USER MANUAL

Vision SYSTEM

Vision 3

3U frame

Crystal Vision

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Revision 1	Added note about new security introduced with frame software version V1.5 build 16216 to beginning of page 17.	05/07/18
Revision 2	Updated information on number of images typically required for software upgrade on Page 33. Amended note on password protecting frames and slots on Page 41.	26/02/20

1 Introduction

Vision 3 from Crystal Vision is a 3U, 19” mount rack frame that holds any mixture of up to 20 Vision cards and has powerful redundancy features including dual Ethernet connections, dual analogue reference inputs and dual power supplies. A hinged front panel drops down for easy access to the cards and power supplies, all of which can be hot plugged. The front panel itself has a LCD display that allows full control and status monitoring of the cards and frame.

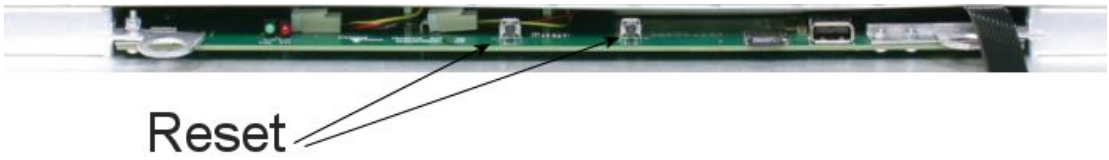
Vision cards are vertically mounted and plug directly into the rear modules and the PCIe bus on the back plane. The rear modules provide the I/O interface and by connecting directly to the rear module much higher I/O video bandwidth is achievable. The cards are held in place when the hinged front panel is shut. To remove a card, firstly lower the front panel by pressing in the two black buttons on the side of the front panel and then using the ring at the bottom of the card pull the card out. The white tab at the top of each card is a label marker only and should not be pulled.

Each card has a green and red LED. The green LED is on when the on-card voltage regulators are working correctly. The red LED is currently undefined.

The frame controller processor (FCP) is mounted horizontally underneath the Vision cards and can be removed, if necessary, by undoing the retaining screws and pulling on the ring pull at the left hand side corner. Care must be taken when re-inserting the FCP to ensure that the

connectors are correctly lined up and not forced. The FCP monitors the status of the frame and cards and contains sufficient memory to back up the configuration of every card.

Holding both reset push buttons down simultaneously will reset the CPU on the FCP if necessary.



There are four cooling fans mounted on the front panel and one in each power supply. Every card has a temperature sensor which controls the speed of the front panel fans to regulate the frame temperature. Normally, the fans run at a fixed speed but if one of the following conditions apply, the fans will enter ‘fault’ mode and run at full speed:

- A card or controller processor temp exceeds 65 degrees (fans will return to normal speed once temp reaches 60 degrees).
- Any one of the front panel fans fail.
- Either of the PSU fans fail.
- Either of the PSUs fail.

The fault conditions above will also activate the alarm relays on the rear of the frame and turn the front panel LED red.

The frame should be operated with the front panel shut to prevent overheating, but the front panel can be opened for short periods to change cards or power supplies etc. To change the fan, the frame should be de-powered as this operation may take too long to prevent the frame from overheating. The frame should continue to work reliably if a single fan only fails but the faulty fan must be replaced as soon as the frame can safely be de-powered for maintenance.

The frame will work reliably with a single PSU only but a faulty PSU should be replaced as soon as possible. The frame need not be de-powered to change a PSU; simply pull out the front IEC mains lead, lift the green locking tab and remove the PSU by pulling on the handle mounted in front of the fan. The front panel should be closed straight afterwards to maintain temperature regulation.

Close up of PSU3-VF power supplies

Each Vision card type can use a variety of rear module types and these are listed in the card's User Manual. A card can be plugged into any position in the frame but the appropriate rear module must be fitted to the same slot position.

Rear of Vision 3 frame showing plug-in rear modules

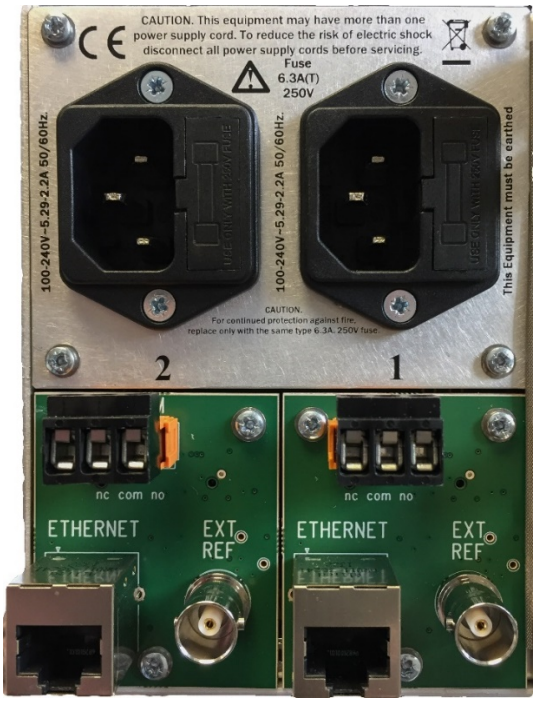
A rear module can have up to seven BNC connectors which can be inputs or outputs depending on the associated card. BNC connectors are normally used for video and unbalanced AES audio. ‘D-Type’ connectors are used for balanced AES and analogue audio. Some rear modules may have optical I/O connectors. The function of each connector of the rear module is explained in the User Manual of every card.

The front panel is fitted as standard with an LCD display and several buttons that can be used to step through several menus to display and control the configuration of each card and the frame itself. The function of each button and the menu tree is explained later in this manual.

Vision 3 front panel close up showing LCD and buttons

Next to the left-hand row of front panel buttons is a USB connector which, although powered, has no current function.

On the rear panel, can be found: mains inputs for both PSUs and fuses; two RJ45 Ethernet ports which can be set to respond to different or the same IP address; two external analogue reference inputs which are fed to all card positions and those cards that require a reference can be programmed to use either one then automatically use the other in case of failure; two identical relay alarm outputs that both change state after a power supply or fan failure.



Rear view showing mains supply, alarm, Ethernet and reference connectors

2 Installation

2.1 General Safety Summary

The following warnings are intended for user guidance and safety.

Ground

This product must be grounded through the grounding conductor of the power cord.

Power cable

Use only power cords that meet the required specification for this product.

Fuses

To avoid fire hazard, use only fuses of the type and rating specified.

Service

These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in this manual unless you are qualified to do so. Refer all servicing to qualified service personnel.

Apart from procedures described in this manual there are no user serviceable parts within the frame. If the frame requires any other servicing it should be returned to the manufacturer or dealer.

On no account should the unit be powered whilst any covers are removed.

Ventilation

The unit must have adequate ventilation. Installation should be in standard 19" racks with cool air circulation available at the front. The lower side and upper rear ventilation grilles must not be obstructed. The front panel should only be open for short periods.

EMC

To comply with EMC regulations, the following guidelines should be observed:

Do not operate this unit for extended periods with the front panel open.

Do not use the frame unless all the rear connector positions are filled, either with Crystal Vision rear modules, or with Crystal Vision blanking plates.

Do not operate the equipment with covers or panels removed.

General

To avoid electric shock do not operate this product in wet or damp conditions.

To avoid injury or fire hazard do not operate this product in an explosive atmosphere.

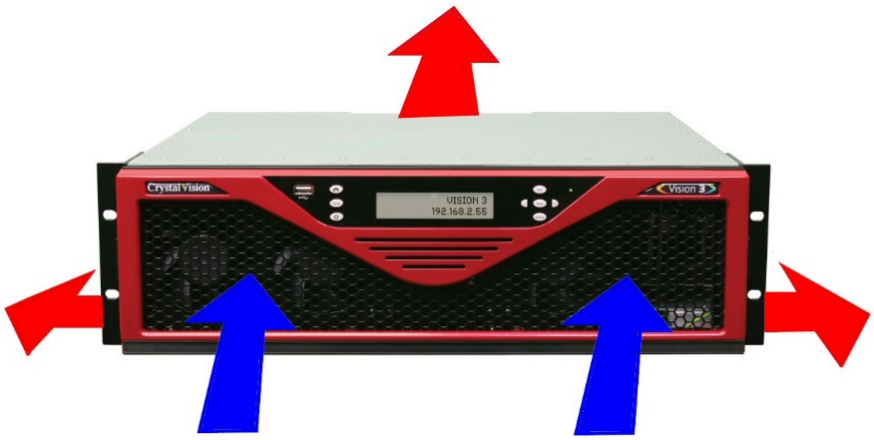
Only use this rack in conjunction with Crystal Vision -VF modules designed for that purpose.

The Vision 3 frame can house the Crystal Vision range of optical modules. Although these modules are not capable of causing personal injury, care should be exercised when exposing unshielded optical signals not to look directly into the light beam.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

2.2 Rack mounting and ventilation

The unit must have adequate ventilation. Install in standard 19" racks with cool air circulation at the front and with both lower side and upper rear ventilation slots unobstructed.



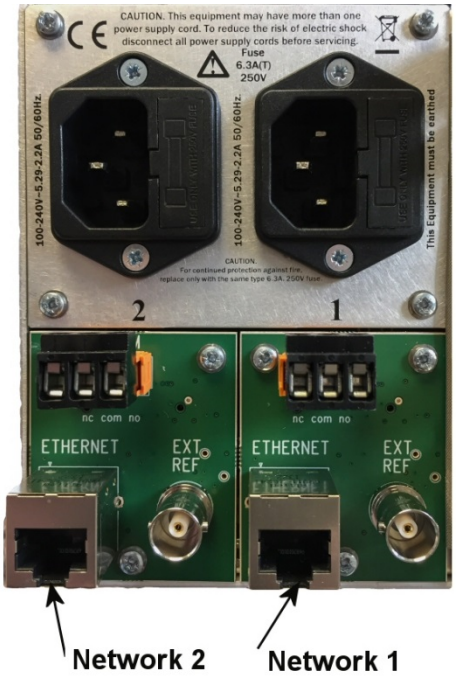
Vision 3 airflow

Install the Vision 3 frame in a standard 19” rack as follows:

- Mount the frame and secure via the rack ears.
- Allow adequate space for the fan intakes at the front and exhaust through the left, right and rear openings.

2.3 Frame connectors

All frame connectors are grouped together behind the PSUs at the rear of the frame. The connectors are in two groups labelled 1 and 2. Group 1 connectors are on the right hand side when viewed from the rear.



Vision 3 rear connectors showing Ethernet interface connectors 1 & 2

The following connectors are available at the rear of the frame:

Connector	Function	Notes
IEC connector (2)	Left hand (viewed from rear) AC mains input.	90-264 Vac, 6.3A (T) fuse under flap.
IEC connector (1)	Right hand (viewed from rear) AC mains input.	90-264 Vac, 6.3A (T) fuse under flap.
Alarm connector (2)	Alarm relay output.	See pin-out tables. Relay contacts 1->2 (nc->com) are open during normal operation and closed during fault or power off condition.
Ethernet connector (2)	Ethernet Interface 2 control using CAT5 cabling.	See pin-out tables.
Ext Ref connector (2)	Analogue reference input 2.	Black & Burst or tri-level syncs.

Alarm connector (1)	Alarm relay output. Same function as left connector.	As Alarm connector (left).
Ethernet connector (1)	Ethernet Interface 1 control using CAT5 cabling.	See pin-out tables.
Ext Ref connector (1)	Analogue reference input 1.	Black-burst or tri-level sync.

Connecting mains cables

To connect the Vision 3 frame to AC mains proceed as follows:

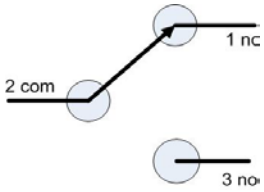
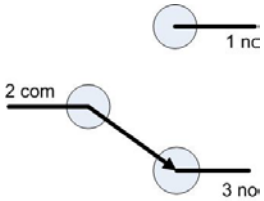
- Power the unit by connecting IEC power cord(s) to the left and right IEC connectors.
- Vision 3 PSUs are fused at 6.3A (T) so mains distribution must be able to safely withstand the maximum fault current before the fuse blows.
- Mains cables should be fitted with an IEC 320 female connector which includes a protective ground connection and meets relevant local safety standards.
- To reduce the risk of electric shock consider using mains distribution with separate service grounds for either PSU.

Note: *The fuse holder is part of the mains inlet. The mains cable must be disconnected before the fuse can be accessed. Replace the fuse only with one of the same type and rating. Refer to the Maintenance section of the Troubleshooting guide for more information.*

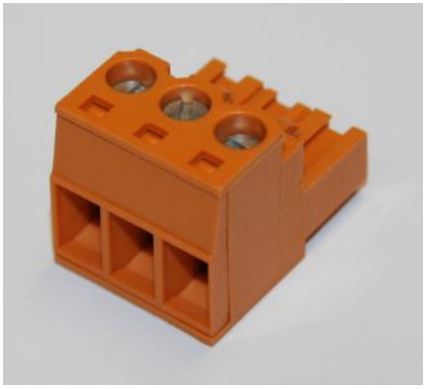
2.4 Connector pin-outs

Alarm relay connections

Vision 3 has a changeover relay to indicate if the frame is in an alarm state caused by a power supply problem or a fan stopping. Both alarm connectors operate together. Note that the alarm relay will be in the fault condition when the frame is de-powered.

Description	Relay condition
Fault or power off	
No fault and power on	

The screw terminal wired mating connector (below) for the alarm connectors are normally supplied with the frame.



RJ45 Ethernet connectors

Pin number	Function
1	TD+
2	TD-
3	RD+
4 and 5	Not used – 75 ohm resistor to GND in frame
6	RD-
7 and 8	Not used – 75 ohm resistor to GND in frame

2.5 Vision 3 PSUs

The Vision 3 frame is supplied with two 460W 12V PSU3-VF modular power supplies. In the event of mains or PSU failure the frame will continue to run on a single PSU but the frame will enter ‘fault’ mode, where the fans will increase to full speed, the front panel LED will turn red and the alarm relays on the rear of the frame will be activated. The green LED on the power supply module may also extinguish.

PSU3-VF

The power supply modules can be removed and re-plugged with mains power applied. To remove a power supply firstly lower the front panel by pressing on the buttons on each edge.

Remove the mains IEC cable from the front of the PSU and then lift the green locking tab on the power supply module to release it – this may require a flat bladed object. Remove the module by pulling on the handle fixed above the fan. Close the front panel as soon as possible to prevent overheating.

