Imagine
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User Manual

QS100HD™

HD quad-split module for Sony™ LMD monitors

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Publication Information

Trademarks

Contact Information

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- ▪ Support Contacts: http://www.imaginecommunications.com/services/technical support/
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Contents

Preface

Manual Information

Purpose

This manual details the features, installation, operation, maintenance, and specifications for the Harris QS100HD™ quad-split module for Sony™ LMD monitors.

Audience

This manual is written for engineers, technicians, and operators responsible for installation, setup, maintenance, and/or operation of the Harris QS100HD™ quad-split module for Sony™ LMD monitors.

Revision History

Edition	Date	Comments
V.05	February 2008	1st full release
V.06	May 2008	2nd full release
V.07	November 08	3rd full release w/new ZCon graphics.

Table 1): Revision history of manual

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Term or Convention	Description
Bold	Dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names.
Italics	E-mail addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis.
CAPS	A specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE.
Code	Variables or command-line entries, such as a DOS entry or something you type into a field.
>	The direction of navigation through a hierarchy of menus and windows.
hyperlink	A jump to another location within the electronic document or elsewhere.
Internet address	A jump to a Web site or URL.
Tip	Advice or recommended practice
Note	Important information that helps to avoid and troubleshoot problems.

Table 2): Writing Conventions

Obtaining Documents

Product support documents can be viewed or downloaded from our website. Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.

2. Confirm that you have received all items listed on the packing list.

3. Contact your dealer if any item on the packing list is missing.

4. Contact the carrier if any item is damaged.

5. Remove all packaging material from the product and its associated components before you install the unit.

Keep at least one set of original packaging, in the event that you need to return a product for servicing.

Product Servicing

Except for firmware upgrades, Harris QS100HD multiviewer modules are not designed for field servicing.

All hardware upgrades, modifications, or repairs require you to return the modules to the Customer Service center.

Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, and then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service.

If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

-   The packaging must be able to withstand the product's weight.
-   The product must be held rigid within the packaging.
-   There must be at least 2 in. (5 cm) of space between the product and the container.
-   The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Restriction on Hazardous Substances (RoHS) Compliance

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)—sets limits on the use of certain substances found in electrical and electronic equipment.

The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling.

The Directive, which took effect on July 1, 2006, refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

According to this EU Directive, all products sold in the European Union will be fully RoHS-compliant and "lead-free." (See our website, for more information on dates and deadlines for compliance.)

Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation.

Equipment that complies with the EU directive will be marked with a RoHS-compliant emblem, as shown below.

Figure 1: RoHS Compliance Emblem

Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from

Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled.

See the Harris website, www.harris.com for more information on dates and deadlines for compliance.

Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown below.

Figure 2: WEEE Compliance Emblem

Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. If this product is rack-mountable, it should be mounted in an appropriate rack using the rack-mounting positions and rear support guides provided. It is recommended that each frame be connected to a separate electrical circuit for protection against circuit overloading.

If this product relies on forced air cooling, it is recommended that all obstructions to the air flow be removed prior to mounting the frame in the rack.

If this product has a provision for external earth grounding, it is recommended that the frame be grounded to earth via the protective earth ground on the rear panel.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Introduction

The QS100HD HD Quad module is an HD four-window display processor card designed specifically for selected Sony LMD production monitors.

It is configurable as a Quad-split or any 4 window arrangement. It can drive LMD HD displays up to a resolution of 1920 x 1080, with auto-sensing of analog composite, SDI and HD-SDI inputs.

Main features

- 4 auto-sensing HD SDI, SDI and composite video inputs
- Full-screen, quad-split and any 4-window display configuration
- 10-bit resolution for all digital inputs
- Compatible with the Sony LMD series of HD monitors
- DVI-D output supporting 1920 x 1080p
- HD-SDI output at 1080i or 720p dependent on DVI output resolution and frame rate.
- No more than 1 frame of delay from source to display
- Control options include ZConfigurator software, LMD front panel for full screen selection of any source, GPI and LAN
- Supports embedded audio metering with up to 16 in-picture audio meters per video window
- 4 GPI inputs for external triggers
- Dynamic & static UMD support
- Configurable tally lamps, up to four tally lamps per video window
- Supports user bitmaps and logos
- NTP timecode support with clocks with Up/Down timers
- Built in test patterns for display calibration

Video sources are rendered as scalable windows with no more than 1 frame of delay from source to display. The QS100HD multiview output can be monitored by 1) looping its DVI output to the LMD HD monitor's DVI input or 2) connecting its HD-SDI output to suitable video input on another LMC monitor.

The QS100HD enhanced graphics engine delivers pristine image quality and can reproduce fine details even for small video windows. Each video input is equipped with an advanced de-interlacing and scaling engine to ensure high quality monitoring.

There is a wide range of applications wherever high quality real time monitoring, centralized control and configurable virtual monitor walls are required.

Typical applications include:

- Broadcast Monitoring in Studios and Production Control
- Broadcast Monitoring in Master Control Rooms
- Satellite Center & Cable Head-end Monitoring

Figure 3: Typical Broadcast Application

Applicable Sony LMD monitors

The QS100HD is an integrated solution that fits into the expansion slot of Sony LMD production monitors with the following details:

LMD-2450W: S/N 3003387 and later; exfactory from 19th December 2007

LMD-2050W: S/N 3003370 and later; exfactory from 18th December 2007

LMD-4250W: S/N 3000001 and later; exfactory from 7th January 2008

Using presets

A range of preset layouts are available as standard and further layouts may be created with video tiles scaled to any size using ZConfigurator. Any image can be made to fill the screen using Full-Screen Mode.

GPIs, Dynamic UMDs and Tallies

There are 4xGPI inputs which can be configured using ZConfigurator to control Full Screen, Layout Recall or Tally lamps.

Note GPIs are OFF by default.

GPI functionality toggles on whether a GPI is closed or not, for example, when enabled, a contact closure on GPI 1 will cause PiP 1 to go Full Screen on the display where it is positioned. Contact open will cause the full screen display to revert to the preset layout.

GPIs can be configured to turn on one Tally lamp per PIP on and off. Contact closure on GPI inputs can toggle any selected Tally.

GPIs must be turned on and configured via ZConfigurator.

Two types of tally are supported, GPI triggered tallies or router controlled tallies. GPI inputs can be used to trigger events such as tally display. The GPI interface supports up to 4 tallies in total and the router interface supports four tallies per PiP

The multiviewer also supports up to two UMD (Under Monitor Display) captions per PiP with up to 16 characters per UMD. Tally status and UMDs can be dynamically updated from attached routers.

Note GPI and router tallies cannot be used at the same time.

Router tallies and captions are configured via ZConfigurator and can be positioned within the PiP.

QS100HD interfaces to a selection of industry routers via Ethernet. This ensures that source idents, UMDs, and tally status are dynamically updated by the router or UMD controller.

Refer to the Using ZConfigurator chapter, online help and/or Operation chapter for further details of UMD and Tally configuration.

Clocks and Timecode

Internally generated clock formats use a handless analog design with a digital clock at its center and a digital only clock (similar to the timer). The clock size and position can be changed using ZConfigurator.

