

Evertz VIP-PRO Multiviewer driver

Version 3.0.5

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1 Overview

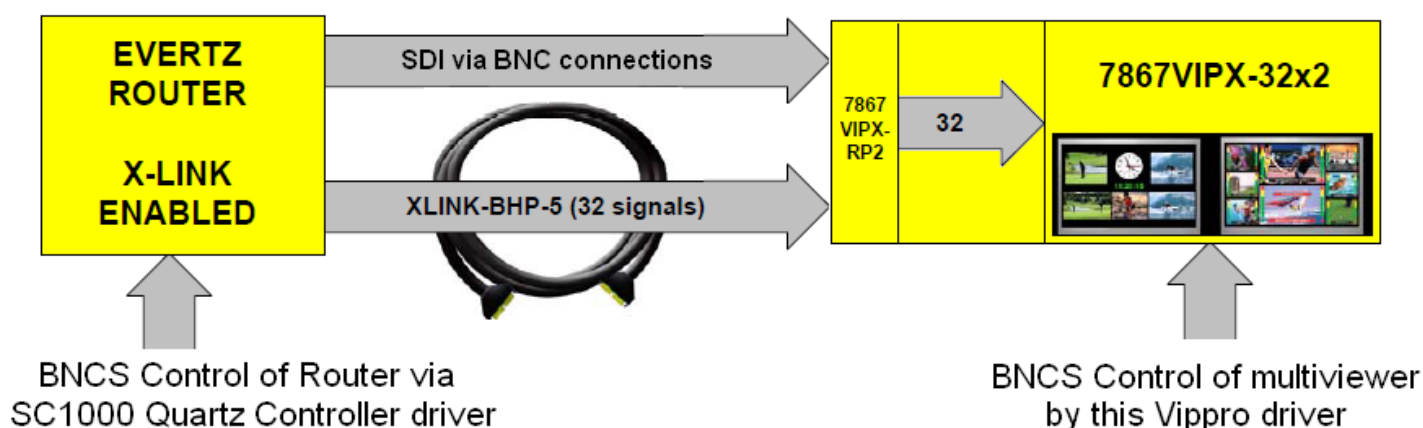
1.1 Description

This BNCS driver is designed to control the Evertz VIP-PRO range of multiviewers. These multiviewers are designed to be connected to and take their video inputs from Evertz Routers. There are two ranges of display devices – the VIP-A and more versatile VIP-X

The VIP-A series has a number of input options from 8, 12, 16, 18, 24 and 32 SDI inputs with 2 display outputs.

The VIP-X is especially designed to function in conjunction with the Xenon or EQX router ranges which are equipped to work with Evertz's X-Link interconnects. The VIP-X multiviewers start with a 32 input system for small routers up to 288 inputs, allowing up to 72 multi-image preconfigured layouts for the 2 display outputs. The X-Link connectors provide an additional set of inputs to the multiviewers as well as the standard BNC SDI video inputs.

All the devices in the VIP-PRO range can have their display layouts designed and configured by using the Evertz Maestro software.



Evertz Xenon, EQX and other routers controlled by the BNCS Quartz Controller driver completes the video monitoring chain. The router is used to determine which signals are routed to the multiviewer for display on the configured multiviewer layouts.

1.2 Multiviewer functionality available via this driver

(a) Display Labels and Tallies –

Output windows can, via the Evertz Maestro software, be set up to display text based UMDs and coloured tallies. This text, often the video source name, written to the appropriate infodriver slot(s) will be seen under the relevant outputs. Two tallies on the left and right of the UMD label can be used to indicate on-air status etc. The colour of the active tallies is determined within the Maestro configured layout.

(b) Change current Layout –

Up to 72 different video window layouts can be stored on a multiviewer. There is an infodriver slot per display by which the user can specify the layout name to be recalled.

Layouts need to have already been designed, configured and saved on the multiviewer by using the Maestro software first. Specifying a layout that does not exist will result in failure to change the current display.

(c) SDI Output Control –

There are a number of different video outputs from the hardware, including DVI and two SDI outputs. By default the SDI outputs mirror that of the DVI – namely the current layout, but via the driver, this can be changed to route any of the X-Link inputs. First the SDI output mode must be set to “Route” rather than “Display” mode and then desired X-Link input may be specified for the SDI output.

Note – the ability to change the SDI output mode is only available on some VIP-X / VIP-A hardware modules. Please refer to Evertz VIP-X manual for specifics.