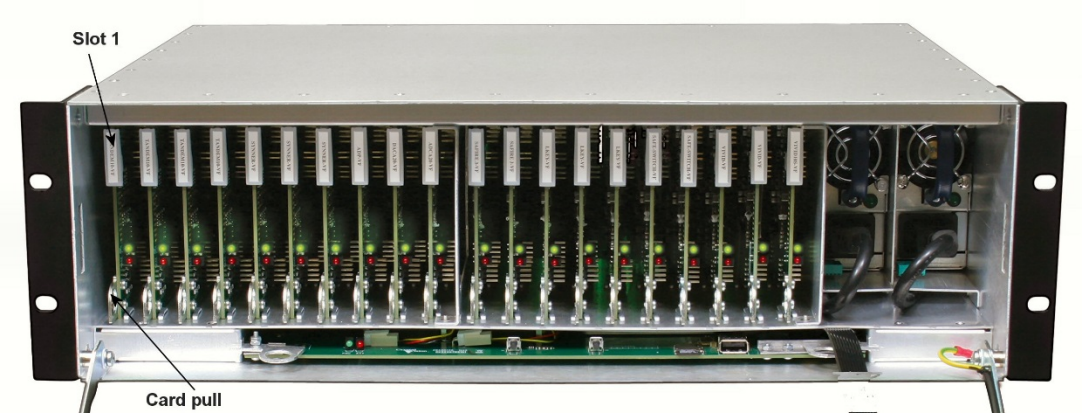
The power supply modules are fitted with an internal fan.

The green LED should normally be on when mains voltage is applied; if off, then the AC mains voltage may be below the minimum turn-on voltage or the main output is disabled and not delivering power.

2.6 Installing Crystal Vision cards

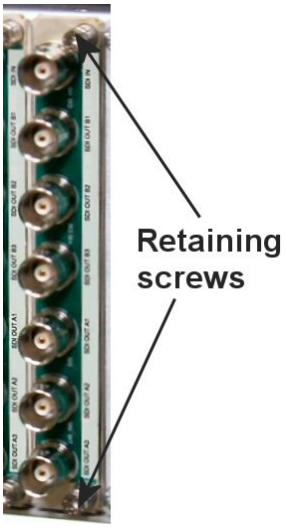
Crystal Vision cards can be inserted and removed with power still applied to the frame. To access the cards firstly unhinge the front panel by pressing on each of the right-hand side buttons and carefully lower the panel. Cards can then be removed by pulling on the ring at the bottom of each card. The white label carrier at the top of each card is not a handle and should not be pulled. When inserting a card excessive force should not be required. The front panel must be shut as soon as possible to prevent overheating and should not be left open for long periods.

When replacing a card ensure that the card is within the guides before pushing home.



There are 20 slot positions for cards that are numbered 1-20 from left to right looking at the front of the frame.

2.7 Fitting rear modules



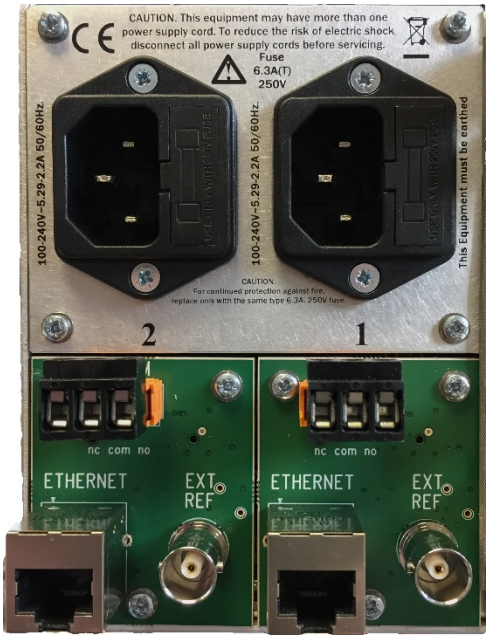
Vision rear modules are fitted into the back of the frame and Vision cards plug directly into them from the front. Each rear module has two frame connectors – one that plugs into the Vision card directly and another into the frame back plane PCB for mechanical location.

The frame need not be de-powered before removing or inserting rear modules. Ensure alignment is correct before inserting.

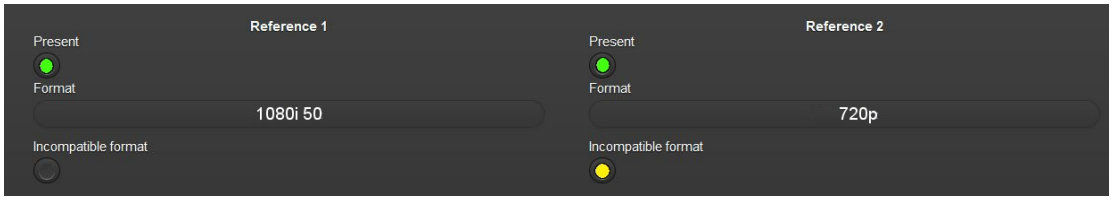
Rear modules are removed by firstly removing the associated card then unscrewing the screws at the top and bottom of the module before carefully pulling out.

2.8 Video References

Vision 3 frames have two analogue video reference inputs on BNC connectors labelled ‘Ext Ref’. The reference signal can be either Black & Burst or tri-level syncs. Looking at the rear of the frame, the left-hand reference connector is Reference 2 and the right hand is Reference 1.



Vision cards can use either reference input and offer options to use the other reference input in case one fails. The following is a grab from a SYNNER-VF VisionWeb GUI showing the reference status:



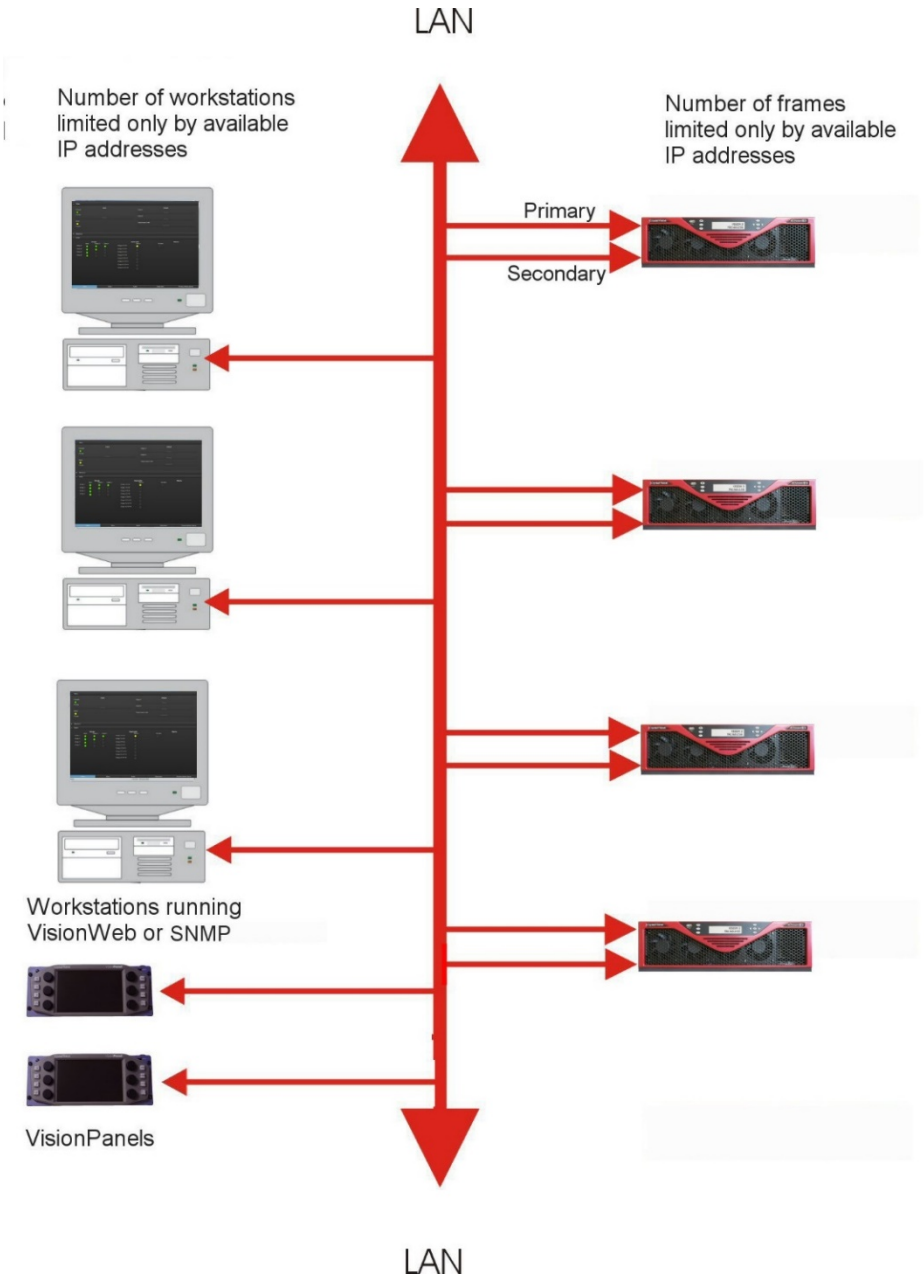
SYNNER-VF VisionWeb GUI showing the 'Reference' status page

This typical card offers the option of switching to the backup reference if the reference is lost, and when the original reference is restored the card can automatically switch back.

3 Control

The Vision 3 frame supports ping, FTP, SSH, HTTP, SNMP and ASCII control protocols. From frame software version V1.5 build 16216, it is possible for a user to disable all services except ping in order to prevent unwanted access. It is also possible to remove the Network Configuration, SNMP Configuration and Software Upgrade menus should restricted access be required to these settings. Please contact support@crystalvision.tv for further information including the necessary frame login credentials.

Ethernet control is provided by the Vision 3 frame. This allows PC control of many Vision series frames over a local area network by VisionWeb, VisionPanel or by SNMP.



Control of Vision 3 frames over Ethernet

3.1 Ethernet connections

Vision 3 has two Ethernet connectors – labelled Ethernet 1 and Ethernet 2, which can be set to different IP addresses or 'bonded' to use the same. When 'bonded', Ethernet 1 is the primary network connector and Vision 3 will automatically switch to Ethernet 2 should Ethernet 1's connection be lost. When not 'bonded', Vision 3 will respond to network traffic on both connectors such that if one fails the other will continue to control the frame. Although both network connections can use addresses in the same sub-net, it is recommended for network redundancy that the two connections are on separate networks i.e. the combination of IP and netmask address of one would not be accessible by the other.

3.2 Setting up and connecting

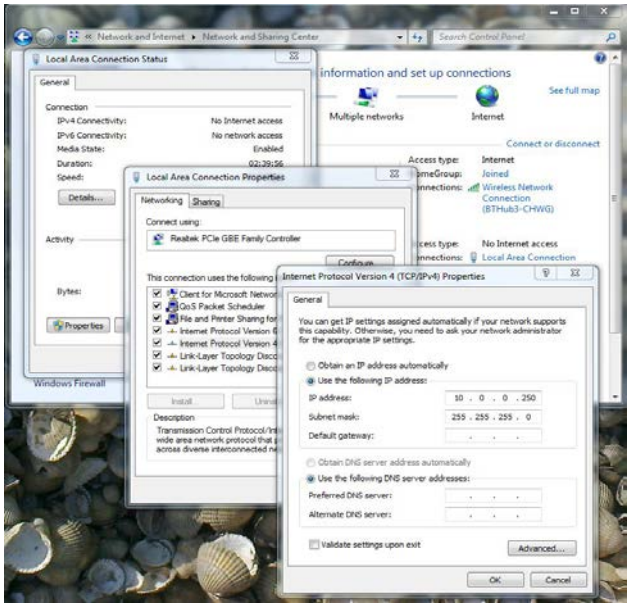
The frame can be connected to a network port or directly to a PC from either rear panel RJ45 port labelled 'Ethernet'. Usually, if connecting directly to a modern computer, a straight CAT5 cable only is needed. A crossover cable might be necessary with older equipment.

Frames are shipped with a default Ethernet 1 address 10.0.0.201 and Ethernet 2 IP address 10.0.1.201 which will need changing if another network device has the same address. The frame's IP addresses can be changed at any time by:

- Selecting the 'Configuration/Network' menu from the front panel. (See *Front Panel operation* for more information.)
- Accessing the frame's internal VisionWeb' pages with an Internet browser using the frame's current IP address which is visible on the front panel LCD display. (See *VisionWeb* for more information.)

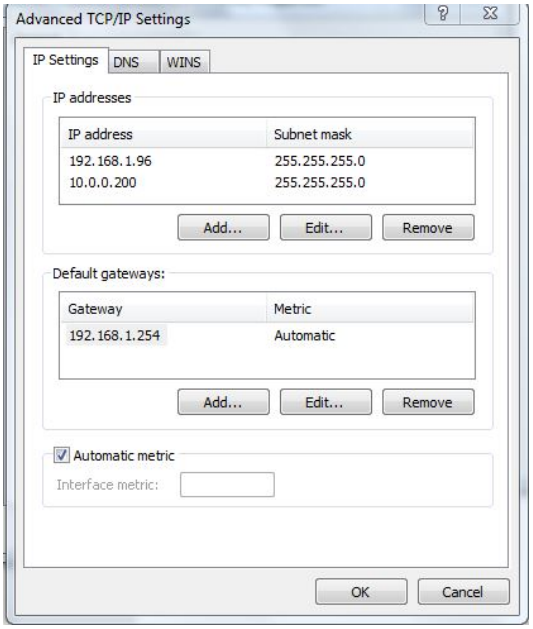
Set up the PC's Local Area Connection

Set the PC's LAN controller's sub-mask (usually 255.255.255.0) and its IP address to within the frame's address range (e.g. 10.0.0.250 if the frame's IP address was 10.0.0.201). For Windows users, this is most easily achieved from the Network and Sharing Centre:

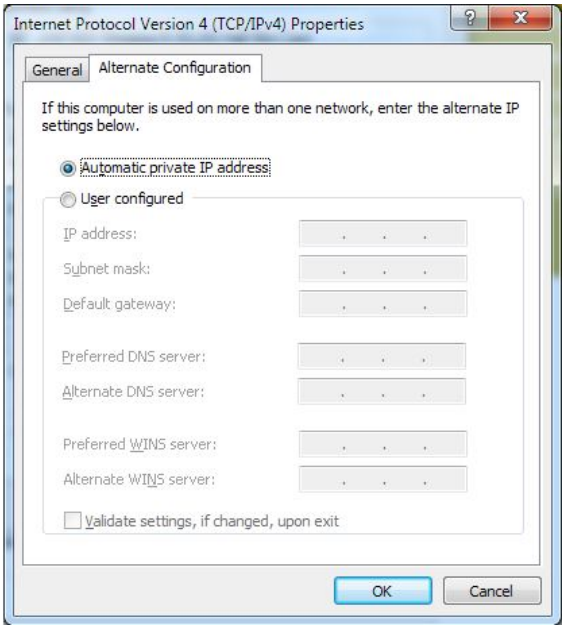


Setting up the PC's LAN controller with Windows 7

It is worth noting here that Windows does allow LAN controllers to operate with several IP addresses and sub-masks simultaneously, which can be useful if several frames need to be set up. Once a frame is programmed with its final IP address it may be that the PC will no longer be able to control the frame without changing its LAN controller's IP address. In this case setting an additional IP address could save time if many frames are to be configured. Additional IP addresses can be added via the 'Advanced' tab in Windows 7, or the 'Alternate' tab in Windows 10:



Windows 7 Advanced TCP/IP settings



Windows 10 Alternate Configuration

Alternatively, the LAN controller sub-mask can be extended to allow control of frames of similar IP address. For instance, if a frame is to be finally configured as 10.0.1.0 then a sub-mask of 255.255.0.0 would allow control of the frame in its default and final configuration.

