

# HQView-100S Operating Instructions



***This manual explains how to operate your HQView-100S image scaler. HQView-100S is designed to provide users with a powerful and flexible method of driving large display devices from typical TV sources.***

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**SAFETY WARNING:**

1. THERE ARE NO USER SERVICEABLE PARTS WITHIN THE UNIT. REMOVAL OF THE TOP COVER WILL EXPOSE DANGEROUS VOLTAGES. DO NOT OPERATE THE UNIT WITHOUT THE TOP COVER INSTALLED.
2. ENSURE THAT ALL ELECTRICAL CONNECTIONS (INCLUDING THE MAINS PLUG AND ANY EXTENSION LEADS) ARE PROPERLY MADE AND COMPLY WITH ELECTRICAL SAFETY REGULATIONS.
3. ENSURE THAT THE INTEGRITY OF THE EQUIPMENT ISOLATION BARRIER IS MAINTAINED WHEN CONNECTING TO OTHER EQUIPMENT. THIS MEANS THAT ONLY LOW VOLTAGE ISOLATED CIRCUITS MAY BE CONNECTED TO THE SIGNAL INPUTS AND OUTPUTS. IF ANY DOUBT EXISTS CONSULT QUALIFIED SERVICE PERSONNEL.
4. TO PREVENT SHOCK OR FIRE HAZARD DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. IF SUCH EXPOSURE OCCURS, REMOVE THE PLUG FROM THE MAINS OUTLET AND HAVE THE EXPOSED UNIT CHECKED BY QUALIFIED SERVICE PERSONNEL.
5. DO NOT CONTINUE TO OPERATE THE EQUIPMENT IF YOU HAVE ANY DOUBT ABOUT IT WORKING NORMALLY, OR IF IT IS DAMAGED IN ANY WAY. WITHDRAW THE MAINS PLUG FROM THE MAINS OUTLET AND CONSULT QUALIFIED SERVICE PERSONNEL.
6. DO NOT REMOVE ANY FIXED COVERS UNLESS YOU ARE QUALIFIED TO DO SO AND EVEN THEN WITHDRAW THE MAINS PLUG FROM THE MAINS OUTLET BEFORE YOU START.
7. THIS EQUIPMENT CONTAINS NO USER SERVICEABLE PARTS. REFER ALL SERVICING AND MAINTENANCE TO QUALIFIED SERVICE PERSONNEL.
8. TO AVOID EXPLOSION, DO NOT OPERATE THIS EQUIPMENT IN AN EXPLOSIVE ATMOSPHERE

## INTRODUCTION

### **1.1. General Introduction**

HQView-100S is a very flexible image scaler developed specifically for driving large screen displays from video sources.

HQView-100S features state of the art digital image processor which provides market leading SD per-pixel multiple low-angle motion-adaptive de-interlacing and automatic film pull-down correction for 3:2 and 2:2, significantly outperforming the capabilities of benchmark competitor products.

HQView-100S features excellent image processing algorithms for the very best scaling, film and video noise reduction and MPEG artefact reduction.

HQView-100S uses a high performance video decoder with 4x oversampling and 3D Y/C separation for outstanding video image clarity.

The output format can be set to I/O Lock mode where it locks the output frame rate to the input frame rate dynamically without frame rate conversion so as to reduce system latency, or it can be set to a fixed output frame rate for driving basic screens which are not 50Hz-compatible. Furthermore, the HQView-100S can be set to have the output resolution match the input resolution to preserve aspect ratio. A Low latency mode with non-motion adaptive reduced processing is available to further reduce latency.

HQView-100 supports Pan, Zoom and Tilt to select a part of the input image, fill the screen and pan within it.

Outputs are available in DVI digital formats.

System control is via an OSD controlled by keys on the front panel or through an intuitive 'Windows' application connected via a normal RS232 serial port or via TCP/IP (ethernet).

### **1.2. Packing List**

HQView-100S is supplied with the following:

- 1) This manual
- 2) 3 pin plug IEC mains cable
- 3) DVI-D output cable
- 4) CD

## HQVIEW-100S SYSTEM DESCRIPTION

### **2.1. Product Overview**

HQView-100S is designed to accept the following input signals:

- Composite video via BNC
- Composite video via RCA
- S-Video via 4-way miniDIN

### **2.2. Product Specification**

This section provides technical details for all possible inputs.

#### **2.2.1. Power Supply Requirement**

12V DC table top power supply requiring a 100V-264VAC 50/60Hz mains connection.

#### **2.2.2. Video Inputs**

Composite via BNC and RCA connector, S-Video via 4-way mini DIN socket

Signal formats	Composite (CVBS), S-Video (Y/C), Standards NTSC, PAL, SECAM
Composite (CVBS) input level	1V p-p nominal inc. sync
Luminance (Y) input level	1V p-p nominal inc. sync
Chrominance (C) input level	0.6V p-p nominal
Input Impedance (all inputs)	75 Ohms

#### **2.2.3. Display Output**

A DVI-D output connector is provided. The DVI-D connector will support HDMI 1.3 with 36-bit video when connected to a suitable HDMI 1.3 receiver.

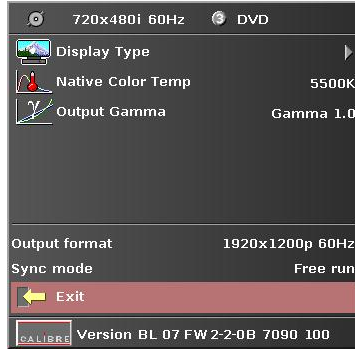
**HQVIEW-100S CONTROL**

**3.1. Menu Tree**

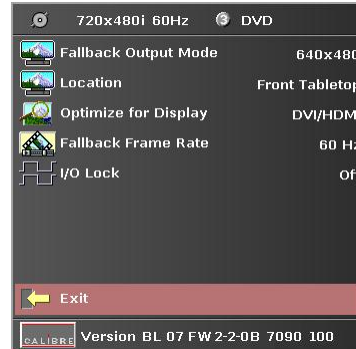
**1<sup>st</sup> Level**



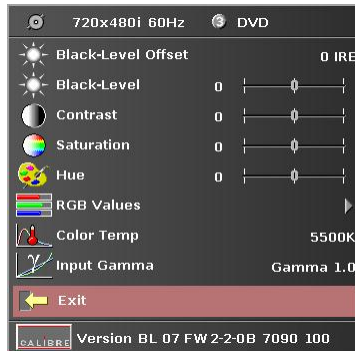
**2<sup>nd</sup> Level**



**3<sup>rd</sup> Level**



**4<sup>th</sup> Level**

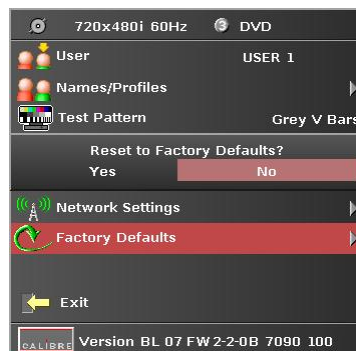
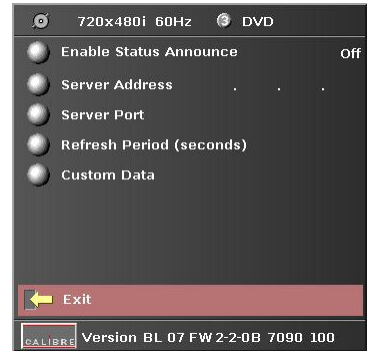
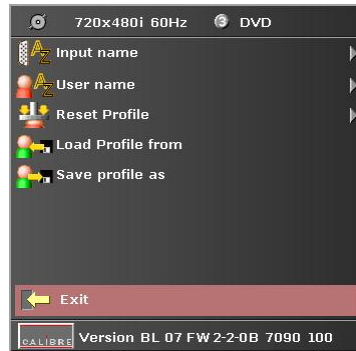


1<sup>st</sup> Level

2<sup>nd</sup> Level

3<sup>rd</sup> Level

4<sup>th</sup> Level



### 3.2. Introduction

The HQView-100S units have the input connectors on one side of the housing and the output connector as well as the communication ports on the opposite side. The keypad for controlling HQView-100S is located on the input connectors side. The active input is indicated by their corresponding triangles lit green.



1 – Keypad with three keys for OSD menu navigation (Menu, Down and Up) and a key for input channel selection (Input).

With the Menu key the OSD menu is activated. The up/down keys are used for OSD menu navigation. To exit the OSD menu or any submenu navigate go to the Exit item and press the menu key. To access a submenu navigate to it and press the menu key. To apply a change to the menu item, press the menu key and make a parameter change with the up/down key. Confirm the change by pressing the Menu key. This will also bring you back to the submenu.

By pressing the Input button multiple times the available input channels are toggled through. The active channel is indicated by the associated green lit triangle(s).

With the following multiple key presses further functions can be applied:

**Keypad unlock:** Up/Down

**Set output and fallback output mode to VGA:** Menu/Up

**Mode reset:** Menu/Down

**Factory reset:** Menu/Up/Down

A factory reset can also be applied when pressing the factory reset key combination at power up. The keys have to be kept pressed for about 10 seconds until the Composite 1 input LED stops flashing. If the keys are released during that 10 seconds period the system will get into Updater mode (see chapter 5) since the Menu key is part of this key combination.

2a, 2b – CVBS composite video inputs (BNC and RCA)

3 – S-Video input

4 – DVI-I output connector (only the digital DVI-D is supported, HDMI 1.3 receivers can be connected with a DVI/HDMI adapter cable)

5 – TCP/IP port

6 – USB port

7 – RS232 port

8 – Power supply connector

### **3.3. Main Menu**

The main menu lists the input channel select item and 5 sub menus.

On each menu page an Exit menu item is available to leave the menu or submenu. Some adjustments are not applicable to all signal types or operating modes, in which case those non-applicable functions will be ghosted and are not accessible via the menus.

All menus have a top status line and a bottom line indicating the firmware revision number. In the status line the currently selected input channel is indicated and the detected mode is identified. The firmware revision number displays the revision number of the bootloader behind BI and the revision number of the firmware behind FW.

To set up your HQView-100S it is recommended that you follow this procedure:

Choose the correct output mode and parameters to suit your screen or projector.

Select the correct input signal.

Set the input levels and features appropriately to optimize the appearance of your image.

Set any other parameters to suit your application.

Note: All Input parameters are specific to your chosen input channel and input signal type, they are not global to the unit. All Output parameters are global

### **3.4. Input**

The list of available inputs can be scrolled through using the Up and Down keys. The new input is not selected until the Menu key is pressed.

The list of inputs are: Composite 1, Composite 2, S-Video and Test Pattern.

Test patterns can be generated by HQView-100S without needing an input connected. When Test Pattern is selected as the input, the required test pattern can be chosen with the menu navigation up/down keys when the OSD menu is off.

### **3.5. Output**

This menu contains adjustments associated with setting up outputs from the unit. Most items are collected in the Display Type submenu. Use the up and down keys to scroll to the required item and press the Menu key.

#### **3.5.1. Output Mode**

Settings: 640x480, 800x600, 1024x768, 1280x768, 1280x800, 1280x1024, 1360x768, 1366x768, 1400x1050, 1440x900, 1600x1200, 1680x1050, 1920x1200, 720p (1280x720), 1080p (1920x1080), 480p (720x480), 576p (720x576)

Set up the desired output resolution with output mode. The output mode setting should match the native resolution of the imaging device to avoid double scaling.

#### **3.5.2. Location**

Settings: Front Tabletop, Front Ceiling, Rear Tabletop, Rear Ceiling

The image can be flipped to accommodate different projection scenarios as well as screens mounted upside down.

#### **3.5.3. Optimize for Display**

Settings: DVI forced, Optimized, DVI/HDMI

Internally, the display interface processes data at a full ten bits per colour. The colour depth on the DVI-D output is determined by the supported standard of the attached monitor or device when set to DVI/HDMI. For DVI 1.0 and HDMI 1.1/1.2 devices it is 24 bit, for HDMI 1.3 compliant devices it is up to 36 bit.

DVI forced will output with 24 bit colour depth irrespective of the supported standard of the attached monitor.

When the Optimized setting is enabled the output resolution is automatically set to the native screen resolution of the attached display if the Aspect Ratio menu item was chosen to Scale or when no input is detected. The colour depth is determined in the same way as when set to DVI/HDMI.

#### **3.5.4. Frame Rate**

Settings: 50Hz, 60Hz, Auto

In auto mode the output frame rate follows the input frame rate, i.e. when a 50Hz/60Hz video signal is detected, the output is repeated at 50Hz/60Hz. When the input video signal has other than 50Hz or 60Hz (with margin) refresh rate, the output is set to 60Hz. Resolution and actual frame rate is shown in the status lines of the OSD window under Output Format.

#### **3.5.5. I/O Lock**

Settings: On, Off

If I/O Lock is switched off the output is run with a fixed refresh rate determined by the frame rate setting, which deviates from the input refresh rate, even if both are nominally at the same rate. This causes occasional frame dropping or repeat. If I/O Lock is on the output refresh rate is following the input refresh rate. This is achieved by modulating the output clock and works if input and output refresh rate are nominally at the same rate, e.g. when frame rate is set to 60Hz and the video input is also 60Hz. If e.g. the video input rate is 50 Hz and the Frame rate is set to 60Hz, the output is in free run mode. The status line of the OSD window under Sync Mode indicates if the output signal is locked to the input signal (I/O Locked) or in free run mode (Free Run) .

### **3.5.6. Native Color Temp**

Settings: 5500, 6500, 7500, 9300, 10000

Native Color Temp allows the user to select from pre-configured color temperatures to match the display. If both Native Color Temp set here in the Output menu and Color Temp set in the Color menu are set to the same value, no conversion is performed.

### **3.5.7. Output Gamma**

Settings: 1.0 to 3.0 in steps of 0.1

Output gamma allows to re-gamma video signals with pre-configured gamma values to match the display. Input gamma and output gamma both default to 2.2. If they are both set to the same value, there is no effect on the image.

Note: If e.g. an adjustment to reduce the level of red in the image is required, select a higher number for the (input) Color Temp in the Color menu, or a lower number for the Native Color Temp in the Output menu.

## **3.6. Color**

This menu contains adjustments associated with setting up inputs to the unit. Use the Up and Down keys to scroll to the required item and press the Menu key.

### **3.6.1. Black-Level Offset**

Settings: 0 IRE, 7.5 IRE

Used to select 7.5 IRE black level set-up adjustment. Should always be set to 7.5 IRE for HDMI video inputs and should usually be off for analog video inputs.

### **3.6.2. Black-Level**

Settings: -50 to 50 in steps of 1

Black level controls the offset applied to the video signal.

### **3.6.3. Contrast**

Settings: -50 to 50 in steps of 1

Contrast controls the gain applied to the video signal.

### **3.6.4. Saturation**

Settings: -50 to 50 in steps of 1

Control of video saturation, applies to all video inputs but not computer input signals or formats.

### **3.6.5. Hue**

Settings: -50 to 50 in steps of 1

Control of video hue, applies to all video inputs but not computer input signals or formats.

### **3.6.6. RGB values**

This is a user-defined color temperature setting whereby individual R,G,B gain and offset (bias) can be set so as to accurately calibrate a particular input to the display device.

### **3.6.7. Color Temp**

Settings: 5500, 6500, 7500, 9300

Color Temp allows the user to select from pre-configured color temperatures to match the color temperature of the incoming signal. If both Color Temp set here in the Color menu and Native Color Temp set in the Output menu are set to the same value, no conversion is performed.

### **3.6.8. RGB values**

This is a user-defined color temperature setting whereby individual R,G,B gain and offset (bias) can be set so as to accurately calibrate a particular input to the display device.

### **3.6.9. Input Gamma**

Settings: Gamma 1.0, Gamma 1.5, Gamma 2.2, Gamma 2.8

Set this value to match the native gamma of the input signal. Input gamma and output gamma both default to 2.2. If they are both set to the same value, there is no effect on the image.

## **3.7. Geometry**

This menu contains adjustments associated with setting up position, aspect ratio and scale of the input signal.

### **3.7.1. Horizontal/Vertical Position**

Settings: in steps of 1 pixel/line

Change the positional values to match the display borders.

### **3.7.2. Aspect Ratio**

Settings: Scale, Preserve

The system can be set to scale the input image to a fixed output resolution or, with the setting preserve, to choose an output resolution matching the input resolution. If no matching output resolution is available or no input is detected, the pre-defined output resolution is used though.

### **3.7.3. Picture Format**

Settings: Standard, Full Screen, Crop, Anamorphic

Picture Format allows a user to select the displayed aspect ratio where the signal input is at variance with the display panel's natural aspect ratio. Note that some aspect ratios may not be applicable to all signal types, in which case selecting a non-applicable aspect ratio conversion will have no effect on the displayed image. E.g. when a 16:9 image is displayed on a 16:9 panel all settings give an identical full screen image.

Standard preserves the aspect ratio of the incoming image and scales the image to fit into the size of the panel. Dependant on the aspect ratio of the panel the image is either bordered by the right/left side or bottom/top of the panel. Non-used areas of the panel are displayed black (letterboxed). Full Screen scales the image to the size of the panel without preservation of the aspect ratio. Crop preserves the aspect ratio and scales the image to fit the screen. Dependant on the aspect ratio of the panel either the top/bottom or right/left areas of the image are cropped. Anamorphic scales the input image such that it is displayed with a 16:9 aspect ratio when displayed on the screen. The image is further scaled to fit into the size of the panel. Dependant on the aspect ratio of the panel the image is then either bordered by the right/left side or bottom/top of the panel. Non-used areas of the panel are displayed black (letterboxed).

#### **3.7.4. Overscan**

Settings: 0 to 10 in steps of 1

Overscan is used to slightly zoom into the image. Thus, the border area of an image is no longer displayed on the screen. This cuts off unwanted features at the top or bottom from e.g. video images.

#### **3.7.5. Pan Tilt Zoom**

This menu provided settings to zoom and shrink the image, as well as panning within the image.

Pan Tilt Zoom (PTZ) can be switched on or off. When switching on the latency of the system is increased by one frame. Thus, there is a difference of a PTZ setting off or on with no zoom. PTZ settings can be saved per mode or globally, i.e. the same PTZ settings are applied when switching input channels or changing the input mode.

The Zoom slider allows to zoom into the image or shrink it. When Aspect Lock is set to On the separate slider for zooming vertically is greyed out and the horizontal zoom or shrink factor is used as vertical factor as well. The aspect ratio is preserved. When Aspect Lock is Off horizontal and vertical scaling factors can be chosen separately.

With the Pan and Tilt sliders panning within the image in horizontal and vertical direction is possible. Off raster panning is allowed, i.e, the image can be shifted outside the active area of the display.

For convenience the PTZ settings can be reset with one button.

### **3.8. Enhancement**

The enhancement menu provide image enhancement functions. Note that the enhancement settings apply to video input signals only, not computer graphics signals.

#### **3.8.1. Sharpness**

Settings: -50 to 50 in steps of 1

Control of the sharpening enhancement filters' levels. These are peaking filters to improve high-frequency response. Note that setting this control too high on a signal which already has good high frequency response will cause ringing or ghosting.

#### **3.8.2. Detail**

Settings: 0, 1, 2, 3

This filter provides powerful 2D image enhancement which can be used to greatly improve detail definition and clarity without causing image ringing or ghosting. It improves both horizontal and vertical detail. Correct setting of the detail enhance filter can make SD signals look virtually indistinguishable from true HD. At setting 0 the filter is switched off, with setting 3 providing the highest effect.

#### **3.8.3. Video Filters**

The video filters menu provides LTI/CTI filters and TRNR/MNR noise reduction filters.

The LTI filter enhances the sharpness of the luminance component. The CTI filter enhances the color sharpness of the chrominance signal by increasing the steepness of color edges.

TRNR (Temporal Recursive Noise Reduction) and MNR (Mosquito Noise Reduction) are available for SD input signals only. These filters reduce spatial and temporal noise as well as block artifacts.

CCS is a filter to reduce luminance to chrominance cross talk of composite video signals (only) which appears as a coarse rainbow pattern or random colors in regions of fine details.

### **3.9. System**

This selection contains functions which are more applicable to system operation than to picture adjustment.

#### **3.9.1. User**

Settings: USER 1, 2, 3, 4

A predefined setting stored under a user name can be selected. Several settings of the HQView-100S can be stored under a user name. Thus, different users can store their preferred HQView-100S settings and recall these profiles by picking up their user name from this menu.

#### **3.9.2. Names/Profiles**

The Names/Profiles menu provides input masks to rename the generic input channels and user names. User names and input channel names can be changed to any word with a maximum of 12 alpha numeric characters with a value range of 0-9, A-Z and blank.

The Names/Profiles menu allows the user to store profiles under a certain user name. It also allows to copy user profiles by loading a profile stored under one user name and save it under another user name. Reset Profile allows to restore default HQView-100S settings for the currently selected user.

#### **3.9.3. Test Pattern**

Settings: Grey V Bars, Grey H Bars, Aspect Test, Multi Test, Warp Adjust, SMPTE, PLUGE

List box to choose a test pattern. When the OSD menu is off the test pattern can be toggled through by pressing the up and down keys of the keypad.

#### **3.9.4. Display Mode**

The "Display Mode" can be set to either Low Latency or Best Picture. In Best Picture optimum image processing is applied, whereas in Low Latency mode the lowest latency is achieved. The flicker of interlaced video is not suppressed totally for the latter setting. Thus it has the disadvantage of conventional CRT TVs, but also their advantage of almost no delay in response, which is important for applications such as gaming, simulation or imaging in medical treatment.

#### **3.9.5. Menu Settings**

This menu provides items to change the menu position and menu display time, i.e. the time after which the OSD is switched off again with no user interaction. OSD Messages can be activated and deactivated.

The menu language can be altered and the keypad can be locked. To unlock the keypad a combination of keys has to be pressed at the same time. The locking of the keyboard is accompanied by the message: Keypad is locked. Press Menu/Up/Down to unlock. When successfully unlocking the keypad the message shows up: Keypad unlocked.

#### **3.9.6. Network Settings**

The Network Settings menu allows to configure the HQView-100S TCP/IP address for communication with e.g the warp generator PC tool. Under Address Type a static or DHCP leased address can be chosen. The static address and Netmask need to be entered manually.

The Network Settings menu has a section with information on the DHCP Status and IP address assigned to the board, as well as the fixed MAC Address programmed into the HQView-100S. The DHCP status is Off when static assignment is used or it displays an address when DHCP has leased an address accordingly or it is None assigned if the lease was not successful.

Note: When changing from DHCP to Static mode or vice versa it is strongly recommended that HQView-100S is powered down after such a change, then powered back up, so that it is properly recognised by other devices on the network.

In the Network Settings menu is a submenu Status Announce Setting. This feature is activated when Enable Status Announce is switched on. HQView-100S will then send messages out continuously through RS232 and TCP/IP to signal system condition. Server address and port of the PC where to send the message need to be entered. The Refresh Rate determines the rate at which the HQView-100S status condition and the message entered under Custom Data being sent out.

