BEWATOR

Uniclass L7626	EPIC M231
CI/SfB (64.11) X	

V3-ISU
Visilynx 3
Integrated System Unit

Installation & Maintenance Manual

Manual: INS00285 Issue: 1.0

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About This Manual

This manual describes the methods and procedures to be followed when installing and maintaining the Bewator Ltd. Visilynx 3 Integrated System Unit.

This manual describes the following equipment:	
V3-ISU	Visilynx 3 Integrated System Unit
V3-QUAD	Quad Card (optional)

IMPORTANT NOTES

Please read this manual in its entirety before installing the Visilynx 3 Integrated System Unit (V3 ISU).

It is recommended that the installation of this unit comply with the latest national standards:

NACOSS National Approval Council for Security Systems.

NACP20 Code of Practice for Installation and Maintenance of Closed Circuit Television Systems.

IEE 16th Edition Regulations for electrical installations, BS7671.

SELECT SUITABLE EQUIPMENT!

Please ensure that all equipment is suitable for the application and the environment for which it is intended. Ensure all applicable specifications are adhered to.

Please take particular care ensuring that interconnected equipment is fully compatible and suitable for such use. Check load ratings, dimensions, etc.

SECURELY MOUNT THE ASSEMBLY!

This unit must be properly and securely mounted.

If free standing, it should be installed on a suitable flat level surface as supplied, with the mounting feet fitted.

If rack mounted, care should be exercised to select a suitable 19" rack cabinet. The supplied mounting feet should not be fitted. Always use the recommended fixing screws for the selected rack cabinet. Failure to comply with these recommendations could result in the unit coming loose from the cabinet and falling with resultant damage or injury to anyone or anything struck by the falling unit.

INSTALL CAREFULLY!

A qualified installer should make the installation. Specific tools may be required for installation purposes dependent upon the site in which the assembly is to be installed.

Refer to local and national standards for wiring and follow recommendations. The installation should comply with local codes. Check that correct cable types are used.

WARNINGS

This device must be connected to Earth!

Only replace the fuses with the same type!

An appropriate disconnection device must be fitted when installing the electrical supply.

Always disconnect and remove the mains power supply before opening the Visilynx 3 Integrated System Unit.

Only service personnel should open the Visilynx 3 ISU.

Ensure the power CANNOT be re-connected by external sources while the unit is being worked on.

FAST-TRACK INSTALLATION

If you are familiar with Visilynx 3 Integrated, this is an overview of the installation process:

1. **You need a PC or a Laptop to change the default configuration or upgrade the software or run self-tests, using the VisiPC software. Connect it to the Test/Config connector using a VC-3CONFIG cable.**
2. **Ensure that the mains power supply has an adequate earth connection.**
3. **Where two units are connected in an expanded video matrix node, ensure that the expansion cable is fitted between them.**
4. **Ensure that no more than <u>two</u> Visilynx 3 Keyboards are powered by the Visilynx3-ISU. Additional V3 Keyboards <u>must</u> have their own local power supply units.**

IMPORTANT – DO NOT CONNECT A KEYBOARD TO A DC POWER SUPPLY AS WELL AS WIRING IT TO THE +12V SUPPLY ON THE V3-ISU REAR PANEL KEYBOARD CONNECTOR, OR DAMAGE MAY OCCUR.

5. **Ensure that the network address switches of all nodes are set to different addresses.**
6. **Where two units are connected in an expanded video matrix node, both units should be powered up together. If this is not possible, power up the Slave unit first.**
7. **After powering up, ensure that either the blue Master or Slave LEDs are lit and that the red Status LED is not lit. If otherwise, run self-tests using VisiPC test/simulator software.**
8. **After powering up, ensure that all Visilynx 3 Keyboards go to their Main Menu or their ID request menu.**
9. **Units are shipped from the factory with all labelled connectors operational.**
10. **Note that using the rear panel Quad and Ethernet connectors requires internal option cards to be fitted.**

IMPORTANT – ONLY SERVICE PERSONNEL SHOULD OPEN THE VISILYNX 3i UNIT, AFTER FIRST DISCONNECTING THE MAINS SUPPLY.

11. **C-type (over-the-coax) telemetry is *disabled* by default.**
12. **If required, set on-screen text labels, or enable alarms, or set up serial ports, or enable networking using VisiPC configuration software.**

Glossary

Alarm Input	A signal from external equipment indicating an alarm condition.
C-Type	A serial telemetry data protocol that connects to a Receiver down the same coaxial cable that carries the camera output video.
D-Type	A serial telemetry data protocol that connects to a Receiver using an RS-485 data cable.
Expansion	The connection between two Visilynx 3i units that combines them into a double-size matrix.
IP	Internet Protocol
ISU	Integrated System Unit
Logical Camera	The number of a camera as used by a keyboard operator.
Loop-Through	An output connector carrying the signal from a camera input connector, but with C-type Telemetry removed.
LRU	Line Replaceable Unit
Matrix	One Visilynx 3i unit or two expanded units that allow video inputs to be switched to video outputs.
Network	Two or more Visilynx 3 Nodes linked by Trunks.
Network Address	The identity of a Node on a Network, set by the rotary switches on the rear panel.
Node	A single Matrix on a Network, identified by an Address.
NTSC	National Television Standards Committee: the 525-line TV system used in America and Japan.
Option Card	The Quad Card or IP Video card installed internally as required.
PAL	Phase Alternation Line: the 625-line TV system used in the UK and Europe.
PCCON	PC Control is a simple serial protocol allowing remote control from a PC.
Physical Camera	The number of a camera as determined by its connection to Visilynx 3.
Receiver	A device that converts telemetry signals into control voltages used to move or adjust a camera.
Roll-Free Switch	A switching technique that blanks a video output for a short time, to prevent the monitor image from rolling while switching between camera inputs.
RS-232	A point-to-point serial data connection type with limited noise immunity and cable length.
RS-485/422	A point-to-point serial data connection type with good noise immunity and cable length.
RS-485	A multi-drop serial data connection type with good cable length and noise immunity.
Trunk	Video and data connection between Nodes.
User Configuration	The set of data loaded from VisiPC to a Visilynx 3i Unit that determines the operation of the Matrix.
V3	Shorthand for Visilynx 3.
V3i	Shorthand for Visilynx 3 Integrated.
VisiWire	The name of the Network data protocol used to connect Visilynx 3 Nodes.
VisiPC	Configuration and test software run on a PC.

Introduction

General Description

Visilynx 3i (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 (called Visilynx 3 Integrated System Unit).

Two identical units can be connected together by an expansion cable to double the size of the video matrix to 64 loop-through input x 16 output full cross-point switcher. In this configuration, one of the two units is set to be the Master unit in the node and can be connected to a Visilynx control network, while the other is set to be the Slave unit.

Up to 127 nodes, made up of a mixture of Visilynx 3 ISU or Visilynx 3 Modular units, can be connected together to form a distributed video switching network. The video connections between nodes are made by trunk connections.

In a networked system, a keyboard at one node may view and control cameras, VCR/DVRs and multiplexers at any other node. It may also respond to alarms from other nodes. The number of video inputs from remote nodes that can be viewed at any one time will be governed by the number of available trunk connections between the nodes.

All Visilynx 3 ISUs have the built-in capacity for further expansion by the fitting of up to two optional Visilynx 3 Modular cards. These cards may be either one or two Quad Cards or one IP Video Card (when available), or a mixture of both.

The main user interface device of the Visilynx 3i system is the Visilynx 3 keyboard. Up to two may be powered by a single V3-ISU, and a further 14 keyboards with local power supplies may be addressed. **A Keyboard must not be connected to both power sources at once.**

Each Visilynx 3 ISU is designed to be used free standing (as supplied) or fitted into a standard 19" rack cabinet.

The Visilynx 3 ISU is supplied with configuration and test software called VisiPC, which should be installed onto a suitable PC. It is both user friendly, and comprehensive, and forms the heart of the system's configuration and test capability.

Reference Documents

CD-ROM

The CD-ROM (Bewator Ltd. Part Number INS00298) supplied with every Visilynx 3 ISU contains electronic copies of this manual, the operational control software, VisiPC software and manuals, keyboard operation manual, the PCCON3 remote control protocol manual and installable Visilynx 3i and VisiPC software, as follows:

Control Card Firmware/Software

The control software and firmware components loaded during manufacture into FLASH on the main control PCB comprise:

- The Main Controller Software (Bewator Ltd. Part Number SW220).
- The Flash Boot Loader Software (Bewator Ltd. Part Number SW221).
- The Controller FPGA Firmware (Bewator Ltd. Part Number SW249).
- The European Display Font (Bewator Ltd. Part Number SW250).

VisiPC Software and Manuals

The VisiPC test and configuration software (Bewator Ltd. Part Number SW224) has a two-part user manual:

- Part 1 describes the "Visilynx 3 Configurator" sub-program (Bewator Ltd. document INS00231).
- Part 2 describes the "Visilynx 3 Tester & Simulator" sub-program (Bewator Ltd. document INS00237).

Keyboard User Manual

The Visilynx 3 Keyboard has its own software in EPROM (Bewator Ltd. Part Number SW218), together with a user manual (Bewator Ltd. document INS00232).

PCCON3 Remote Control Protocol User Guide

PCCON3 is a simple yet powerful remote control language for controlling all aspects of matrix operation from another PC or control system. The User Guide for this ASCII-based protocol is included on the CD-ROM (Bewator Ltd. document INS00296).

Contents Of Package

The product should reach you in perfect working order. If the unit is damaged in any way or if the supplied items are missing, please contact Bewator Ltd. immediately for a replacement.

The full list of items contained in the shipping package is shown on the Packing Note (Bewator Ltd. Document INS00302), which is included in the package.

Before Starting Installation

1. Ensure that the contents of the package are correct.
2. Read all these instructions in their entirety.
3. Save these instructions for later use.
4. Ensure that the correct tools are used during installation – see below.

Suggested Tools

The following tools are suggested for the installation of a Visilynx 3 ISU.

- Flat blade screwdriver, 2.5mm blade width.
- Phillips No. 1 screwdriver.
- 2.5mm A/F (across flats) Allen key.

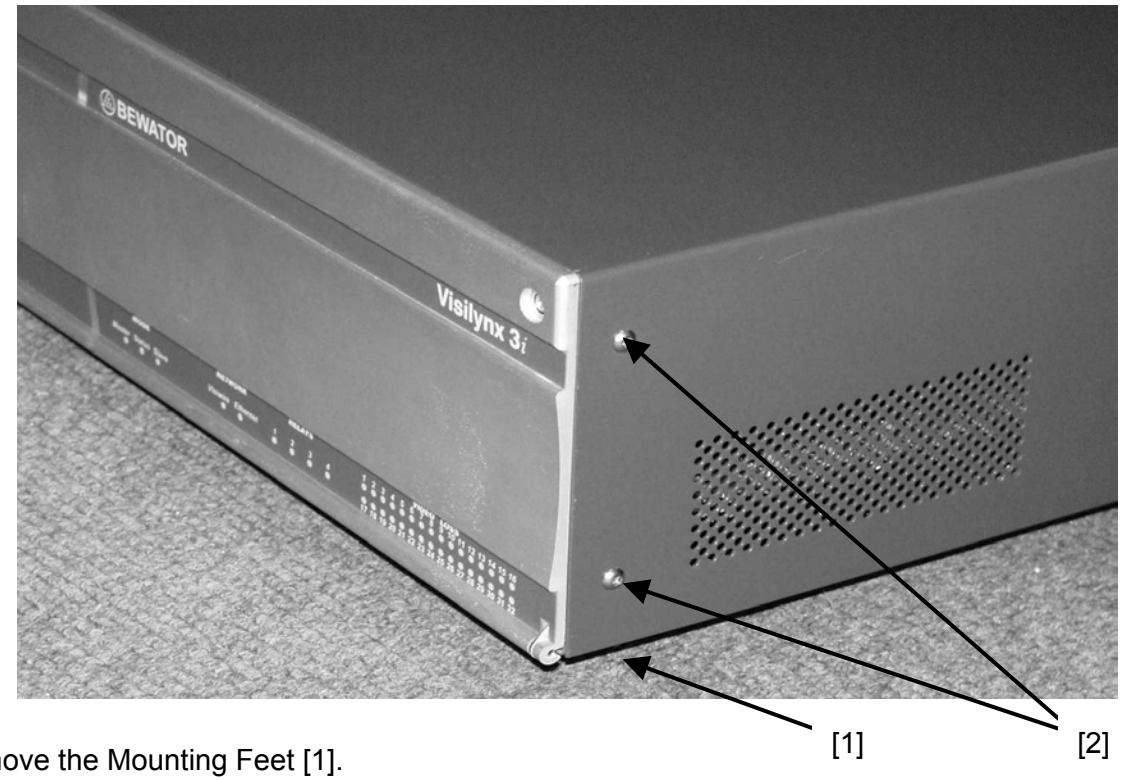
Installing Visilynx 3i Units

Free Standing Installation

1. The Visilynx 3 ISU is supplied ready for free standing operation.
2. It is recommended that the Rack Mount Brackets be retained for future use.
3. Commission the unit. See Page 12.
4. Connect all the required system inputs and outputs. See Pages 18 and 23

Rack Mounted Installation

Figure 1 Visilynx 3 ISU



1. Remove the Mounting Feet [1].
2. Fit the Rack Mount Brackets using the front pair of screws that retain the Lid on each side of the unit [2].
3. Fit the Visilynx 3i Unit into a suitable 19” rack cabinet using suitable screws (not supplied).
4. Commission the unit. See Page 12.
5. Connect all inputs and outputs. See Pages 18 and 23.

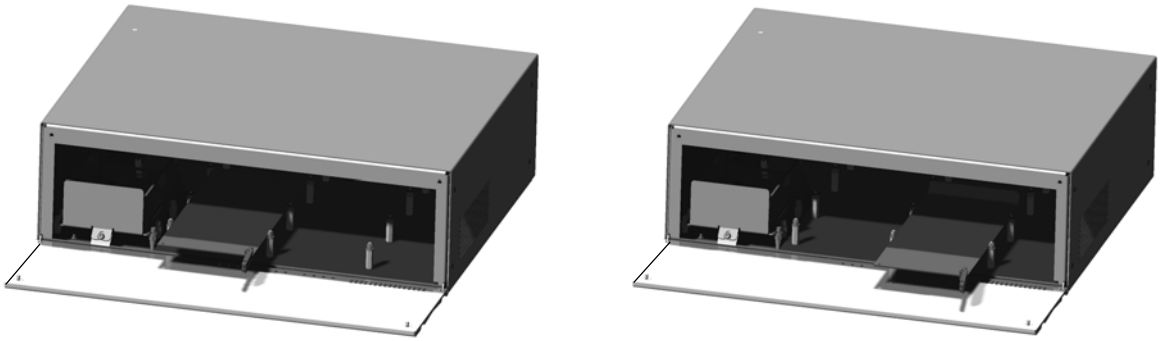
Installing Option Cards

Two Quad Cards, one IP Video Card (when available) or a mixture of both can be added to each Visilynx 3 ISU. Each Quad Card allows any 4 of the video inputs to that Node to be displayed in quad format on a dedicated quad monitor video output.

To reveal the two internal option card slots and their card guide posts, undo the two captive screws and drop down the hinged front panel.

IMPORTANT - ONLY SERVICE PERSONNEL SHOULD OPEN THE VISILYNX 3i UNIT, AFTER FIRST DISCONNECTING THE MAINS POWER SUPPLY.