An additional IP address can also be set to connect to Ethernet 2 controller such that any failure of one would not prevent network access.

4 VisionWeb

Vision 3's internal web pages are called VisionWeb and enable the user to configure the frame, monitor status of the frame and cards, and control cards from a PC running a web-browser*. To access the VisionWeb home page, connect your PC to either the Ethernet 1 or Ethernet 2 connector, open your web browser and enter the frame's IP address**.

The web page displayed shows the names of the cards installed, the slot number they are fitted into, and the firmware version and serial number. This page will give status information about the frame, its power supplies and means to access each card's controls.

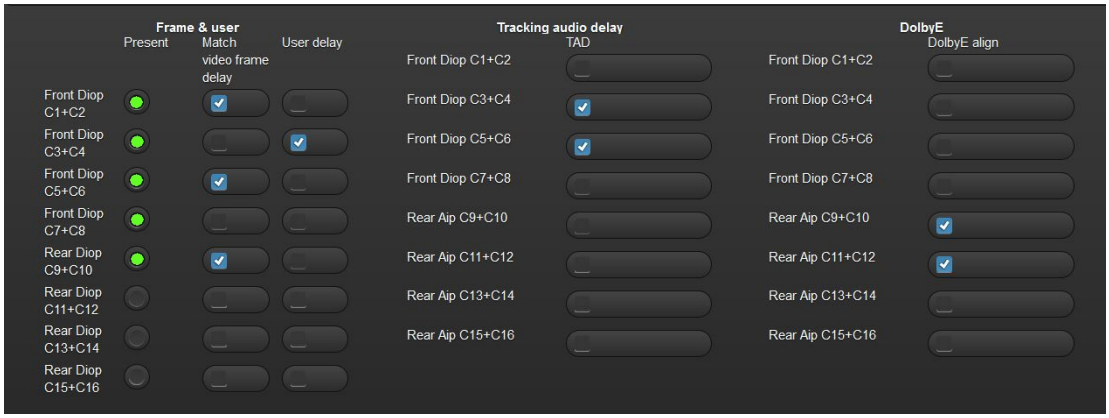
**Recommended web browsers include IE10 or later, Google Chrome and Mozilla Firefox.*

***Ethernet 1 connector's IP address is shown on the front panel LCD display and will be 10.0.0.201 if the frame has yet to be configured. Ethernet 2 connector's default IP address is 10.0.1.201 but if the frame configuration has been changed, the IP address can only be found by connecting to Ethernet 1 connector and browsing to the Configuration/Network page.*

VisionWeb Home page

The displayed page shows a list of all the Vision cards currently installed in the frame. If a card has only just been plugged in it may take a short while to appear in the list. Adjacent to the card is the frame's slot number and by the right-hand edge is the version and serial number information. Crystal Vision may ask for this information if there is a problem with a card.

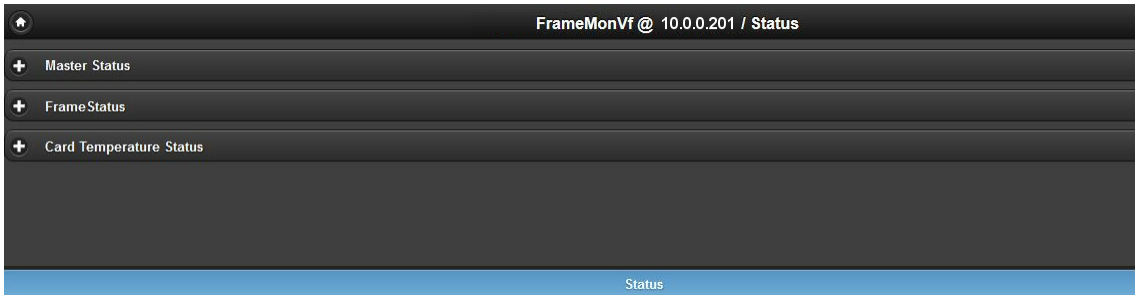
Click on any of the slots to access the card's home page which will give the user a full range of controls and status monitoring. For example, a typical VisionWeb page for SYNNER-VF, shown below, has several virtual controls and indicators to enable complete setup and status indication for the product:



A typical SYNNER-VF VisionWeb page

The function of every Vision card's controls is explained in-depth in the card's own User Manual.

Slot 21 is the Vision frame's controller status page. Click on that slot to open it to reveal the dedicated status pages that apply to the frame itself:

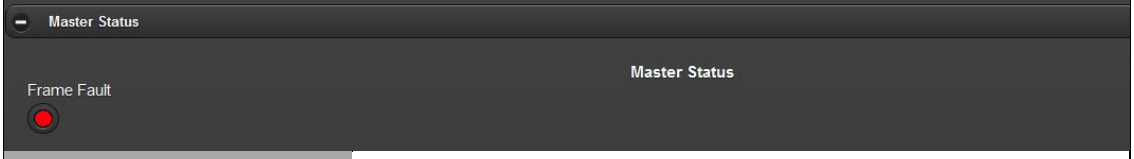


Vision frame controller 'Status' page

The Vision frame's Status pages are described below:

Master Status

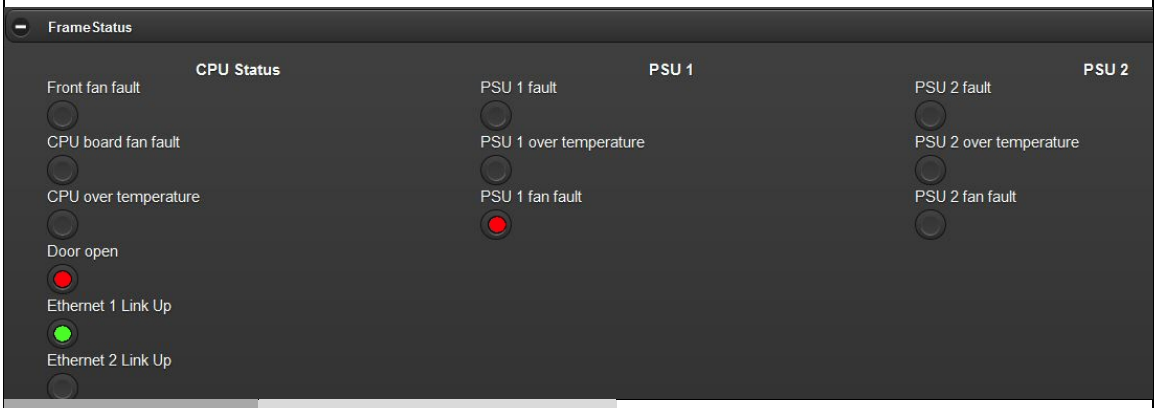
Indicates a fault within the frame.



Frame Fault	**The indicator will show red whenever any fault is detected in the frame. The fault could be any fault that would cause a red indication in the other Frame Status or Card Temperature pages such as a PSU fault, a fan failure or an overheating issue. An SNMP trap can be created to detect this condition.**

Frame Status

Displays specific faults with the frame and also indicates Ethernet connectivity.

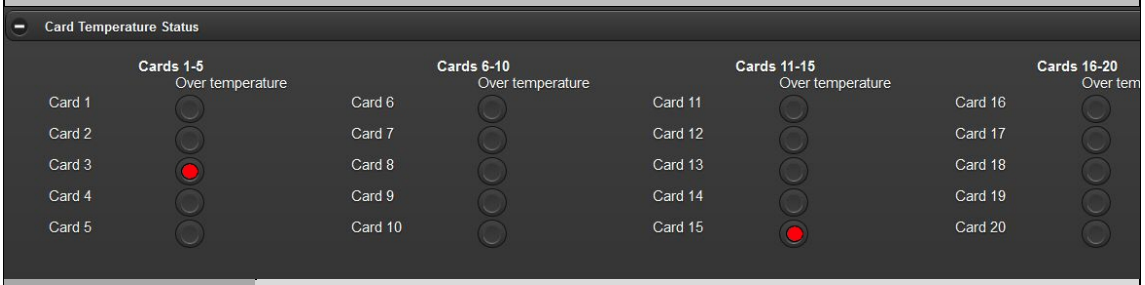


CPU Status	**Front fan fault**	**On when one or more of the front panel fans has developed a fault. A single failed fan may not cause an overheating issue immediately, but - depending on the number of cards in the frame - should be replaced as soon as possible.**
	CPU board fan fault	**On when the fan that is fitted to the horizontally mounted controller board has developed a fault. This fan must be replaced as soon as possible to prevent CPU failure with unpredictable results.**
	CPU over temperature	**On whenever the CPU has overheated. Usually associated with a fan failure or the hinged front panel left open for abnormally long time. The frame should be switched off immediately until the cause of the problem is diagnosed to prevent damage with unpredictable results.**
	Door open	**Opening the hinged front panel affects the air-flow through the frame and may cause overheating if left open for long periods.**
	Ethernet Link Up	**Indicates that the frame is connected to a client on either Ethernet ports.**

PSU 1/2	**PSU fault**	**Indicates that one of the power supplies has developed a fault. Possibly associated with over temperature, check the PSU fan indicators. Hot plug a spare PSU and remove the power supply until the fault is rectified. If the frame runs normally with the spare, then the fault is likely to be the PSU fan or PSU itself.**
	PSU over temperature	**Indicates over-heating of a PSU. This is usually because of a PSU fan failure. Hot plug a spare PSU and remove the over-heating PSU until the fault is rectified.**
	PSU fan fault	**This indicates that the fan cooling the PSU has developed a fault and will need replacing as soon as possible to prevent PSU overheating and failure.**

Card Temperature Status

Display over-temperature warning for all slots.



Cards 1-20	**On when a card is running too hot. This may be because a fan has failed (check Frame Status page), because the hinged front panel has been open for too long or because the frame ventilation ports are blocked.**

4.1 VisionWeb ‘Option’ pages

Click on the circle at the top left of the Home page to open the ‘Options’ page:

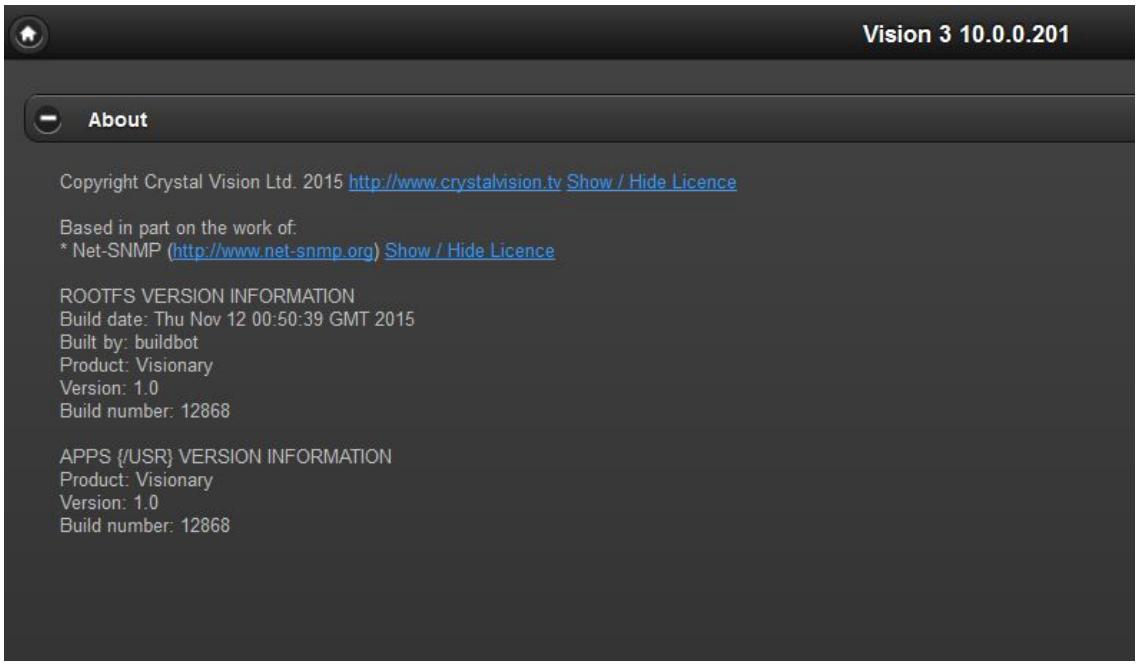
Click on the ‘house’ icon to return to the Home page:

The ‘Options’ page gives access to other pages that enable adjustment and give information of Network, Hardware, SNMP settings and diagnostic information. Crystal Vision may ask for details from these pages if there is a problem:

VisionWeb ‘options’ page

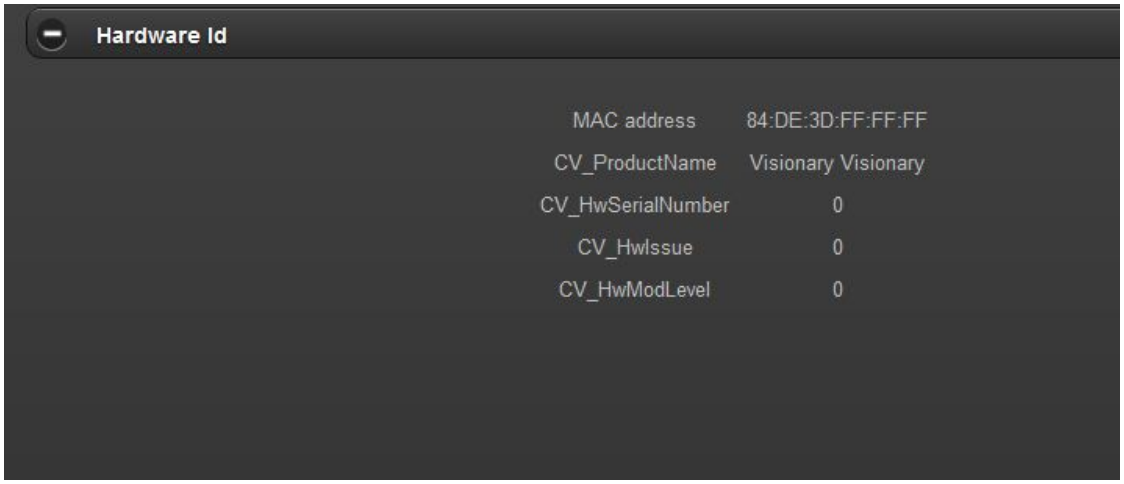
About

From the ‘Options’ page, clicking on the ‘About’ link will open a web page that shows, amongst other things, the frame’s software version number and build.