Figure 4: Internal clocks and timers

In the analog clock shown on the left, yellow dots precede around the clock edge in place of hands turning red for the last ten seconds.

Clocks may be synced to an external NTP server. This is an application running on a local server which can synchronize to a time source such as GPS or other master time source.

Control options

QS100HD may be controlled via ZConfigurator software, GPI closures and source fullscreen select from the front panel of the LMD monitor in which it is installed.

LMD front panel control

The LMD monitor in which the QS100HD is installed can display any of the 4 sources in full screen by selecting one of them from the front panel.

A multi-image display available from the DVI-D output should be connected to the DVI input of the monitor in which the QS100HD is installed. The DVI source button on the LMD front panel can then be selected for the multi-image display.

Note The HD-SDI O/P will also provide a multi-image display.

Layout control using ZConfigurator

ZConfigurator is a Windows application allows layout configurations to be created and edited for compatible multiviewers.
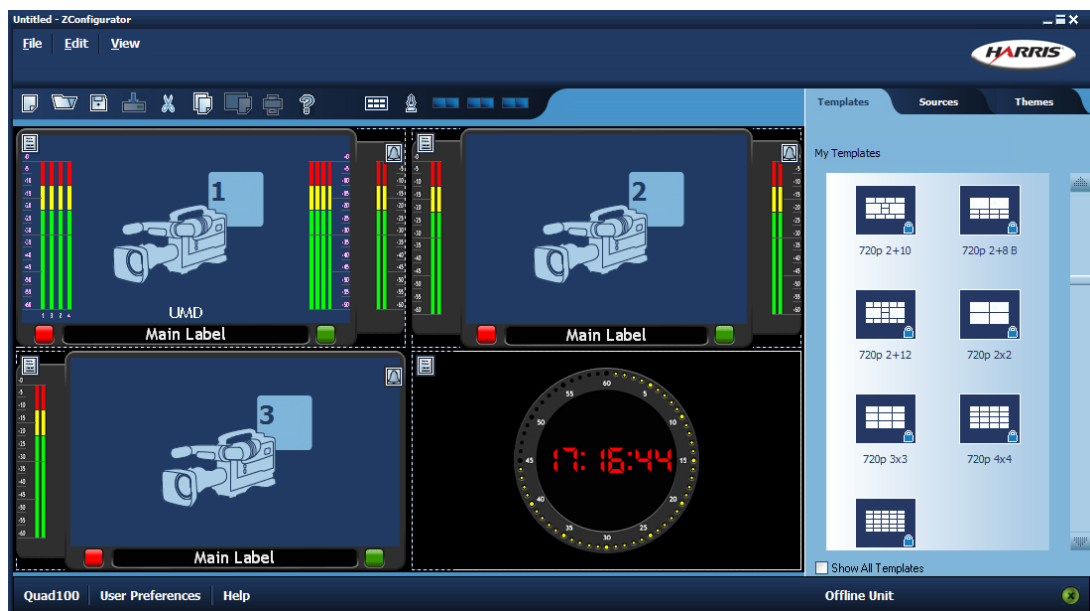

Figure 5: ZConfigurator Layout Editor

ZConfigurator runs on any personal computer running a Microsoft operating system and interconnects with the unit via the Ethernet port at the rear of the module.

ZConfigurator can be used to interconnect to multiple QS100HD or other compatible multiviewer units if a network is used. ZConfigurator allows preset layouts stored in each multiviewer to be edited to create custom presets or new layouts to be created using a resource library containing Layout Templates, Source Graphics and Layout Styles.

Presets and new layouts can be stored in the multiviewer as well as local PC storage and recalled for later use.

ZConfigurator Features

- Create new or edit existing layout configurations
- Read and edit all presets on any compatible multiviewer
- Save presets to attached multiviewer and/or local PC storage
- Create new presets in off-line mode
- Resource library with readymade styles, templates, source graphics, analog/digital clocks and timers
- Print layouts

ZConfigurator layout controls

- Assign source to any PiP and define which are visible
- Change label text and assign any color to text, border and background
- For each PiP define the following properties
- PiP position and size using drag and drop
- PiP border margins and color
- PiP labels text, color and background
- Audio bargraphs – choose over/under thresholds
- Tally and UMD events
- PiP format – 4:3/16:9
- PiP layering priority – not applicable to QS100HD
- Add clock and/or up/down timers

Installation

The following advice is intended for user guidance and safety.

Service

Service instructions are for trained personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so.

Do not install substitute parts or perform any unauthorized modification to the unit.

These are solid state units with low supply voltage rails; however, mains voltages are present on certain parts of the unit. These parts are not accessible under normal operating conditions. There are no user serviceable parts within and only suitably qualified persons should carry out any repairs or modifications. The mains supply must be disconnected before removing any covers.

Applicable LMD monitors

The QS100HD board should only be installed in Sony LMD monitors with the following manufactured dates and serial numbers:

LMD-2450W: 3003387 and later; exfactory from 19th December 2007

LMD-2050W: 3003370 and later; exfactory from 18th December 2007

LMD-4250W: 3000001 and later; exfactory from 7th January 2008

Install the QS100HD as follows:

- Remove any power supply to the LMD monitor
- Ensure that the QS100HD module has been full inserted and its bezel is flush with the monitor connector panel.

If the module is not fully inserted the multimage display may function correctly but could result in the fan failing to startup and result in the system overheating.

- When the module has been correctly fitted re-power the monitor by connecting the power cord
- Check that front panel source select controls (A1, B1, A2, B2) operate and that a faintly audible fan noise is heard 5 seconds after power up.

If this check fails, **UNPOWER THE MONITOR** and check that the QS100HD module is fully inserted.

- Connect appropriate input signals to rear I/O
- Connect the supplied DVI cable between the DVI output of the QS100HD and the DVI input of the display
- Refer to the Operation chapter for system and configuration settings

QS100HD Connector I/O

All QS100HD I/O connectors are factory fitted at the rear of the unit.

Figure 6: QS100HD rear I/O

Input I/O and GPI pin-out

Connect HD SDI, SDI or CVBS video to the IN BNC connectors. Connect a DVI display to the DVI-D output.

GPI pin-out

Figure 7: GPI I/O Pinout

Pin No	Function	Pin No	Function
1	GPI In 2	5	GND
2	GND	6	GND
3	GPI In 3	7	GPI In 4
4	GPI In 1	8	GND

Table 3): GPI I/O connector

GPI inputs are active when low (grounded).

Display Output

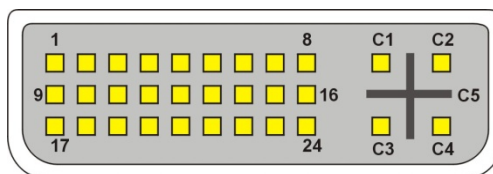High quality DVI cable should be used for digitally connected displays.