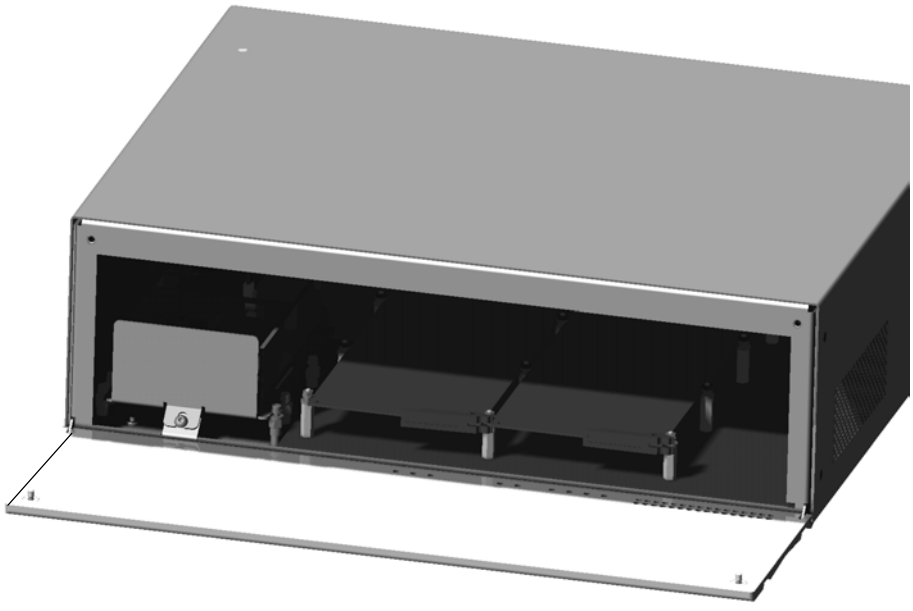
Figure 2 Fitting 1 Quad Card



A single Quad Card (V3-QUAD) may be installed in either card slot, as follows:

1. A Quad Card in the slot furthest from the power supply is connected to Quad Output A on the rear panel, and is controlled as monitor outputs 13-16. Note that on a single unexpanded unit, these are extra to the 8 monitor outputs available on the rear panel.
2. A Quad Card in the slot nearest the power supply is connected to Quad Output B on the rear panel, and is controlled as monitor outputs 13-16. Note that on a single unexpanded unit, these are extra to the 8 monitor outputs available on the rear panel.

Figure 3 Fitting 2 Quad Cards



Two Quad Cards (V3-QUAD) may be installed as follows:

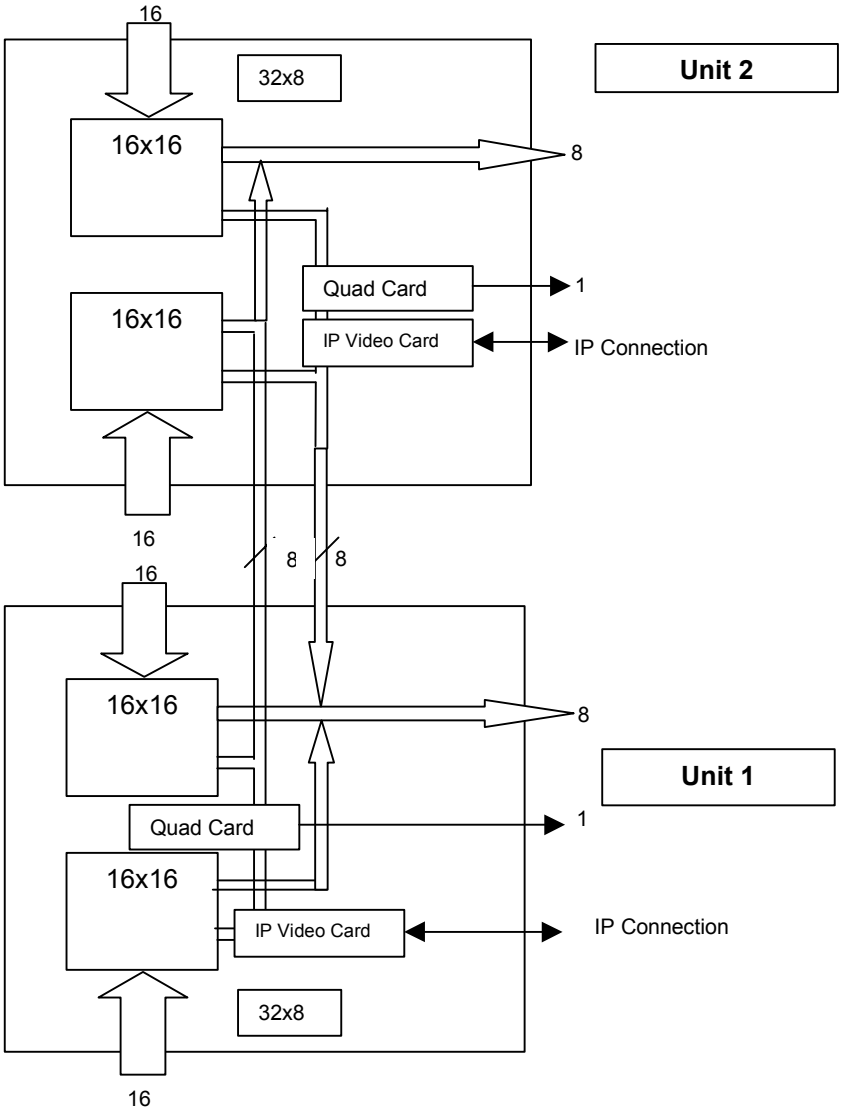
1. The Quad Card in the slot furthest from the power supply is connected to Quad Output A on the rear panel, and is controlled as monitor outputs 9-12. Note that on a single unexpanded unit, these are extra to the 8 monitor outputs available on the rear panel.
2. The Quad Card in the slot nearest the power supply is connected to Quad Output B on the rear panel, and is controlled as monitor outputs 13-16. Note that on a single unexpanded unit, these are extra to the 8 monitor outputs available on the rear panel.

Connecting Two V3i Units For Expansion

Two Visilynx 3i units can be connected together using a single expansion cable to enlarge the video matrix node to 64 loop-through inputs by 16 outputs, as shown in Figure 4. When two units are connected in this fashion, one of the two units is set as the master unit in the node and will be connected to the Visilynx control network.

1. Place the units one above the other in a rack cabinet or on a table top.
2. Connect the rear panel Expansion connectors using an Expansion Cable (Bewator Ltd. Part Number VC-3E).
3. Set the Master-Slave switch on one unit to Master.
4. Set the Master-Slave switch on the other unit to Slave.
5. Power up both units together: the Master indicator should light steadily on the Master unit front panel, and the Slave indicator should light steadily on the Slave unit.
6. From then on, the expanded node is treated as a single large unit, e.g. all the configuration data is sent to the Master unit.

Figure 4 Node Expansion Interconnection Block Diagram



Visilynx 3 Integrated System Unit Commissioning

Commissioning Tasks

1. Following installation, each Visilynx 3 ISU should be commissioned by performing the following tasks, in the sequence shown:
   a) Inspect all items.
   b) Connect a PC running VisiPC software.
   c) Set Default Product to Integrated.
   d) Connect and power up the V3-ISU(s).
   e) Confirm Software Versions – upgrade as necessary.
   f) Set Clock Time and perform VisiPC self-test.
   g) Load new configuration, as necessary.
   h) Load Asian display font data, if necessary.

Commissioning Tasks 1.c) to 1.h) are conducted using the VisiPC Test & Configuration software, which should be installed on a suitable PC, as shown below. A full description of the VisiPC software is contained in the User Manual (see Page 7).

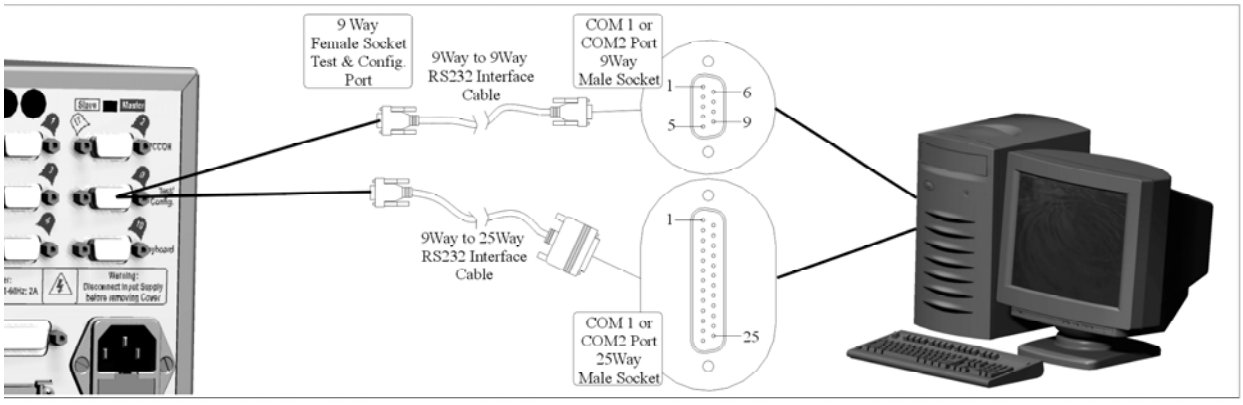
Inspect All Items

1. Visually inspect all the units, especially all input and output connections.
2. Check the contents of the shipping package against the Packing Note (see Page 7).

Connect A PC Running VisiPC Software

1. The Visilynx 3 ISU incorporates an RS232 Test/Config connector port on the Rear Panel which allows connection, via a 9-way to 9-way interface lead (Bewator Ltd. part number VC-3CONFIG), to a PC for system configuration and testing using the VisiPC software.

Figure 5 PC Connection Showing Alternative Cable Types



2. **Note:** If the serial COM Port on the PC is a 25-way connection, a suitable 9-way to 25-way 'D' type pre-wired interface lead will need to be purchased.

3. Tables 1 and 2, shown below, are for reference and give details of the pin-outs used for RS232 transmission. Note that the 25-way to 9-way option is wired differently to the 9-way to 9-way cable. If manufacturing this lead, these pin-outs must be observed.

Table 1 Cable Wiring for 9-Way PC COM Port (Part Number VC-3CONFIG)

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

Table 2 Cable Wiring for 25-Way PC COM Port

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

4. A Baud rate of 38400 is required for communication between the PC and the Test/Config Connector port on the V3 ISU. Selection of the communication Baud rate is achieved using the VisiPC software, as detailed in the User Manual (see Page 7).

Set VisiPC Default Product to Integrated

1. Run the VisiPC software.
2. If VisiPC starts as the "Visilynx 3 Tester and Simulator", select the "Visilynx3 Configurator" sub-program at the 'Switch' drop-down menu, as detailed in the VisiPC Software User Manual (see Page 7).
3. From the 'Options' drop down menu highlight 'Default Product' and select 'Integrated'.

   Note: This ensures that factory set default data applicable to V3i is always loaded when the New option is selected at the 'File' drop-down menu.

Connect and Power Up the ISUs

1. If two V3-ISUs are to be connected as a single expanded matrix node, connect an expansion cable (Bewator Ltd. part number VC-3E) between the expansion connectors on each ISU rear panel. Set the Master – Slave switch on the rear panel of each unit, as required.
2. Connect each V3-ISU to the AC mains supply (see the Specifications section on Page 57 for the allowed mains voltage range).
3. Switch on the mains power supply to the V3-ISU. For an expanded matrix node, switch on both V3-ISUs simultaneously. If this is not possible, switch on the Slave V3-ISU first.

Confirm Software Versions

1. Run the VisiPC software.
2. If VisiPC starts as the "Visilynx 3 Tester and Simulator", select the “Visilynx3 Configurator” sub-program at the 'Switch' drop-down menu, as detailed in the VisiPC Software User Manual (see Page 7).
3. On the menu bar select ‘Transfer’ and then the ‘Versions…’ option. This brings up the “Software Version” pop-up box.
4. Select each software Version Type, in turn, from the drop down menu and press the **Send** button. The software version is then displayed in the ‘Version’ field. (Note: Only the local node, as Node L, can currently be queried.)
5. You can record the versions in the table below, for reference:

Version Type	***Version Reported***
Visilynx FPGA firmware	
Visilynx main software	
Visilynx flash boot loader	
Visilynx configuration	
Visilynx font	

6. Confirm that the latest software versions are installed in the unit, by checking the VisiPC CD (if available) or the Bewator Ltd. Web site (applicable to registered users only). Any required software upgrades are achieved by selecting the 'Transfer' menu command and then the ‘Software…’ option, as detailed in the VisiPC Software User Manual (see Page 7). (**Note: Any Configuration held in V3i will be erased during the transfer of the main control software and will therefore need to be transferred back to V3i after the revised software is loaded**.)

Set Clock Time and Perform VisiPC Self-test

Set Clock Time

It is recommended on a new unit to set the internal clock on the V3 ISU to the current PC time using the 'TIM' command button on the Simulator tab on the "Visilynx 3 Tester & Simulator" sub-program. Ensure 'Current Time' is ticked and select 'Send'.

This can also be done on the “VisiPC (Visilynx 3 Configurator)" sub-program. From the 'Transfer' drop-down menu, select 'Date/Time'.

VisiPC Tester & Simulator

Functional testing of the Visilynx 3 ISU is performed using the features of the VisiPC “Visilynx 3 Tester & Simulator” sub-program, which is described in the User Manual (see Page 7).

VisiPC Self-test

Startup Tests

At unit startup, the Visilynx 3 ISU controller software does the following, without being instructed by VisiPC:

- Tests the stored program, data and key electronics.
- Auto-detects the Slave expansion unit and any installed option cards.
- Stores auto-detection and self-test results in the self-test log.
- Generates any self-test alarms.

Running Self-tests

More comprehensive self-tests are available using VisiPC, and are run by selecting the VisiPC 'Self-Test' Tab and then selecting the 'Test Type' and 'Test Level' from the **Run Tests** button.

These VisiPC self-tests can be run as commissioning tests:

Preparation	***Test Type***	***Test Level***
Remove all video and serial data cables	All Tests	All Internal Tests

Self-test Results

The results logged from all tests since the last power-up are retrieved using the **Self-test Results** button.

Each Self-test record consists of up to a maximum of 5 lines of text, including the Pass/Fail status of the test and the date and time it was done. (If the latter are wrong, you may need to set the internal clock time as described at the start of this section.)

Results are categorised as follows:

- **Pass** The item tested is working correctly and is compatible with the current software.
- **Warning** The item tested is working but may be operating outside limits.
- **Fail** The item tested is not working properly.

If any tests fail severely then a Self-test Alarm (if configured) is generated. The results can be copied to the PC Clipboard for pasting into an editor or spreadsheet by clicking on the 'Results' window and pressing Ctrl-C.

The result log ends with a Results Summary, listing total passes, warnings and failures.

Self-test Failures

Any failures recorded, as a result of the conduct of self-test, should be investigated as described in the "Corrective Maintenance" section (see Page 40).

Load New Configuration As Necessary

Each installation requires its own unique configuration for it to operate correctly with the cameras and monitors etc in use. This configuration is edited and loaded using the “VisiPC (Visilynx 3 Configurator)" sub-program.

Each Visilynx 3 ISU is supplied with a factory default configuration pre-loaded during manufacture. This default configuration can be restored using the “VisiPC (Visilynx 3 Configurator)" sub-program and selecting 'New' on the 'File' menu, and then transferring it to the V3 ISU. This configuration file can also be used as a basis for editing a new configuration tailored to the installation.

Some of the pre-loaded configuration settings are shown in Table 3.

Table 3 Factory Default Single-Unit Matrix Configuration

Parameter	***Settings***	***Notes***
Camera Inputs	32	
Monitor Outputs	16	8 on rear panel and another 8 if optional Quad Cards fitted
Comms Channels	13	1-4 and 9-10 on rear panel, 12-13 on option card connectors (other channels not used)
Internal Quads	2	To enable internal option cards
Telemetry Cards	2	32 D-type channels (C-type disabled by default)
Video Loss Alarms	32	Alarm numbers 1-32
External Alarm Inputs	128	Alarm numbers 33-160
Serial Port 1	Communication Channel 1 set to Network Control Input	9600 Baud, 8 data bits, no parity, 1 stop bit
PCCON Serial Port 2	Communication Channel 2 set to PCCON2/3 Remote Control	9600 Baud, 8 data bits, even parity, 1 stop bit
Serial Port 3	Communication Channel 3 set to Data Log	9600 Baud, 8 data bits, no parity, 1 stop bit
Serial Port 4	Communication Channel 4 set to Debug	9600 Baud, 8 data bits, no parity, 1 stop bit
Test / Config Serial Port 9	Communication Channel 9 set to V3 Remote Control	38400 Baud, 8 data bits, no parity, 1 stop bit
Keyboard Serial Port 10	Communication Channel 10 set to Keyboard Input	9600 Baud, 8 data bits, even parity, 1 stop bit

To use two V3i units together as an expanded 64x16 matrix (see Page 10), you can start your new configuration file by loading the default configuration and changing it as follows:

Table 4 Changes for Expanded Matrix Configuration

Parameter	***Settings***	***Notes***
Camera Inputs	64	1-32 on Master rear panel and 33-64 on Slave rear panel
Monitor Outputs	16	1-8 on Master rear panel and 9-16 on Slave rear panel
Comms Channels	21	1-4 and 9-10 on Master rear panel, 12-13 on Master option card connectors, 16-19 on Slave rear panel, 20-21 on Slave option card connectors (other channels not used)
Internal Quads	4	To enable internal option cards
Telemetry Cards	4	64 D-type channels (C-type disabled by default)
Video Loss Alarms	64	Alarm numbers 1-32 from Master camera inputs, and 33-64 from Slave camera inputs
External Alarm Inputs	256	Alarm numbers 65-192 from Master alarm inputs, and 193-320 from Slave alarm inputs

For instructions on loading and editing configuration files, refer to the VisiPC Software User Manual (see Page 7).