Hardware Id

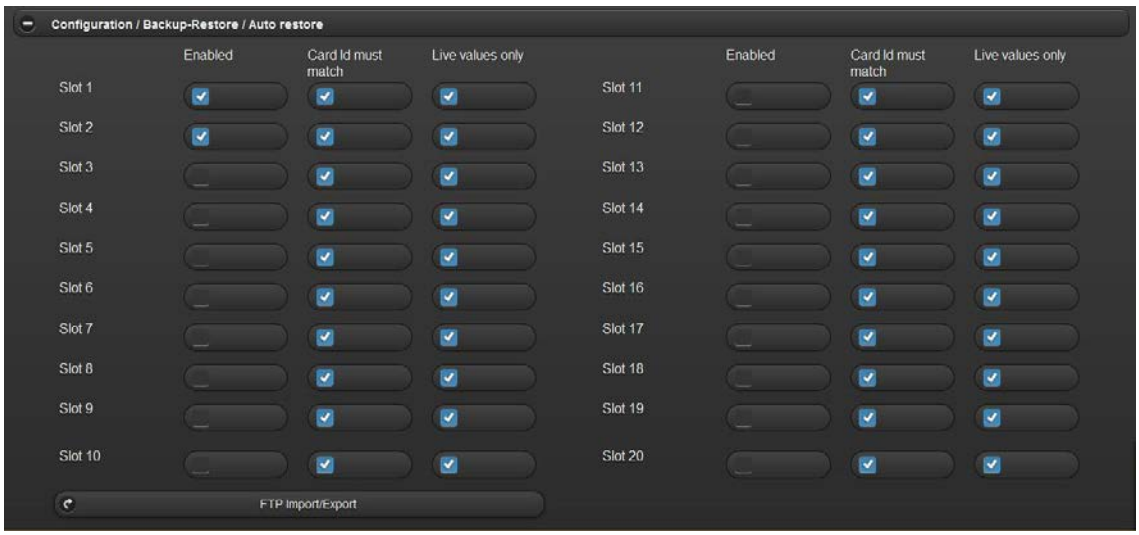
This page gives useful information about the frame:



Configuration/Backup-Restore/Auto restore

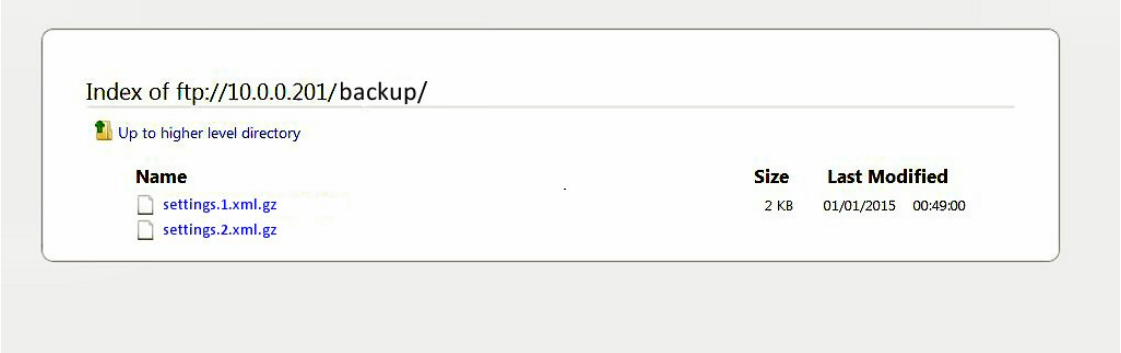
Whenever a Vision card's settings or presets are changed, a backup copy in the Frame Controller Processor (FCP) is automatically updated. This feature allows, for instance, a faulty card to be replaced live and its settings automatically transferred to the replacement.

This web page sets the conditions for the restore of the card's settings and presets from the stored backup. If enabled, this process happens automatically whenever the frame is powered or reset, or whenever a card is plugged in live.



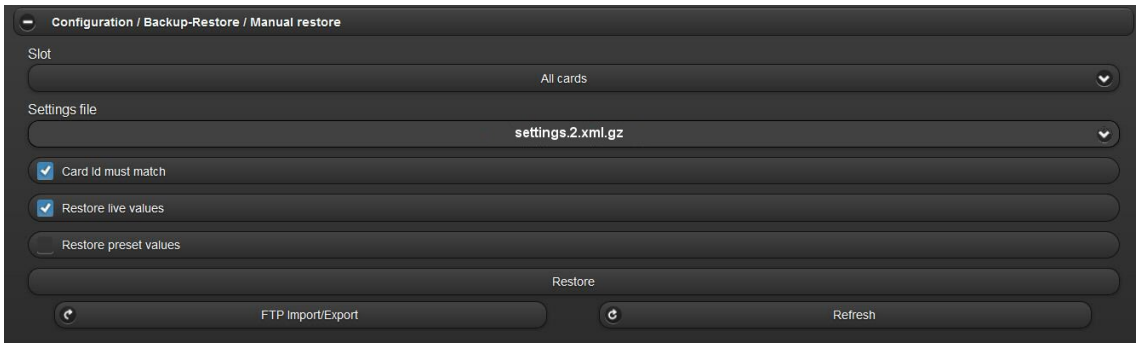
The process can be enabled or disabled for each slot in the frame. If the 'Card ID must match' box is checked then the restore process will only happen if the card currently in the slot is of an identical type to the card used to create the backup. If the box is NOT checked then the restore process will be applied to the card in the slot regardless of type. This will only be valid if the backup and restore are for cards of a similar generic group (i.e. UP-DOWN-A-VF, UP-DOWN-AS-VF etc.) which may have different card IDs for the various options but common control and status registers. If in doubt, check the box. If the 'Live values only' box is checked then only the last backed up settings are copied over and the slot's current settings overwritten but presets remain unchanged. If the box is NOT checked then the card's presets are copied only and the current settings unchanged.

The 'FTP Import/Export' button allows access to the frame's backup memory whereby settings can be transferred between the frame and a PC via FTP. Clicking on the button opens an index to the 'backup' folder showing a list of the backup files that have so far been created:



Each backup file has a file name with a slot number extension. Up to 20 files, one per slot, will be displayed. Clicking on a file will transfer that file to the PC's 'Downloads' file where it can be saved for future use – see *File Structure* for more information.

Configuration/Backup-Restore/Manual restore

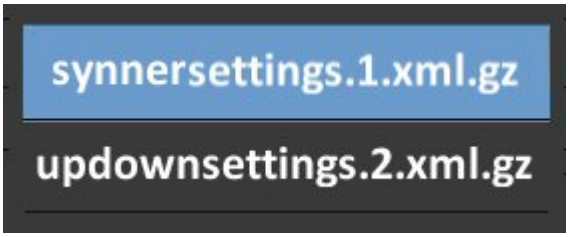


This page allows a user to select a backup file and to manually restore the settings for one or all of the slots. Firstly, click on the 'Slot' button to select either a single card or all the cards to restore:

The window opened will display all the cards currently fitted in the frame. Similar to the 'Auto restore' page the check box 'Card Id must match' should be checked to ensure that a slot's settings are only restored if the backup memory was derived from an identical card type. The box can be left unchecked if the backup file and the card in the slot are versions of the same type of card. As before – check the box if in doubt.

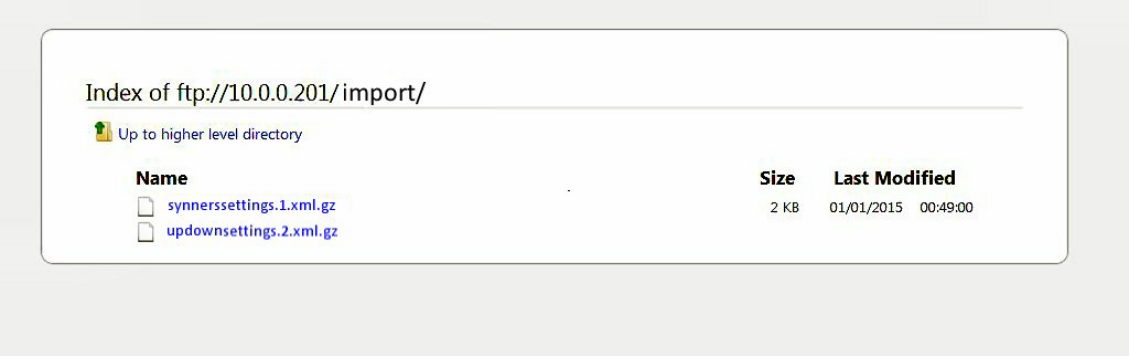
The check boxes ‘Restore Live values’ and ‘Restore preset values’ give the option to restore the card’s current settings and/or presets.

The ‘Settings file’ button will display a list of backup files that are available for manual restoration. Note that these files are stored in a different location to those created automatically and may have been renamed - see section *File Structure* for more information.



Note also that a file created in a particular slot can be used to restore the settings into any or all slot positions. For example, if a card has been set up in slot 1, several similar cards can be fitted to the frame and the backup file applied to one or all of the cards to set them up the same as the original card. The ‘Refresh’ button will update this list.

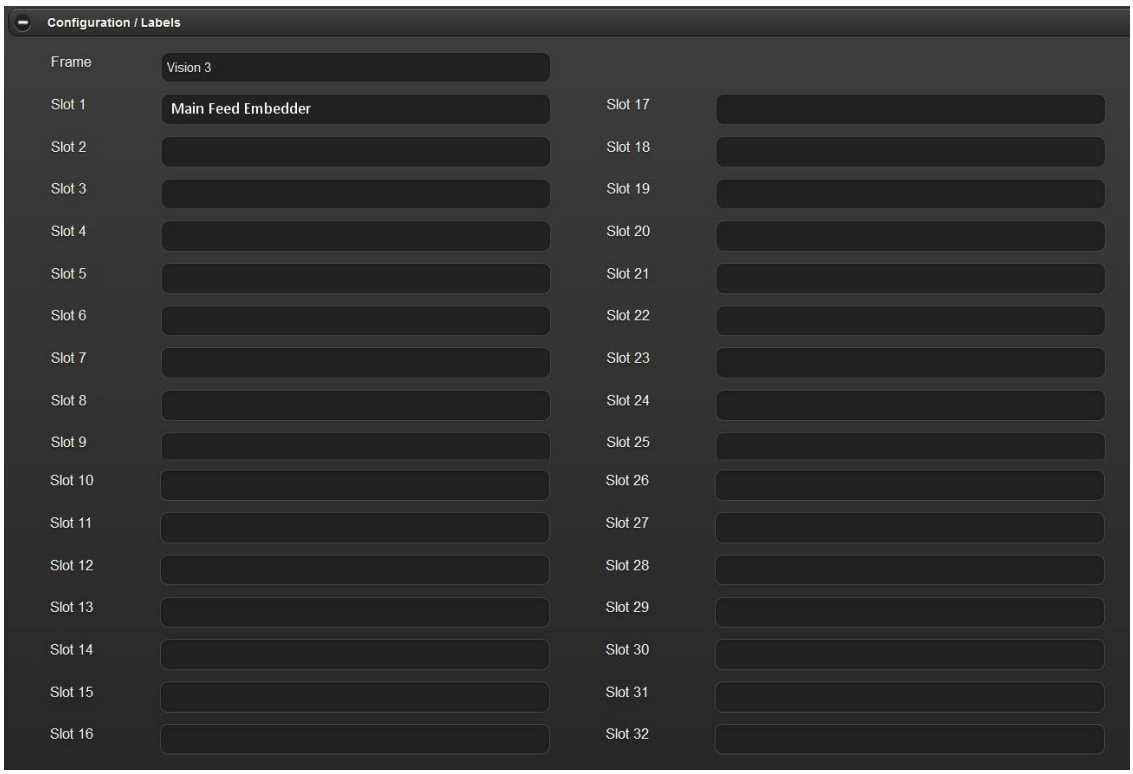
The ‘FTP Import/Export’ button allows access to the frame’s manual backup memory. Clicking on the button opens an index to the ‘import’ folder showing a list of the backup files that have so far been placed there:



Finally, click on ‘Restore’ to overwrite the card(s) current settings and/or presets from the selected backup file.

Configuration/Labels

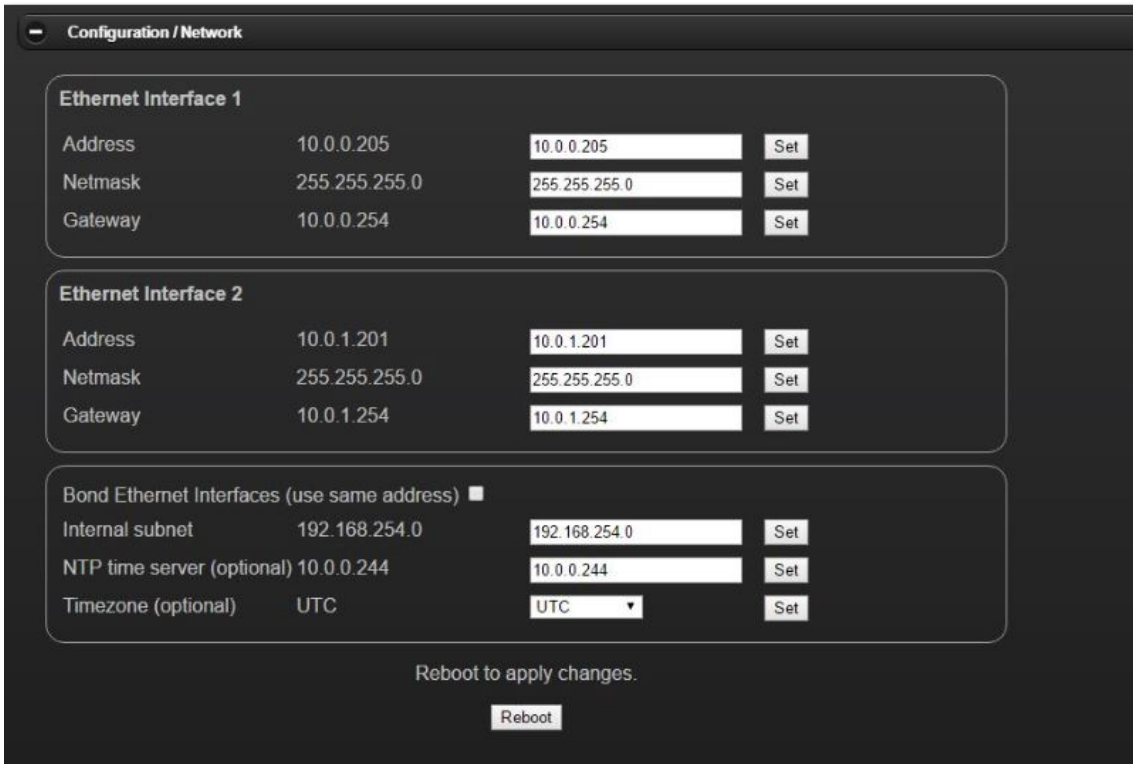
This page can be used to give a user defined alphanumeric label to the frame and any of the 20 real and 11 virtual slots in the frame. A virtual card is one made up of controls from several cards in a frame and allocated a unique slot number – see *Virtual Cards* for more information'.



In the example above, slot 1 has been labelled 'Main Feed Embedder' and the frame itself labelled 'Vision 3'. Once the labels have been created they are displayed on the home page:

Configuration/Network

This page allows the user to set the IP addresses and Netmasks of the two Ethernet connections.



