responses…** brings up the "Set Slave Responses" dialog.

Figure B4 Set Slave Responses Dialog Box



The values entered are used in the replies from the Slave mode, when the Master asks for information.

Note: This mode is not normally used, and can be ignored.

Select the required "Target product" from the selector. The choices are:

Visilynx 3 Modular

Visilynx 3 Integrated

Receiver

Undefined.

'Software Version (SWVN)' reports the software version, e.g. 2.10, as shown above. Blank gives Node number as Major & Node+1 as Minor, e.g. Node=2 gives 2.03.

'Status (STAT)' reports the status. Hover over the box to see what each bit does. The value needs to be entered in Hex. Blank gives random status.

'Active alarm range (ALL)' specifies the first and last alarms to be indicated as active, e.g. 5-55 will set all the alarms in the range to be active. Blank gives random alarms.

'Multiplexer status (MXS)' reports the multiplexer status. Hover over the box to see the options. The value needs to be entered in Hex. Blank gives Mpx no.

'VCR Status (VCS)' reports the VCR status. Hover over the box to see the options. The value needs to be entered in Hex. Blank gives VCR no.

The 'Error override' drop-down menu allows the user to force the Slave to return errors in its responses, as a means of testing the Master' s error handling. It is purely provided as a test function, and is not for general use.

The options available are:

None	No effect (normal operation).
Not Implemented	The Slave doesn' t know the command.
Prohibited	The Slave knows the command, but is not able to deal with it, e.g. trying to control a camera for which you don' t have access rights.
Bad Length	The data packet is the wrong size.
Bad Command	The values supplied in the parameters for a command are invalid (out of range), e.g. Camera number = 0.
Busy	The Slave is busy and cannot deal with the command at the moment; e.g. the V3 system is doing INI, WAK or a self-test, etc.

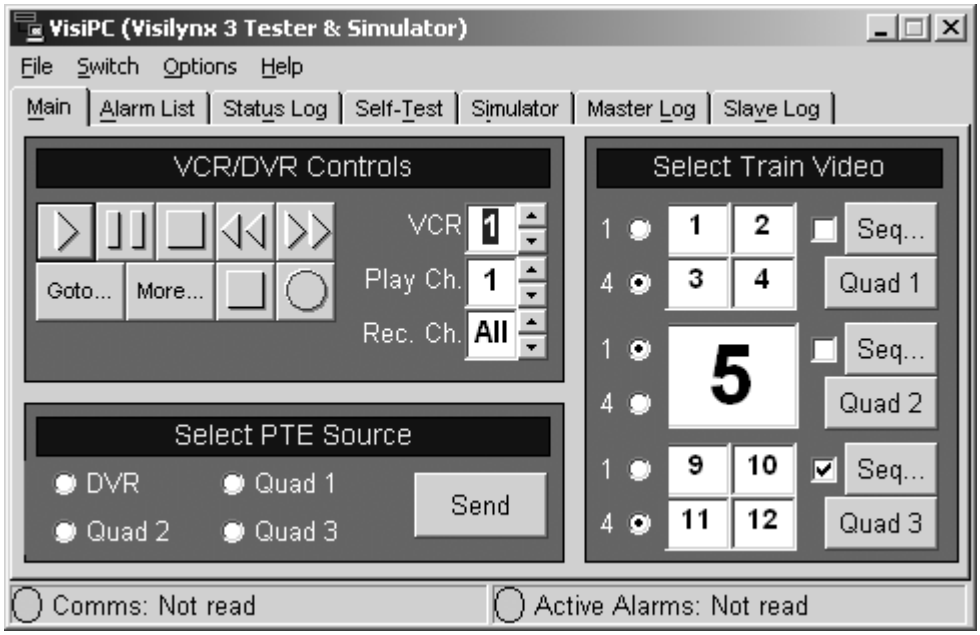
Note: The Slave mode is used to simulate the responses from a V3 system or DVR for testing purposes. A slave mode VisiPC can be connected to a host controller to replace a V3 system; or a slave mode VisiPC can be connected to a DVR control port on the V3 system. Alternatively, a single VisiPC can be operated in Master and Slave mode for testing VisiPC itself; this requires a serial cable linked between two ports on the same PC, e.g. COM1 and COM2.