(d) X-Link Input Control – **VIP-X Devices only**

There are two X-Link inputs to VIP-Xs a “main” input and a “reserve/redundant” input connection. By default the main connection is used to feed the video output windows. The driver enabled the user to switch all the outputs to use the “redundant” X-Link feed as input en masse for all outputs or set individual outputs to use either the main or reserve X-Link input.

Recommended reading:

Evertz MVP Maestro User's Manual – on layout creation and configuration.

Evertz VIP-X System Manual

Evertz EQX Manual

1.3 Differences between the VIP-A and VIP-X devices as handled by driver

The main difference between the two ranges of VIP-PRO multiviewers is in the additional X-Link functionality available for the VIP-X only. The VIP-A only has BNC connectors for its SDI inputs. The driver automatically determines the types of server it is connected to and will only utilize the appropriate infodriver slots. If the device is a VIP-A then any slots linked to X-Link routing will be ignored for that server.

2 Driver setup

This is a BNCS Wizard based C++ Driver, written to be compliant with either a version 3 or 4.5 Control system. The driver requires a single command line parameter, corresponding to the device ID of a BNCS Infodriver that will be hooked into by this driver. The number of the device must lie in the range 1 to 999. This Infodriver ID is required for two purposes:

1. To enable construction of the corresponding Initialisation (ini) file – (see below).
2. To enable interfacing with the corresponding Infodriver.

If an invalid ID is supplied, (or none at all), execution will stop, and a message will be displayed indicating a valid command line parameter must be supplied. The Infodriver must also be running prior to starting the driver, else the driver will not start, again displaying an appropriate error message.

2.1 Ini file settings

The driver's ini file name is directly associated with the Infodriver ID given at the command line, and takes the form "dev_ddd.ini", where *ddd* denotes the Infodriver ID. The first time the driver is executed, (in the absence of a pre-written ini file); default values will be assigned as described in the various sections below. Upon subsequent iterations of the process, Infodriver slot values will be left alone unless blank or invalid:

It is always assumed that there is a valid instance of the Infodriver running before execution of the driver. If this is not the case, the driver will only start once this requirement has been satisfied.

Version 3 of this driver only uses TCP/IP connections to the hardware. The earlier versions of this driver used a SNMP connection for some control, but this is now redundant and no longer recommended.

UMD Labels and GPI tallies use the TCP/IP Port 9800 – and send commands using the Image Video protocol. TCP/IP Port 9750 is used to send display Layout commands and this uses a Symphony Command protocol.

Item	Value	Comment
General Driver Settings		
Debug Mode	1	Default setting is debug on (1) , to turn debug messages off (0)
Log Mode	0	Default setting is log to file off (0) , to enable logging to file (1)

Item	Value	Comment
Specific Server Settings		Settings required for each of the 8 VIPPRO servers
VIPPRO_Identity	-text -	Useful description to identify server on driver GUI
VIPPRO_Location	-text -	Useful description to identify vippro devices
VIPPRO_Output_1 VIPPRO_Output_2	-text - -text -	Useful description to identify the two displays within a device, for identity only
ServerTCIPAddress	0.0.0.0	IP Address of hardware for driver to connect to
ServerTCIPPort	9800	Default TCP-IP port for UMD Label and tally connection
ServerTalliesPort	9750	Default TCP-IP port for Display Layout connection

Note: Versions prior to 3 had ini file entries for SNMP values, one of these entries was "ServerSNMPAgent" which was for the TCP/IP address to connect to. This Version 3 driver looks for this entry and if it finds it will use it and add the "ServerTCIPAddress" entry with the same value.

2.2 Sample Ini File

```
[Evertz_VIPPRO]
DebugMode=1
LogMode=0

[VIPPRO_Server_1]
VIPPRO_Identity=11/MVWR001
VIPPRO_Location=1TER11/C05/01-01
VIPPRO_Output_1=PROD QUAD SPLIT 1
VIPPRO_Output_2=PROD QUAD SPLIT 2
VIPPRO_Type=VIPX,8
ServerTCIPPort=9800
ServerTCIPAddress=10.253.92.1
ServerTalliesPort=9750

... etc up to ... [VIPPRO_Server_8]
```

3 Infodriver

3.1 Slot Usage

Each of the 8 servers has 500 infodriver slots allocated for their use according to the table below. Server 1 uses slots 1...499, Server 2 uses slots 501...999, Server 3 1001...1499, all the way up to Server 8 using slots 3501...3999. Slots 4001 to 4096 are allocated for general driver information. There are no spare slots for any other user use.