Every frame on a network must have a unique IP address so the Ethernet 1 and 2 addresses may need changing to avoid conflict. Ethernet 1 connection default IP address is 10.0.0.201 and Ethernet 2 is 10.0.1.201. To change the value, enter the new value in the box and press ‘Set’. Although Ethernet 1 and 2 can both have IP addresses within the same sub-net, for maximum network redundancy, the two connections should be on separate networks such that the combination of IP and netmask address of one is not be accessible by the other.

The ‘Gateway’ address should be changed if another device such as a router need be addressed to access the network.

When the ‘Bond Ethernet Interfaces’ box is checked, Ethernet Interface 2 options are greyed out and both Ethernet connections will use the same IP address, sub-net and Gateway as those set for Ethernet Interface 1. Ethernet Interface 1 will be the primary connector and all network traffic will use this connection unless the connection is lost when Ethernet Interface 2 will automatically take over.

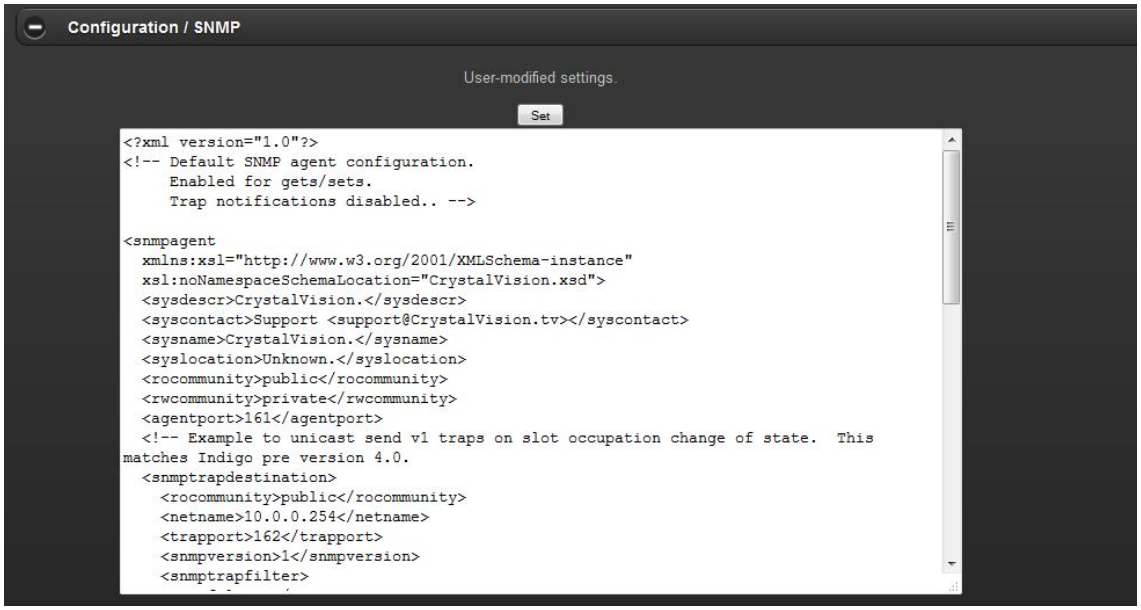
The address labelled ‘Internal Card Subnet’ is an internal address used by the frame to communicate with its cards and should be left unchanged unless it conflicts with either Ethernet Interface 1 or 2 network addresses.

The ‘NTP time server’ address and ‘Timezone’ local time selector are not used currently.

Any changes to any of the above fields will only be implemented after a frame reboot.

Configuration/SNMP

Vision 3 frames can control and report status of cards, PSUs and frames through SNMP. SNMP traps can be used to trigger alarms – for example, say, when a signal has been removed, video standard changed or any of the many monitored status variables changed. The SNMP window can be edited and changes applied by clicking on '**Set**'.



Vision 3 frames use a Net-SNMP agent and a Crystal Vision XML Schema Definition document to control its operation and the management information provided. The user-configurable SNMP configuration window easily allows the user to:

- Edit the list of configuration files.
- Program the IP and port address of the destination SNMP Manager.
- Enable or disable individual trap events individually by OID.
- Select SNMP v1 or v2 operation.

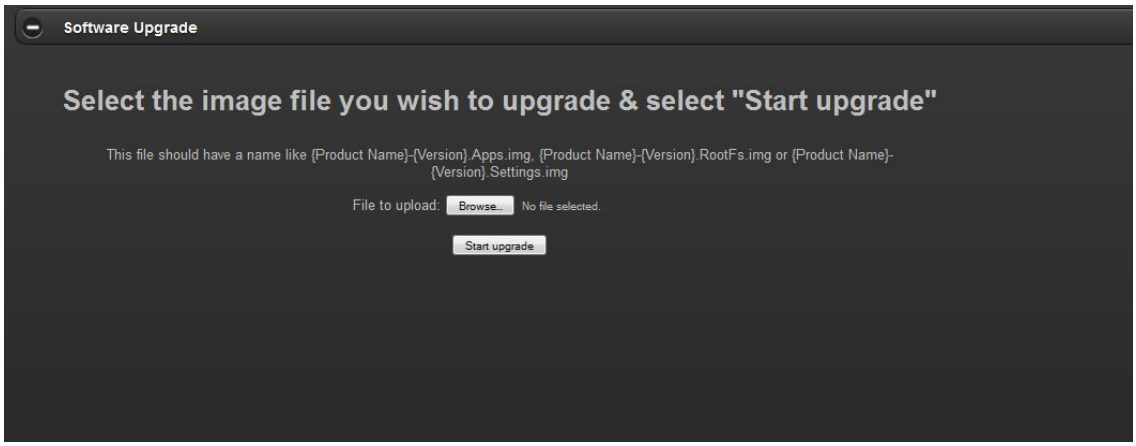
The full list of available XML commands is contained within the Schema Definition document CrystalVision.xsd available from Crystal Vision.

See Appendix 1 *SNMP Operation* for more information.

Software upgrade

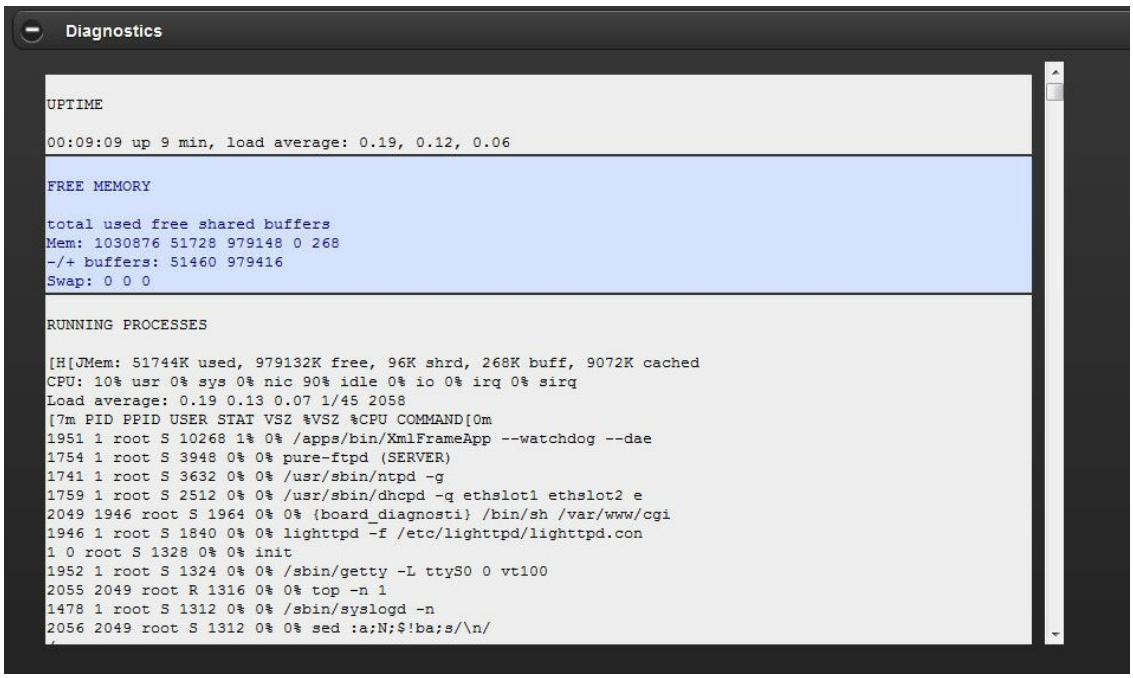
You may be asked to perform an upgrade by Crystal Vision who will supply the software and instructions to perform this task.

Typically, there are two image files: Visionxxx.RootFS and Visionxxx.Apps. Each of the files is selected in turn and the upgrade performed on each before re-booting the frame. Do not attempt to do this without specific instruction from Crystal Vision or its representatives.



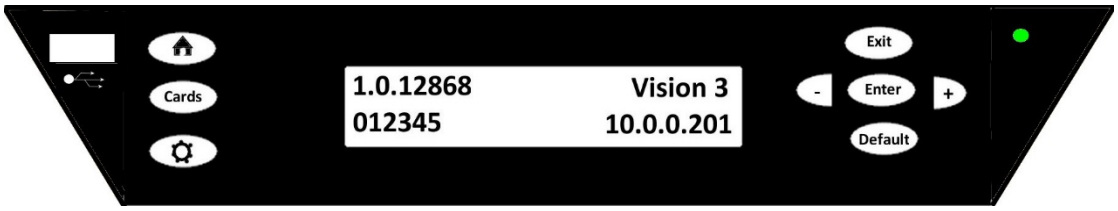
Diagnostics

The ‘Diagnostics’ link opens a page which will help Crystal Vision diagnose any faults encountered with your system. Crystal Vision may ask you to supply this information by copying and pasting part or all of the data:



5 Front Panel operation

The Vision 3 front panel has several push buttons that allow access of all the controls and status of every card fitted in the frame.



Vision 3 frame 'Home' display

On power up, after reset or if the 'home' button is pressed the front panel will display the panel's build, serial number, name and Primary IP address.

The USB connector has no function but is powered.

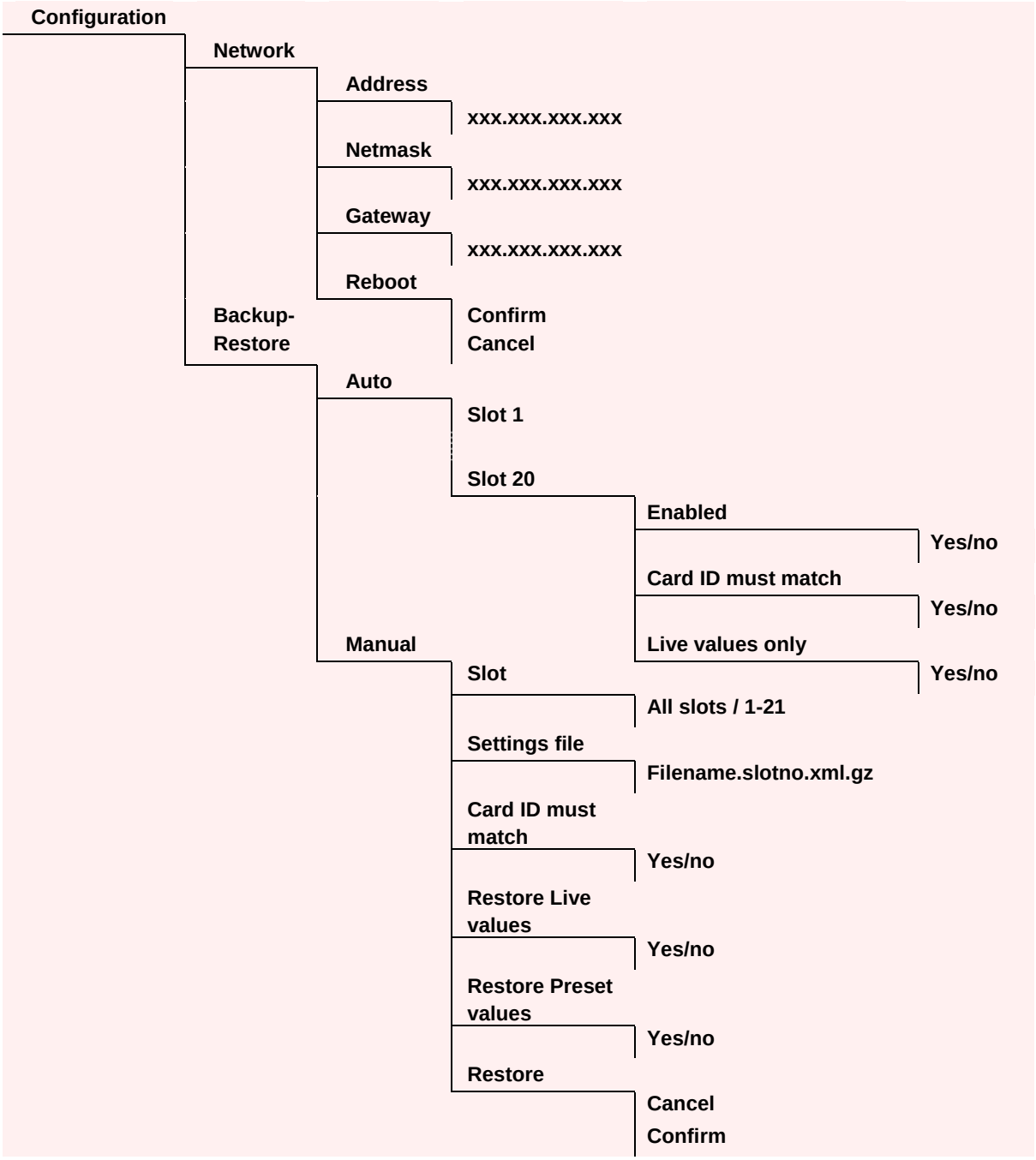
The LED will normally be green but will light red if there is a fan or PSU fault.

The buttons have the following function:

Button	Function
	'Home' - returns the display to the top of the menu structure.
Cards	Displays the list of cards fitted in the frame. Press 'Enter' to open up that card's status/control menu. Each card's menu tree is described in detail in its User Manual.
	Enter the configuration setup menu. See menu tree below.
Exit	Go back a level in the menu structure without changing values.
Enter	Enter the displayed menu or set a value.
Default	Enter the default value for a control.
+ / -	Go forward or back through the menu structure or increment/decrement a value.