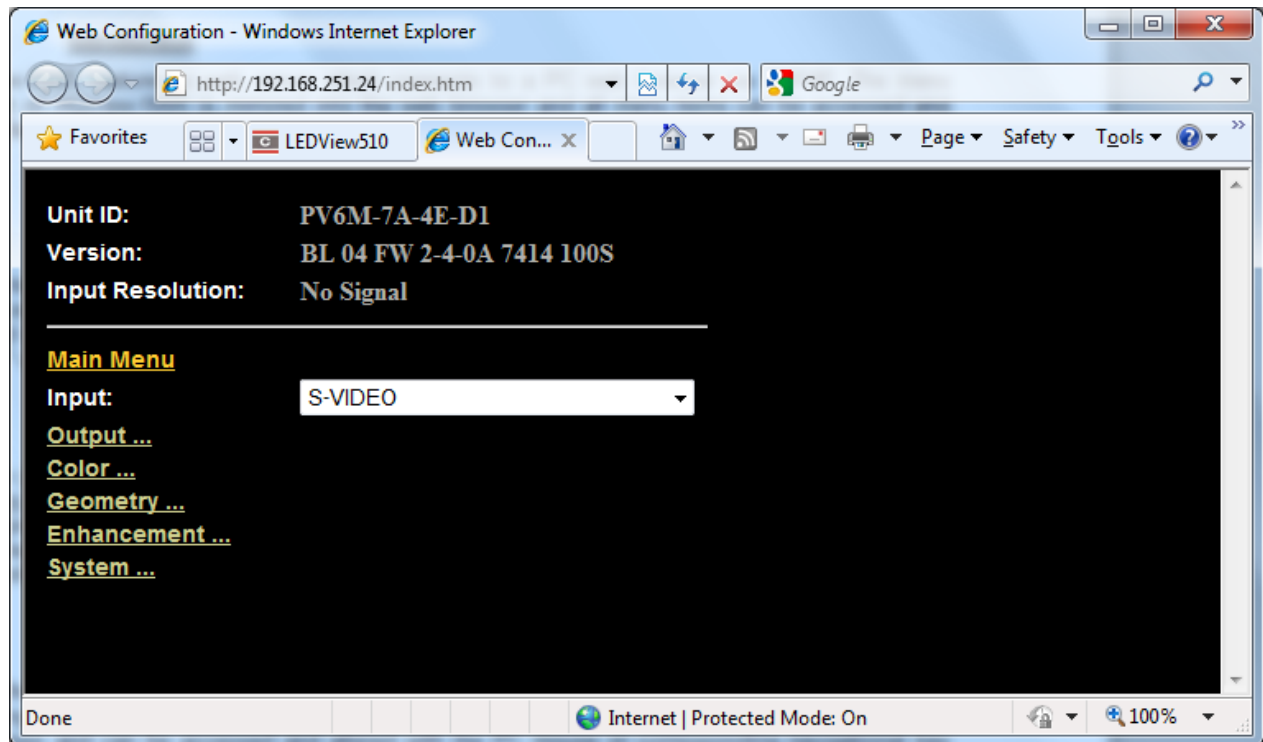
### **3.9.7. Factory Defaults**

This button let you restore all settings to the default values of the HQView-100S, thus, provide a means to get back to a known (good) system state. A requestor will come up and ask to confirm prior to actual restore.

## REMOTE CONTROL WEB SERVER

### 4.1. Introduction

HQView-100S features a web server which connects to a PC web browser via TCP/IP. The menu system of HQView-100S is mirrored into the web browser and all menu items can be accessed and controlled through the keyboard or mouse of the PC.



### 4.2. Installing the Software

No extra software needs to be installed on a PC. The PC web browser is used as the graphical user interface for all control items. To connect to the HQView-100S the TCP/IP address of the unit has to be entered into the address list box of the web browser in the following format <http://xxx.xxx.xxx.xxx>. The TCP/IP address assigned to HQView-100S can be found in the System/Network Settings menu.

### 4.3. Discovery Tool

Calibre provides a DiscoveryTool.exe Windows application to identify Calibre boxes in the network. Clicking on the link of the recognized box will open a browser and make a connection to the corresponding box. The box identifier is made up of "PV6M" in the case of HQView-100S followed by the 6 least significant digits of the MAC address. The MAC address of the box can be found in the System/Network Settings menu.

### 4.4. Software Operation

Once the address has been entered into the web browser starts to load pages from the HQView-100S mirroring the menu system of the unit. All menu items are shown as their respective buttons, sliders and list boxes and can be accessed and altered with the PC mouse or corresponding navigational key presses.

## FIRMWARE UPDATE

### **5.1. Introduction**

HQView-100S has an USB port which allows a PC connection. With the Calibre PC Updater tool new firmware can be installed on HQView-100S for feature upgrades and bug fixes.

### **5.2. Updating Firmware**

HQView-100S accepts firmware downloads in a dedicated Updater mode. The unit is put in Updater mode by pressing and keeping the Menu key pressed at power up. If the Menu key is released within 10 seconds after power up HQView-100S is in Updater mode. Otherwise, HQView-100S is started normally. Whilst the Menu key is still pressed the Composite 1 input channel LED is flashing. When in Updater mode the Composite 1 input channel LED is flashing two times, then switched off, then flashing two times again, then switched off and so forth. Now the USB connection between PC and HQView-100S needs to be established and the Calibre PC Updater tool to be started. The PC Updater tool allows to browse and select a firmware file in BREC format. Once a BREC is selected the Update Firmware button has to be pressed and the firmware download to the HQView-100S into non volatile flash RAM starts. After completion of the download HQView-100S needs to be restarted normally (without pressing the Menu key) for the change to take effect.

## ENVIRONMENTAL AND EMC

### 6.1. Recommended Operating Conditions

Temperature	0°C to 40°C
Humidity (non condensing)	0% to 95%

### 6.2. Storage

Temperature	-25°C to +85°C
Humidity (non condensing)	0% to 95%

### 6.2. CE and FCC Compliance

**CE:** This product complies with the requirements of 89/336/EEC Electromagnetic Compatibility Directive amended by 92/31/EEC and 93/68/EEC, and 73/23/EEC Low Voltage Directive. Compliance is to EN55022 Class A.

**FCC:** **WARNING:** 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 interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at their own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

It is suggested that the user use only shielded and grounded signal cables to ensure compliance with FCC rules.