Slots	Function	Access
SERVER 1	Slots 1 - 499	
1 - 99	UMD Labels – text written to slots is displayed on associated output window	Read/Write
101-199	Enable ("1") / Disable ("0") - changes UMD label GPI Tally on output window	Read/Write
201 -232	Enable ("1") / Disable ("0") Left GPI Tallies on output window	Read/Write
251 – 282	Enable ("1") / Disable ("0") Right GPI Tallies on output window	Read/Write
301 – 332 (VIPX only)	X-link Inputs Status - switch INDIVIDUAL inputs between main and redundant x-links – c.f. slot 412 Reserve 1=Main 2=Redundant /	Read/Write
401	Run Script - to change Layout on display 1 – format : enter layout name	Read/Write
402	Run Script - to change Layout on display 2 – format : enter layout name	Read/Write
411 (VIPX only)	X-link Switching Mode Status – defines how to switch between main and redundant x-link connections mode 1=Manual 2=Auto mode	Read/Write
412 (VIPX only)	X-link Inputs Status - switch ALL inputs between main and redundant x-links - c.f. slots 301..332 Reserve 1=Main 2=Redundant /	Read/Write
421	SDI Output 1 – Mode status 1=Display Mode – sdi video output mirrors that of the DVI Output 2=Route Mode - sdi output shows a specified video Input	Read/Write
422	SDI Output 1 – Route video input – valid values 1..32 , if SDI output mode is set to Route	Read/Write
423	SDI Output 2 – Mode status 1=Display Mode – sdi video output mirrors DVI Output 2=Route Mode - sdi output shows a specified video Input	Read/Write
424	SDI Output 2 – Route video input – valid values 1..32 , if SDI output mode is set to Route	Read/Write

Slots	Function	Access
497	Identifying text for device from device ini file	Read Only
498	Server 1 device type as returned from the hardware – showing if it is a VIP-A or VIP-X	Read Only
499	Server 1 connection state – 0=disconnected, 1=TCPIP connection, no SNMP, 2=SNMP connection, no TCPIP, 3=All Connections OK	Read Only
SERVER 2	Slots 501 – 999	
501 – 599	UMD Labels – text written to slots is displayed on associated output window	Read/Write
601 – 699	Enable ("1") / Disable ("0") - changes UMD label GPI Tally on output window	Read/Write
701 – 732	Enable ("1") / Disable ("0") Left Tallies on output window	Read/Write
751 – 782	Enable ("1") / Disable ("0") Right Tallies on output window	Read/Write
801 – 832 (VIPX only)	X-link Inputs Status - switch INDIVIDUAL inputs between main and redundant x-links – c.f. slot 412 1=Main 2=Redundant	Read/Write
901	Run Script - to change Layout on display 1 – format : enter layout name	Read/Write
902	Run Script - to change Layout on display 2 – format : enter layout name	Read/Write
911 (VIPX only)	X-link Switching Mode Status – defines how to switch between main and redundant x-link connections 1=Manual mode 2=Auto mode	Read/Write
912 (VIPX only)	X-link Inputs Status - switch ALL inputs between main and redundant x-links - c.f. slots 301..332 1=Main 2=Redundant	Read/Write
921	SDI Output 1 – Mode status 1=Display Mode – sdi video output mirrors DVI Output 2=Route Mode - sdi output shows a specified video Input	Read/Write
922	SDI Output 1 – Route video input – valid values 1..32 , if SDI output mode is set to Route	Read/Write
923	SDI Output 2 – Mode status 1=Display Mode – sdi video output mirrors DVI Output 2=Route Mode - sdi output shows a specified video Input	Read/Write
924	SDI Output 2 – Route video input – valid values 1..32 , if SDI output mode is set to Route	Read/Write
997	Identifying text for device from device ini file	Read Only
998	Server 2 device type as returned from the hardware – showing if it is a VIP-A or VIP-X	Read Only
999	Server 2 connection state – 0=disconnected,	Read Only