Configuration menu tree

The configuration menu tree when accessed from the front panel is similar to VisionWeb described previously but with less functions:

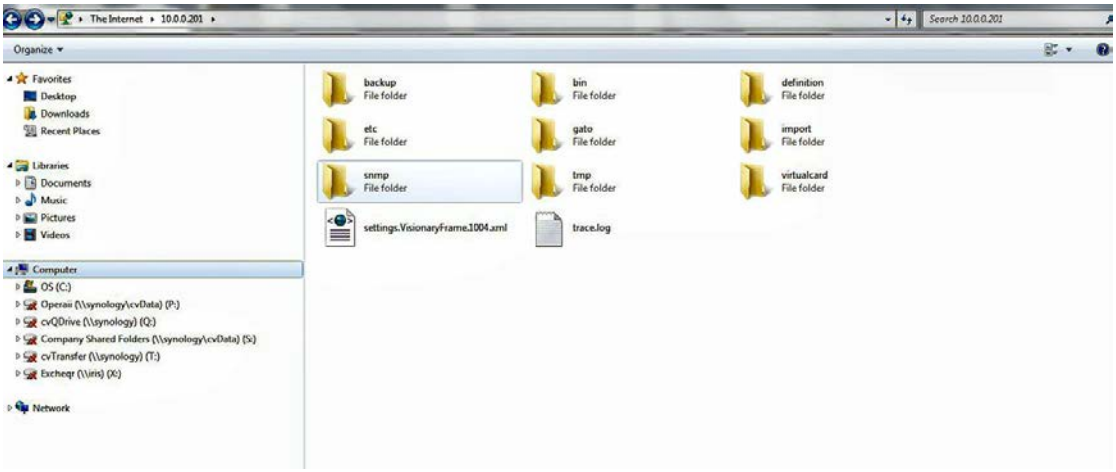


By using the front panel buttons, the operator can step through the menu tree to select the control to change the value. Pressing ‘Enter’ will update that control’s value and the backup copy.

6 Frame memory

6.1 File Structure

Vision 3 has backup memory located in the Frame Control Processor (FCP) board and is accessible via FTP. The file structure consists of a number of folders all of which contain files for different aspects of frame control. For example, some folders contain the files created by automatic backup of card's settings, others contain files for manual restoration of a card's settings. To access a frame via FTP with Windows Explorer type: ftp://followed by the frame's IP address i.e. ftp://10.0.0.201



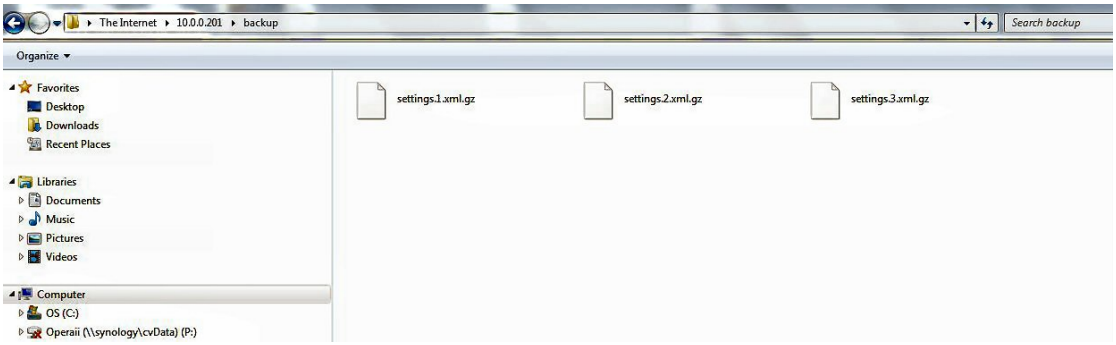
Typical FTP file structure as viewed by Windows Explorer

Folder (or file)	Function
backup	**Contains each slot's automatic backup files.**
bin	**No user content.**
definition	**No user content.**
etc	**Contains files for password protection.**
gato	**No user content.**
Import	**Contains settings files for manual restoration.**
snmp	**Contains the files for SNMP configuration.**
tmp	**No user content.**
virtualcard	**Contains virtual card's xml definition files.**
settings.frame.1004.xml	**File containing automatic backup of frame's settings.**
trace.log	**No user content.**

6.2 Cards

Vision 3 automatically backs up every card's settings and presets whenever they are changed. These values can be restored automatically or manually as required – see section *VisionWeb* for more details.

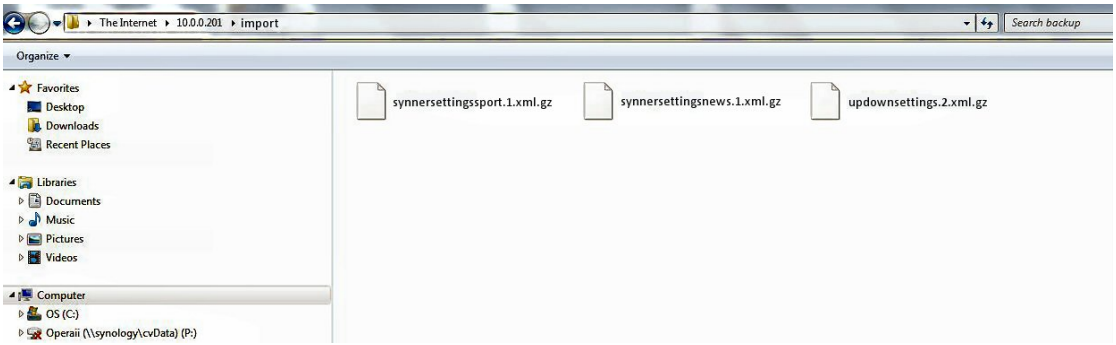
The settings files for automatic backups are stored on a slot by slot basis and have filenames 'settings.N.xml.gz' where 'N' is the slot number. These files are stored in a folder 'backup' which is accessible by FTP:



Typical contents of 'backup' folder showing settings for three slots

If the 'Auto Restore' option is enabled then these files are automatically resent to the card in the slot on power up, reset or if a card is re-inserted.

With an FTP connection from a PC it is possible to copy these files, rename them if necessary and use them for the manual restore operation. Settings files for manual restoration are stored in the folder 'import':



Typical contents of 'import' folder showing renamed settings files for three slots

Currently, files cannot be 'dragged and dropped' from the backup folder to the import folder but must be copied into a PC local folder first. The transferred file can be renamed to something more relevant to its function. Manual restore gives the option of using a single settings file from the import folder to be sent to one or more slots. This is particularly useful for initial setting up of multiple cards which need to be configured identically as only one need be configured and then applied to the others.

6.3 Frame

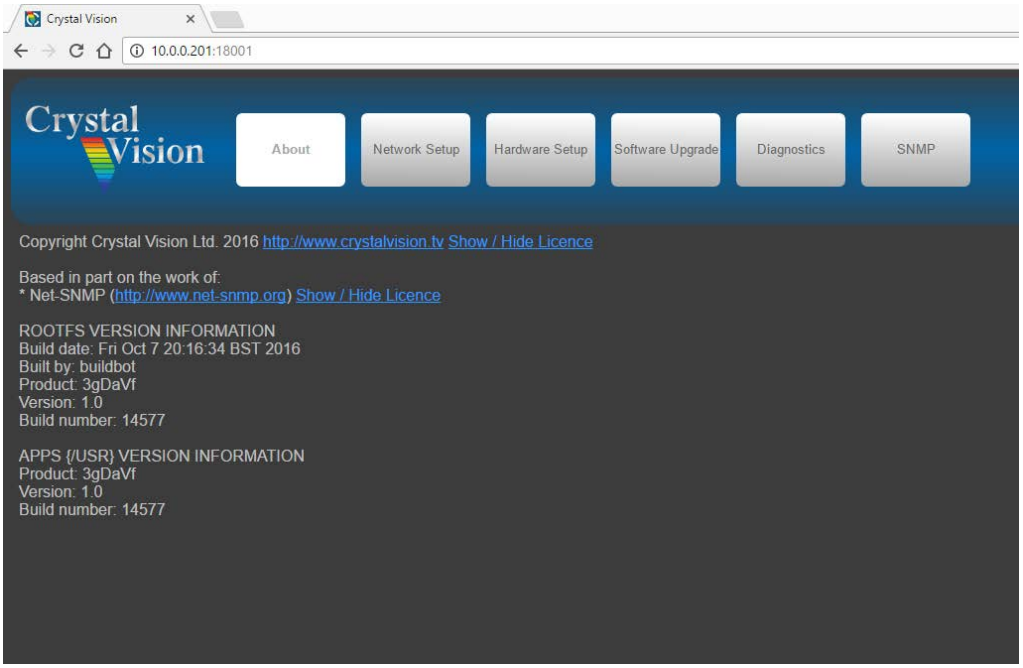
The frame automatically creates a backup file whenever its configuration is changed such as network or slot labelling.

The backup file for the frame is in the root directory and is labelled ‘settings.framename.1004.xml’. The filename may change according to the firmware fitted but will be of that form. It is worthwhile copying this file onto a PC in case the Frame Control Processor is replaced then the file can be copied back to restore previous settings.

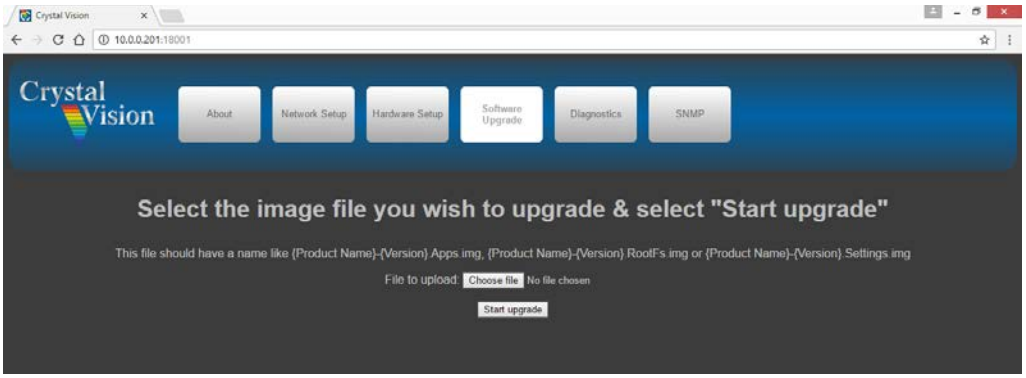
7 Card software updates

If it becomes necessary to upgrade the software fitted into a Vision card, Crystal Vision will provide the necessary image files to upload. Follow this procedure:

- Browse to the slot containing the card to be updated by entering the following: Frame IP address:180+slot number. So, for example, to access slot 01 in a frame set to IP address 10.0.0.201, enter http://10.0.0.201:18001. This will bring up the following page:



- Click on the ‘Software Upgrade’ button to access the following page:



- Browse to the first of the three image files supplied by Crystal Vision named xxxx.RootFS and select ‘Start Upgrade’.
- Repeat for the xxx.Apps file and then the xxx.Settings file.
- Do not reboot the frame until the final xxx.Settings file has been successfully uploaded.

8 Virtual Cards

8.1 Introduction

A ‘virtual card’ is a collection of controls from several cards on the same frame that appear as a single extra card in slots 22-32. The virtual cards feature can be used to limit user interaction, simplify operation or assemble features for specific control purposes. The virtual card creation process involves direct editing of an XML file which is then put into the frame front panel; this is offered as a chargeable service by Crystal Vision or can be carried out by someone familiar with XML editing. What follows is a guide to the process of creating a virtual card:

8.2 What you will need

- A text editor – ideally Oxygen http://www.oxygenxml.com/ with the CV 'external tool' so you can see what your virtual card will look like on VisionWeb.
- Telnet and FTP access to the frame containing the card(s) you want to incorporate into your virtual card.
- The XML files for those cards. You can get these from the Registered Area of the CV website http://www.crystalvision.tv/support/registeredarea/registeredarea.html or from customer support.
- The virtual card template file.

8.3 Summary of what you should do

- Decide what controls you want on your virtual card and how you want them grouped.
- Get the XML files for the 'source' cards from the website.
- Pick a 'virtual slot' number for the virtual card. Make a copy of the template file and save it with a filename including the 'virtual slot' number for the frame.
- Customise your template file so that it refers to your specific virtual card.
- Create the menu structure in it and populate the menu structure with controls copied from real card XML files, adding a reference to the real card (its slot) and the original control ID.
- Check the validity of your XML file against the CV schema file. This is a standard XML editor function.
- If you are using Oxygen with the CV tool you can also generate an HTML file to check the control arrangement is what you want. Appendix 1 gives more detail of installing and using the CV tool.
- Copy the file into the correct directory on the frame.
- Reboot the frame.
- The virtual card will now be available for use.

Appendix 1 includes a worked example, see *Virtual card instructions with example*.

9 Password Protection

With Vision 3 frames it is possible to password protect different levels of access to frames and slots. The default state is no active passwords. When setting up a user you will be able to limit the slots that have full/read/write access. If no access list is specified all slots will be read/write.

9.1 To add a new user

- Pick the user name and password – say, ‘Crystal’ and ‘Vision’.
- Generate the encrypted password information as an MD5 text string. This can be obtained from http://onlinemd5.com/ or similar sites – Google ‘md5 generator’ for more sites.
- Enter the password to be encrypted, in this example ‘Vision’. The MD5 generator will produce the following string - 99A0628D9F7179C032E0CF59EFBC0FAD.
- FTP the file ‘passwd.http’ to your PC from the frame folder ‘etc’.
- Open the copied file with Notepad and edit the file to add every authorised user with a separate line using the format - username:MD5 Password [rw:slotlist] where [rw:slotlist] is optional and specifies the card slots the user is able to access. With no rw option, all slots and the frame options pages are accessible. e.g.

  User "fred" with password "password" with access to all slots -
  :fred:5f4dcc3b5aa765d61d8327deb882cf99

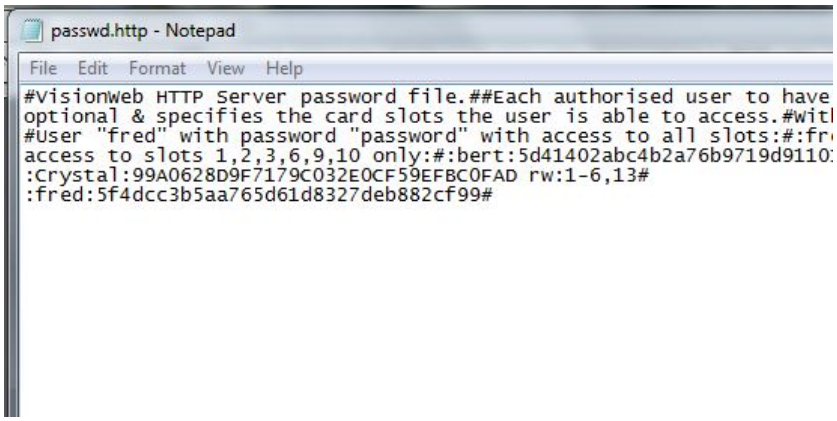
  User "bert" with password "hello" with access to slots 1, 2, 3, 6, 9, 10 only -
  :bert:5d41402abc4b2a76b9719d911017c592 rw:1-3,6,9-10

  For our example, with slots 1, 2, 3, 4, 5, 6, 13 only enabled, the new line will be -

  :Crystal:99A0628D9F7179C032E0CF59EFBC0FAD rw:1-6,13

Note: Any user who has restricted access to slots with the rw option will not have access to the frame ‘Options’ page (via the cog).

Note: The # symbol indicates that the rest of the line is comment.



Editing the ‘passwd.html’ page in Notepad

- Exit and save changes.
- Copy the file back to the frame replacing the original version.
- Reboot the frame. Once the frame has rebooted the new access permissions will apply and a Windows Security window will open when a VisionWeb user attempts to access a slot or the frame's settings:

Windows Security window

You can add a multiple new users at the same time if you want, by adding multiple lines at the file editing stage.