B3 Tab Windows

The "VisiPC (Visilynx 3 Tester & Simulator)" sub-program consists of a maximum of seven tab windows, depending on the Master, Slave Mode selection. The sub-program defaults to the "Main" tab window.

NOTE: This Annex contains only PC screenshots with the 'MASTER & SLAVE' Mode selected in the "Options" Menu (see Section 3.3).

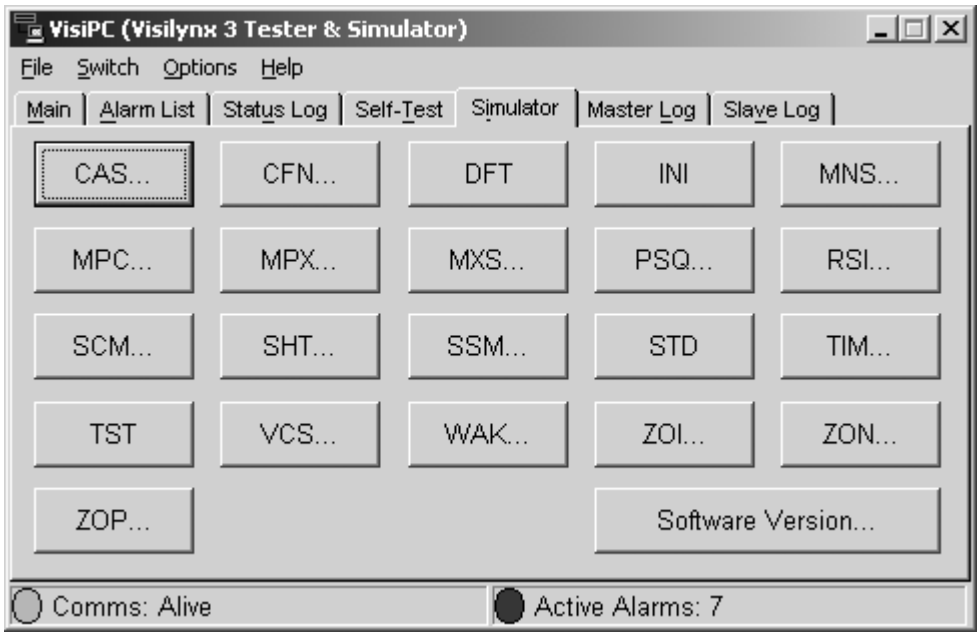
Figure B5 Main Tab Screenshot



The tab windows or functions used for development and/or detailed fault finding activities are described in the following paragraphs.

B4 Simulator Tab

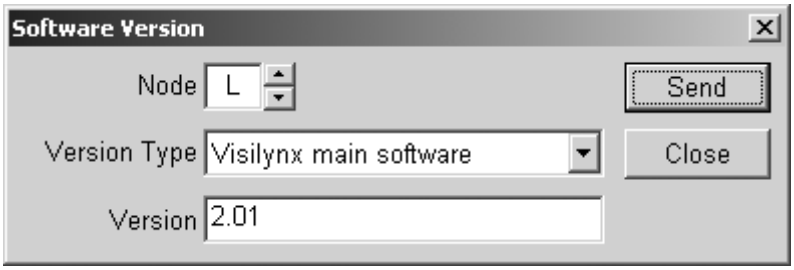
Figure B6 Simulator Tab Screenshot



This Tab screen provides access to all the available commands not covered on other screens. Each button will send the named command to the V3 system. Some buttons (with "**…**") will open a pop-up dialog box to allow the user to select values before sending the command (see Table B1).

The **Software Version…** button brings up the "Software Version" pop-up dialog box (see Figure B7). Each of the five software and firmware Version Type options can be sent in turn and verified, using the Visilynx 3 system "Software Release Notes" document, against the Version numbers supplied by the V3 system. Note: 'Visilynx font' software is only used by V3i.

Figure B7 Software Version Dialog Box



The Simulator tab buttons can be used for exercising all types of V3 systems.

Table B1 Development Simulator Tab Buttons

Button	*Command*	*V3i System*	*V3M System*	*V3 Train Rack System*
CAS…	Return camera status	✔	✔	✔
CFN…	Camera Function	✔	✔	
DFT	Switch default cameras to all monitors	✔	✔	✔
INI	Initialise (unswitch) all monitors	✔	✔	✔
MNS…	Return Monitor Status	✔	✔	
MPC…	Set Up Multiplexer	✔	✔	
MPX…	Multiplexer Function	✔	✔	
MXS…	Return Multiplexer Status	✔	✔	
PSQ…	Program Basic Sequence	✔	✔	✔
RSI…	Return Sequence Information	✔	✔	✔
SCM…	Select Camera and Monitor	✔	✔	✔
SHT…	Shutdown			✔
SSM…	Select Sequence and Monitor	✔	✔	
STD	Select Train Default Video			✔
TIM	Set Time and Date	✔	✔	✔
TST	Initiate Self-Test	✔	✔	✔
VCS…	Return VCR Status	✔	✔	✔
WAK…	Wakeup			✔
ZOI…	Return Zone Information	✔	✔	
ZON…	Select Zone	✔	✔	
ZOP…	Program Zone	✔	✔	

Screenshots of the pop-up dialog boxes identified in Table B2 as usable with a V3i or V3M system follow:

Figure B8 CAS... Dialog Box

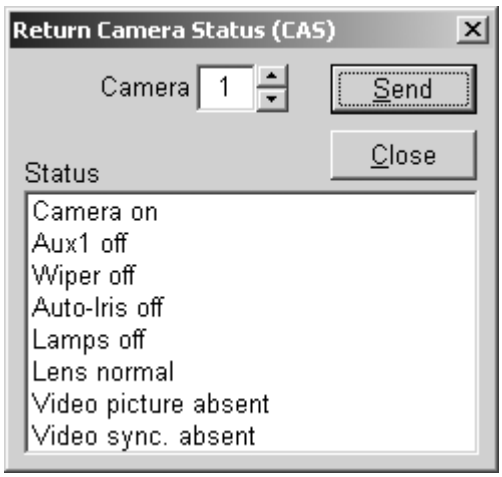


Figure B9 CFN... Dialog Box

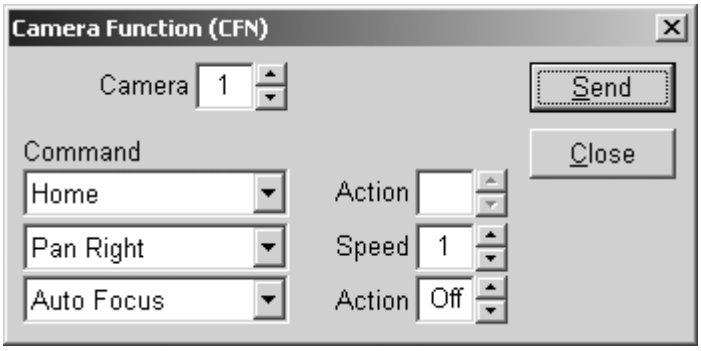


Figure B10 MNS... Dialog Box

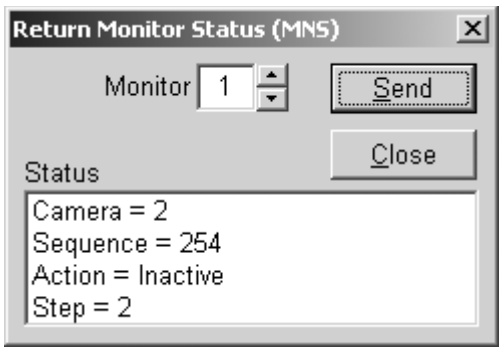


Figure B11 MPC... Dialog Box

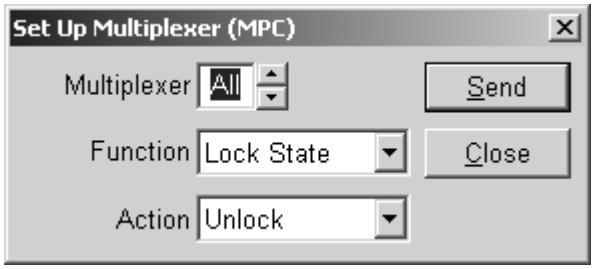


Figure B12 MPX... Dialog Box

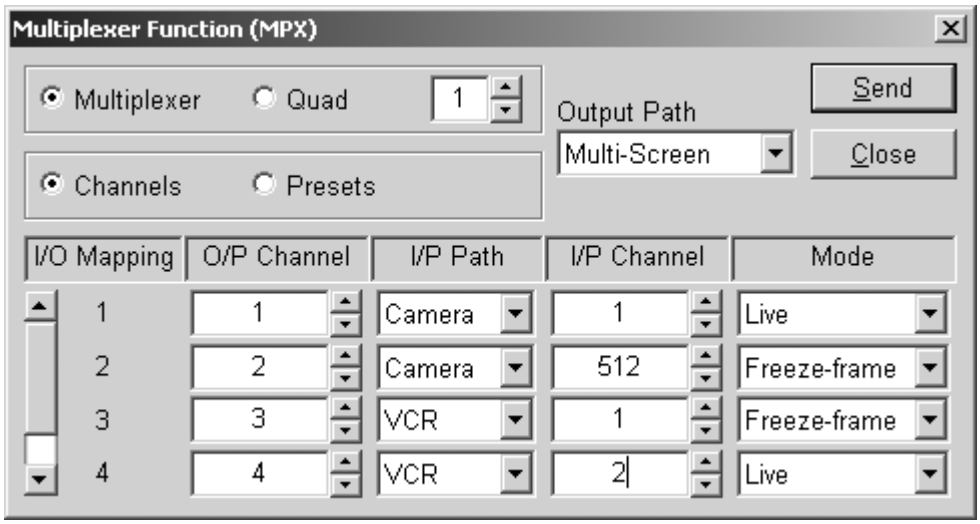


Figure B13 MXS... Dialog Box

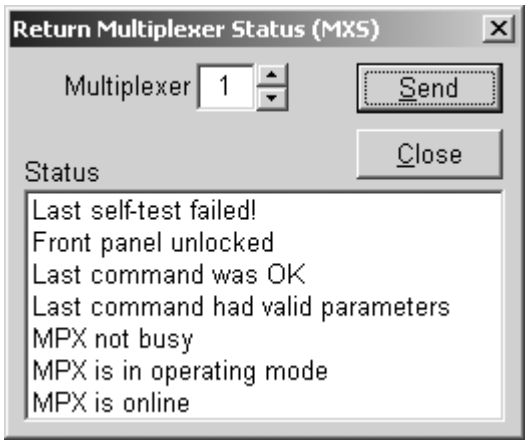


Figure B14 PSQ... Dialog Box

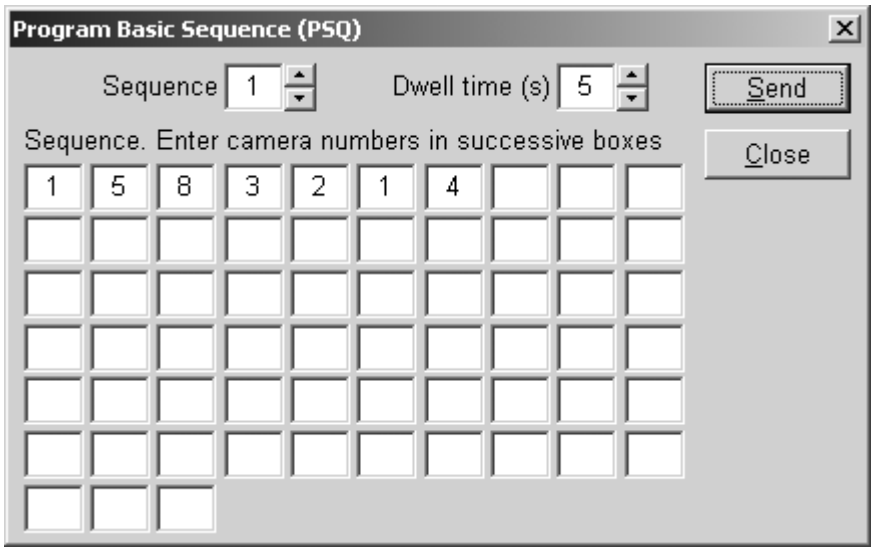


Figure B15 RSI... Dialog Box

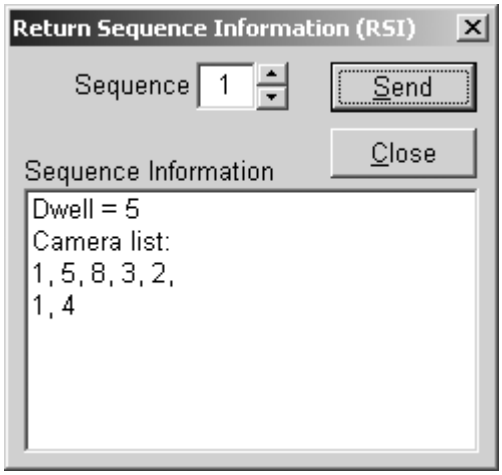


Figure B16 SCM... Dialog Box

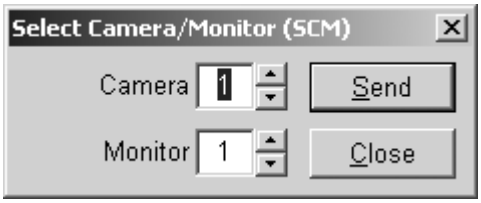


Figure B17 SSM... Dialog Box

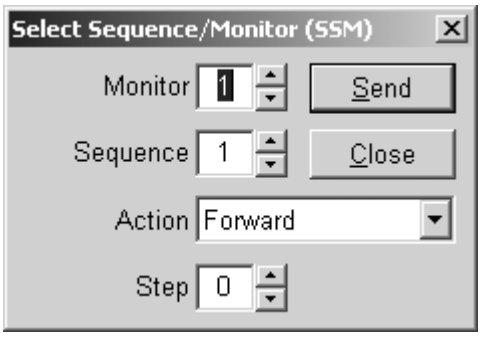


Figure B18 VCS... Dialog Box

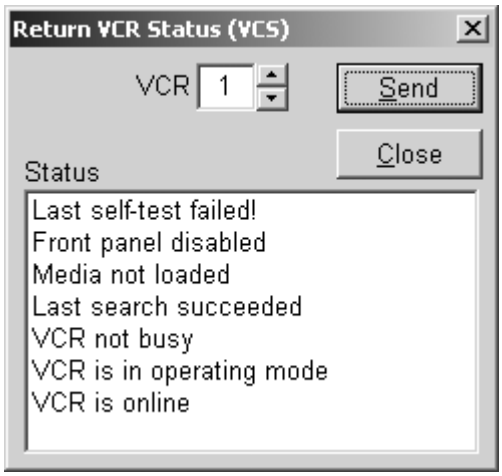


Figure B19 ZOI... Dialog Box

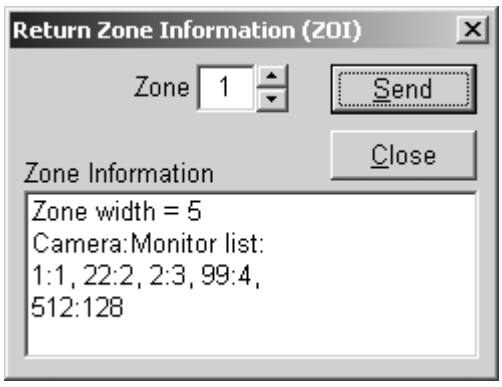


Figure B20 ZON... Dialog Box

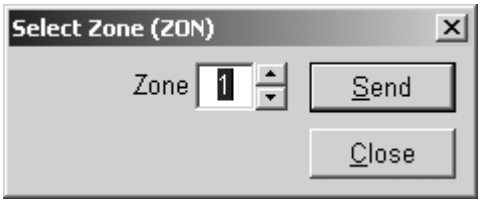
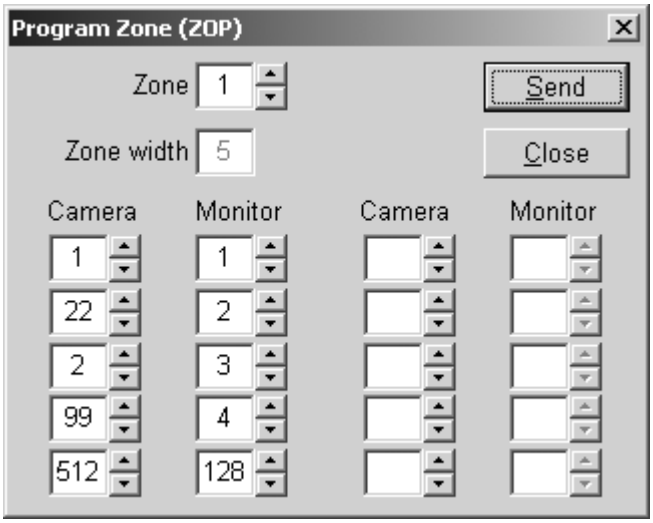
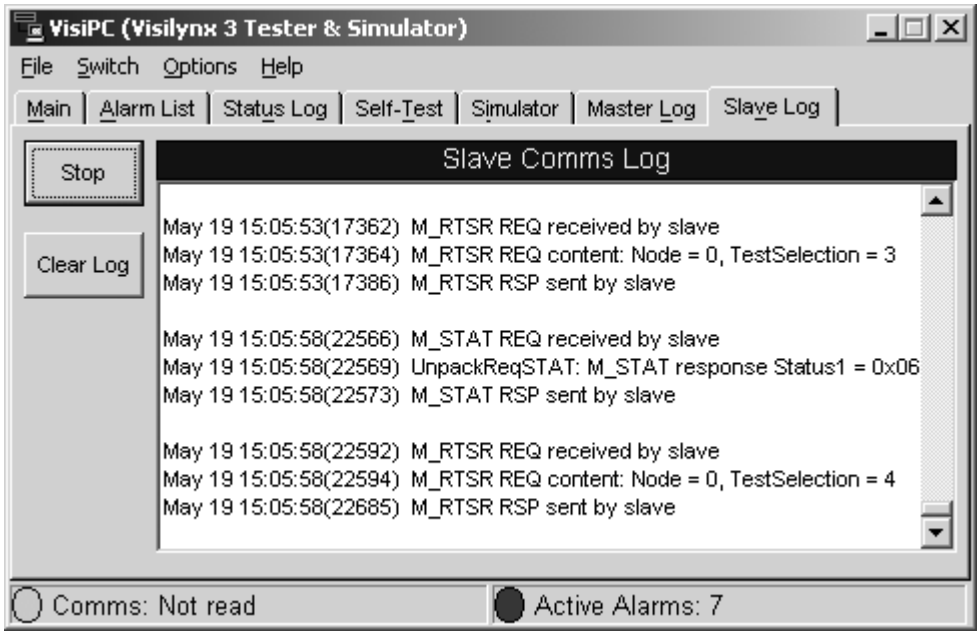


Figure B21 ZOP... Dialog Box



B5 Slave Log Tab

Figure B22 Slave Log Tab Screenshot



This screen displays a log of the messages sent and received by the Slave communications protocol code. This tab is only available in the 'Slave' or 'Master & Slave' Modes.

The **Start**/**Stop** button will alternately start and stop the logging process. The button text indicates the next action that will occur when the button is pressed. Stopping the logging process allows time to analyse the contents; however, events occurring while logging is stopped will be lost.

Pressing the **Clear Log** button will clear the content of the log.

The right hand side of the tab window shows a list area, where the log entries are displayed. Each line is time stamped and the list is limited to 300 lines, with the oldest entries being removed to make way for new entries.

If the list exceeds the screen space, a scroll bar will appear to allow access to the whole list.

If any line is longer than the available box width, hovering the mouse over the line will show the whole line in a fly-over help box.

The contents of the log can be copied to the clipboard by pressing Ctrl-C.

NOTES

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