Slots	Function	Access
	1=TCPIP connection, no SNMP, 2=SNMP connection, no TCPIP, 3=All Connections OK	
SERVER 3	Slots 1001 – 1499	
1001 – 1099	UMD Labels – text written to slots is displayed on associated output window	Read/Write
.etc...up to 1499	Server 3 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
SERVER 4	Slots 1501 – 1999	
1501 – 1599	UMD Labels – text written to slots is displayed on associated output window	Read/Write
..Etc...up to 1999	Server 4 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
SERVER 5	Slots 2001 – 2499	
2001 – 2099	UMD Labels – text written to slots is displayed on associated output window	Read/Write
.etc...up to 2499	Server 5 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
SERVER 6	Slots 2501 – 2999	
2501 – 2599	UMD Labels – text written to slots is displayed on associated output window	Read/Write
..Etc...up to 2999	Server 6 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
SERVER 7	Slots 3001 – 3499	
3001 – 3099	UMD Labels – text written to slots is displayed on associated output window	Read/Write
.etc...up to 3499	Server 7 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
SERVER 8	Slots 3501 – 3999	
3501 – 3599	UMD Labels – text written to slots is displayed on associated output window	Read/Write
..Etc...up to 3999	Server 8 connection state – 0=disconnected, 1, 2 , 3=All Connections OK	Read Only
4001	Overall Driver Status – 0=Not Running/Failed in some way, 1=Driver Running OK	Read Only
4002	Debug setting status can be viewed or changed thru this slot. Writing '0' will turn debug messages off, '1' will turn them on. (note: Have debug turned on can be detrimental to overall performance of the driver – by default it is turned off)	Read/Write

4 Driver GUI design

Driver Status - if TXRX then it will be the main driver and will connect and control the hardware

Status information for each VIPPRO server, as defined in the device ini file. Connection settings and status, latest layout, current values for XLink Mode and Xlink Inputs, and for the two SDI Outputs

Debug and error messages shown in this window. By default only important messages will be displayed. Select "Show All Messages" in Menu-Debug to display more debug if required.

Driver application and debug window

This window can provide at a glance the state of the driver. The driver Status should read "Running OK", and the Infodriver Status will either say "TX-RX Main" or if the driver is running as reserve "RX-Only Reserve".

The interface settings and status data received from the devices will be displayed for each defined server. If the driver is running as reserve these status fields will be blank and Status field as "Disconnected".

Options under Menu-Settings include the ability to force the driver to reconnect to all defined servers, reassert all UMDs to all server outputs and push a driver into either TXRX (main) mode or RXOnly (reserve) mode. When changing a driver mode from this menu option, first push the main driver into RXONLY / reserve mode and then immediately force the other driver instance from RXOnly into TXRX / main mode.

5 Resilience and Redundancy

This driver can function in full BNCS resilient/ redundant mode – i.e. two or more instances of a driver connected to infodrivers of the same device number. The infodriver must run on the same workstation as the driver instance. The Evertz hardware supports only 1 valid SNMP and 1 TCPIP connection at any one time. The effect of this is that the Vippro driver running in BNCS TX-RX mode will be the “main” driver and connect and drive to the hardware, whilst the driver running as RX-ONLY will be the “reserve” driver and disconnect from the hardware. Should the main driver / workstation stop running, when the reserve driver becomes TX-RX then it will establish a connection to the hardware and become the main.

6 Version history

6.1 Driver version

Version No	Date	Details	Name
1.1	March 2010	First release of driver	Paul Wilkins
1.2	April 2010	Addition of UMD GPIs	Paul Wilkins
1.3	Sept 2010	Additions to ini file settings and Driver Gui revision	Paul Wilkins
1.3.1	Sept 2010	Amended slot usage to allow for 99 umds and gpi tallies	Paul Wilkins
3.0.0	Aug 2012	Revised driver uses TCP/IP for all connectivity With significant increase of speed in functionality	Paul Wilkins
3.0.1	Jan 2013	Debug setting can be monitored or changed via infodriver slot 4002	Paul Wilkins
3.0.5	Sep 2014	Internal enhancements for tally processing to improve on how messages get to the hardware	Paul Wilkins

6.2 Document version

Version No	Date	Details	Name
1.0	March 2010	Initial Driver Documentation	Paul Wilkins
1.1	April 2010	Revisions for VIP-A hardware	Paul Wilkins
1.2	Sept 2010	Updates for version 1.3 of driver	Paul Wilkins
1.3	Aug 2012	Revised doc for Version 3 of driver	Paul Wilkins
1.4	Jan 2013	Updated docs for addition of slot 4002	Paul Wilkins
1.5	Sep 2014	Keeping docs in sync with driver version	Paul Wilkins