9.2 To delete a user

To disable authentication, so that no username/password is required:

Delete all the users from the passwd.http file by deleting the relevant lines. Leave the rest of the file in place, in case you want to enable passwords in future. Needs a reboot to take effect.

9.3 Logging out from a password-restricted frame

The password system we use (HTTP Basic Access Authentication) is a standard system that works with web browsers. The browser generally stores the password information while the session is open, although it may time out after a long period of inactivity. That is a browser characteristic not controlled by the frame and if users want to prevent unauthorised access they should close the browser window (not just the tab) when they want to 'log out'. This will force a log in next time the frame is accessed.

If the user selects 'remember this password' when they type it in, then their PC will remember the password and the user is relying on the PC login to restrict access to the frame.

10 Maintenance

Warning: **These servicing instructions are for use by qualified personnel only. To reduce risk of electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.**

Refer also to the General Safety Summary in the Installation chapter.

10.1 Inserting and removing power supplies

The PSU3-VF power supply can be inserted and removed while the system is powered without damage. However, this must be done quickly as there will be no forced convection air when the front panel is hinged down.

A power supply may be faulty if the front panel LED is red, the alarm relay is closed, or the green LED on the power supply itself is off. If any of these conditions are present then the PSU should be replaced. Vision 3 will continue to work with only one PSU but the faulty unit should be replaced as soon as possible.

To remove a Vision 3 PSU proceed as follows:

- If possible, power down the frame.
- Pull down the front panel using the black buttons at either side of the panel.
- Unplug the front IEC mains lead.
- Prise up the green locking tab.
- Remove the PSU by pulling on the fan mounted handle.

Once the PSU has been pulled out, the fan of the other power supply will increase in speed to compensate for the extra load and the front panel LED will change from green to red if not already so.

Note: There are no user-serviceable parts inside the PSU module.

To re-insert a PSU proceed as follows:

- Push in the PSU.
- Push down the green locking tab.
- Reconnect the front mains IEC lead.

Once the PSU is powered the fan of the other PSU will decrease in speed as it shares the load. Any alarm indications should go.

10.2 Replacing a front panel fan

Should a front panel fan fail the alarm relay will close and the front panel LED will change from green to red. The Vision 3 frame will continue to work if a single fan is faulty but it should be replaced as soon as possible. Fan replacement should be undertaken with the frame powered down to prevent overheating.

To replace a fan, proceed as follows:

- Lower the front panel by pressing on the two buttons on the edge of the panel.
- Remove the four screws securing the fan guard and fan to the front panel.
- Unplug the fan connector.
- Refitting is the reversal of removal but care should be taken to avoid the fan blades once the fan connector is reconnected.

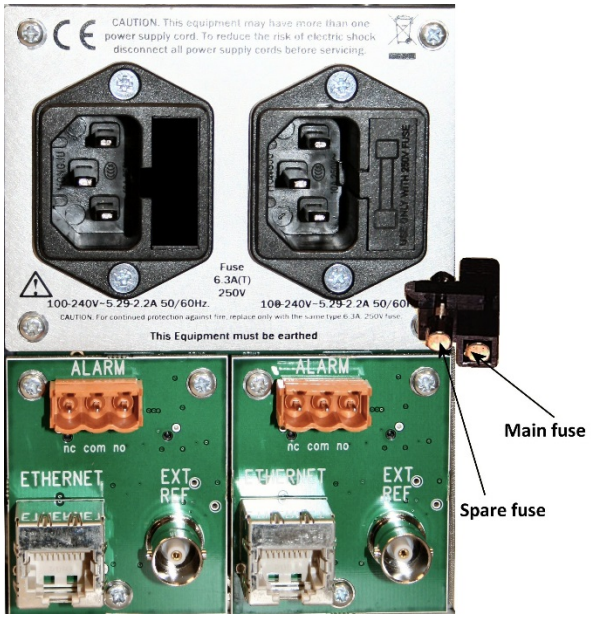
Once the frame is powered, the PSU fan should now be operating and the alarm indicators off.

10.3 Replacing the mains input fuses

The mains input fuses are fitted inside the IEC 320 connectors at the rear of the frame. A spare fuse is also stored inside the connector. The fuse can only be accessed when the power cord is disconnected.

The sequence is as follows:

- Disconnect the rear power cord from the frame.
- Using a flat bladed screwdriver or similar tool gently lever out the fuse drawer from the relevant IEC connector using the tab visible at the bottom of the connector depression.
- Remove the defective fuse and replace with either the spare fuse from the fuse drawer or with 6.3A, 250V time delay fuse. Never use a fuse of a higher rating.
- Replace the spare fuse if used with one of the same type.
- Replace the fuse drawer and reconnect the power cord.



Rear of frame showing mains connectors and fuses with one fuse drawer removed

If a fuse blows repeatedly this indicates a fault either in the associated power supply module or elsewhere. Return the frame and/or power supply to the manufacturer or dealer for repair.

11 Troubleshooting

11.1 Front panel LED status

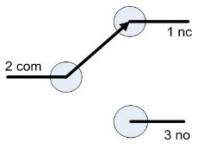
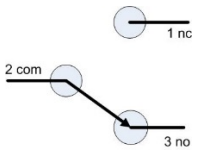
There is only a single front panel LED which is normally green and red under fault conditions. The fault conditions are: PSU failure or low voltage output state, front panel or PSU fan failure.

Vision 3 front panel LED

11.2 Alarm relays

Below each PSU is a change-over relay, the contacts of which are brought out to the remote connectors. These relays are under frame control and will change state whenever a frame fault is present. The relays are normally powered when the frame is powered and will change to an alarm state if the frame is de-powered. Both relays will change state at the same time. The conditions that will trigger an alarm are: front panel or PSU fan failure, PSU fail or low output voltage.

The relay contacts will operate as follows:

Description	Relay condition
Fault or power off	
No fault and power on	

These contacts can be used to operate external indicators as desired.

Should either the front panel LED or the alarm relays enter an alarm condition then check the following in this order:

- Open the front panel and check the PSU module LED. If both not green, then check the frame's main distribution. If a single PSU LED not green, then check the rear panel fuse.
- Visually check the PSU fan operation.
- Visually check the front panel fan operation.

Always close the front panel afterwards to prevent overheating.

11.3 Ethernet

If difficulty is found in connecting to the frame, check the following:

- Ensure that the frame is in the same range as the PC as defined by the IP address and netmask of both devices.
- Ensure that no other frame has the same IP address.
- If a router is in the network path check the gateway address.
- Ensure that Ethernet 1 and 2 address/Netmask combination has no conflict with the internal card sub-net.
- Ensure the correct Ethernet connector is being used – Ethernet Interface 1 is the right-hand connector when viewed from the rear of the frame.
- Check the PC's actual IP address by running 'ipconfig' from the CMD prompt.
- Try 'pinging' the frame from the CMD prompt if VisionWeb won't open.

12 Specification

Vision 3 frames

General

Dimensions:	482mm (19 inches) wide (including ears). 131.5mm high (3U). 407mm deep (front panel to Ethernet connector). Weight approx. 15kg fully loaded.
Power requirements:	90 to 264 Volts, 47 to 63Hz.
Operating conditions:	0 to 40 degrees C non-condensing. Ventilation in front, exhaust to back and sides, without air filters.
Power supply:	Up to two plug-in power supplies (460 Watt PSU3-VF).

Module control

Remote options:	Contact open/closure for any power supply or frame fault condition (supply out of range or failure, fan too slow or fail). Dual 1 Gb/S Ethernet control capable. Complimentary SNMP control and monitoring as standard.
Reference:	Two video reference inputs for Black and Burst or tri-level syncs.

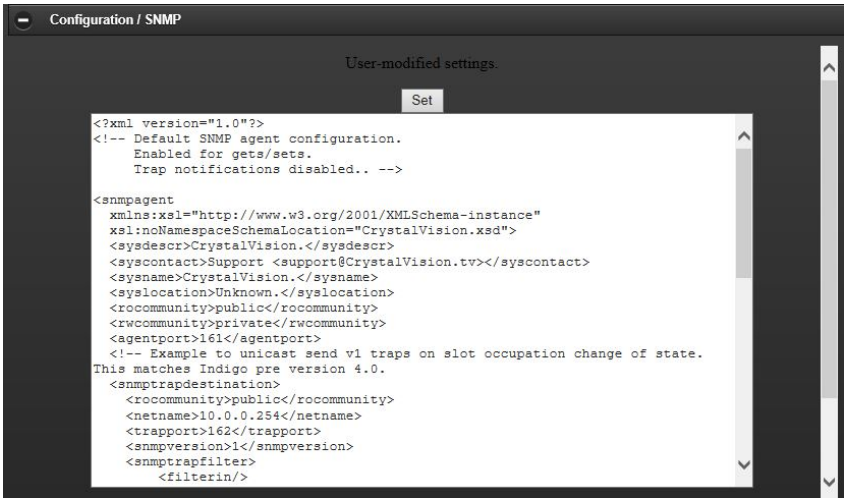
13 Appendix 1

13.1 SNMP Operation

Vision 3 frames are SNMP enabled and use the Net-SNMP agent and a Crystal Vision XML Schema Definition document to control its operation and the management information provided. The user-configurable SNMP configuration window easily allows the user to:

- Edit the list of configuration files.
- Program the IP and port address of the destination SNMP Manager.
- Enable or disable individual trap events individually by OID.
- Select SNMP v1 or v2 operation.

The full list of available XML commands is contained within the Schema Definition document **CrystalVision.xsd** available from Crystal Vision.



Indigo 'SNMP' configuration page

Management information base (MIB)

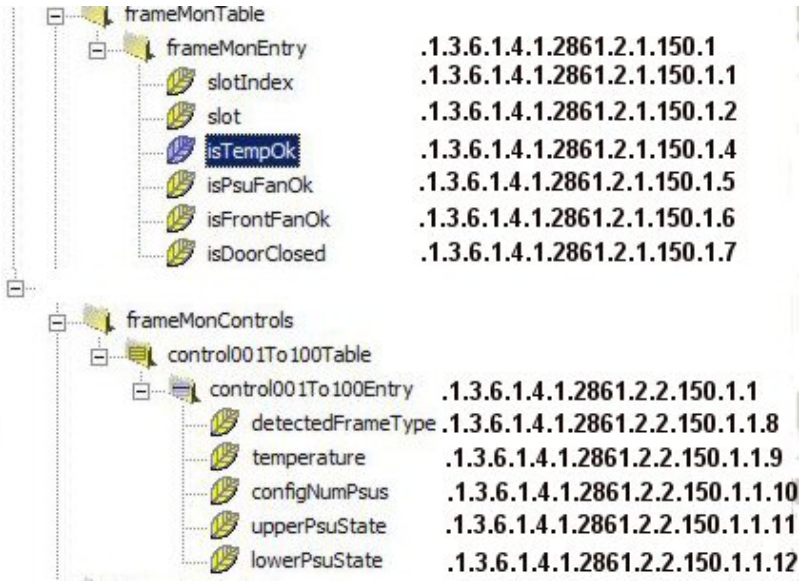
As is normal for an SNMP manager system, each of the remotely-controllable boards, frame and PSUs that are to be monitored have an associated MIB. Each MIB is a collection of object identifiers that identify all variables that can be read via SNMP and these MIBs are available from Crystal Vision. Use a MIB Browser to view all status and control possibilities.

Object Identifiers (OID)

For each variable to be monitored there is an object identifier or OID which can be distinguished from any other OID within the MIB tree by a unique number sequence coded within the MIB. As an example, from the FrameMon MIB (see tree below), the front panel status variable **isTempOK** is accessed by the OID **1.3.6.1.4.28681.1.2.1.150.1.4**. The OID will then be

accompanied by a value to indicate its status, in this case, 1=NO, 2=YES. Any status change will cause the transmitting of a trap to the SNMP manager.

The following grab from a MIB Browser shows the FrameMon MIB tree from the Indigo frame system with its identifying number sequences:



Partial tree of FrameMon MIB showing identifiers

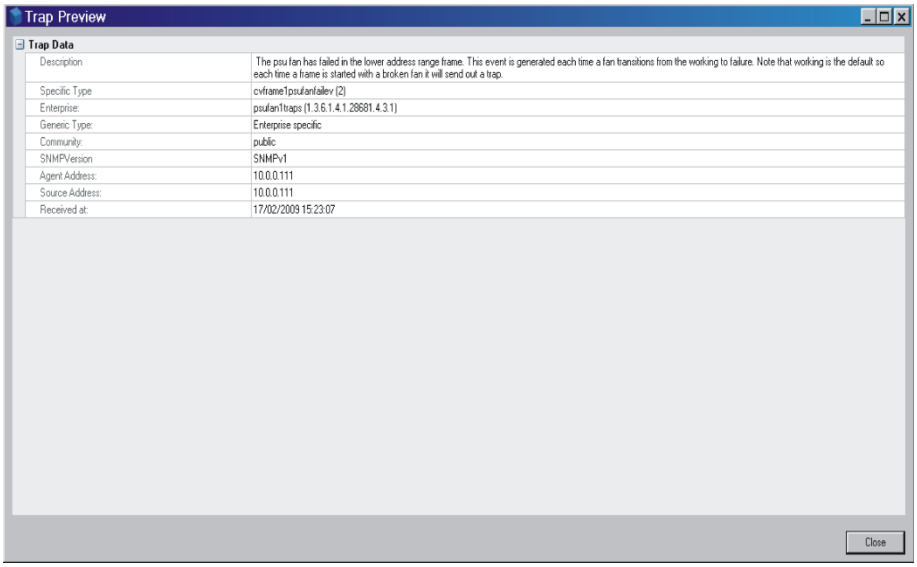
The frame variables monitored by the Vision 3 frame FrameMonVF MIB are:

Name	Syntax	Value
Slot	INTEGER 0..31	1, 2, 3….31
frameFault	INTEGER	1=NO, 2=TRUE
doorFanFault	INTEGER	1=NO, 2=TRUE
cpuFanFault	INTEGER	1=NO, 2=TRUE
cpuOverTemperature	INTEGER	1=NO, 2=TRUE
doorOpen	INTEGER	1=NO, 2=TRUE

eth1LinkUp	INTEGER	1=NO, 2=TRUE
eth2LinkUp	INTEGER	1=NO, 2=TRUE
psu1Fault	INTEGER	1=NO, 2=TRUE
psu1OverTemperature	INTEGER	1=NO, 2=TRUE
psu1FanFault	INTEGER	1=NO, 2=TRUE
psu2Fault	INTEGER	1=NO, 2=TRUE
psu2OverTemperature	INTEGER	1=NO, 2=TRUE
psu2FanFault	INTEGER	1=NO, 2=TRUE
card1OverTemperature ⋮ card20OverTemperature	INTEGER	1=NO, 2=TRUE

Traps

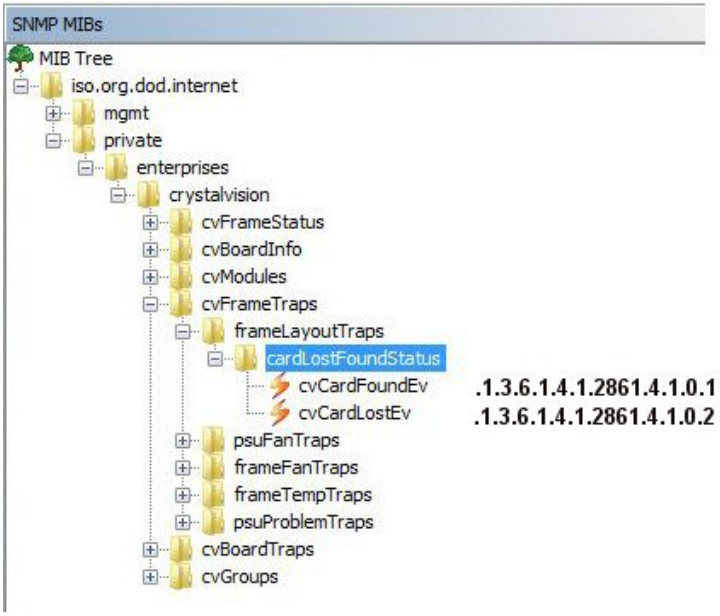
Whenever a status or control value changes, a trap will be sent to the SNMP manager unless filtered (see MIB for trap OIDs). By interrogating this trap it is possible to identify the status change and its consequences. It will be quite common for multiple traps to be sent for any one incident – for example, removing an input may typically trigger eight traps. It will then be down to the SNMP manager to sort these into a hierarchical order or mask as necessary.