Figure 8: Display Output

Pin No	Description	Pin No	Description
1	DATA 2+	16	Hot Plug Detect
2	DATA 2-	17	DATA 0-
3	DATA 2/4 SHIELD	18	DATA 0+
4	DATA 4-	19	DATA 0/5 SHIELD
5	DATA 4+	20	DATA 5-
6	DDC CLOCK	21	DATA 5+
7	DDC DATA	22	CLOCK SHIELD
8	N/C	23	CLOCK+
9	DATA 1-	24	CLOCK-
10	DATA 1+		
11	DATA 1/3 SHIELD	C1	N/C
12	DATA 3-	C2	N/C
13	DATA 3+	C3	N/C
14	+ 5V Power	C4	N/C
15	DATA GND	C5	Analogue Ground

Table 4): DVI display output

Note QS100HD uses a DVI-I connector to maximize compatibility with the widest range of cables but has NO analog RGB outputs. This means that a DVI-I cable will carry the digital part of the DVI signals to the display as well as a DVI-D cable.

Operation

The A1, B1, A2 or B2 front monitor buttons control sources and the DVI input button is used to select the QS100HD multiview output.

There are no controls to configure the QS100HD at the monitor and all multiviewer settings and layout control are accomplished using ZConfigurator software.

Note The monitor's LCD status screen will display QS100HD status information when the monitor is powered up.

Getting Started

All connections are made to the rear of the QS100HD module installed in an appropriate LMD Sony monitor.

Figure 9: rear view

Connect HD, SD or Composite video to the In BNC connectors. Inputs are autodetected. Properly screened high quality video cable should be used.

For a complete installation guide see the [Installation](#) chapter.

Power the monitor and use the front panel controls A1, B1, A2 or B2 to select one of the four sources to full screen. This bypasses QS100HD processing, so the multiview display from the QS100HD DVI output can only be seen if that output is fed back into the monitor's DVI input.

Note The supplied DVI cable should normally be fitted between the two DVI connectors at the rear of the unit.

To use the QS100HD multi-image display, press the DVI input button. Each input contributes to a PiP or video tile on the display output. PiPs are labeled using A/B input numbers by default.

Tip For multiview display on another monitor use the either the HD-SDI or QS100HD DVI output. If the DVI output is used, the LMD monitor with the QS100HD will still be able to display any of the 4 sources in full screen by selecting one of the sources from the front panel.

If this is the first time the unit has been used, or if factory settings have been recalled, the first preset will be shown on the LMD monitor.

Note If a PiP has no source connected, a blue PiP window is shown for that source.

©

Using ZConfigurator

QS100HD layout presets are loaded into ZConfigurator when it connects to a multiviewer. The factory presets are optimized for a particular output resolution and the size of the windows are as large as possible to fit within horizontal and vertical constraints.

ZConfigurator requires a PC with one or more connected multiviewers.
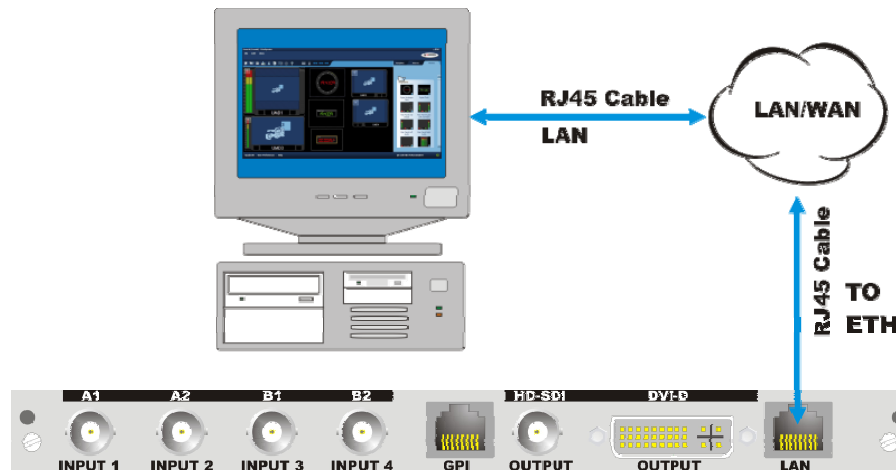

Figure 10: ZConfigurator and single QS100HD system

Establishing a connection

- Connect the QS100HD LAN port via TCP/IP using a direct Ethernet connection (single multiviewer) or via a LAN (multiple multiviewers)
- Power the LMD Monitor/QS100HD
- The Monitor LCD screen should show the current QS100HD IP address (and MAC address) for about 7 or 8 seconds
- Make a note of the IP address

Although ZConfigurator searches for multiviewers when first it starts, the PC running ZConfigurator and the multiviewer **MUST** have IP addresses in the same range.

For this reason the IP address of the PC has to be changed to lie in the same sub-net as the QS100HD for first time connection.

There is no way to change the IP address on the QS100HD from the monitor controls.

To continue the first time connection procedure:

- Change the PC's IP address to one in the same subnet range as the QS100HD
- Launch ZConfigurator and double-click on the QS100HD connection icon (or right click and select Connect)
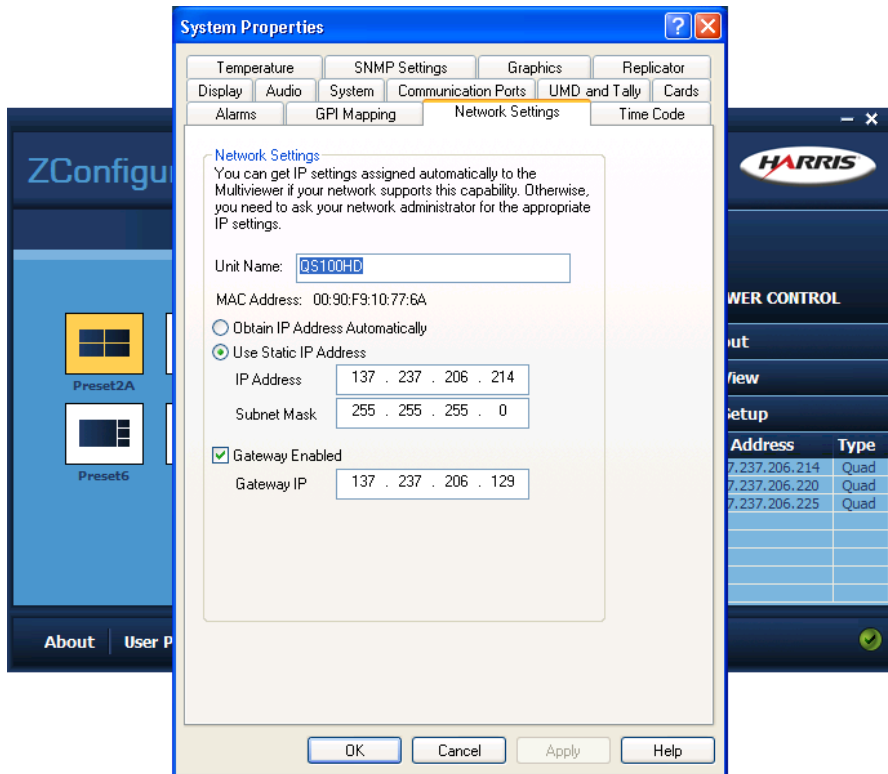- Select *System Setup* and click on the *Network Settings* tab.

Figure 11: Network Settings

- Enter a static IP address and appropriate subnet mask that matches the network.
- If required, enable and enter a gateway address
- Click *OK* to apply when done.
- Return the PC to its normal network address
- Right click in the blue connection area and initiate a new search (or restart ZConfigurator)
- The QS100HD connection icon appears

Once multiviewers are autodetected they can be connected to by double-clicking on their connection icons (or by right-clicking a connection icon and selecting Connect).

Press F1 from within ZConfigurator for further help with IP addresses.

Basic settings

Setting output type and standard

To configure the output of the multiviewer, from ZConfigurator select *System setup* and choose the *Display* tab.

The DVI connector includes a single link digital signal. To set the output resolution, select the *Configure* button.
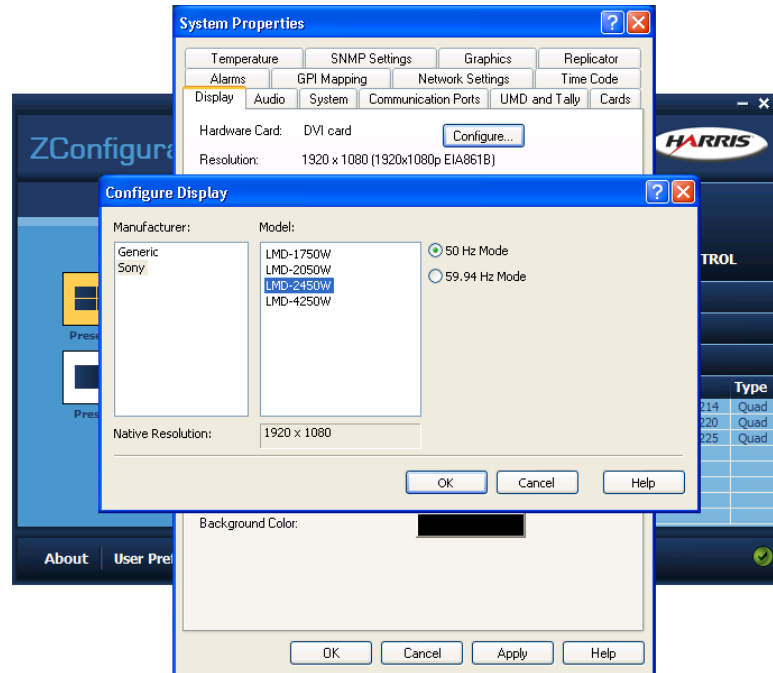

Figure 12: System Properties, Display tab (resolutions)

A list of display manufacturers is presented on the left hand side of the dialog box. Select the applicable SONY LMD/LUMA model.

Tip The reference rate should match the refresh rate of the video sources used. Use 50Hz in PAL regions and 60Hz in NTSC regions.

Note RGB output selection is not applicable to the QS100HD.

UMD and Tally Setup

QS100HD can emulate Under Monitor Display (UMD) functionality allowing window labels to be dynamically updated by external third party equipment.

To setup the UMD or Tally indicator interface select *System Setup* and choose the *UMD & Tally* tab.
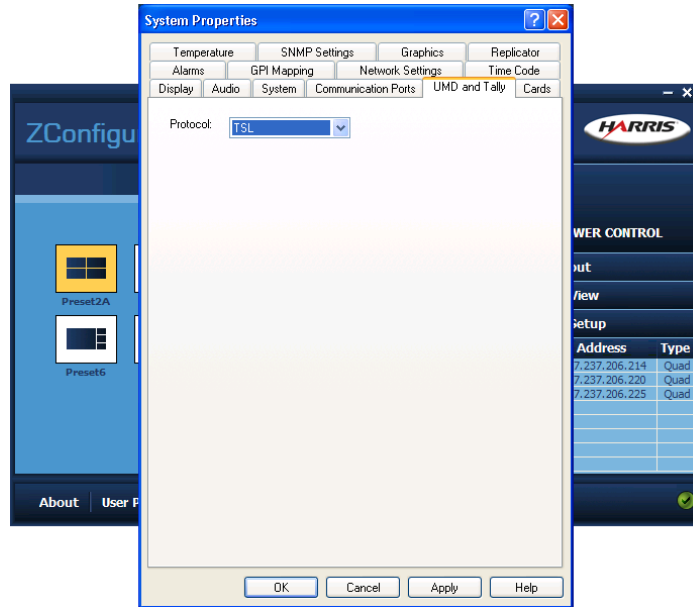
Figure 13: System Properties, UMD&Tally tab

Choose the desired UMD protocol from the drop down list and click *OK* when done.

Tallies are added as a component to a PIP in the edit layout window.

Select the *Communication Ports* tab and set the desired IP port to connect with the external 3rd party UMD and Tally controller.
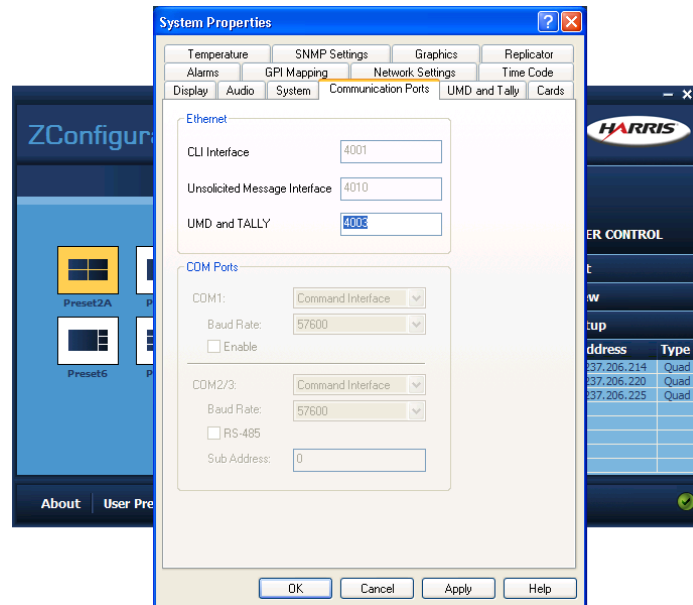

Figure 14: Setting Communication Ports

Serial communication port selections are not applicable to the QS100HD.

GPI functionality

There are 4 GPI inputs. Contact closure on GPI inputs can toggle the state of the (Red) Tally in each PiP or Full Screen Recall for each PiP or control Layout Recall for the first four presets. To switch between the different functions select the *GPI Mapping* tab under *System Setup*.

Start by selecting a video card slot number (1), then select the physical ID (1 to 4) of a GPI channel at the rear of the frame. Usage options depend on the function type selected from the drop down list.
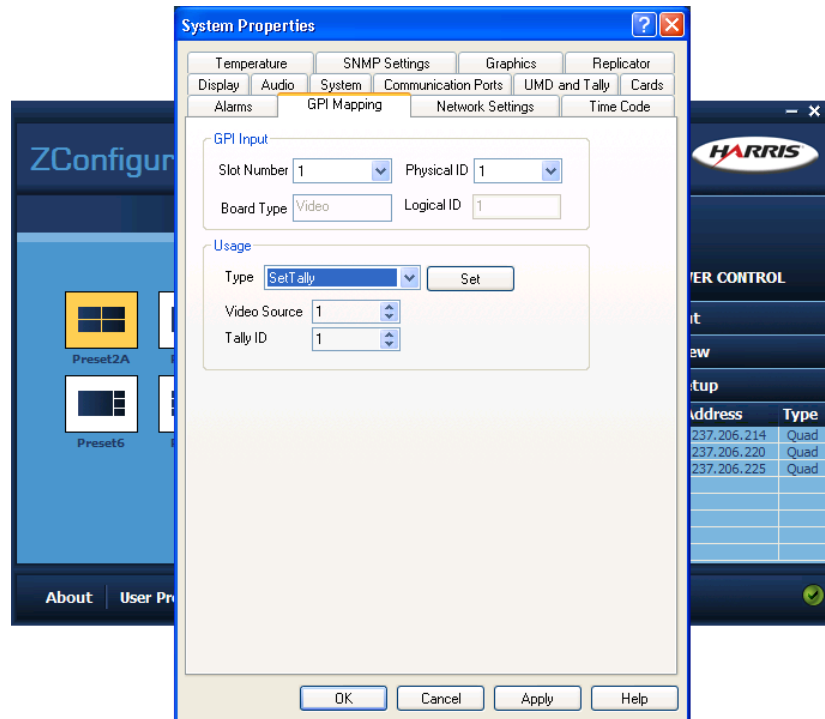

Figure 15: System Properties, GPI tab

Tally Mode

A Tally is active if the assigned GPI contact is closed and inactive if open.

For example, if a GPI with Physical ID 1 on slot 1 is assigned to Tally 1 on Source 1, it will control tally 1 for video source 1.

Full screen Mode

GPI closure triggers full screen for the associated PIP and GPI open reverts to multiview.

Layout Recall

In Layout recall mode a contact closure on the first four GPI's in the system will recall a stored layout from the first four presets. For example a contact closure on GPI 2 would recall Layout 2 and contact closure on GPI 1 would recall Layout 1.

Audio Setup

The mapping of incoming audio channels to meter bargraphs in each PiP is accomplished within the layout editor. Start by right-clicking anywhere in the unpopulated area of a PiP to display the panel insert menu.
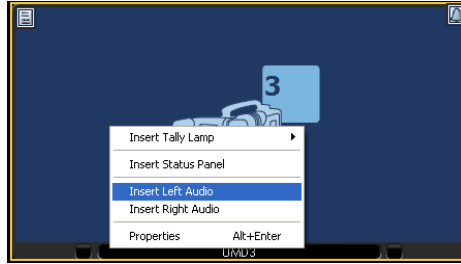

Figure 16: Panel Insert Menu

Tip The panel insert menu will only appear if a Theme with the main panel already configured has been assigned.

Use the panel insert menu (as shown above) or select *Properties* (or press *Alt+Enter*) and click on the *Panel Objects* tab.
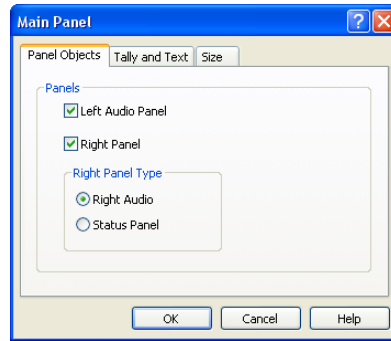

Figure 17: Panel Objects

Once one or more left and/or right Audio Panes have been inserted, right click on a source to display a set of properties. Select an option to display the *Audio Panel Setup* menu and select audio channels as required.
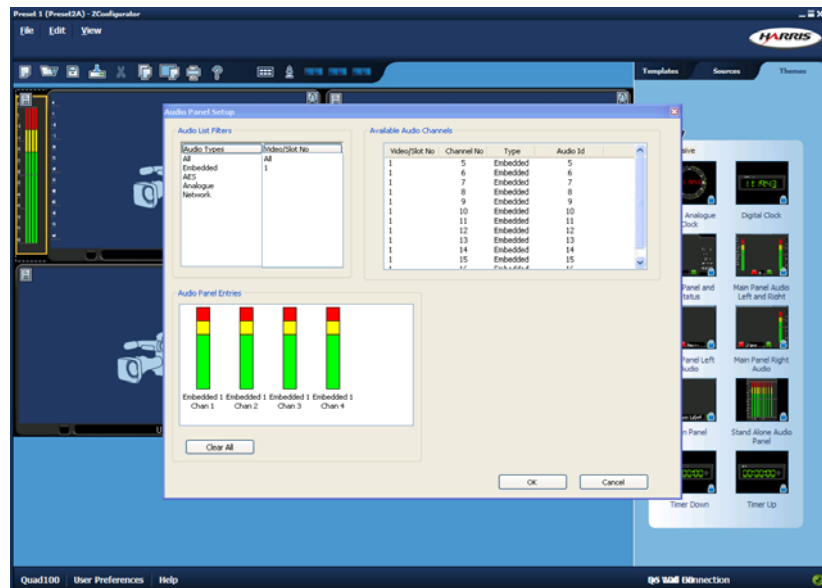

Figure 18: Audio Panel Setup

Using Alarms

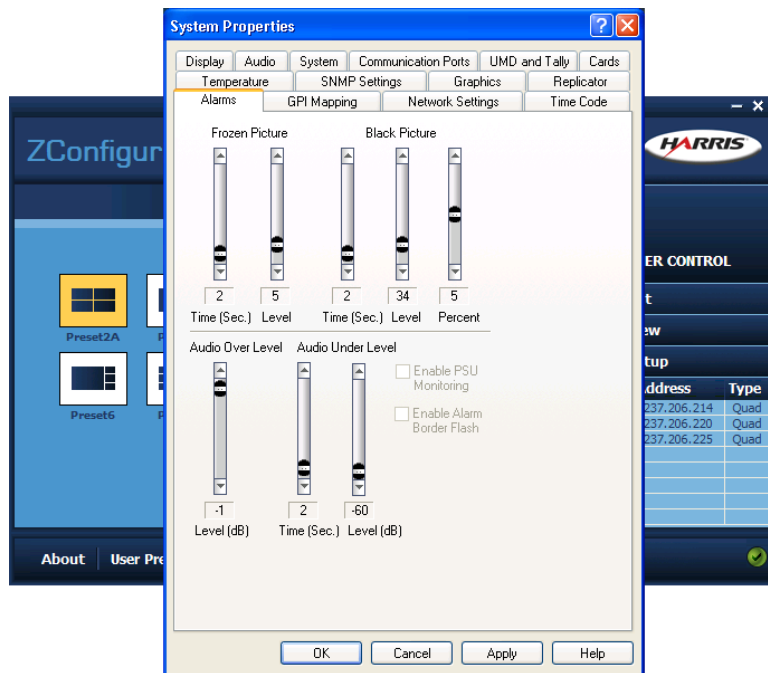The Alarms tab allows the alarms supported by the multiviewer to be configured.

Figure 19: Alarm Setup

The alarms supported depend on the options licensed or fitted to the connected multiviewer and the threshold ranges depend on the type of audio meter standard selected on the Audio System tab.

The following settings affect all PiPs that use the corresponding alarm.

Frozen Picture Delay

Time in seconds (0-60) - The amount of a time of video source would need to remain static before being declared frozen.

Level (1-30) - The percentage of motion allowed in picture before it is deemed to no longer be static. (Normally used with noisy analog inputs)

Black Picture

Time in seconds (0-60) - The amount of a time of video source would need to remain below the black level threshold before being declared black.

Level (0-255) - The video level or threshold below which pixels are deemed to be black. Black is 16 (default) and white 235.

Percent (0-10) - The percentage of picture that may be allowed above the black level threshold in a black picture. The threshold back-off percentage control is provided so that a brief period of blackness won't trigger the alarm.

Audio Alarms

AES/EBU meters are supported and the threshold for audio under and over alarms ranges from 0 to -45 dB.

Audio Over

Level in dB (0 to -45): The level in dB's above which the audio is deemed to be too loud and an audio over event is triggered.

Audio Under Level

Level in dB (0 to-45) - The level in dB's below which the audio is deemed to be too low and an under level event is triggered.

Time in seconds - The amount of time an audio source must be silent or under level before an alarm is raised.

Border Flash

Flashing border alarms are not supported on the QS100HD.

PSU Monitoring

Power supply level monitoring is not applicable to the QS100HD.

Audio Settings

Use the Audio tab to access general audio options. The current system settings control audio metering options for all PiPs in all layouts.
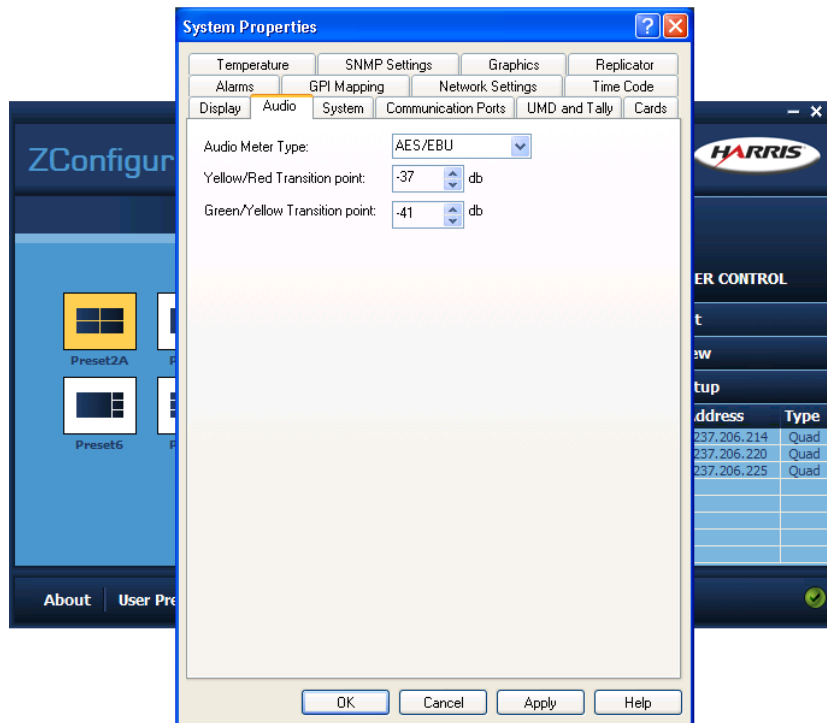
Figure 20: System Audio Setup

Select the audio meter type and then select the upper (yellow/red) and lower (green/yellow) transition points.

Scale types

De-embedded HD SDI/SDI and discrete audio channels can only be assigned to an AES bar/scale.

Scale	Dynamic range	Attack time	Decay time
AES/EBU	0 to -45dB	One sample	1.5 seconds per 20dB decay

Click *Apply* when done to activate the chosen settings.

Graphics

The multiviewer supports the use of logos and other bitmap graphics as PiP backgrounds.
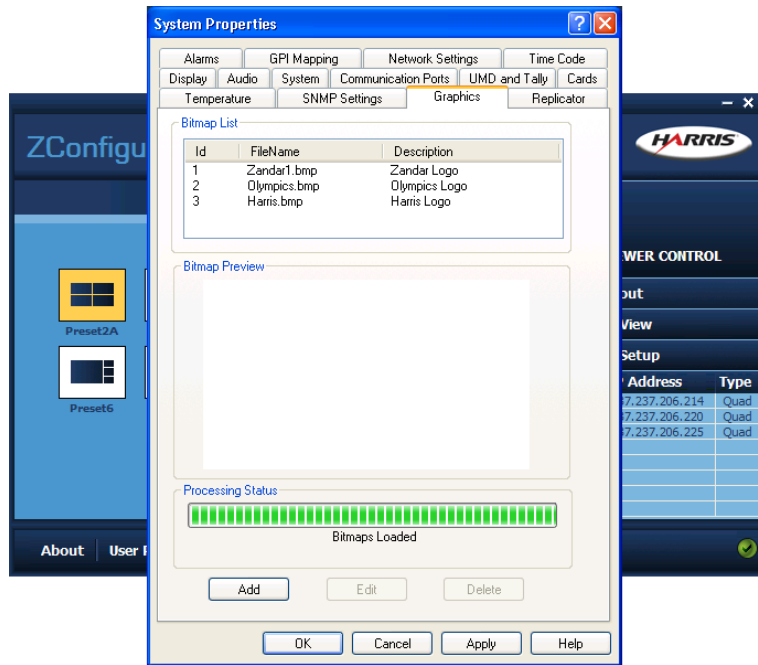

Figure 21: Manage Bitmap Graphics

Bitmaps can be managed using the *Add*, *Edit* and *Delete* commands.

Replicator

The replicator facility allows System Settings and Layouts to be duplicated on other multiviewers.
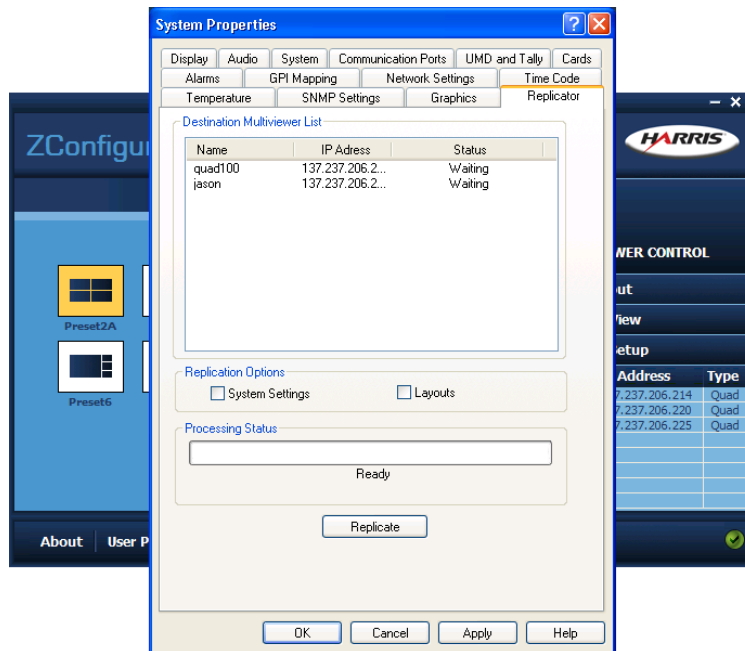
Figure 22: The Replicator

Temperature

The System Temperature monitor refers to the junction temperature of the multiviewer processor and is rated to go to a maximum of 85 degrees C.

Figure 23: Temperature Control

Normal mode runs the fan at the standard operating speed consistent with optimum cooling, while the Low Noise Mode allows a higher than normal temperature to achieve lower noise.

The current temperature can be read in the System Temperature box.

Tip: Click on Refresh to update the temperature display.

©

Timecode

The Time Code tab allows the multiviewer time to be synchronized to external time code, the PC internal clock or an NTP Server.
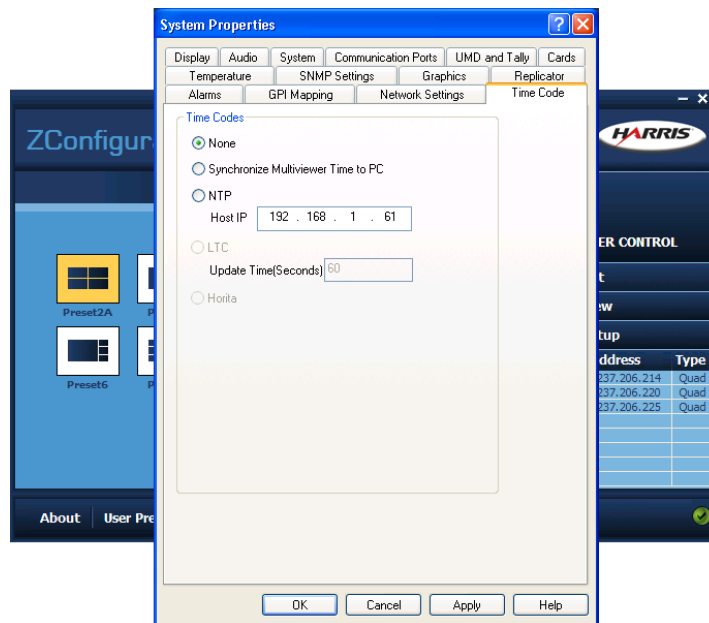
Figure 24: Time Synchronization Options

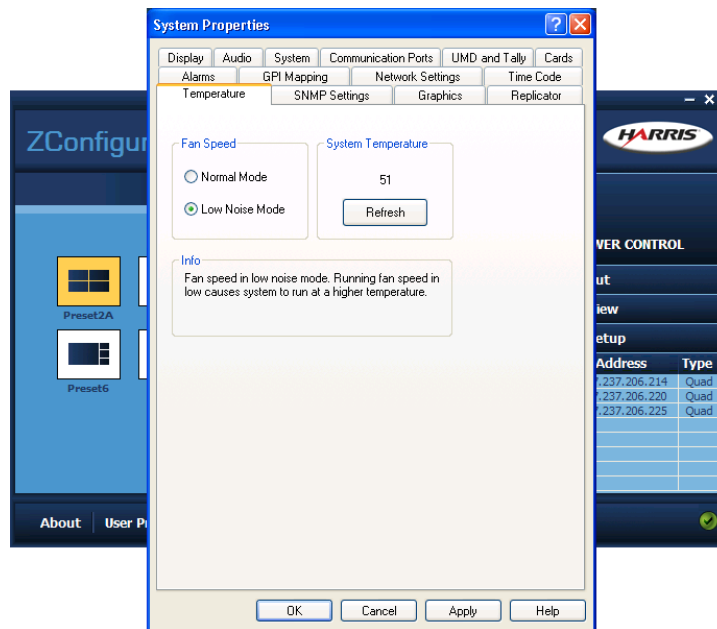*None* – no external time reference is used.

Using the PC clock - to sync clocks to an internal clock check Synchronize Multiviewer Time to PC.

Using an NTP server - to sync clocks to an NTP server, check *NTP* and enter its IP address.

The Network Time Protocol (NTP) is a protocol designed to resist the effects of variable latency and jitter when synchronizing the clocks of computer systems over the internet with a time server.

Note: It is recommended to use NTP to synchronize to a reliable NTP server, rather than a PC clock, even if the PC also uses an internet time server, since the PC time link will only exist for as long as the ZConfigurator is in control of the multiviewer.

Using an LTC source/Horita - Longitudinal Time Code and/or the Horita option are not available for this multiviewer.

Aspect Ratio Management

QS100HD is designed to monitor 16:9 and 4:3 sources.

Standard definition sources can be configured to display with an aspect ratio of 16:9, 4:9, or freeform where the video will fill the window shape that is configured in the layout.

High Definition sources can be configured to display with an aspect ratio of 16:9 or freeform where the video will fill the window shape that is configured in the layout.

Note HD will be forced to 16:9 even if 4:3 is selected.

When enabled, the video will take on the correct aspect ratio and fill the window with active video to the maximum horizontal or vertical dimension. Unused space is filled with a grey border.

To force the aspect ratio, right click on the camera icon in Edit Layout; select *Properties*, then select the *Aspect Ratio* from a drop down list.
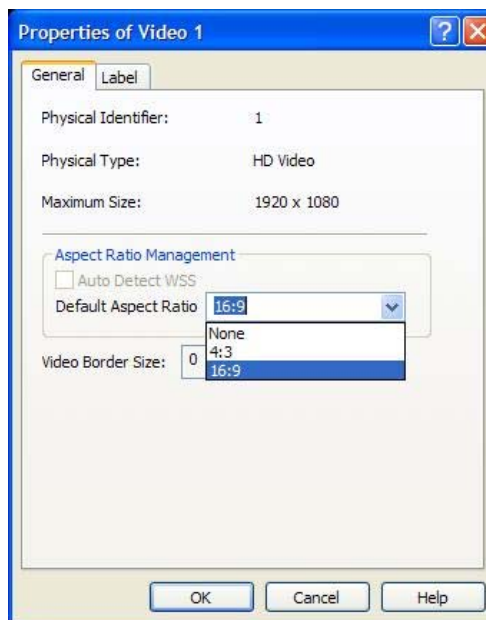
Figure 25: Video properties

Note Aspect Ratio detection via WSS is not implemented on the QS100HD.

Designing layouts for aspect ratio

To design a layout, select *Edit Layout* and then *Template* mode.
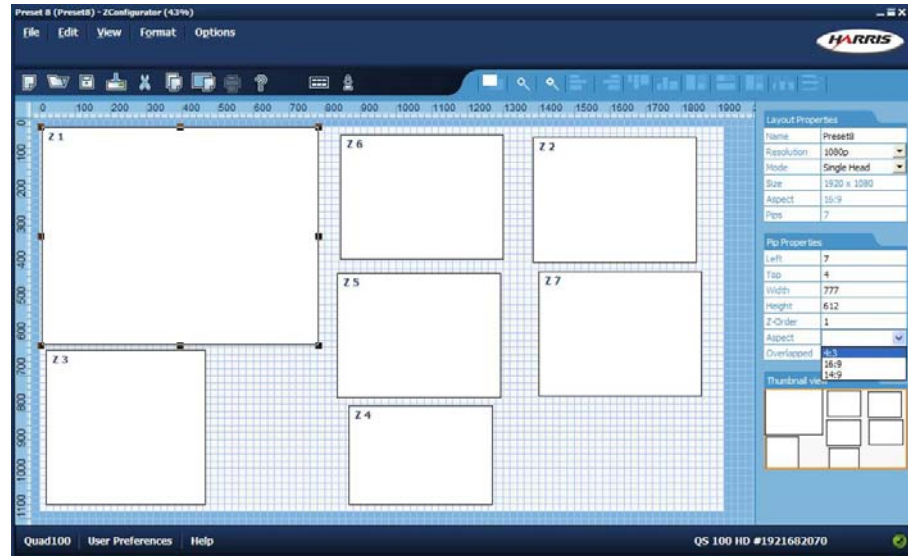
Figure 26: Aspect ratio layout

Click on a PIP to reveal its properties, (to select multiple PiPs press and hold Ctrl while select PiPs).

Under the *PIP Properties* on the right side of the window, select the desired aspect ratio (4:3, 14.9 or 16:9) from the drop down list. The PIP will automatically resize taking into account any borders or labels that may be applied to the PIP.

Select *Download Preset* to apply changes.

Audio Monitoring

QS100HD may be configured to provide support for real-time audio level meters for de-embedded audio from SD/HD inputs.

Figure 27: Typical PiP attributes for in-picture Bargraphs

To improve scale visibility, whilst keeping their appearance as discreet as possible, scales are mixed with the background. The audio bar and the normal operating level indicator replace the background.

HD/SD - SDI audio

Up to 8 embedded audio channels in each SDI channel can be simultaneously de-embedded and monitored with bargraph meters.

Scale types

De-embedded HD SDI/SDI audio channels can only be assigned to an AES bar/scale.

Scale	Dynamic range	Attack time	Decay time
AES/EBU	45dB (0 to –45dB)	One sample	1.5 seconds per 20dB decay

Table 5): Scale dynamic range and ballistics

Note A white graticule bar denotes typical line-up operating level. Actual operating levels may be different.

Configuration of audio bargraphs for each PiP can only be performed using ZConfigurator.

Trouble Shooting

Solving display problems

Most display problems can be traced to incorrect display calibration or poor link cabling.

Display calibration

The display should always be properly calibrated to ensure high picture quality. For example the display brightness and contrast should be set so that neither black nor white crushing occurs and some displays even have a gamma adjustment to ensure that the full dynamic range is obtained.

Frequently Asked Questions

ZConfigurator cannot access any multiviewer on the network, what's wrong?

Ensure that any Firewall present is not blocking either ZConfigurator or the IP address range of the network. Also check that PC and multiviewer IP addresses are in the same subnet range as the rest of the network.

ZConfigurator needs to be permitted to access the network in order to detect and control multiviewers. The first time ZConfigurator is run, Windows will ask for permission to grant ZConfigurator network access. However, if it is run under a non-admin account some personal firewalls will not allow it network access. Check the user documentation that came with your firewall for more information.

Also: see the answers to the following two questions.

The QS100HD is not responding, what can I do?

Power cycle the LMD/QS100HD unit and/or check that the LMD monitor is operational.

Ensure that the host name/IP number and port number are correct for TCP/IP connections.

How do find out my multiviewer IP address?

To find out the current IP address of the multiviewer check the splash screen on the LCD during boot up. The IP address will be displayed for a few seconds.

Can I use a DHCP server to assign IP addresses?

A DHCP server dynamically allocates IP addresses. Although this might appear to make system administration easy, we recommend fixed addressing. This is because it works well with UMD Tally controllers which only recognize a multiviewer by its IP address and not its name. DHCP

servers may choose to change assigned addresses which would cause external controllers to lose connection with multiviewers.

Note The QS100HD does not currently support Dynamic addressing from a DHCP server.

Why can't I see any output?

This problem might occur if the display output cannot support the resolution of the attached display.

Check that there is power to the LMD display unit and that the QS100HD module is inserted correctly.

Check that one or more valid input signal(s) are connected and that the chosen PiPs or Tiles correspond to valid input(s).

Ensure that the supplied short DVI cable is connected securely between the QS100HD and the LMD in which it is installed.

What can I do if the display image quality is poor?

Check that the short DVI cable is securely fastened to both receptacle connectors and that the QS100HD card is fully inserted within the expansion slot of the LMD.

What is the DVI-I format and how do I use it?

The QS100HD is equipped with a DVI-D Display Output Microcross connector which outputs a digital video signal and does NOT have analog signals. Pin-out is given in the Installation chapter.

Cable length for digital signals may be as low as 2 meters, but can be increased using DVI extenders.

What is the typical delay through a QS100HD multiviewer?

The total video delay is somewhere between 0.5 to 1 frame of video depending on the relative timing of the incoming sources.

Specification

Video inputs	4 auto-sensing inputs HD-SDI (SMPTE 292M 1.485Gb/s and/or SDI (SMPTE 259M 270Mb/s) and/or Composite (PAL/NTSC) BNC connectors, Input impedance 75Ω
Equalization	Up to 250m cable for SD, 100m for HD
Return Loss	> 15dB
Display Outputs	DVI-D up to 165MHz output using DVI-I (Microcross) connector. HD-SDI using BNC at 1080i or 720p dependent on DVI output resolution and frame rate.
Resolution	Output Resolution – User Programmable to 1920x1080
Control	ZConfigurator layout configuration software for multiviewer operation via 100BaseT Ethernet control TCP/IP on RJ45 connector GPI: 4 GPI inputs
UMD Protocols Support	Harris-Zandar, TSL, Thomson ASCII
Graphics Overlay	Stylized video window skins In-picture embedded audio bargraphs – red, green, yellow 16 text & border colors 4 tally lamps – red, green, yellow, blue Dynamic UMD/tally 2 analog clocks 6 digital clocks 6 up/down timers
Dimensions	200mm x 147.5mm x 20mm
Power	10W
Environmental	Operating ambient temperature 0° C to 35°C (recommended operation 15°C to 30°C) Storage temperature 0°C to 50°C , Humidity 70% max (QS100HDHD)

Front Panel Control LMD/QS100HDHD	Source Select A1, A2, B1, B2 and DVI for Multi-image display
Integrated rear panel LMD/QS	4 BNC inputs, 1 BNC output, 1 DVI-D Female, 1x Ethernet RJ45, 1x GPI RJ45, 1x Reset button
Applicable Sony LMD monitors	LMD-2450W: 3003387 and later; exfactory from 19th December 2007 LMD-2050W: 3003370 and later; exfactory from 18th December 2007 LMD-4250W: 3000001 and later; exfactory from 7th January 2008

Ordering Codes

QS100HD product codes are as follows:

Code	Description
Z-QS100HD	High resolution 4 channel integrated quad module supporting HD (720p/1080i), SDI (525/625), PAL and NTSC inputs (auto-selected)
Z-DVI-EXT	DVI FM Extender to extend DVI display up to 2000 ft away from source (from Gefen: EXT-DVI-FM). One per output.

Table 6): QS100HD options

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