Load Asian Display Font Data - If Necessary

If the Visilynx 3i units are being operated in an Asian country, the combined European and Asian display font data needs to be installed using VisiPC, as only European display font data is installed during manufacture. To do this:

1. Run the VisiPC software.
2. Select the “VisiPC (Visilynx 3 Configurator)” sub-program, as detailed in the VisiPC Software User Manual (see Page 7).
3. On the menu bar select ‘Transfer’, then the ‘Software’ option and then select ‘Ok’.
4. Select the “SW251-2.x.hex” file from the CD and press the **Open** button.
   Note: This takes several minutes to transfer to the unit.

If two Visilynx 3i units are being operated as an expanded matrix, the display font data needs to be transferred to both the master and the slave units.

To transfer the Asian font to the master unit:

1. Run the VisiPC software with the PC COM port connected to the Master unit 'Test/Config' port.
2. Select the “VisiPC (Visilynx 3 Configurator)” sub-program, as detailed in the VisiPC Software User Manual (see Page 7).
3. On the menu bar select ‘Transfer’, then the ‘Software’ option and then select ‘Ok’.
4. Select the “SW251-2.x.hex” file from the CD and press the **Open** button.
   Note: This takes several minutes to transfer to the unit.

To transfer the Asian font to the slave unit:

1. Run the VisiPC software with the PC COM port connected to the Slave unit 'Test/Config' port.
2. Select the “VisiPC (Visilynx 3 Configurator)” sub-program, as detailed in the VisiPC Software User Manual (see Page 7).
3. On the menu bar select ‘Transfer’, then the ‘Software’ option and the select ‘Ok’.
4. Select the “SW251-2.x.hex” file from the CD and press the **Open** button.
   Note: This takes several minutes to transfer to the unit.

System Integration

Connecting Keyboards

1. A total of 16 keyboards can be connected to the Keyboard serial port of a Visilynx 3 Integrated System Unit, using a single RS-485 cable 'daisy-chained' between multiple keyboards.
2. Keyboard power for up to 2 keyboards is drawn from the Visilynx 3 ISU. For more than 2 keyboards, a local 12V DC power supply must be used for each keyboard.

IMPORTANT – DO NOT CONNECT A KEYBOARD TO A DC POWER SUPPLY AS WELL AS WIRING TO THE ISU 12V KEYBOARD CONNECTOR SUPPLY, OR DAMAGE MAY OCCUR.

3. RS-485 cable wiring is as follows. Note that the cable screen is grounded at the ISU connector shell, and is only linked to the next cable screen at each keyboard connector.

Table 5 RS-485 Keyboard Cable Wiring

ISU Keyboard Port	Cable	Keyboard 1 to 2 RS-422/485 ports	Cable	Keyboard 3 to16 RS-422/485 ports
Shell	Screen	Not connected	Screen	Not connected
Pin 1 (+12V)	Twisted pair	Pin 1 (+12V)		Not connected
Pin 6 (0V)		Pin 6 (0V)		Not connected
Pin 2 (+12V)	Twisted pair	Pin 2 (+12V)		Not connected
Pin 7 (0V)		Pin 7 (0V)		Not connected
Pin 5 (data -)	Twisted pair	Pin 5 (data -)	Twisted pair	Pin 5 (data -)
Pin 9 (data +)		Pin 9 (data +)		Pin 9 (data +)

4. In cases where a keyboard must be connected via a fibre link, or through some other device where the short (less than 3ms) line turnaround requirement of the Molynx protocol is a problem, a single keyboard can be connected using an RS-422 cable as follows. (The +12V and 0V connections are not required if the keyboard has its own DC power supply.)

Table 6 RS-422 Keyboard Cable Wiring

ISU Keyboard Port	Cable	Keyboard 1 RS-422/485 port
Shell	Screen	Not connected
Pin 1 (+12V)	Twisted pair	Pin 1 (+12V)
Pin 6 (0V)		Pin 6 (0V)
Pin 2 (+12V)	Twisted pair	Pin 2 (+12V)
Pin 7 (0V)		Pin 7 (0V)
Pin 4 (data T-)	Twisted pair	Pin 4 (data R-)
Pin 8 (data T+)		Pin 8 (data R+)
Pin 5 (data R-)	Twisted pair	Pin 5 (data T-)
Pin 9 (data R+)		Pin 9 (data T+)

5. For more details of keyboard cabling, refer to the Keyboard User Manual (see Page 7).

Connecting Alarm Inputs

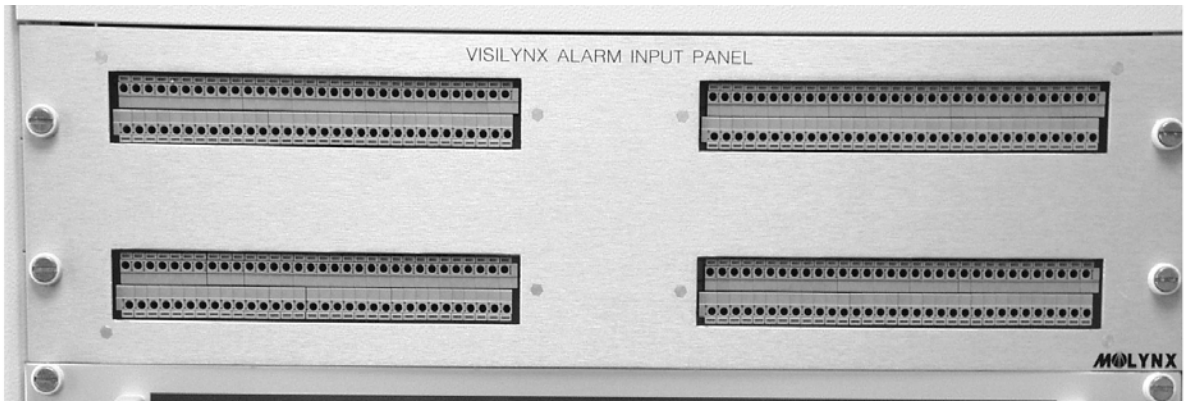
1. A total of 128 Alarm Inputs can be connected to a Visilynx 3 Integrated System Unit, making a total of 256 Alarms Inputs for each expanded V3i Node.
2. Volt-free contacts from external alarm sources can be connected directly to the Alarm Connector on the Rear Panel of the unit (See Figure 15).
3. Pin connections for the Alarm Connector are provided in Table 18. A typical example of alarm connections is:

Typical Alarm Connections Direct to Alarm Connector

PIN 1 to PIN 20	Alarm contact 1	
PIN 2 to PIN 20	Alarm contact 2	
PIN 3 to PIN 20	Alarm contact 3	Similar for alarm contacts 4 - 16
PIN 1 to PIN 21	Alarm contact 17	
PIN 2 to PIN 21	Alarm contact 18	
PIN 3 to PIN 21	Alarm contact 19	Similar for alarm contacts 20 - 32
PIN 1 to PIN 22	Alarm contact 33	
PIN 2 to PIN 22	Alarm contact 34	
PIN 3 to PIN 22	Alarm contact 35	Similar for alarm contacts 36 - 48
PIN 1 to PIN 27	Alarm contact 113	
PIN 2 to PIN 27	Alarm contact 114	
PIN 3 to PIN 27	Alarm contact 115	Similar for alarm contacts 116 - 128

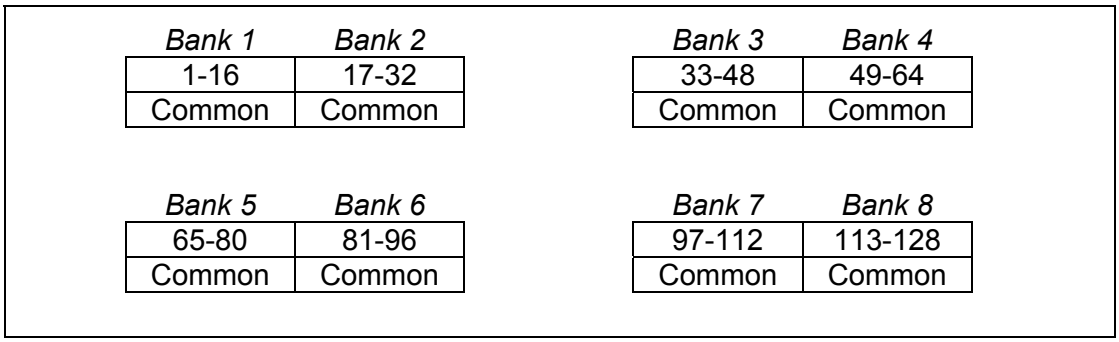
4. For numerous alarms a separate optional Alarm Panel (Bewator Ltd. Part Number PCBV311) is available for ease of installation. The Alarm Panel is designed to fit into a standard 19" rack cabinet. A 37-way to 37-way cable (Bewator Ltd. Part Number VC-ALARM) connects the Alarm Panel to the unit Alarm Connector.

Figure 6 Alarm Panel



5. All individual alarm input connections are made via pairs of terminals (one above the other) on the Alarm Panel, using 1 pair of volt-free wires for each alarm. Each input can be configured using VisiPC as a Normally Open (N/O) or a Normally Closed (N/C) contact. The 128 alarm inputs are provided in 8 separate banks.

Figure 7 Alarm Panel - Terminal Identification



6. Note: If several alarm-input pairs are required to share the same common connection, **it is important to note that separate banks of alarms should not be connected together**. Use separate common connections for each bank.

   e.g. A single common connection for alarm input pairs **1-16** is allowed using any Common terminal in that bank, but using the same common connection for pairs **13-18** is not allowed, as **Bank 1** would short circuit with **Bank 2**, thus causing multiple false alarm indications.

Connecting A VCR/DVR And Multiplexer

1. All 32 camera video inputs can be recorded on two time lapse Video Cassette Recorders (VCRs) via two 16-channel Multiplexers (MPXs), or on two Digital Video Recorders (DVRs) that include built-in 16-channel multiplexing, or on a combination of VCRs and DVRs.
2. This is achieved by connecting the video loop-through outputs to the Multiplexer video inputs. An example interconnection block diagram is shown in Figure 8, on Page 22.
3. If the MPXs and VCR/DVRs are to be controlled from the Visilynx Keyboard or PCCON remote control input, then the Visilynx 3i serial control ports on the rear panel have to be connected to these devices using RS-232 cables, which must observe the pinouts shown in Table 7.
4. Note that Ports 1, 3 and 4 are dual-standard RS-232 and RS-422 ports, while Port 2 is RS-232 only. This accounts for the difference shown in Conductor Function. See Table 18 for full connector pinouts.

Table 7 Example VCR/DVR & MPX RS-232 Serial Control Cable Wiring

Visilynx 3 ISU			***VCR/DVR/MPX***	
Serial Port	***Conductor Number***	***Conductor Function***	***Device Serial Port Conductor***	***Example Device Type***
1 (female D)	2	Transmit Data	MPX1 pin 3	Panasonic WJ-FS616
	3	Receive Data	MPX1 pin 2	
	6	Ground	MPX1 pin 7	
			MPX1 pin 4 link to pin 5	
2 (male D)	2	Receive Data	VCR/DVR1 pin 3	Panasonic AG-6730
	3	Transmit Data	VCR/DVR1 pin 2	
	5	Ground	VCR/DVR1 pin 7	
3 (female D)	2	Transmit Data	VCR/DVR2 pin 3	Dedicated Micros Digital Sprite 2
	3	Receive Data	VCR/DVR2 pin 2	
	6	Ground	VCR/DVR2 pin 7	
			VCR/DVR2 pin 4 link to 5	
4 (female D)	2	Transmit Data	Other device as required, or leave disconnected	
	3	Receive Data		
	6	Ground		

5. A new User Configuration file is required, based on the default configuration file, using the VisiPC Configurator software. The required changes are identified in Table 8.

Table 8 Example Changes to Default Configuration for VCR/DVR & MPX

Screen	***Parameter***	***Value***
Global System Settings	Multiplexers	1
	VCR/DVRs	2
Communications Settings, Channel 1	Function	Multiplexer control output
	MPX	1
	Protocol	Panasonic WJ-FS616 MPX
	Port settings	9600 baud 7/O/1
Communications Settings, Channel 2	Function	VCR/DVR control output
	VCR	1
	Protocol	Panasonic AG-6730 VCR
	Port Settings	9600 7/O/1
Communications Settings, Channel 3	Function	VCR/DVR control output
	VCR	2
	Protocol	Dedicated Micros DS DVR
	Port Settings	9600 baud 8/N/1
Multiplexer Settings, Multiplexer 1	Timeout	5
VCR/DVR Settings, VCR/DVR 1	Timeout	5
VCR/DVR Settings, VCR/DVR 2	Timeout	5

Connecting Multiplexer or DVR Video Outputs to V3i Video Inputs

If required, the multi-screen or spot outputs from the Multiplexer or DVR can be connected to V3i Video Control Input Channels (i.e. camera inputs), for switching to any Video Output Channel (i.e. monitor output).

If this is done, any text in the Multiplexer or DVR video image will probably overlap with text injected on the monitor output.

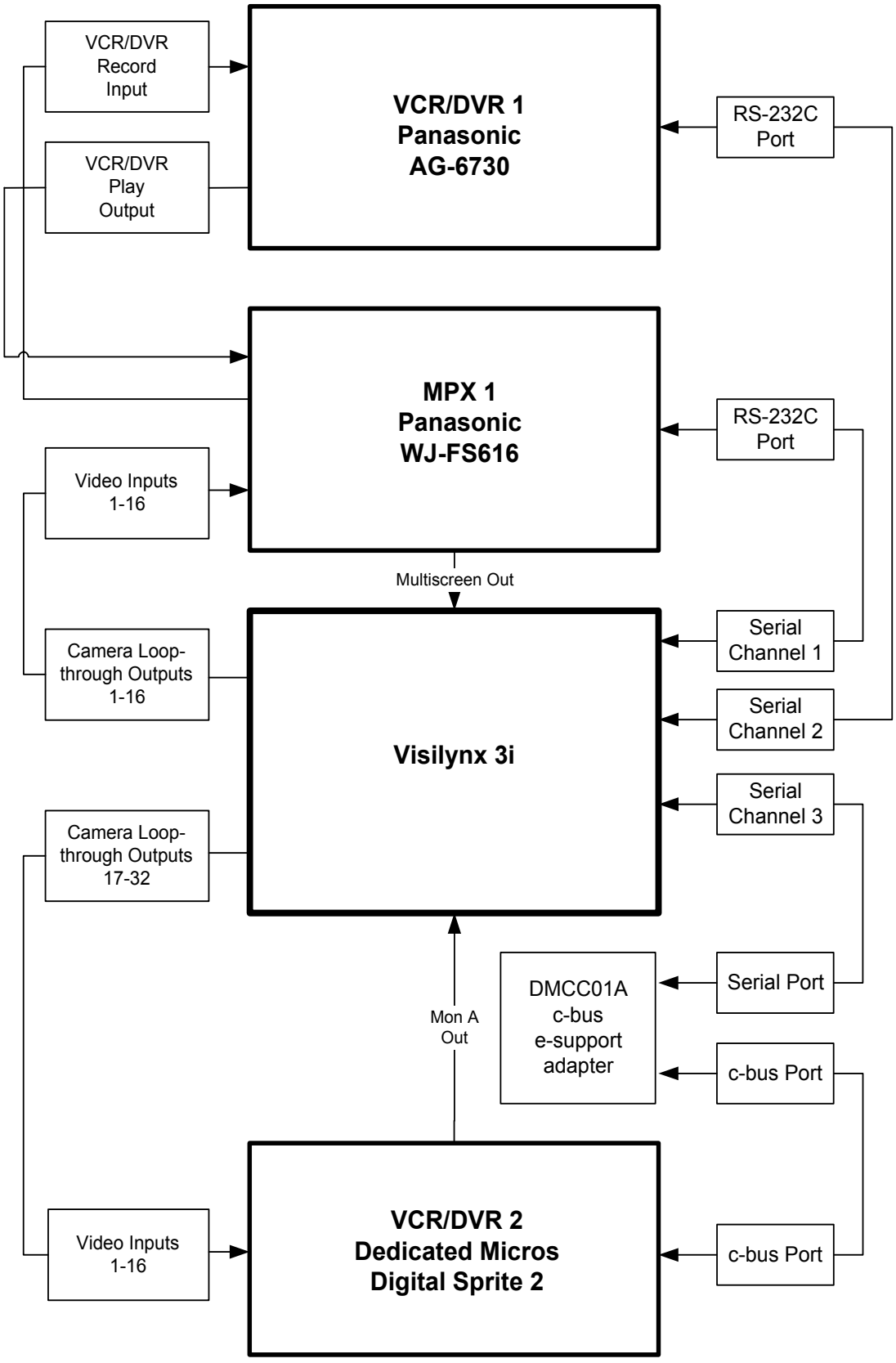
To prevent this, tick the 'Blank All Monitor Text' box on the VisiPC (Visilynx3 Configurator) “Camera Settings” screen for each camera used as a Multiplexer or DVR return input. This blanks all V3i text on any monitor to which these cameras are connected.

Also, any C-type telemetry should be disabled for camera inputs connected to Multiplexers or DVRs, as the telemetry can interfere with Multiplexer or DVR video output.

To disable C-type telemetry, set the ‘C-Type’ value to Off at the VisiPC Visilynx3 Configurator) “Telemetry Cameras” screen, for each port corresponding to the required cameras (e.g. Telemetry card 1's ports 1-16 serve cameras 1-16, Telemetry card 2's ports 17-32 serve cameras 17-32, etc.).

Figure 8 Example VCR/DVR & Multiplexer Connection

Note: DVRs generally do not require multiplexers as VCRs do, and can be connected directly to the V3i loopthrough outputs, as shown. Multiplexer or DVR monitor outputs can also be connected back to V3i camera inputs for routing to monitors, also as shown.



Connecting A Quad Card Output To A Video Input

The rear panel output of one or both quad cards can be connected to a Video Control Input Channel (i.e. camera input), for switching to any Video Output Channel (i.e. monitor output).

Visilynx 3 has a special Keyboard menu for easy control of quad cards connected in this manner. To enable this feature, go to the VisiPC (Visilynx3 Configurator) “Quad Card Settings” screen for each quad card connected to a camera input, and set the ‘Return Camera’ field to the number of the camera input used.

Also, any C-type telemetry should be disabled for camera inputs connected to quad cards, as the telemetry can interfere with quad card video output.

To disable C-type telemetry, following the same procedure described on Page 21 under 'Connecting Multiplexer or DVR Video Outputs to V3i Video Inputs'.

Distributed Video Switching Using A VisiWire Network

Up to 127 nodes, made up of a mixture of Visilynx 3i or Visilynx 3 Modular units, can be connected together to form a distributed video switching matrix using the Bewator Ltd. VisiWire network system. The video connections between the nodes can be made via coaxial cables, or via UTP Ethernet cabling when using optional IP Video Cards (when available).

A keyboard at one node may view and control devices at any other node, specifically cameras, VCR/DVRs and multiplexers. It may also respond to alarms from other nodes.

Setting the Node Address

1. Each node on the network must have a unique address, between 1 and 127. Setting an address outside this range takes the node offline, e.g. for maintenance or modification.
2. The address of a single-unit node is set using the two rotary hexadecimal switches on the rear panel. The left rotary switch sets ‘Sixteens’ and the right switch sets ‘Units’.
3. The address of a dual-unit expanded node is set using the Master unit address switches.
4. To convert between decimal used in VisiPC and hexadecimal for the switches, use Table 9:

Table 9 Converting between Decimal and Hexadecimal Addresses

Decimal	Hex	Decimal	Hex	Decimal	Hex	Decimal	Hex	Decimal	Hex
1	01	27	1B	53	35	79	4F	105	69
2	02	28	1C	54	36	80	50	106	6A
3	03	29	1D	55	37	81	51	107	6B
4	04	30	1E	56	38	82	52	108	6C
5	05	31	1F	57	39	83	53	109	6D
6	06	32	20	58	3A	84	54	110	6E
7	07	33	21	59	3B	85	55	111	6F
8	08	34	22	60	3C	86	56	112	70
9	09	35	23	61	3D	87	57	113	71
10	0A	36	24	62	3E	88	58	114	72
11	0B	37	25	63	3F	89	59	115	73
12	0C	38	26	64	40	90	5A	116	74
13	0D	39	27	65	41	91	5B	117	75
14	0E	40	28	66	42	92	5C	118	76
15	0F	41	29	67	43	93	5D	119	77
16	10	42	2A	68	44	94	5E	120	78
17	11	43	2B	69	45	95	5F	121	79
18	12	44	2C	70	46	96	60	122	7A
19	13	45	2D	71	47	97	61	123	7B
20	14	46	2E	72	48	98	62	124	7C
21	15	47	2F	73	49	99	63	125	7D
22	16	48	30	74	4A	100	64	126	7E
23	17	49	31	75	4B	101	65	127	7F
24	18	50	32	76	4C	102	66		
25	19	51	33	77	4D	103	67		
26	1A	52	34	78	4E	104	68		

Determining How V3i Unit Nodes Can Be Networked

Networked nodes can be connected in two types of layout, which is set in configuration by VisiPC at each node. All nodes must be set to one of these node layout types:

A **Star** layout has one or more remote camera nodes connected to one central control node that is fitted with keyboards and monitors.

A **Multi-hop** layout can be more complex and allows multiple nodes to be daisy-chained. More than one node may be a control node fitted with keyboards and monitors. Video may pass through one or more 'hop nodes' between camera and monitor nodes.

The number of available serial ports determines the number of other nodes that can be connected to a V3 ISU node, because one port is required for each node connection.

Table 10 Serial Ports Available For Networking

Type of node	***Serial data ports not available for networking***	***Total ports available on single ISU***	***Total ports available on dual ISU***
Camera node	Any Test/Config port and a Slave unit Keyboard port.	5	9
Hop node	As above.	5	9
Monitor node	As above. Also, at least one port must be configured as a keyboard or PCCON control port.	4	8

Note: If the RS-232 PCCON serial port is used for networking, it may need an external RS-232 to RS-422 converter in order to drive a long serial line.

Connecting V3i Unit Nodes Using Trunk Connections

1. An example system interconnection block diagram of three nodes is shown in Figure 9, on Page 25. In this simple example, two of the Visilynx 3i units connect to remote cameras and the third unit connects to a local Visilynx 3 Keyboard and a monitor.
2. Note that the number of video inputs from remote nodes that can be simultaneously viewed on monitors at the local node is governed by the number of trunk connections between the nodes.
3. A special Network Data interface cable is required to connect each remote node to the local node. The cable has two male 9 pin D type connectors and should be wired as shown in Table 11. (Note that any of serial port connectors Serial 1, Serial 3 and Serial 4 may be configured for this.)

Table 11 Example Network Data Cable Wiring

Local Node Unit - Serial 1 or Serial 3 Connector	***Pin***	***Connected to***	***Pin***	***Remote Node Units - Serial 1 Connector***
	4		5	
	8	(twisted pair)	9	
	5		4	
	9	(twisted pair)	8	

4. For ease of installation, trunk video and network data cabling always go together.
5. In order use each Visilynx 3i unit in a network, its configuration file has to be set up using the VisiPC Configurator software. As an example, the changes that are required to the VisiPC Configurator software screens for each of the three units shown in Figure 9 are shown in Table 12, Table 13 and Table 14, respectively. Each unit configuration should be saved in a separate new file. Full details of VisiPC operation are detailed in the User Manual (see Page 7).

Figure 9 Example 3 Node System Interconnection Block Diagram

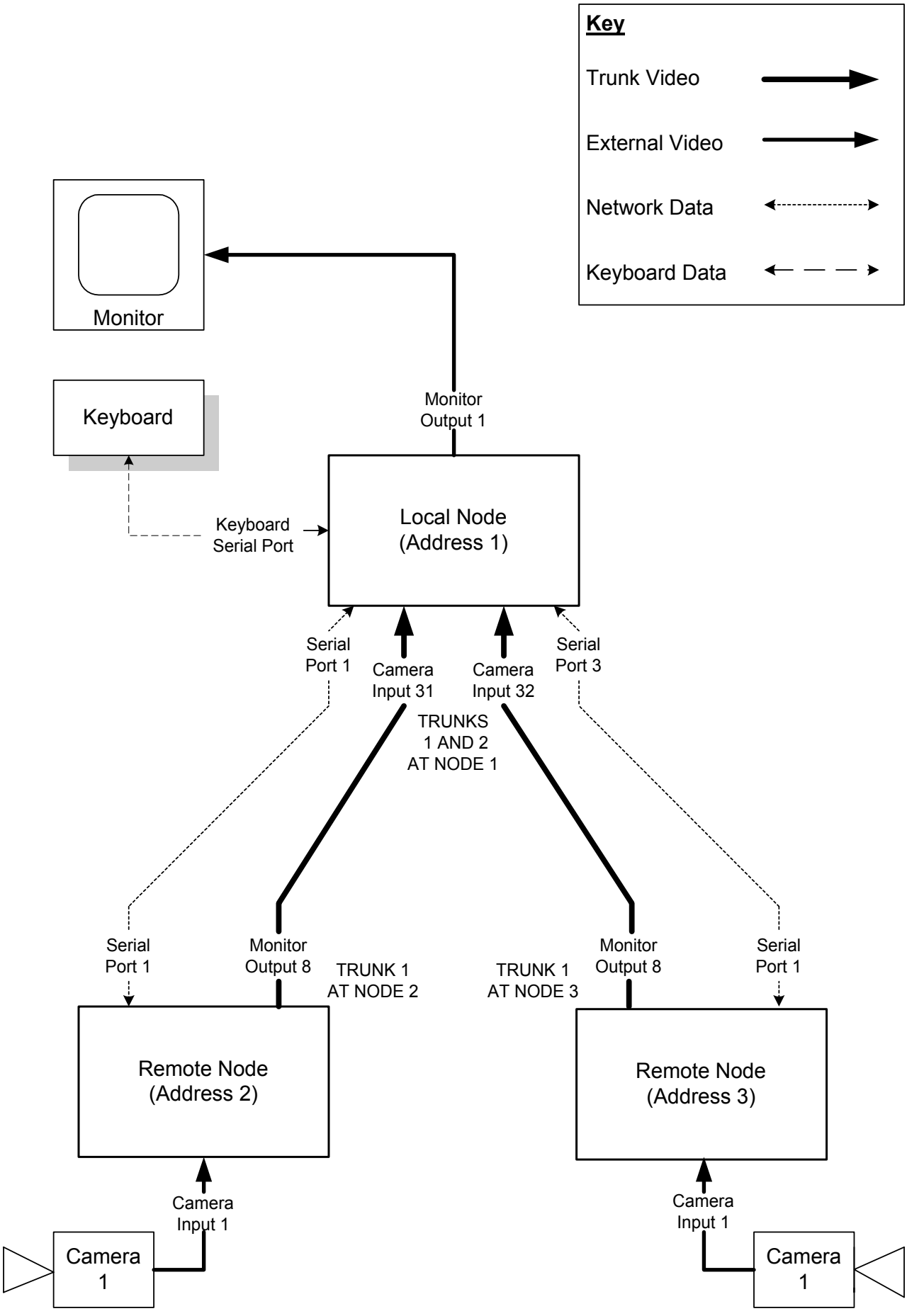


Table 12 Example Changes To Default Configuration For Node 1 Unit

Screen	*Parameter*	*Value*
Global System Settings	Nodes	3
	Node Trunks	2
Communication Settings, Channel 1	Function	Network control input
Communication Settings, Channel 3	Function	Network control input
Node Settings	Name	N1
	Remote Prefix[1]	2
Node Trunk Settings, Node trunk 1	Neighbour Node End, Node	2
	Neighbour Node End, Trunk	1
	Local Node End, Direction	Input
	Local Node End, Camera	31
Node Trunk Settings, Node trunk 2	Neighbour Node End, Node	3
	Neighbour Node End, Trunk	1
	Local Node End, Direction	Input
	Local Node End, Camera	32

Table 13 Example Changes To Default Configuration For Node 2 Unit

Screen	*Parameter*	*Value*
Global System Settings	Nodes	3
	Node Trunks	1
Communication Settings, Channel 1	Function	Network control input
Node Settings	Name	N2
	Remote Prefix[1]	2
Node Trunk Settings, Node trunk 1	Neighbour Node End, Node	1
	Neighbour Node End, Trunk	1
	Local Node End, Direction	Output
	Local Node End, Camera	8

[1] The Remote Prefix is a count that sets the number of letters from the remote node's name that are displayed on monitors in front of the camera name when that node's cameras are switched. For example, if a camera called ROAD from node EAST is switched, a Remote Prefix of 4 will display EAST:ROAD (limited to 16 characters total).

Table 14 Example Changes To Default Configuration For Node 3 Unit

Screen	Parameter	Value
Global System Settings	Nodes	3
	Node Trunks	1
Communication Settings, Channel 1	Function	Network control input
Node Settings	Name	N3
	Remote Prefix	2
Node Trunk Settings, Node trunk 1	Neighbour Node End, Node	1
	Neighbour Node End, Trunk	2
	Local Node End, Direction	Output
	Local Node End, Camera	8

Connecting V3i Unit And V3 Modular Unit Nodes

Connecting V3i units to V3 Modular units is achieved in the same way as connecting V3i units together, using video trunks, data cables and reconfiguring each unit as detailed above.

Configuring Network Alarms

The steps required to configure a remote node to broadcast its alarms over the network are listed in Table 15.

Table 15 Configuring Network Alarms On A Remote Node

Screen	***Parameter***	***Value***
Global System Settings	Nodes	Total nodes on network (no node must have its address switch set to higher than this value)
Alarm Settings, to enable each alarm to be broadcast to other nodes	Exists	Ticked
	Type	Camera
	Camera	0
	Netcast	Ticked
Alarm Keyboard Access Settings, to enable each alarm to be broadcast to other nodes	Any keyboard (does not require a corresponding keyboard to be connected)	Ticked
Keyboard Settings, for the *local node* keyboard with this number to be given access to the alarm(s)	Alarm Monitors	At least one alarm monitor must be non-blank (does not require a corresponding monitor to be connected)

The steps required to configure a local node's keyboard(s) to accept alarms from other nodes over the network are listed in Table 16.

Table 16 Configuring Network Alarms On A Local Node

Screen	***Parameter***	***Value***
Global System Settings	Nodes	Total nodes on network (no node must have its address switch set to higher than this value)
Keyboard Settings, for the keyboard(s) that responds to the remote alarms	Alarm Monitors	At least one alarm monitor must be non-blank (does not require a corresponding monitor to be connected)
Keyboard Alarm Access Settings, for the keyboard(s) that responds to the remote alarms	Alarm number(s) to be handled	Ticked
Keyboard Alarm Node Access Settings, for the keyboard(s) that responds to the remote alarms	Node(s) that originate the remote alarms	Ticked

Visilynx 3 Integrated System Unit Descriptions

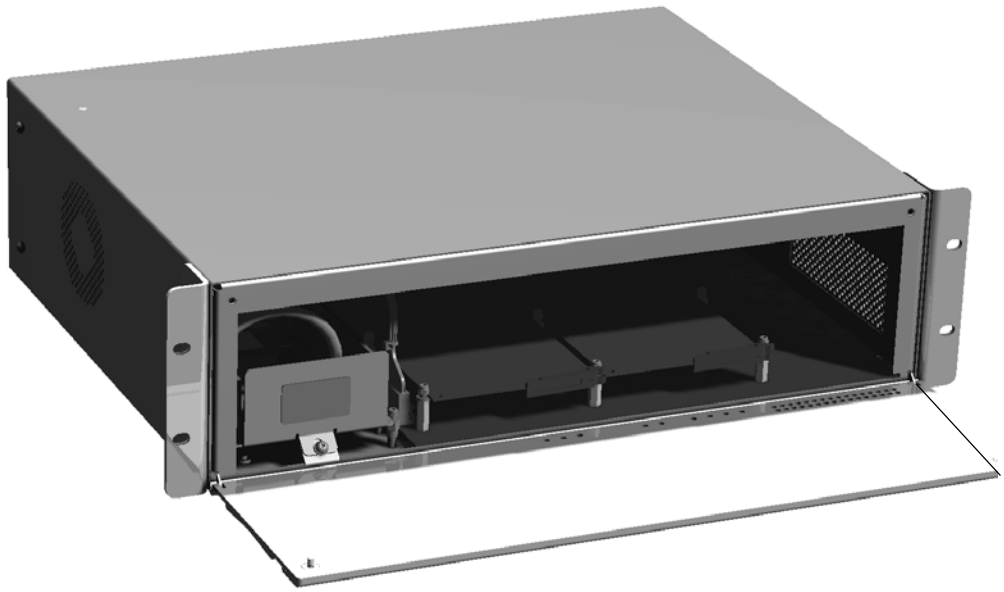
General

The Visilynx 3 ISU is made up of these mechanical and electrical subsystems:

- Enclosure.
- Printed Circuit Boards (PCBs).
- Power Supply Module (V3-PSU).
- Cooling Fan (V3-FAN).
- Front Panel Indicators.
- Rear Panel Connections & Controls.
- Firmware and Software.
- Option Cards.

Enclosure

Figure 10 V3 ISU Enclosure



The Visilynx ISU Enclosure comprises four main parts:

- Base Assembly.
- Cover.
- Front Panel.
- Rack Mount Brackets (optional).

The **Base Assembly** is fabricated from 1.2mm Zintec Sheet with a natural finish. It provides fasteners for mounting the cooling fan and the Control Card. Cut-outs are provided on the Rear

Panel for the mounting the Input/Output Connectors (see Page 34). Details of the connectors are screen printed on the Rear Panel. Two additional cut outs are provided in the sides of the Base Assembly to provide a path for the cooling air. Four black Polyastomer feet are fitted in the base of the assembly.

The **Cover** is fabricated from 1.2mm Zintec Sheet and finished with Polyester Powdercoat in Pantone Reference 293 (Blue). The Cover is fastened to the Base using a slide-in Capture Bracket and 8 M4 screws. Vent holes are provided in the sides and the Cover incorporates an Earth Stud.

The hinged **Front Panel** has 2 cross-head captive screws which are provided for fastening the panel to the Base Assembly. Holes are included in the panel for viewing the Indicators (see Page 32).

The **Rack Mount Brackets** are manufactured from 3.0mm Aluminium Sheet with a brushed finish and are optionally fitted to the Base Assembly for mounting the Unit into a 19" rack enclosure.

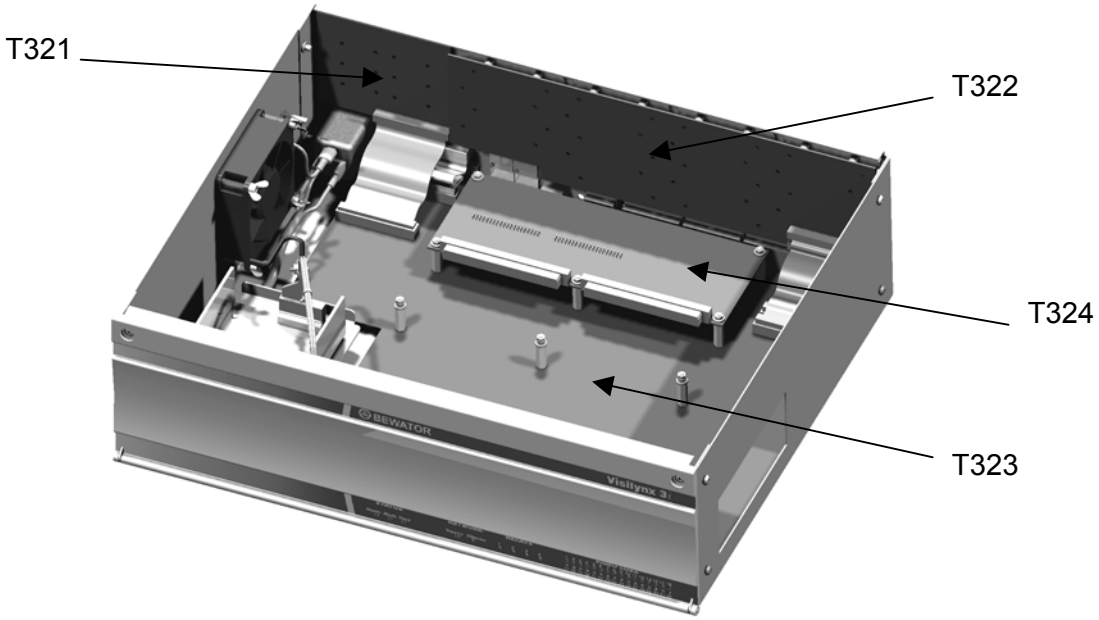
Printed Circuit Boards (PCBs)

The Visilynx 3 ISU contains four Printed Circuit Boards (PCBs) to provide control, configuration, access to the Input/Output connectors and interfacing to the two option cards. The PCBs are:

- Control PCB (T323).
- BNC Connector PCB (T322).
- D Connector PCB (T321).
- Slot Expansion PCB (T324).

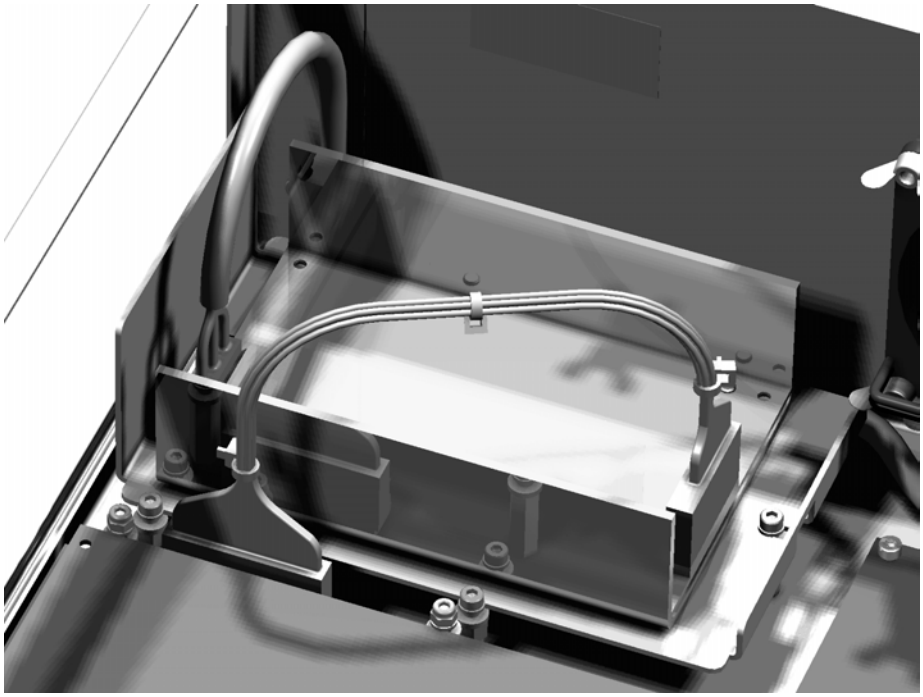
The PCBs are fixed within the Unit Enclosure and are therefore not considered to be user serviceable parts. Figure 11 shows the location of the PCBs within the unit.

Figure 11 Printed Circuit Boards



Power Supply Module (V3-PSU)

Figure 12 Power Supply Module (V3-PSU)



Purpose

- An 80W proprietary universal AC mains input, bipolar DC output switch mode power supply.
- Fixed on a mounting tray (shown above) for ease of fitting/removal.

Removal from Unit

- DISCONNECT THE MAINS INPUT.
- Undo and drop down the Enclosure Front Panel.
- Undo the single screw that secures the stainless steel mounting tray.
- Slide out the tray until the front Molex mains input connector is accessible.
- Release the front Molex connector retaining clip, unplug the connector, and continue to slide out the tray.
- Release the rear Molex output connector retaining clip and unplug the connector as soon as accessible, and then withdraw the tray.

Replacement in Unit

- Replacement is a reversal of removal.

Operational Adjustments

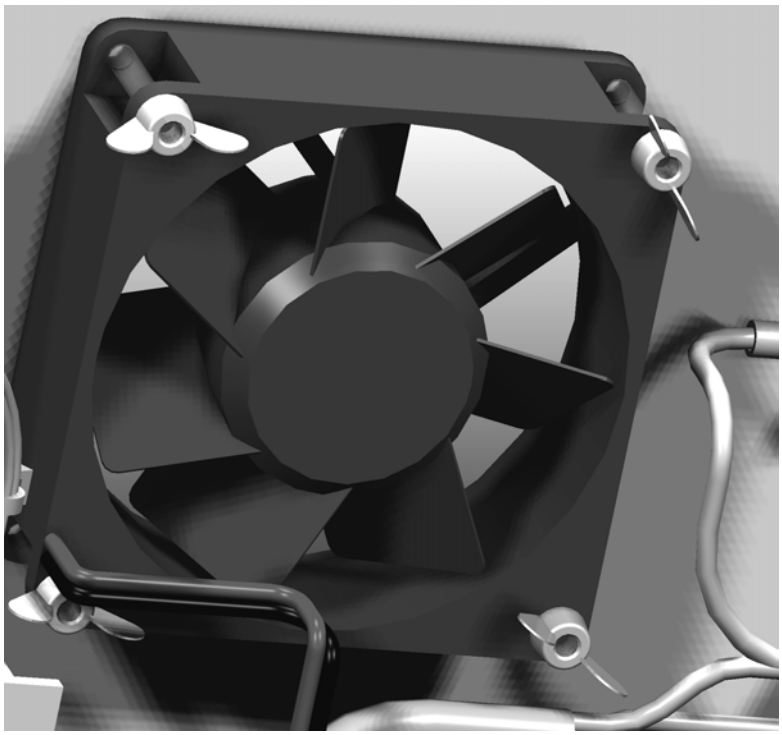
- No adjustments are required.

Specification

- Model: PPS80-22
- Input: 90–264VAC, 47–63Hz, Inrush current 35A (typical).
- Output: +5.2VDC/8A, -5.5VDC/8A.
- Maximum power: 80W.
- Line regulation: +/-0 5%.
- Ripple & Noise: +/- 1% Max.
- Overload and over voltage protection.
- Dimensions (L x W x H):
  127.0 x 81.3 x 38.1 mm
  Overall: 165.0 x 95.5 x 40.0 mm
  including mounting tray.

Cooling Fan (V3-FAN)

Figure 13 Cooling Fan (V3-FAN)



Purpose

- A fixed speed DC fan that forces air through the enclosure intake vent, across the PCBs and power supply, and out of the exhaust vent.

Removal from Unit

- DISCONNECT THE MAINS INPUT.
- Undo and drop down the Enclosure Front Panel.
- Remove the power supply module as described on Page 31.
- Disconnect the fan's flying lead from the main PCB.
- Release and remove the four wing nuts securing the fan to the side of the base assembly and withdraw the fan.

Replacement in Unit

- Replacement is a reversal of removal.

Operational Adjustments

- No adjustments are required.

Specification

- Model: KD1208PTB2
- Input: 12VDC, 2.1W, operated at 5.2V
- Speed at 12V: 2900 RPM
- Air Flow at 12V: 39.0 CFM
- Noise at 12V: 32dBA
- Dimensions: 80 x 80 x 25 mm (L x W x H)

Front Panel Indicators

The Visilynx 3i Unit has 41 single colour LED indicators on the Front Panel.
The LED's are located in 4 distinct groups:

1. Mode (3).
2. Network (2).
3. Relays (4).
4. Video Loss (32).

Figure 14 Front Panel Indicators

Table 17 Front Panel LED Indicator Descriptions

Indicator Group	***Name***	***Description***	***Colour***	***On***	***Flashing***	**Off**
MODE	Master	Master Mode	Blue	Unit is Master	Two Masters are connected	Unit is Slave
	Status	General Status	Red	Hardware failure or configuration error	(a) Slow Flash: self-test failure (b) Fast Flash: waiting for another VisiPC software component	All software components are loaded and self-tests have passed. Main controller software is running
	Slave	Slave Mode	Blue	Unit is Slave	No Master is connected	Unit is Master
NETWORK	VisiWire		Green		Blinks when valid data is received	
	Ethernet		Green	Network connected	Blinks when data is transferred	
RELAYS	1 - 4		Yellow	Relay active		Relay inactive
VIDEO LOSS	1 - 32	Video Loss Channel 1-32	Yellow	No video syncs on channel	Syncs ok, but picture level is low	Video signal ok on channel

Rear Panel Connections & Controls

All external connections to the Visilynx 3 ISU are made via the rear panel. The connections are divided into these distinct groups:

1. Video inputs.
2. Video loop-throughs.
3. Video outputs.
4. D-type telemetry.
5. IP network.
6. Quad outputs.
7. Video & control expansion.
8. Serial ports.
9. Alarm inputs.
10. Relay outputs.
11. Mains input.

Figure 15 Rear Panel Connectors & Controls

Table 18 Rear Panel Connectors

Name	***Description***	***Type***	***Conductor Number***	***Conductor Function***	***Serial Port***
Input 1-32	Video Control Input Channel 1-32	BNC Female	Inner	Signal	
			Outer	Ground	
Loop 1-32	Video Loop-Through Channel 1-32	BNC Female	Inner	Signal	
			Outer	Ground	
Serial 1	General purpose serial port (RS-232/422, reconfigurable)	9 way D-Type Female	1	NC	1 (16)
			2	TX (RS-232)	
			3	RX (RS-232)	
			4	TX- (RS-422)	
			5	RX- (RS-422)	
			6	GND	
			7	GND	
			8	TX+ (RS-422)	
			9	RX+ (RS-422)	
			Shield	GND	
Serial 3	General purpose serial port (RS-232/422, reconfigurable)	9 way D-Type Female	1-9	As Serial 1	3 (18)

Name	***Description***	***Type***	***Conductor Number***	***Conductor Function***	***Serial Port***
Serial 4	General purpose serial port (RS-232/422, reconfigurable)	9 way D-type Female	1-9	As Serial 1	4 (19)
PCCON	Remote Control (RS-232, reconfigurable)	9 way D-Type Male	1	DCD	2 (17)
			2	RX	
			3	TX	
			4	DTR	
			5	GND	
			6	DSR	
			7	RTS	
			8	CTS	
			9	RI	
			Shield	GND	
Test/Config	Test and Configuration Port (RS-232, reconfigurable)	9 way D-Type Female	1	NC	9
			2	TX	
			3	RX	
			4	NC	
			5	GND	
			6	NC	
			7	NC	
			8	NC	
			9	NC	
			Shield	GND	
Keyboard	Keyboard Control Port (RS-422/485)	9 Way D-Type Female	1	+12V	10
			2	+12V	
			3	NC	
			4	TX-	
			5	RX-, DATA_485-	
			6	GND	
			7	GND	
			8	TX+	
			9	RX+, DATA_485+	
			Shield	GND	
Output 1-8	Video Output Channel 1-8	BNC female	Inner	Signal	
			Outer	Ground	
Telemetry 1-32	D-Type Telemetry	Sets of 3 screw terminals	Left	DATA+	
			Centre	DATA-	
			Right	GND	
Relay 1-4	Relay Output 1-4	2 x 12 plug-in screw terminal	Left	NO	
			Centre	COM	
			Right	NC	
Ethernet	IP Network ***Only used by option card, if fitted***	8 way RJ45 Female	1	TX+	
			2	TX-	
			3	RX+	
			4	NC	
			5	NC	
			6	RX-	
			7	NC	
			8	NC	
Quad A-B	Quad Composite Video Out A-B ***Only used by option card, if fitted***	BNC Female	Inner	Signal	
			Outer	Ground	
Quad A-B	Quad S-Video Out A-B ***Only used by option card, if fitted***	4 pin MiniDIN Female	1	GND	
			2	GND	
			3	Y	
			4	C	
Alarms	Alarms In from Alarm Panel	37 way D-Type Female	1	Alm_return0	
			2	Alm_return1	
			3	Alm_return2	
			4	Alm_return3	
			5	Alm_return4	
			6	Alm_return5	
			7	Alm_return6	
			8	Alm_return7	
			9	Alm_return8	

Name	*Description*	*Type*	*Conductor Number*	*Conductor Function*	*Serial Port*
			10	Alm_return9	
			11	Alm_return10	
			12	Alm_return11	
			13	Alm_return12	
			14	Alm_return13	
			15	Alm_return14	
			16	Alm_return15	
			17	NC	
			18	NC	
			19	NC	
			20	Alm_scan0	
			21	Alm_scan1	
			22	Alm_scan2	
			23	Alm_scan3	
			24	Alm_scan4	
			25	Alm_scan5	
			26	Alm_scan6	
			27	Alm_scan7	
			28	NC	
			29	GND	
			30	GND	
			31	GND	
			32	GND	
			33	GND	
			34	GND	
			35	GND	
			36	GND	
			37	GND	
			Shield	GND	
-	Mains Power In	3 way IEC inlet Female	Live	Live	
			Earth	Earth	
			Neutral	Neutral	

Note: Serial port identification for a Slave expansion Unit is identified in parentheses (…)

Table 19 Rear Panel Controls

Name	*Description*	*Type*	*Positions*
Slave / Master	Master/Slave Switch	Slide switch	Left position is Slave
			Right position is Master
Reset	Processor reset	Momentary push	Push and release to reset the processor
Network Address	Address of node on network	Rotary hex	Left switch is hex address Sixteen's
			Right switch is hex address Units

Firmware and Software

Table 20 shows firmware and software compatibility between Visilynx 3i and Visilynx 3 Modular.

Table 20 Firmware and Software

Part Number	***Description***	***How Loaded***	***Version***	***Compatibility***
SW218	Keyboard software	EPROM	5, 6 or later (See below)	V3i and V3 Modular
SW220	Main Controller software	VisiPC	2.05 or later	V3i and V3 Modular
SW221	Flash Boot Loader software	VisiPC	2.04 or later	V3i and V3 Modular
SW224	VisiPC software	Installed on PC	2.01.0006 or later	V3i and V3 Modular
SW249	V3i FPGA Firmware	VisiPC	1.0 or later	V3i Only
SW250	V3i European display font data	VisiPC	1.0 or later	V3i Only
SW251	V3i European and Asian display font data	VisiPC	2.0 or later	V3i Only

Keyboard Compatibility

Visilynx 3i is compatible with earlier Visilynx 3 keyboards showing SW218-5 on their LCD when switched on. However, V3i systems using these keyboards should not enable camera bi-directional telemetry alarms 1190 to 1701 for keyboard access. These alarms cannot then be handled by PCCON either, but VisiPC will show their true states.

(Note: These earlier keyboards cannot correctly determine whether they are supposed to respond to these higher alarm numbers, and may show these alarms on their alarm menus when they are not supposed to, or vice versa.)

To disable these alarms for keyboard access:

1. Start VisiPC in the Visilynx3 Configurator Sub-program as described in the VisiPC Software Manual (see Page 7).
2. Select the “Alarm Settings” menu screen.
3. For each ‘Alarm’ ID 1190 onwards, ensure that ‘None’ is selected in the ‘Type’ drop down menu.
4. Save the configuration and transfer the file to V3i.

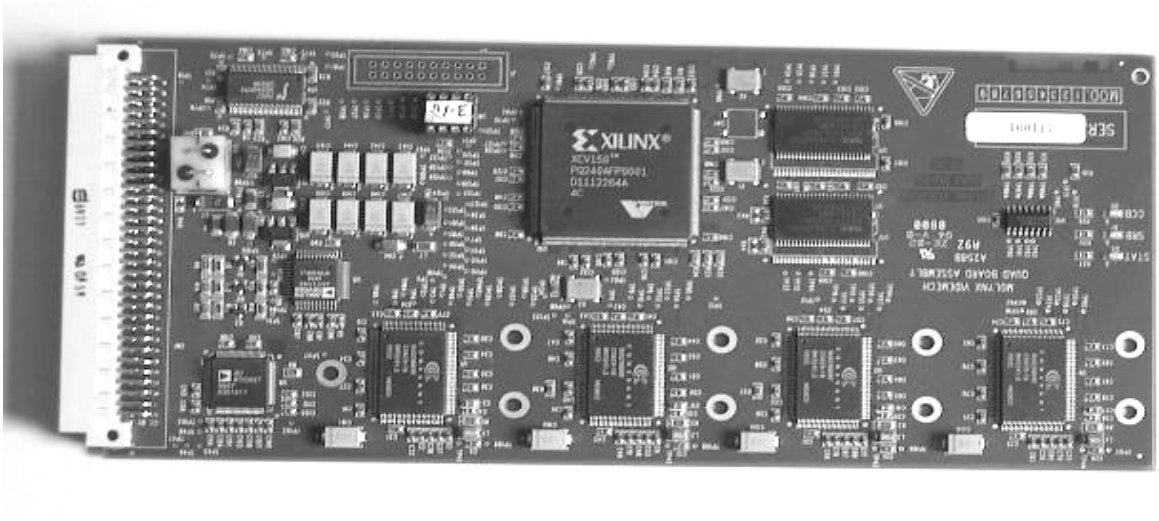
Note: To be able to handle camera bi-directional telemetry alarms 1190 onwards at keyboards and when using PCCON, make sure you are using keyboards showing SW218-6 or higher on their LCD when switched on. Response options other than ‘None’ can then be selected in the ‘Type’ drop down menu at the Visilynx3 Configurator Sub-program “Alarm Settings” menu screen for these ‘Alarm’ IDs.

Option Cards

IMPORTANT - ONLY SERVICE PERSONNEL SHOULD OPEN THE VISILYNX 3i UNIT, AFTER FIRST DISCONNECTING THE MAINS POWER SUPPLY.

Quad Card (V3-QUAD)

Figure 16 Quad Card (V3-QUAD)



Purpose

- Displays 4 high-colour pictures on a single video output in real time, with each segment controllable as a separate monitor number.

Installation in Unit

- One or two cards may be fitted.
- If only one card is fitted, it may occupy either of the internal option card slots.
- The output connectors on the rear panel are in the same position when viewed from above as the cards they serve.
- See Page 9.

Operational Adjustments

- No settings are required for this card.

Specification

- Accepts CCIR colour or monochrome cameras.
- 24 bit colour digital video.
- 50 Fields/Sec display with 768 x 625 pixel resolution (PAL).
- 1 multi-segment output that will display the 4 inputs in quad format in a specified order, or any 1 input as full-screen.
- Each segment can be independently frozen.
- 16 – 4 Multiplexer on the inputs allows the Quad to pick up any 4 of the available monitor outputs.
- Separate Composite and S-Video outputs, available on the rear panel.
- Time base correction of video inputs ensures high quality pictures without the need for external camera synchronisation.
- Each picture segment is frozen when the input source is switched, in both full screen and Quad mode, to prevent picture roll.
- All the video inputs have AGC to preserve clear images independent of differences in input levels.
- Colour text insertion on the monitor output, with texts supplied by the Control Card.
- Dedicated self-test failure alarm per card.

Routine Maintenance

Visilynx 3i Cleaning

The only Routine Maintenance task to be conducted on the Visilynx 3i Unit is cleaning at regular intervals. The regularity of the cleaning task will depend on the environmental conditions.

- Strong abrasive detergents should not be used.
- Wiping over the cover with a soft dry cloth will normally suffice.

Corrective Maintenance

Policy

A suggested policy to be adopted for the unscheduled maintenance of the Visilynx 3 ISU, supplied by Bewator Ltd., is:

- All unscheduled maintenance tasks relate to the removal and refitting of the Line Replaceable Units (LRUs) identified in Table 21.
- Items considered repairable will be returned to the supplier (Bewator Ltd.) for investigation and possible repair or replacement.

Line Replaceable Units (LRUs)

The Line Replaceable Units (LRUs) of the Visilynx 3 ISU are the Power Supply Module, the Cooling Fan, the Quad Card (if fitted) and the mains supply fuse.

Table 21 Visilynx 3 ISU – Line Replaceable Units

Equipment Description	***Part Number***
Power Supply Module	Bewator Ltd. V3-PSU
Cooling Fan	Bewator Ltd. V3-FAN
Quad Card	Bewator Ltd. V3-QUAD
Mains supply fuse	2A anti-surge, 20mm x 5mm, 250V

Fault Indications

There are four ways that faults in the Visilynx 3 ISU will be observed by the user:

- Alarms.
- Error Message received on the Visilynx 3 Keyboard.
- Indicator LEDs.
- The system did not function as expected.

Alarms

Alarms are generated by a variety of sources in the CCTV system. Depending on the installation, they are mostly fed to the Visilynx 3 ISU, where their actions are determined by the software Configuration File. However in larger installations, some alarms (e.g. rack frame power failure) may be wired directly to an integrated Control Room.

If a data log device is fitted and configured (this may be a printer with an RS232 interface connected to one of the rear panel serial ports), all alarm events can be read from the data log printout. These events include operator actions taken in response to alarms, as well as the alarms themselves.

If a printer is not available, the VisiPC software may be used to retrieve the last 2000 alarm and action events, using the **Show Log** button on the Alarm List tab of the Visilynx (Tester & Simulator) sub-program.

A schematic diagram showing Visilynx 3i alarm processing is shown in Figure 17.

Alarms may be individually enabled for handling by the Visilynx 3 keyboards.

Keyboard Error Messages

A number of error messages can appear on the Visilynx 3 Keyboard. The error messages are defined in the Visilynx 3 Keyboard User Manual (see Page 7).

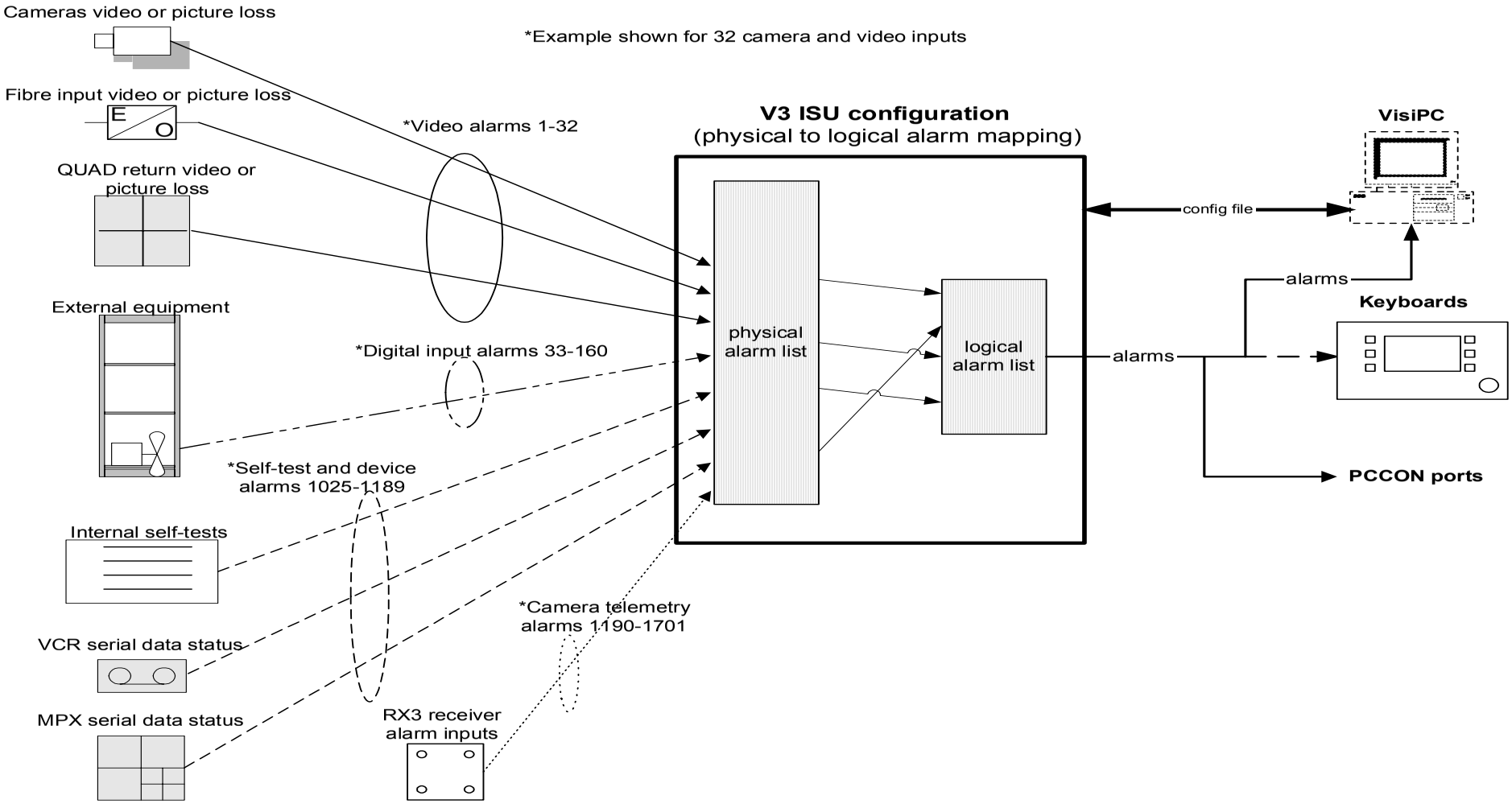
Indicator LEDs

See Page 33.

System Malfunction

The operator may observe that the system did not respond as expected to a command. These observations should be logged as an aid to the system fault finding process.

Figure 17 Visilynx 3i System Alarm Processing



System Fault Finding Process

Because of the number of ways a fault of the Visilynx 3i Colour Video Matrix system can be observed, it is recommended that fault finding should always follow a predetermined logical process.

NOTE: The Visilynx 3 ISU must be powered down before any LRU(s) are replaced.

Initial Checks

The first checks should confirm that the Power Supply Module and the Cooling Fan are operating normally.

Power Supply Failures

A failure of the Power Supply Module –5V supply will result in an Alarm 1028, if enabled by the system configuration. A failure of the +5V supply will result in an inability to start (no front panel LEDs lit) or in unexpected restarts (shown in the Alarm & Action Log).

The power supply voltages are indicated by two LEDs on the front left edge of the main PCB, accessed by dropping down the front panel. If required, the voltages should be measured with a suitable voltmeter at the power supply connector, also on the front left edge of the main PCB. If a voltage error is confirmed, the module should be replaced (see Page 31).

Cooling Fan Failures

A failure of the Cooling Fan will result in over-temperature alarm 1028, if the alarm is enabled (see Table 22 on Page 50). If a malfunction due to over temperature is suspected, the flow of air at the cooling vent holes should be checked. If it is found to have stopped, the fan should be replaced (see Page 32).

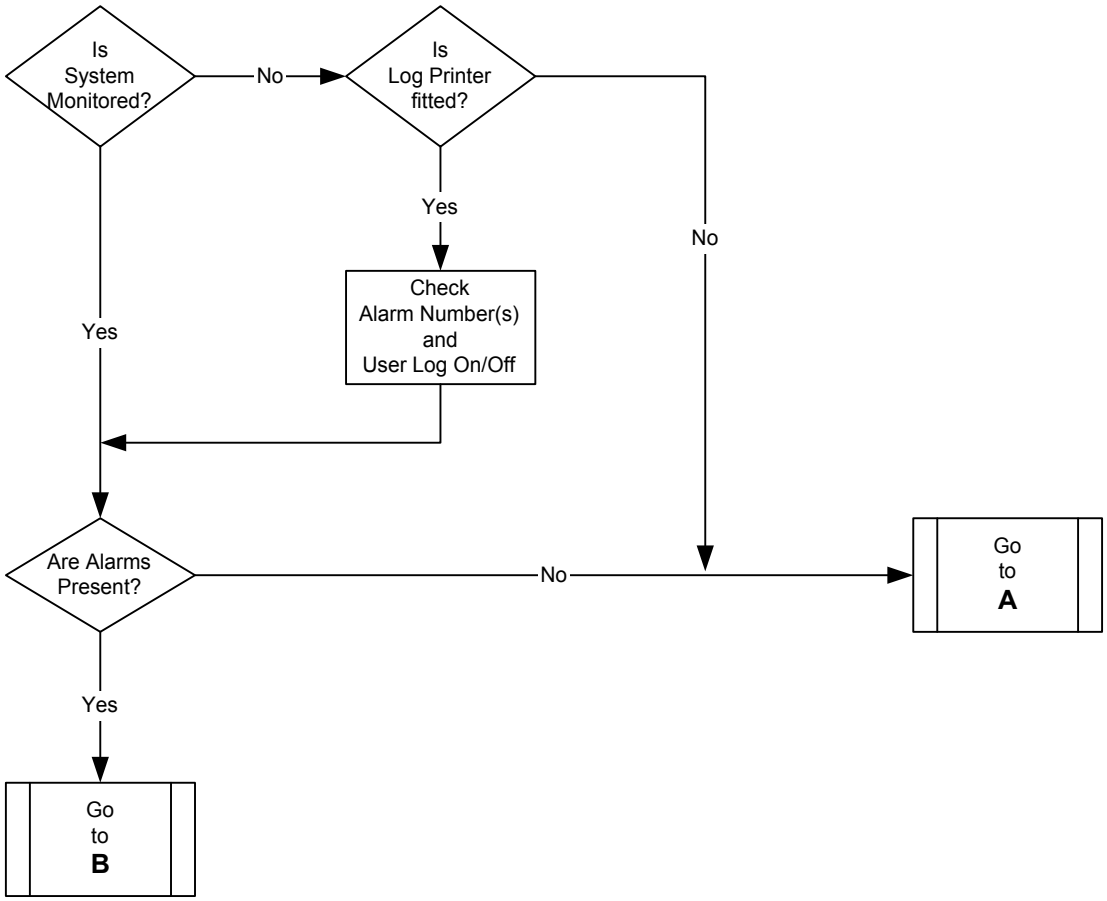
Diagnostic Tool

The main diagnostic tool for the Visilynx 3i system is the VisiPC software, which should be installed on a PC connected to the Visilynx system. A test lead is required to interface the PC communication port to the Test/Config Port (see Page 12). The VisiPC Software is described in the two-part User Manual (see Page 7).

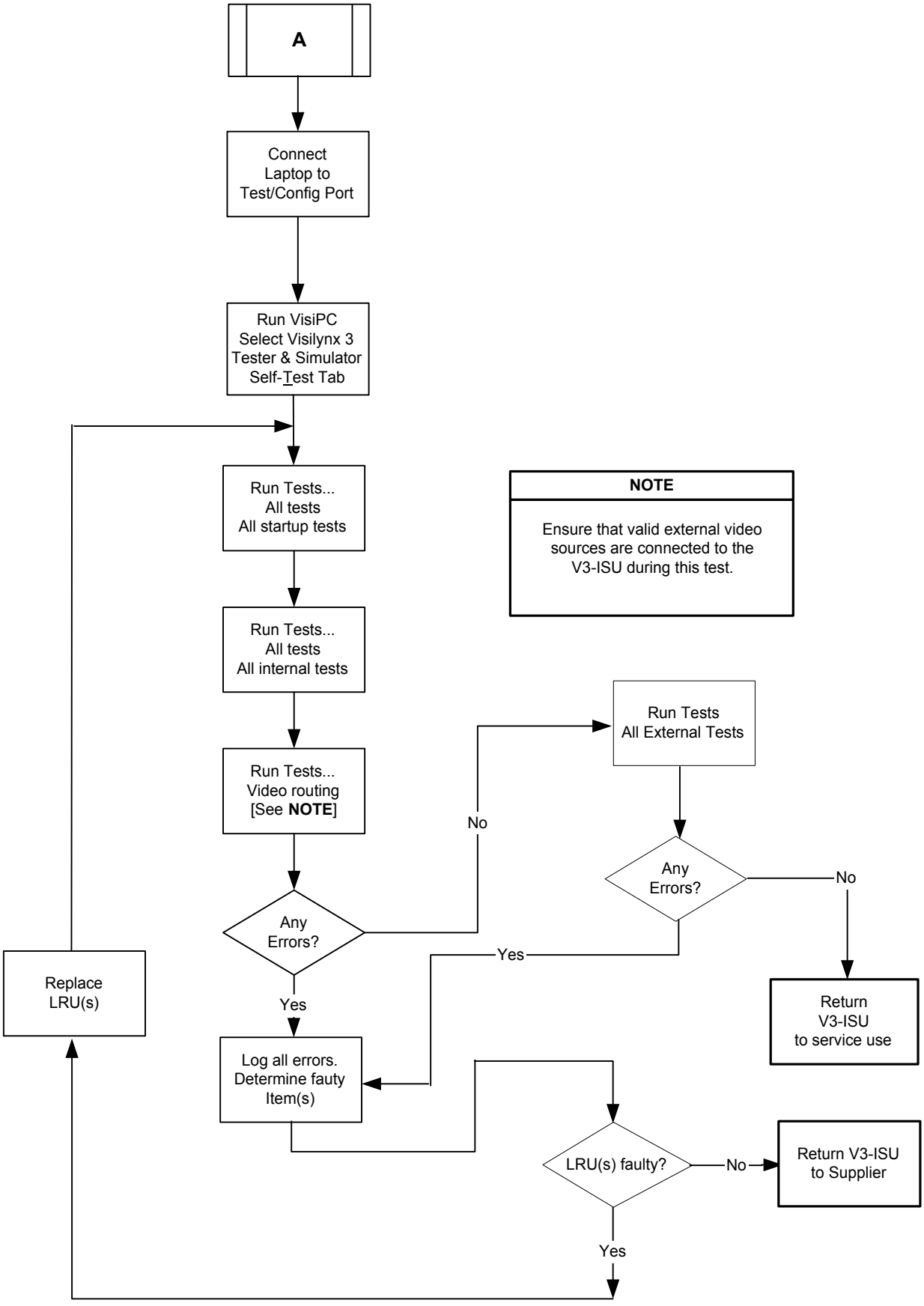
Flow Charts

Fault finding Flow Charts are shown in Figure 18 (6 Pages).

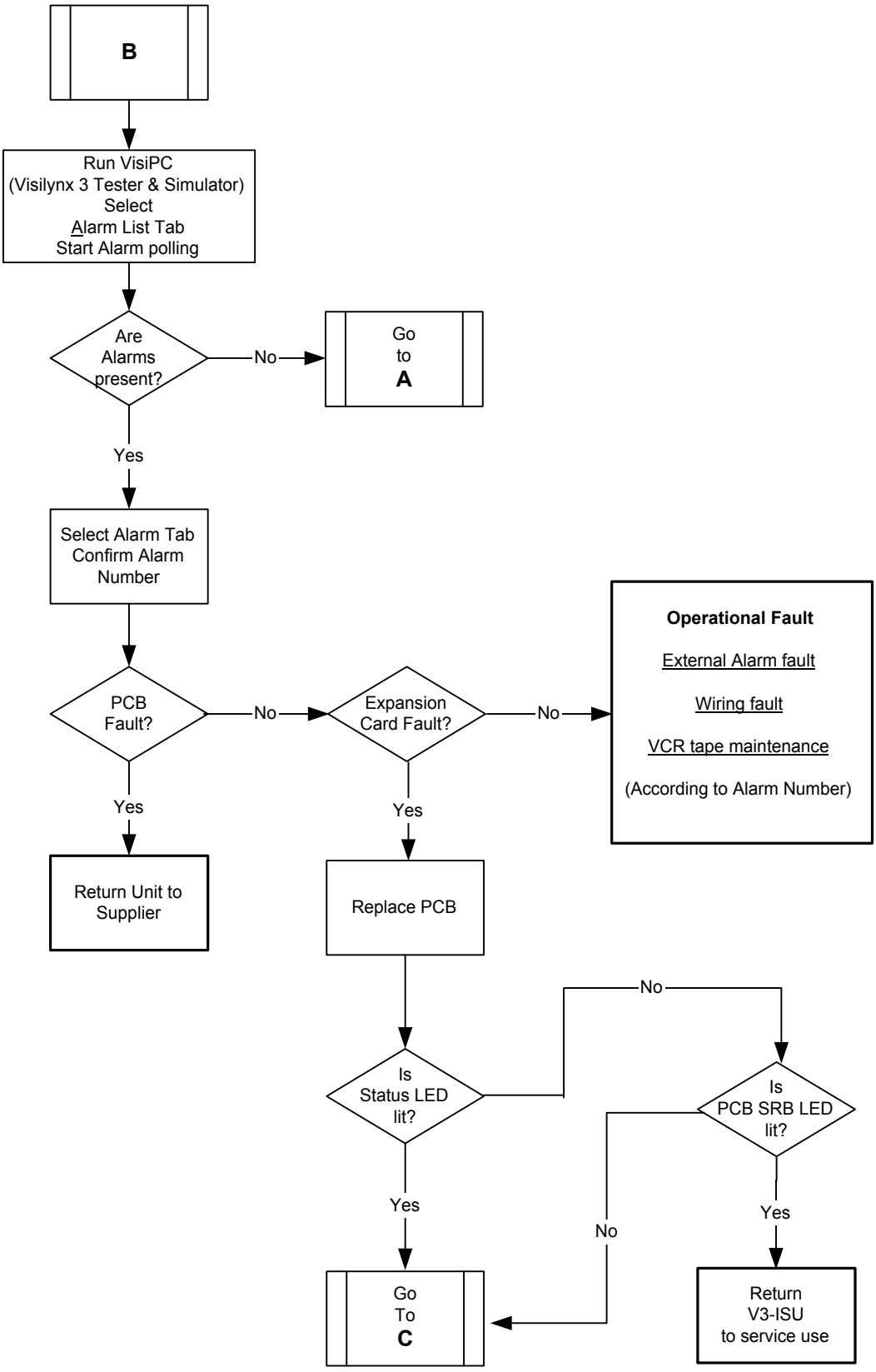
Figure 18 Visilynx 3i System – Fault Finding (1 of 6)



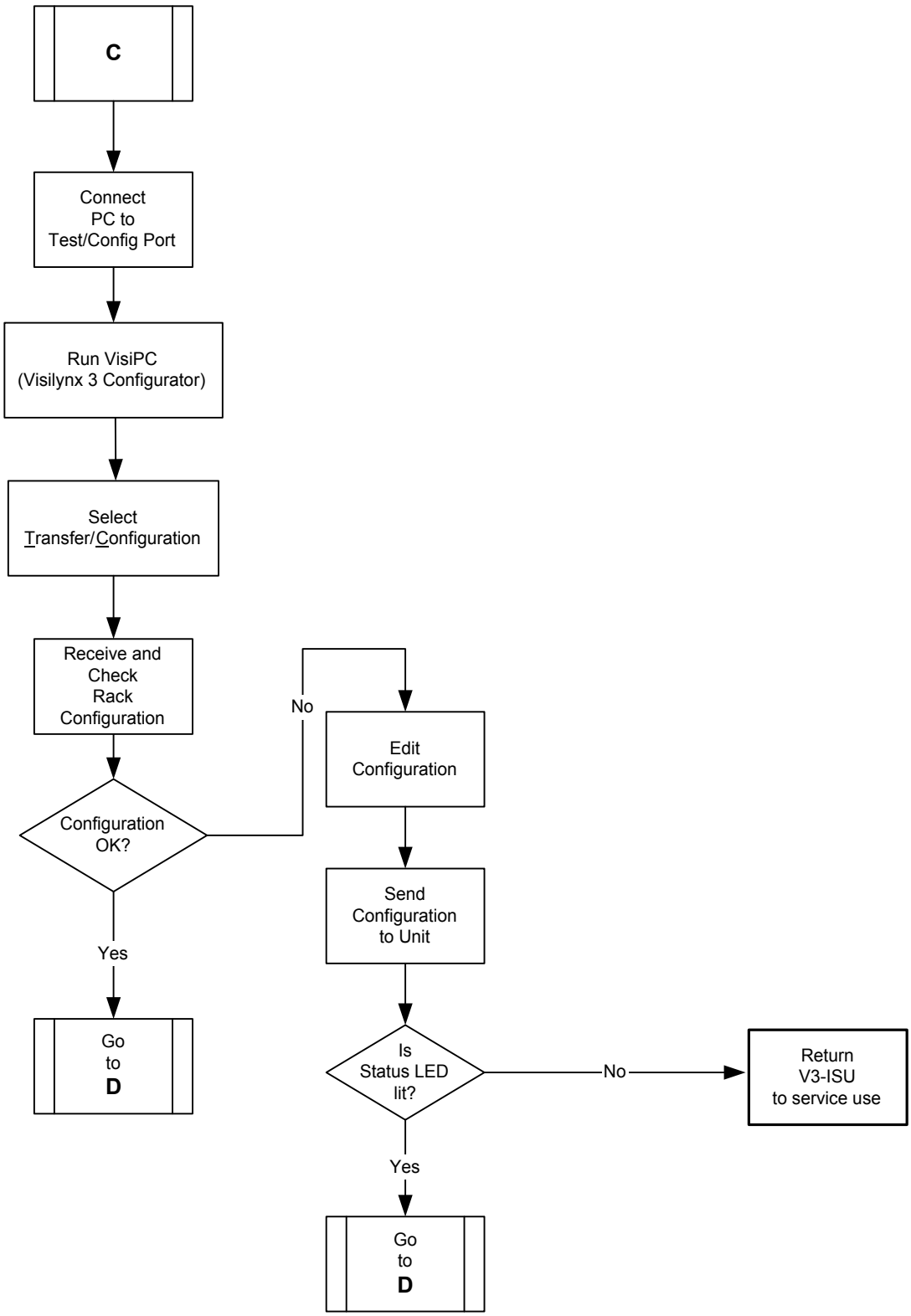
Visilynx 3i System – Fault Finding (2 of 6)



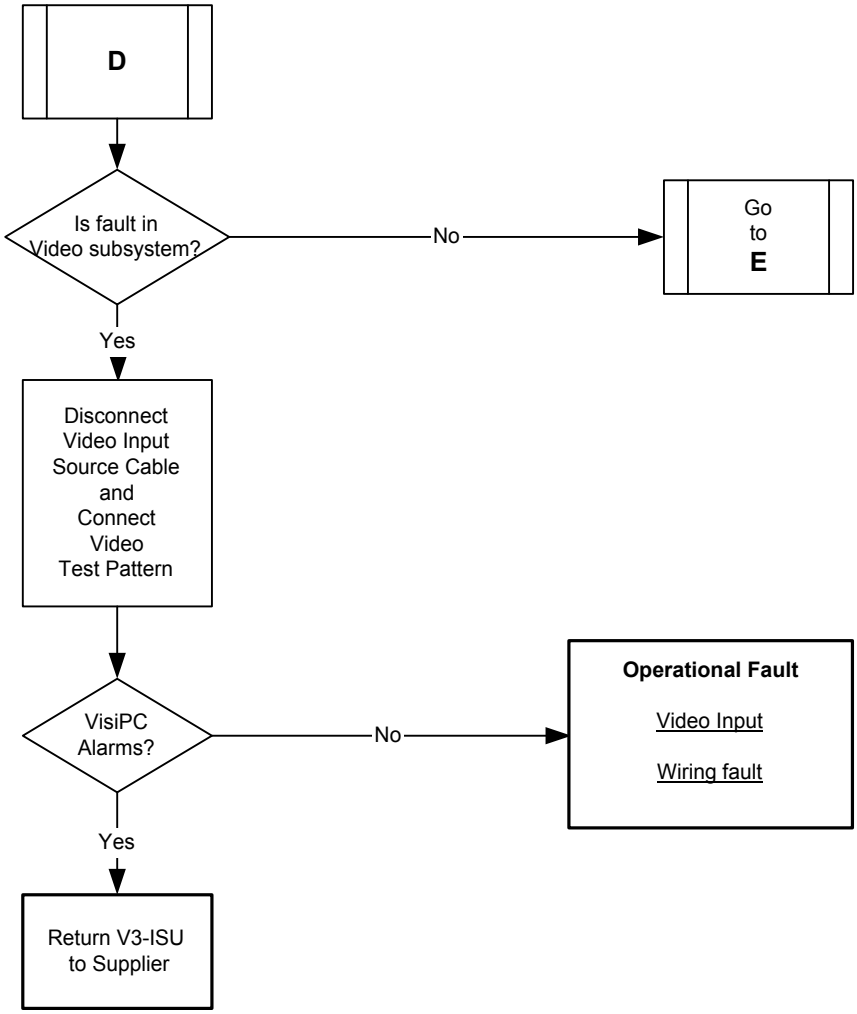
Visilynx 3i System – Fault Finding (3 of 6)



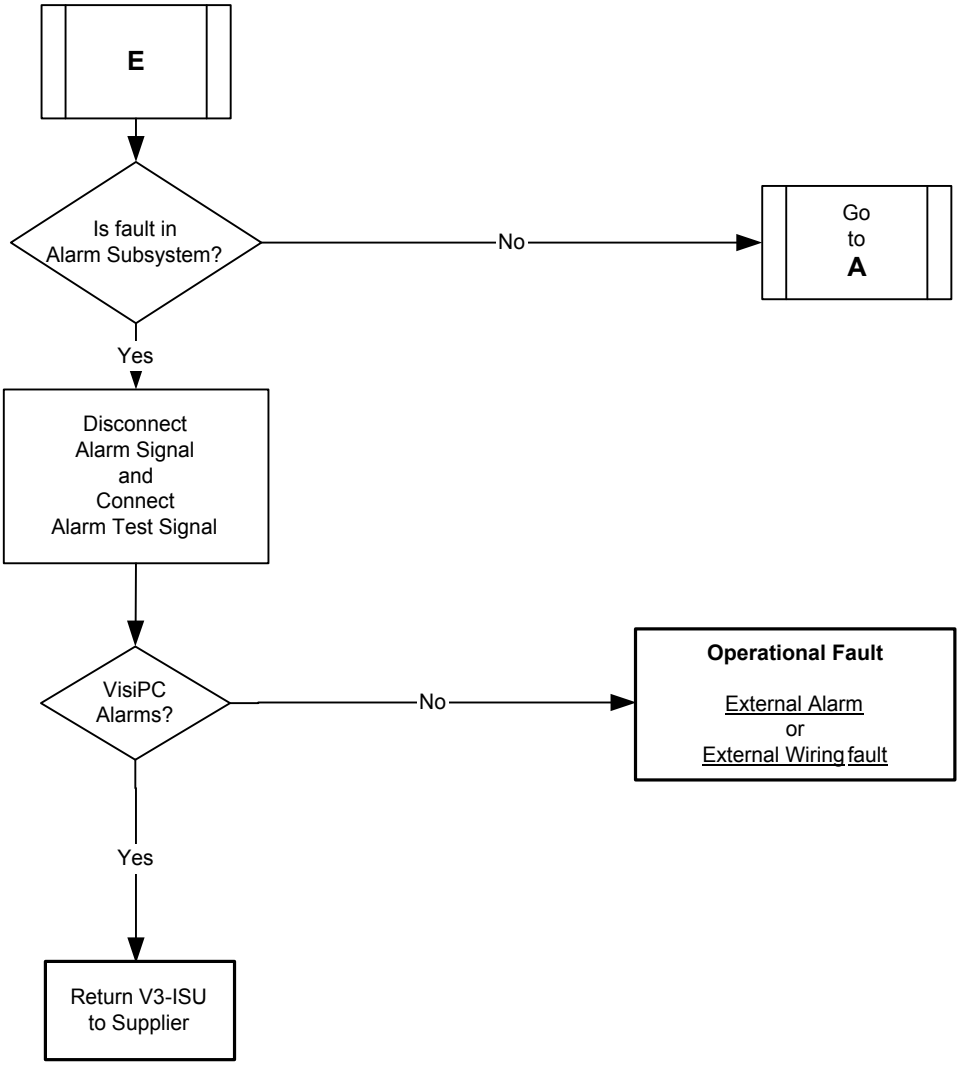
Visilynx 3i System – Fault Finding (4 of 6)



Visilynx 3i System – Fault Finding (5 of 6)



Visilynx 3i System – Fault Finding (6 of 6)



Self-Test Alarms

The Configuration Files that are loaded into the Visilynx 3 ISU, using the VisiPC software, contain descriptions of all alarms that are reported by the unit.

Each Configuration File also includes an optional mapping of the Physical Alarms to the Logical Alarms. By default, the mapping is one-to-one, so logical alarms match their corresponding physical alarms. This is often adequate.

Physical alarms are the alarm numbers determined by wiring (cameras to BNC input connector cards, alarms to alarm input connector cards) and by self-test (see Table 22), all of which can be mapped to logical numbers if a more convenient numbering scheme is required.

It is the logical alarm numbers that are seen in Alarm Lists at VisiPC, PCCON and V3 Keyboards.

NOTE: It should be noted that not all alarms denote failures of Visilynx 3i Units. Some are due to failures of cabling or controlled devices; such as VCR/DVRs and multiplexers.

Table 22 VisiPC Self-test Alarms

Physical Alarm	***Cause***	***Possible Faults***	***Notes***
1025	Matrix failure	Configuration error. Control PCB (T323).	If Option Cards were added or removed since the configuration was last loaded try reloading the configuration. Otherwise, possible PCB fault, return to supplier.
1026	Program corrupt	Control PCB (T323)	FLASH validation failure: try reloading software. Otherwise return to supplier.
1027	Data corrupt	New software just loaded. Control PCB (T323).	Ignore after loading new configuration. Restart Visilynx 3i Unit to check true state. If fault persists, return to supplier.
1028	Internal power supply failure or over-temperature	Power supply or fan	Replace Power Supply Module or Cooling Fan.
1029	I/O failure:	Control PCB (T323). BNC Connector PCB (T322). D Connector PCB (T321).	Return to supplier.
1030-1061	VCR/DVR 1-32 failure	VCR/DVR	Operational, not fault. Data cable disconnected or device switched off.
1062-1093	VCR/DVR 1-32 media missing	VCR/DVR	Operational, not fault. Replace tape or disk caddy.
1094-1125	VCR/DVR 1-32 end of media reached	VCR/DVR	Operational, not fault. Can be avoided by setting VCR/DVR recording mode to “Overwrite at end of media” using VisiPC software.
1126-1157	MPX 1-32 failures	Multiplexer	Possibly operational. Data cable disconnected or device switched off.

Physical Alarm	*Cause*	*Possible Faults*	*Notes*
1158-1189	Quad card 1-32 failure	Quad Card (T258) - if fitted	Card removed or failed since configuration last loaded.
1190	Camera 1 alarm input 1	Alarm i/p activated - not a fault	Operational
1191	Camera 1 alarm input 2	Alarm i/p activated - not a fault	Operational
1192	Camera 1 alarm input 3	Alarm i/p activated - not a fault	Operational
1193	Camera 1 alarm input 4	Alarm i/p activated - not a fault	Operational
1194	Camera 1 alarm input 5	Alarm i/p activated - not a fault	Operational
1195	Camera 1 tamper alarm	RX3 lid removed	Tamper or maintenance
1196	Camera 1 self-test alarm	Over current or over temperature	See RX3 installation manual
1197	Camera 1 offline	Telemetry or RX3 power lost	Fault or power loss
1198-1701	Camera 2-64 alarms		

VisiPC Self-tests

A full list of all the VisiPC Self-tests that can be selected is contained in Table 23. Refer to the VisiPC Software User Manual for full details (see Page 7).

Table 23 Visilynx 3i – VisiPC 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 24	Tests serial ports via loopbacks
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 a hardware fault.			

VisiPC Settings		***Hardware Required***	***Precautions***	***Description***
Test Type	***Test Level***			
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 24	Tests all serial port connections via external loopback connectors
Real-time clock	*Unused*	None		Tests the clock device
SCB registers	*Unused*	None		Tests internal Serial Control Bus communication
Cards	All cards	None		Tests all the following internal card types
	Video input switch with C telemetry	None		Tests internal loopback
	D telemetry card	None		Tests internal loopback
	V3i video output	None		Tests card presence
	Alarm input	None		Tests card presence
	Relay output	None		Tests card presence
	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 26	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

Serial Port 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 24 identifies the wiring requirements for each of the test plug connectors.

Table 24 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	4-6-1-9 ,7-8	1	1
RS-422	9-pin male D	4-5	8-9	4	3
RS-232 TTL	96-pin DIN41612	A15-C15	A16-C16	1	1

To fully test the serial ports that are wired for both RS-232 and RS-422, two separate external loopback tests are required, using different loopback connectors for each test, as shown in Table 25.

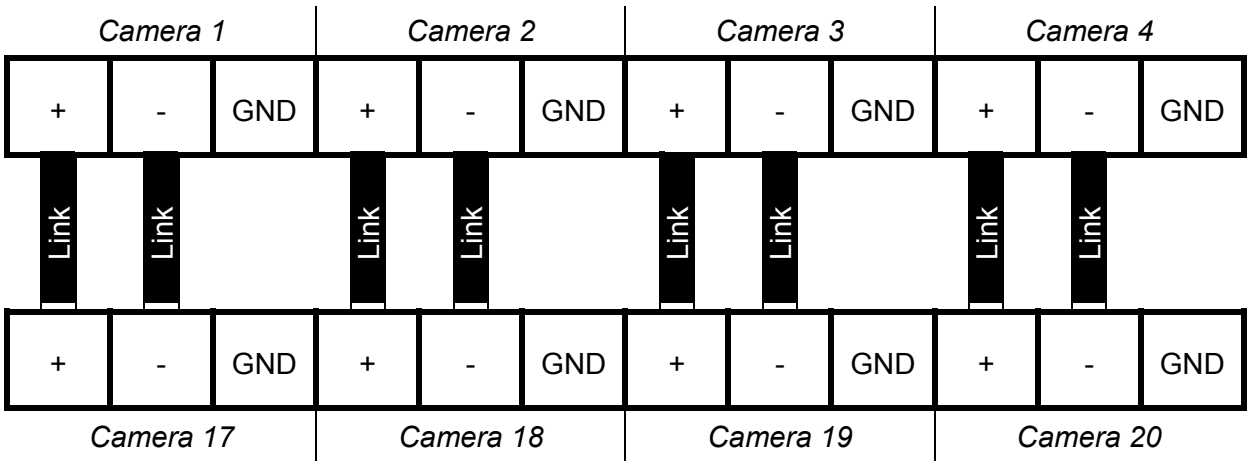
Table 25 Serial Port Loopback Connectors (2)

Unit	***Connector Name***	***Interface***	***Loopback type for first test***	***Loopback type for second test***
Master or standalone	Serial Port 1	RS-232/422	RS-232 Male	RS-422
	PCCON Port 2	RS-232	RS-232 Female	
	Serial Port 3	RS-232/422	RS-232 Male	RS-422
	Serial Port 4	RS-232/422	RS-232 Male	RS-422
	Test/Config Port 9	RS-232	(None - connected to VisiPC)	
	Keyboard Port 10	RS-422/485	RS-422	
	Option card ports 12 & 13	RS-232	RS-232 TTL	
Slave	Serial Port 16	RS-232/422	RS-232 Male	RS-422
	PCCON Port 17	RS-232	RS-232 Female	
	Serial Port 18	RS-232/422	RS-232 Male	RS-422
	Serial Port 19	RS-232/422	RS-232 Male	RS-422
	Option cards ports 20 & 21	RS-232	RS-232 TTL (at either card connector)	

D-type Telemetry External Loopback Connectors

These self-test external loopback tests confirm that the D-type telemetry ports are working correctly. To conduct this test requires the D-type ports for cameras 1-16 to be linked to the ports for cameras 17-32. This is done by linking the two removable screw terminal blocks with pairs of link wires, as shown below for the first block of four cameras. (This pattern should also be repeated for the remaining three blocks.)

Figure 19 Self-test ~ Camera D-type Port Linking



Video Routing

VisiPC includes a powerful test to automatically check the routing of video signals from all the camera inputs to all the monitor outputs, including the expansion connection between units.

Before running this test, all available sources of clean video should be connected to the camera inputs. This test is therefore best conducted once installation is complete.

To run the test, select the VisiPC 'Self-Test' Tab and then select the 'Test Type to 'Video Routing' from the **Run Tests** button and then press the **Send** button.

Note: If no route failures are detected, the self-test log shows the total routes tested. If failures are detected, only the failures are shown.

Self-test Results

A full list of all the possible Self-test results is provided in Table 26. The actual test records provided will depend on the tests that are run following the selection of the Test Type and the Test Level during the VisiPC Self-test Request.

All test record listings include a Results Summary, as the last record.

Table 26 VisiPC Self-test Results

Note that the log only shows the results of those tests that have been carried out since power-up.

Test Description	*Result Type*		*Result Data*
Address Decoder Test Results			
PLD firmware version	Firmware versions		Latest version supported, actual version read
PLD register integrity	Register values		Value written and value read
FLASH Test Results			
FLASH boot loader FLASH CRC	None		None
Controller FLASH CRC	None		None
FPGA/Font FLASH CRC/Checksum	Firmware area Font area		Not Tested; or Checksum Passed; or CRC Passed; or Test Failed
User configuration CRC/checksum	Fixed area Variable area Factory defaults		Not Tested; or Checksum Passed; or CRC Passed; or Test Failed
Power Supply Test Results			
+12 V supply	Voltage read		Voltage
-5V supply	Voltage read		Voltage
VBATT supply	Voltage read		Voltage
SRAM Test Results			
Static RAM size	Memory size detected		Size in kilobytes
Battery-Backed SRAM Test Results			
Command status data validation	None		None
RTC Test Results			
Timer interrupt period	Period measured		Period in ms
RTC Register integrity	Bad registers		Register count and 1st bad value
SCB Subsystem Test Results			
SCB Register integrity	Location of 1st bad register		Register offset from start of SCB
Master/slave connection	None		None
CPU Temperature Test Results			
CPU temperature	Temperature read		Degrees C
Serial Ports Test Results (up to 21 sets of internal loopback results, one per communication channel)			
Serial channel (n) sent (byte count), received (byte count) bytes (internal loopback) [*Data transmission and reception*]	Total bytes received		Channel number (n), Byte count sent, Bytes received.
Serial channel (n) data integrity: (byte count) bytes not matched (internal loopback) [*Data integrity]*	Total bytes not matching		Channel number (n), Byte count.
Serial Ports Test Results (up to 21 sets of external loopback results, one per communication channel			
Data transmission and reception	Total bytes received		Channel number, Byte count sent, Bytes received.
Data integrity	Total bytes not matching		Channel number, Byte count.
Cards Test Exceptions			
Card tests passed	Total cards tested		Total cards

Test Description	***Result Type***		***Result Data***
Card firmware version is incompatible	Card with wrong version		Rack number (always 1), Slot, Version found
Card PCB version is incompatible	Card with wrong version		Rack number (always 1), Slot, Version found
Card LED register not responding	Card with bad register		Rack number (always 1), Slot, Type
Comms card loopback failure	Card that failed		Rack number (always 1), Slot, Channel
Telemetry card loopback failure	Card that failed		Rack number (always 1), Slot, Channel
Card test exception buffer full	None		None
Auto-Detection Test Exceptions			
Auto-detection tests passed	Total rack frames and cards detected		Rack frames (always 1), Total cards
Card type is unknown	Card with wrong type		Rack number (always 1), Slot, Type
Too many cards of one type	Card type details		Type, Number allowed, Number detected
Valid Flash hardware configuration is different from auto-detected one. Flash configuration used.	None		None
Auto-detection test exception buffer full	None		None
Video Routing Test Exceptions			
Video routing tests passed	Total routes tested		Total routes tested
No input video source detected	None		None
Sync not detected at correct output channel	Camera and correct monitor		Camera, Monitor
Sync detected at wrong output channel	Camera and wrong monitor		Camera, Monitor
No sync detected at any output channel	Camera		Camera
Video routing test exception buffer full	None		None
SRB Error Exceptions			
SRB slot status register	Register contents		Rack number (always 1), Slot, Register value
SRB error exception buffer full	None		None
Self-test Results Summary			
Summary: total passes, warnings, failures	Summary of all test results		Passes, Warnings, Failures

Specifications

Parameter	*Description*	*Single ISU*	*Expanded ISU Pair*	*Units*
Video Connections	Input connectors	32	64	BNC
	Input level	0.7 to 1.5		V_{pp}
	Input impedance	75		Ohms
	Loop-through connectors	32	64	BNC
	Output connectors	8	16	BNC
	Output level	As input		V_{pp}
	Output impedance	75		Ohms
Video Performance	Frequency response (-3dB point)	>5		MHz
	Chrominance delay	<15	<18	nsec
	Chrominance gain	>97	>91	%
	K-rating (2T pulse/bar)	<2.2	<4.0	%
	Signal to noise (567 weighted)	>70	>70	dB
	Signal to noise (567 unweighted)	>60	>60	dB
	Crosstalk (at 4.43MHz, input to input)	-36	-27	dB
Video Matrix	Single unit	32 x 8	64 x 16	i/p x o/p
Text Insertion	Text columns per output channel	38		chars.
	Text rows per output channel	14		chars.
Telemetry Channels	C-type channels	32	64	channels
	C-type carrier frequency	11.3		MHz
	D-type channels	32	64	channels
	D-type fixed termination per channel	120		Ohms
Serial Ports	RS-232 control ports	1	2	ports
	Dual standard RS-422/232 control ports	3	6	ports
	RS-422/485 keyboard ports	1		ports
	Keyboards powered from keyboard port	Up to 2		keyboards
	Serial port fixed termination	120		Ohms
Other Connections	Alarm inputs via alarm connector panel	128	256	channels
	Relay outputs	4	8	SPDT
Internal Option Cards	V3-QUAD: quad card with independent BNC o/p	0 to 2	0 to 4	cards
	V3-IP: IP video card (when available)	0 to 1	0 to 2	cards
Power Input	Voltage	100 to 240		VAC
	Frequency	47 to 63		Hz
	Power consumption	100	200	VA
Physical - Unit	Dimensions (width x height x depth)	430 x 132 x 355	430 x 264 355	mm
	Height in rack units	3	6	U
	Extra height of mounting feet	7	14	mm
	Extra width of rack mount brackets	50		mm
	Weight	8.8	17.6	kg
Physical - Package	Dimensions (width x height x depth)	560 x 275 x 550	-	mm
	Total weight	12.7	-	kg
Storage Conditions	Temperature	-10 to 70		°C
Operating Conditions	Temperature	0 to 50		°C
	Humidity (non-condensing)	10 to 90		%
Approval	Emission	EN 55022 (B)		
	Immunity	EN 50082-1:1998		
	Safety	EN 60950:2000, IEC 950		
	Flammability	UL94		

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Notes

The Certificate of Conformity for this product is available at Bewator Ltd. (contact details below).

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Support and additional resources are available to registered users on the Bewator Ltd web site.
Users should register on the Bewator Ltd. web site (www.bewator.co.uk) by selecting the 'INTRANET' option on the Home Page and then pressing the **Join** button.