Example of a trap received by the SNMP manager

Filters

Any status or control value change can potentially send a trap but these can be filtered by information in the configuration file. The following extract from the MIB tree shows two events with their OIDs that will generate traps if a card is found or lost:



Unless previously edited, the SNMP configuration window will show an example of enabling the trap filter using the events shown above (the below example is from the Indigo frame system):

```
<-- Example to unicast send v1 traps on slot occupation change of state.
This matches Indigo pre version 4.0.
 <snmptrapdestination>
<rocommunity>public</rocommunity>
   <netname>10.0.0.254</netname>
   <trapport>162</trapport>
   <snmpversion>1</snmpversion>
   <snmptrapfilter>
      <filterin/>
      <snmpoidmask>1.3.6.1.4.1.28681.4.1.0.1-2</snmpoidmask>
   </snmptrapfilter>
 </snmptrapdestination>
 -->
```

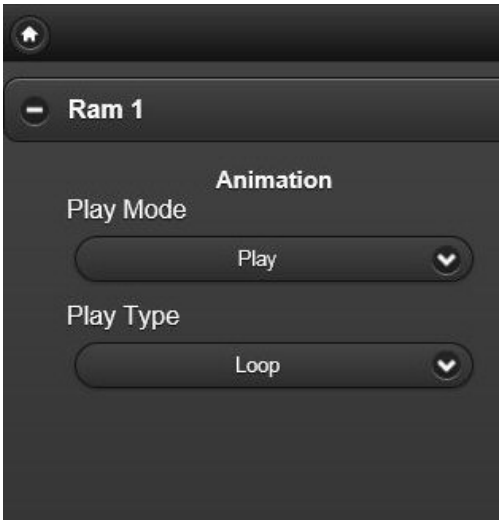
Extract from SNMP configuration window showing example of trap filtering

13.2 Virtual card instructions with example

The following example is based on previous Indigo frames and cards and will differ in detail from the latest Vision frame and VF cards. The principle of constructing a virtual card, however, remains the same.

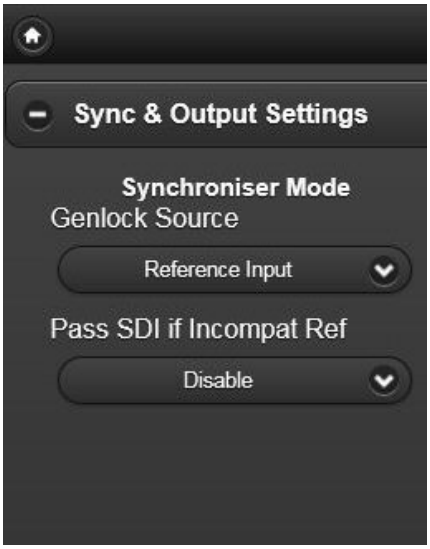
Choose the controls

The following is a screen grab of the 'Play Mode' control of a MultiLogo V132/V432 logo generator with a section of the XML file specific to that control. After that is a screen grab of the 'Genlock Source' control of a SYNNER 310 embedder/de-embedder with its associated XML file detail. In the following example, we will create a simple virtual card that contains a single control only from both cards:




```
- <control>
    <id>170</id>
    <name>Ram1PlayMode</name>
    <label>Play Mode</label>
    <labelfull>Play mode</labelfull>
  - <interface>
      <controlid>170</controlid>
    - <snmpcontrol>
        <id>70</id>
        <snmptableid>3</snmptableid>
      - <snmptrap>
          <snmptraponvalue/>
        </snmptrap>
      </snmpcontrol>
    </interface>
    <default>0</default>
  - <enum>
    - <enumitem>
        <value>0</value>
        <label>Stop</label>
      </enumitem>
    - <enumitem>
        <value>2</value>
        <label>Pause</label>
      </enumitem>
    - <enumitem>
        <value>1</value>
        <label>Play</label>
      </enumitem>
    </enum>
  </control>
- <control>
```

Multilogo 'Playmode' control - XML detail




```
- <control>
    <id>29</id>
    <name>RgpVideoSyncSource</name>
    <label>Source</label>
    <labelfull>Genlock Source</labelfull>
  - <interface>
      <controlid>29</controlid>
    - <snmpcontrol>
        <id>29</id>
        <snmptableid>2</snmptableid>
      - <snmptrap>
          <snmptraponvalue/>
        </snmptrap>
      </snmpcontrol>
    </interface>
    <default>1</default>
  - <enum>
    - <enumitem>
        <value>0</value>
        <label>SDI Input</label>
      </enumitem>
    - <enumitem>
        <value>1</value>
        <label>Reference</label>
        <labelfull>Reference Input</labelfull>
      </enumitem>
    </enum>
</control>
```

SYNNER 310 'Genlock Source' control – XML detail

Rename the template file

To provide an interface consistent with that of real cards, the frame allocates a slot address to each virtual card and the desired slot number is given in the filename. Make a copy of the template file ('VirtualTemplate0.xml.gz') and rename it with a filename that includes the 'virtual slot' number and the unique identifier (no spaces allowed). Use the filename structure 'CardDescription.SlotID.xml.gz. In this example, we will use slot 22 and the name 'VirtualCardTest' by renaming the file 'VirtualCardTest.22.xml.gz'. This file will appear in slot 22 when the file is copied into a frame into the 'virtualcard' folder.

Edit the template file

Each Crystal Vision card type is given a reference (ID) number. The range 900-999 is reserved for virtual cards. The card ID should be unique within any frame. E.g. **<id>900</id>**

The card also needs a name, which must:

- Be unique within the frame.
- Contain only letters and numbers (no spaces).
- Start with a capital letter.

'User900' to 'User999' (depending on the card type ID) will meet these requirements e.g. **<name>User900</name>**

And a label – the name shown on the user interface, which must:

- Be ten characters or less.
- Be made up of letters, numbers and spaces e.g. <label>TestCard</label>

Optionally the card can also have a 'hint', a single line of text that might be shown when a mouse is hovered over the card selection. E.g. **<hint>MultiLogoPlayMode</hint>**

A group of controls is defined by the tag pair <controlgroup> and </controlgroup>. The same tags are used at all levels.

VisionWeb uses a complex set of rules to optimise the presentation of control groups, but typically different levels of controlgroup might appear as follows:

<card>
header section
<controlgroup>
this level appears as a new tab
<controlgroup>
this level appears as an accordion
<controlgroup>
this level appears as a sub-accordion
</controlgroup>
could have more sub-accordions in here
</controlgroup>
could have more accordions here
</controlgroup>
could have more tabs in here
</card>

Each controlgroup must have a name and can also have a label (maximum ten characters) and optionally a 'labelfull', a longer label of up to 24 characters. These labels can contain letters, numbers and spaces. The label is what appears on the control interface; graphical interfaces will use the 'labelfull' if it is present.

A controlgroup cannot be empty, it must contain one or more controls or controlgroups.

The next step is to fill the control groups with the desired controls. The process involves copying the relevant control definition from the XML file for the 'source' card – the real card with the real control. This definition is pasted into the appropriate control group in the virtual card XML and changed as follows:

- The control ID is the number right at the start of the control definition. This must be a unique value in the virtual card, no two controls can have the same ID number. If the virtual card contains controls from more than one real card then two might have the

same ID, by chance or because they are the same control on different cards of the same type. One way to ensure a unique control ID is to change the ID number to a new value that goes up by one each time you add a control. Starting at 10 avoids overlapping with the ID numbers in the header section. Make a note of the original control ID before you overwrite it, you will need in the next few steps.

The remaining changes take place in the 'interface' section:

- The contents of the 'snmpcontrol' section should be deleted. In principle you can have SNMP control of a virtual card. However, SNMP control of a user-created virtual card does not make much sense and the file is smaller and simpler without it.
- Change the 'controlid' to match the number put into the 'id' in step 1.
- Add a 'redirect' section, defined by the tags <redirect> </redirect>. The redirect section tells the frame which slot the real control is in and what its control number is.

For example, using the MultiLogo ‘Play Mode’ control 170 in slot 4:

Before	After
<interface> **<controlid>75</controlid>** **<snmpcontrol> <id>75</id>** **<snmptableid>2</snmptableid>** **<snmptrap>** **<snmptraponupdate/>** **</snmptrap>** **</snmpcontrol>** **</interface>**	**<interface>** **<controlid>10</controlid>** *number changed to match new id* **<redirect>** **<slotid>4</slotid>** *the slot number of the source card (1-12 in a 2U frame)* **<destid>170</destid>** *the control ID of the copied control as it appears on the source card* **</redirect>** **</interface>**

The **slotid** is the slot number that the source card is in. In a Vision 3 frame this will be in the range 1 to 20. Slot 21 in a Vision 3 frame is the frame controller slot and should not be used.

The **'destid'** is the 'id' value of the control as it appears on the source card. This is the number that you made a note of in step 1.

Apart from changing the ID number and the interface section, the control should remain as copied from the source card file.

Repeat this process for each control you want to add.

So for the single MultiLogo ‘Play Mode’ control, we could edit the template XML file as follows:

```
- <controlgroup>
    <name>MultiLogo</name>
    <label>MultiLogo</label>
  - <layout>
      <horizontal/>
    </layout>
  - <control>
      <id>10</id>
      <name>Ram1PlayMode</name>
      <label>Play Mode</label>
    - <interface>
        <controlid>10</controlid>
      - <redirect>
          <slotid>4</slotid>
          <destid>170</destid>
        </redirect>
      </interface>
      <default>0</default>
    - <enum>
      - <enumitem>
          <value>0</value>
          <label>Stop</label>
        </enumitem>
      - <enumitem>
          <value>2</value>
          <label>Pause</label>
        </enumitem>
      - <enumitem>
          <value>1</value>
          <label>Play</label>
        </enumitem>
      </enum>
    </control>
  </controlgroup>
```

The original control id has been replaced with 10 and re-directed to slot 4 control 170. Otherwise the XML code for the MultiLogo ‘Play Mode’ control is the same. The control has been included as the only control in the group ‘MultiLogo’.

Repeating this process for the additional control from the SYNNER 310 in slot 6:

```
- <controlgroup>
    <name>Synner310</name>
    <label>Synner 310</label>
  - <layout>
      <horizontal/>
    </layout>
  - <control>
      <id>11</id>
      <name>RgpVideoSyncSource</name>
      <label>Genlock Source</label>
    - <interface>
        <controlid>11</controlid>
      - <redirect>
          <slotid>6</slotid>
          <destid>29</destid>
        </redirect>
      </interface>
      <default>1</default>
    - <enum>
      - <enumitem>
          <value>0</value>
          <label>SDI Input</label>
        </enumitem>
      - <enumitem>
          <value>1</value>
          <label>Reference</label>
          <labelfull>Reference Input</labelfull>
        </enumitem>
      </enum>
    </control>
  </controlgroup>
</controlgroup>
```

The new control id 11 is created and then re-directed to slot 6 control 29. The new control has been included as the only control in the group ‘Synner310’.

Repeat this process for as many controls as required, nesting the controls to be within the correct groups.

Check the edited file against the XML schema

If you are using a dedicated XML editor, it should be able to check the XML file for validity against the Crystal Vision schema file (CrystalVision.xsd). The preferred 'Oxygen' XML editor does this automatically. The schema file is included with the XML files download from the Registered Area on the Crystal Vision website.

Transfer the file to the frame

Once you have got the controls you want you need to FTP transfer the XML file to the **virtualcard** directory in the frame. Then reboot the frame. The virtual card will then be available in its new virtual slot to be accessed by VisionWeb, VisionPanel or by the Vision 3 front panel:

Screen grab showing new virtual card 'TestCard' in slot 22 in addition to the existing MultiLogo and SYNNER 310 cards in slots 4 and 6

Clicking on '22 TestCard' will open up the new virtual card:

For the simple example above, the new controls were each added to two 2nd level controlgroups 'MultiLogo' and 'Synner310', which were both included in the 1st level controlgroup (tab) 'Control'. The controls could have been combined into one group or allocated separate tabs by correct nesting of the XML control definitions within the hierarchy. The hierarchy of the control groups was created like this:

controlgroup	controlgroup	control
<controlgroup> <name>**Control**</name>		
	<controlgroup> <name>**MultiLogo**</name>	
		<control> <id>10</id> <label>**Play Mode**</label> </control>
	</controlgroup>	
	<controlgroup> <name>**Synner310**</name>	
		<control> <id>11</id> <label>**Genlock Source**</label> </control>
	</controlgroup>	
</controlgroup>		

More controls could have been included in either the controlgroups ‘MultiLogo’ or ’Synner310'.

If we were to change the above nesting by missing out the 2nd level of controlgroups but adding an additional 1st level controlgroup like this:

controlgroup	control
<controlgroup> <name>**MultiLogo**</name>	
	<control> <id>10</id> <label>**Play Mode**</label> </control>
</controlgroup>	
<controlgroup> <name>**Synner310**</name>	

```
                                        <control>
                                        <id>11</id><label>Genlock
                                        Source </label> </control>
</controlgroup>
```

We will produce the following with two tabs:

Adding a 3rd level of controlgroups like this:

controlgroup	controlgroup	controlgroup	control

```
<controlgroup>
<name>Control
</name>
        <controlgroup>
        <name>MultiLogo</name
                <controlgroup>
                <name>Animation
                </name>
                        <control> <id>10</id>
                        <label>Play Mode
                        </label>
                        </control>
                </controlgroup>
        </controlgroup>

        <controlgroup>
        <name>Synner310</name
        >
                <controlgroup>
                <name>Reference
                </name>
                        <control> <id>11</id>
                        <label>Genlock Source
                        </label> </control>
                </controlgroup>
```

```
        </controlgroup>
</controlgroup>
```

Will produce the following with a single tab ‘Control’ but with two groups that open when selected to reveal the included controls: