Compass 3.0 Presentation Switcher Manual

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Limited Warranty

The Compass 3.0 family is warranted against failures due to defective parts or faulty workmanship for a period of three years after delivery to the original owner. During this period, FSR will make any necessary repairs or replace the unit without charge for parts or labor. Shipping charges to the factory or repair station must be prepaid by the owner, return-shipping charges (via UPS Ground) will be paid by FSR.
This warranty applies only to the original owner and is not transferable. In addition, it does not apply to repairs done by other than the FSR factory or Authorized Repair Stations.
This warranty shall be cancelable by FSR at its sole discretion if the unit has been subjected to physical abuse or has been modified in any way without written authorization from FSR. FSR's liability under this warranty is limited to repair or replacement of the defective unit.
FSR will not be responsible for incidental or consequential damages resulting from the use or misuse of its products. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date (if a Warranty Registration Card was mailed in at the time of purchase, this is not necessary). Before returning any equipment for repair, please read the important information on service below.
SERVICE
Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.
NOTE: all equipment being returned for repair must have a Return authorization (RMA) Number. To get a RMA Number, please call the FSR Service Department (1-800-332-FSR1). Please display your RMA Number prominently on the front of all packages.

CONTACT INFORMATION
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SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

1. SAFETY

- All the safety and user manual should be read before the appliance is operated.
- The safety and operating instructions should be retained for future reference.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use this equipment near wet place.
- This product should be operated only from the type of power sources indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your local power company.
- This equipment may be equipped with a 3 wire grounding-type plug, a plug having a third (grounding) pin. This pin will only fit in to a grounding type power outlet. This is a safety feature. If you are unable to insert the plug in to the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- Openings on the case are provided for ventilation and to ensure reliable operation of the equipment and to protect it from overheating. The openings should never be blocked.
- Do not use any damaged power cords or plugs, or loosed outlets, this may cause electrical shock or fire.
- Do not put heavy articles such as other equipment on this product. Keep it away from liquid, magnetic and flammable substances.

Compass 3.0 Presentation Switcher

Table of Contents

2. Introduction

This manual explains how to operate your Compass 3.0 Presentation Switcher.

If you have any questions relating to this or any other product supplied by FSR please visit our web site www.fsrinc.com.

2.1 System Overview

The Compass 3.0 Presentation Switchers line of products feature excellent image processing algorithms for the very best in scaling, motion-adaptive de-interlacing and automatic film 3:2 and 2:2 pull-down correction. The new generation of FSR products significantly outperforms the capabilities of benchmark competitor products.

In addition to full 4K processing, new and unique technology allows for seamless switching between different inputs as fast as ¼ of a second.

The Compass 3.0 Presentation Switchers feature with a flexible, high performance video input front end that allows them to accept and process a wide variety of inputs. HDMI, DVI and Display Port video with HDCP encryption is supported, as are computer graphics inputs in SVGA analog and HDMI/DVI digital formats. Analog support also includes true component video in YPbPr and RGBS formats as well as composite (CVBS) inputs.

A high performance video decoder is utilized with 4x oversampling and 3D Y/C separation for outstanding video image clarity. The output frame rate can lock to the input frame rate dynamically without frame rate conversion in order to reduce system latency; or it can be set to a fixed output frame rate, e.g. for driving basic screens which are not 50Hz-compatible. The output format can also lock to an externally provided synchronization signal on various models (see model matrix). 3GSDI/HDSDI/SDI digital formats are supported on various models (see model matrix below).

Outputs are available in HDMI/DVI digital formats as well as 3GSDI and HDBaseT (see model matrix below). All outputs are active simultaneously, except in the cases where the formats are not compatible. For example, for the PC graphic formats that are not supported by the SDI standards, the 3GSDI output will be disabled. Also note that if an HDCP encrypted signal is connected to the DP, HDMI or DVI input, the HDMI and DVI output signals will be similarly HDCP encrypted and the 3GSDI output will be disabled. HDCP capability can be switched off per input, so that a source can transmit non-protected content material.

The Pan, Tilt and Zoom (PTZ) feature allows users to select a 'region of interest', ROI, of the input image to fill the screen and pan and tilt within it.

The Video Wall feature allows multiple units to work synchronously and be part of a large matrix configuration, up-to 4x4. Each unit automatically crops a section of the input video image and displays it on the corresponding projector or screen.

All units can be operated via the front panel LED display and rotary knob, or through a built-in web page, or via an API interface. The API manual is published separately and is available on our website.

Compass 3.0 Presentation Switcher

Compass 3.0 Presentation Switchers that support audio include 8 stereo audio inputs and two microphone inputs with Phantom Power. An embedded audio mixer allows mixing of the mic inputs to any analog or digital audio signal. Each unit includes a 30W stereo audio power amplifier allowing direct connection to loudspeakers. Separate line level outputs are also provided for connecting to external amplifier systems.

Model	Inputs	Outputs
CO-PS81 CO-PS81A*	8 Video Inputs: 2xHDMI 4K, 1xHDMI HD, 1xDisplayPort 4K, 1xVGA, 1xCVBS, 1xDVI-U (DVI/HDMI & VGA/RGBS/YPbPr)	2 Video Outputs: 1xHDMI 4K, 1xDVI/HDMI
CO-PS91 CO-PS91A*	9 Video Inputs: 2xHDMI 4K, 1xHDMI HD, 1xDisplayPort 4K, 1xVGA, 1xCVBS, 1xDVI-U (DVI/HDMI & VGA/RGBS/YPbPr) HDBaseT 4K	3 Video Outputs: 1xHDMI 4K, 1xDVI/HDMI HDBaseT 4K
CO-PS101 CO-PS101A*	10 Video Inputs: 2xHDMI 4K, 1xHDMI HD, 1xDisplayPort 4K, 1xVGA, 1xCVBS, 1xDVI-U (DVI/HDMI &VGA/RGBS/YPbPr), 2x3G-SDI 1x Genlock reference sync input	3 Video Outputs: 1xHDMI 4K, 1xDVI/HDMI, 1x3G-SDI
CO-PS111 CO-PS111A*	11 Video Inputs: 2xHDMI 4K, 1xHDMI HD, 1xDisplayPort 4K, 1xVGA, 1xCVBS, 1xDVI-U (DVI/HDMI & VGA/RGBS/YPbPr) 2x3G-SDI HDBaseT 4K 1x Genlock reference sync input	4 Video Outputs: 1xHDMI 4K, 1xDVI/HDMI, 1x3G-SDI HDBaseT 4K
* : Audio Models		

2.2 Packing List

Compass 3.0 Presentation Switchers are supplied with the following:

1) 3 pin plug IEC AC Cord

2) CD (w/ documentation)

3) Quick Start Guide (QSG)

3. Basic Switcher Set-Up

Inspect the shipping box and make sure that no damage was caused during transportation. If you see any damage, immediately contact the shipping carrier. Remove the unit, power cord, CD and QSG from the shipping carton. Inspect the unit and ensure that there is no damage caused during shipping.

You can install the unit on a clean flat surface or on an equipment rack using the rack-mount ears. The unit should always be installed in a well ventilated, static free environment and close to the AC power source. Max. operating temperature is 0^0C to 40^0C and 5% to 95% non-condensing humidity.

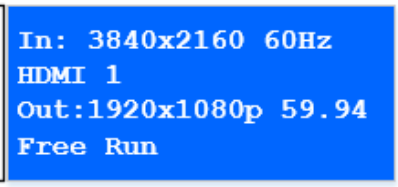
Connect the display device (Monitor, LED Wall, Projector, etc.) to one of the output connectors DVI/HDMI 1 or HDMI 2 featured by all models, or SDI or HDBaseT featured only on certain models. If applicable, connect the speakers to the audio output connectors. (The image shown here is for a fully loaded model)

Connect the Input sources (Blue Ray Player, Set Top Box, PC, etc.). Use input connectors from different groups for the ¼ sec ultra-fast switching. Different groups are identified by the their related key color on the front panel. If applicable, also connect any audio sources

Inset the power cord to power-up the unit.
The power-up process takes about one minute.

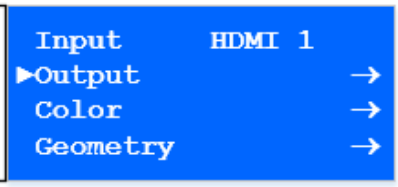
Compass 3.0 Presentation Switcher

After the unit boots up, the main status menu is displayed. The menu shows the detected resolution of the input source, the output resolution and the lock status. In the example, a 4K source was detected on the HDMI-1 input



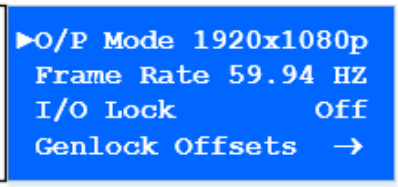
Press the Test button to enable a Test Pattern on the output. Use the rotary knob to select the Warp Adjust pattern. This pattern provides a border around the whole raster

Press the Sel button or the rotary knob to enter the main menu. Scroll to the Output menu entry to setup all the output related parameters

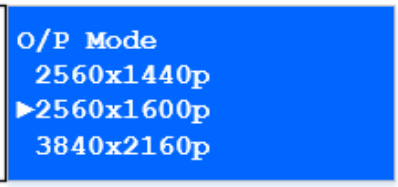


Enter the Display Type sub menu by pressing the menu button.

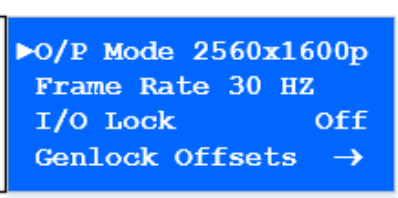
First, we select the output resolution from the O/P Mode sub-menu



Locate and select the desired output resolution to match the native resolution of the connected device. In the example, 2560x1600p was selected. Press the Esc key to return to the previous menu.



Repeat the previous steps to change the Frame Rate or the Genlock source. In the example, a 30Hz frame rate was selected. Make sure that the Test pattern with the border outline is shown on the display

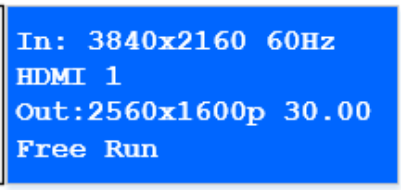


If the input source is a Mac computer and the unit is connected to a non-HDCP display, you need to turn off HDCP processing, for the Mac to output non-protected content. Enter the Output Config menu

Enter the HDCP menu and turn off HDCP. Immediately HDCP will also be disabled on all the input channels.

By default, the unit fills the output raster with an image ignoring any mismatch between the input and output aspect ratios. To maintain the input source aspect ratio, select the Original or Crop settings from the Geometry\Pict. Format menu.

Hit Esc several times and return to the status menu. In the example, the menu indicates that a 4K source is connected to HMDI-1, the output is set to 2560@30 and the unit is free running. (no genlock or I/O lock)



The functionalities and settings described in this chapter can also be accessed and modified via the built-in webpage and API interface

4. System Description

4.1 Front Panel Layout

The front panel includes several buttons allowing the user to select between the different inputs and to perform other functions, a jog wheel and an LCD screen. From the front panel you can navigate the menus, select the an input and direct access to key functions. The front panel layout is similar between the different models except for the SDI, HDBT selection keys. Only models featuring these inputs include these buttons.

CO-PS81 / CO-PS81A

CO-PS91 / CO-PS91A

CO-PS101 / CO-PS101A

CO-PS111 / CO-PS111A

1 2 3 4 5 6 7

1 – Standby key: By pressing the Standby key, the unit is put into standby mode. This is indicated by a "STANDBY" message on the LCD with the back light turned off. When the unit starts up, the red Standby key flashes. Once the unit is operational, the Standby key is solid red.
2 – Input channel selection keys: All input channels can be directly selected. The active channel key is illuminated.
3 – Test Pattern key: Directly activates a Test Pattern. Use the jog wheel to scroll through the available test patterns.
4 – Direct function keys: Four functions can be directly accessed by pressing their assigned key: Freeze (stop/resume live video), PTZ (activate/deactivate Pan Tilt Zoom), Logo (show/skip a predefined logo), Blank (blank the output screen/resume live video).
5 – Menu navigational keys: When the Menu/Sel key acts as an Enter or Select key for menu changes. A jog wheel is used for menu navigation and changing values. To exit the menu or any submenu press the Esc key or navigate to the Exit item and press the Menu/Sel key or press the jog wheel.

6 – Front Panel LCD: Displays the Menus on a 4-line display
7 – Jog wheel: The wheel is used for navigating through the menu system and making value changes. The jog wheel has a push function the creates the same effect as pushing the Menu/Sel key.

4.2 Input Connector Overview

Model	CO-PS81	CO-PS91	CO-PS101	CO-PS111
Display Port via DP connector	✔	✔	✔	✔
2x HDMI 1 & 2 (UHD,4K) via HDMI connector	✔	✔	✔	✔
DVI & analog (RGB/ RGB/YPbPr) via DVI-U	✔	✔	✔	✔
VGA analog via 15HDD	✔	✔	✔	✔
Composite Video via BNC	✔	✔	✔	✔
HDMI (HD) Via HDMI connector	✔	✔	✔	✔
HDBaseT via RJ45 connector		✔		✔
2x 3G-SDI/HD via BNC			✔	✔
Dedicated Genlock			✔	✔
Audio Models	CO-PS81A	CO-PS91A	CO-PS101A	CO-PS111A

Front Panel Shortcuts:	
Keypad unlock:	**ESC + SEL**
Mode reset:	**ESC + CV**
Factory reset:	**ESC + YPbPr** (in live operation or at power up)
Set output mode to 720p:	**ESC + VGA**
Firmware version:	**POWER + ESC** (press the SEL button to exit)

4.3 Rear Panel Layout

CO-PS81

CO-PS81A

CO-PS91

CO-PS91A

CO-PS101

CO-PS101A

CO-PS111

CO-PS111A

1 - 2x SD/HD-SDI/3G-SDI input
2 - HDBaseT (UHD/4k) input
3 - Display Port (UHD/4k) input
4 - 2x HDMI-1 & 2 (UHD/4k) input
5 - S/PDIF output
6 - VGA Input
7 - DVI-U (DVI-D and YPbPr with an adapter)
8 - 1x HDMI-3 (HD) input

9 - Composite Video 2 (BNC) 10 - Genlock input (BNC)
11 - 3G-SDI output 12 - HDBT (UHD/4k) output
13 - RS232 port 14 - DVI/HDMI1 (HD) output
15 - HDMI2 (UHD/4k) output 16 - TCP/IP and 2x USB 17 - Power supply

4.4 Output Connector Overview

Model	CO-PS81	CO-PS91	CO-PS101	CO-PS111
DVI-D/HDMI via DVI-U	✔	✔	✔	✔
1x HDMI (UHD,4K) via HDMI connector	✔	✔	✔	✔
HDBaseT via RJ45 connector		✔		✔
1x 3G-SDI/HD via BNC			✔	✔
Audio Speaker and Line Out Via Phoenix connectors	CO-PS81A	CO-PS91A	CO-PS101A	CO-PS111A

4.5 Product Specification

This section provides technical specification for all models. The following topics are discussed:

- Power Supply Requirements
- Input Specifications
- Output Specifications
- Supported Formats
- Communication Specifications

4.5.1 Power Supply Requirement

100V-264VAC 50/60Hz connected via a standard IEC connector located on the rear panel.

4.5.2 Input Specifications

4.5.2.1 Video Inputs

- Composite via BNC connector
- Signal formats Composite (CVBS)
- Standards NTSC, PAL, SECAM
- Composite (CVBS) input level 1V p-p nominal incl. sync
- Input Impedance 75 Ohms

4.5.2.2 Component Video Inputs

- Via DVI-U connector and appropriate adapter cable
- YPbPr (YUV), YPbPrS and RGsB component video, menu selectable.
- Signal formats 484i (480i) and 576i (SD), 480p, 576p (ED), 720p, 1080i at 50, 59.94 and 60Hz and 1080p at 23.98, 24, 25, 29.97 and 30Hz.
- Please note this input does not support Computer SVGA signals which should be connected via the Computer SVGA input, The SVGA input supports the separate H & V syncs.

4.5.2.3 3G-SDI Input

- Format:SD-SDI, HD-SDI and 3G-SDI YCbCr 4:2:2 serial digital component video. \
- Level B support: When input is 3G Level B (2 stream mapping), there is an option to select which of the two video streams (Stream 1 or 2) to use. Otherwise it works with whatever mapping is specified in the SMPTE 352 packet (or defaults to 10bit 4:2:2 if none).
- Input impedance: 75 ohms.
- SMPTE 292M, SMPTE 259M-C and SMPTE 424M compliant, accepts 484i, 576i, 720, 1080i and 1080p single link formats at 270Mb, 1.485Gb or 2.97Gb rates.

4.5.2.4 Computer (SVGA) Inputs VESA formats

- Signal formats: DOS, VGA – WUXGA up to 165MHz pixel clock
- RGB video level: 0.7V - 1.0V
- RGB input impedance: 75 Ohms
- Sync format : Separate H & V sync at TTL/5V levels.

4.5.2.5 HDMI & DVI Inputs

- HDMI with or without HDCP, 36-bit video compatible.
- DVI-D input with or without HDCP
- Signal formats - video
- SD: 625i (576i) and 525i (480i) in double-rate formats;
- ED: 480p, 576p;
- HD: 1280x720p, 1920x1080i, 1920x1080psf; 1920x1080p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz; 2048x1080p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz.
- HDMI 1 and HDMI 2 support: 4K signals: 3840x2160p & 4096x2160p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz (50, 59.94 & 60Hz supported in YUV 4:2:0 color space format),
- Signal formats – computer
- Common VESA graphics formats from VGA to 4k up to 297 MHz (HDMI 1 and HDMI 2) and 225 MHz (HDMI 3) pixel clock

4.5.2.6 DP Input

- Display Port without HDCP, 36-bit video compatible.
- Signal formats as HDMI 1 and HDMI 2.

4.5.2.7 HDBT Input

- Uncompressed HD video over RJ45 connector and max.100m CAT5e cable (or better)
- CAT5e/CAT6 for 100m and signals with less than 225MHz Pixel Clock
- CAT6a/CAT7 for 100m and signals up to 297MHz Pixel Clock
- Signal formats as HDMI 1 and HDMI 2.

- HDMI-1 and HDMI-2 and HDBT inputs support RGB and YUV 4:2:0 color space formats. Signals with YUV 4:4:4 and YUV 4:2:2 color space formats need to be connected to the HDMI3 or DVI input.

- Graphics formats with odd numbered horizontal active pixels, e.g. 1365x768 are not supported.

4.5.3 Output Specifications

All output channels are active simultaneously, provided that the input signal is not HDCP encrypted. All units include an HDMI, and a DVI-U connectors for DVI/HDMI connectivity. Some models feature a BNC connector for 3G-SDI signals and an RJ-45 connector supporting HDBaseT capability. The DVI-D connector supports HDMI with 36-bit video and audio formats when connected to a suitable HDMI receiver. The color depth of the HDMI signal is determined by a menu selection and the capabilities of the monitor.

Interlaced outputs are only supported on models with 3G-SDI output.

4.5.3.1 3G-SDI Output

- Format:SD-SDI, HD-SDI and 3G-SDI YCbCr 4:2:2 serial digital component video
- Input impedance: 75 ohms.
- SMPTE 292M, SMPTE 259M-C and SMPTE 424M compliant, accepts 484i, 576i, 720, 1080i and 1080p single link formats at 270Mb, 1.485Gb or 2.97Gb rates.

4.5.3.2 HDMI & DVI Outputs

- HDMI with or without HDCP, 36-bit video compatible.
- DVI-D input with or without HDCP
- Signal formats - video
- SD: 625i (576i) and 525i (480i) in double-rate formats;
- ED: 480p, 576p;
- HD: 1280x720p, 1920x1080i, 1920x1080psf; 1920x1080p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz; 2048x1080p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz.
- HDMI 1 and HDMI 2 support: 4K signals: 3840x2160p & 4096x2160p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz (50, 59.94 & 60Hz supported in YUV 4:2:0 color space format),
- Signal formats – computer
- Common VESA graphics formats from VGA to 4k up to 297 MHz (HDMI 1 and HDMI 2) and 225 MHz (HDMI 3) pixel clock

4.5.3.3 HDBT Output

- Uncompressed HD video over RJ45 connector and max.100m CAT5e cable (or better)
- CAT5e/CAT6 for 100m and signals with less than 225MHz Pixel Clock
- CAT6a/CAT7 for 100m and signals up to 297MHz Pixel Clock
- Signal formats as HDMI 1 and HDMI 2.

4.5.3.4 HDCP Output encryption

When the input signal is HDCP encrypted, the DVI-D, HDMI and HDBaseT outputs will also be encrypted and the 3G-SDI output will be disabled. If the display device does not support HDCP, the output will be black and a message indicating that the presence of an HDCP signal will be shown on the screen

The user can turn off the unit's HDCP compliance to allow non-encrypted content to pass through the unit. This is an important feature specially when using a MAC computer as the source. The MAC will encrypt its output signal if a compliant device is seen attached to its output regardless of the copy protection requirements of the content. By turning off HDCP, the MAC will see a non-compliant device and therefore will not encrypt its output. When HDCP compliance is turned off, encrypted sources will not be displayed.

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4.5.3.5 Audio Output

Audio embedded in HDMI and SDI video streams is passed through the system and re-embedded into the HDMI and SDI output signals.

Also, the unit features a S/PDIF coaxial digital audio output connector for monitoring audio of the HDMI and SDI channel.

When HDMI is selected as the input channel, the HDMI EDID is read by a video source such as a Blu-Ray Player. The unit allows the source to provide the formats shown under output formats for HDMI in the below table. All formats are re-embedded into the HDMI output data stream, those which are not allowed on the SDI or SPDIF output are muted on the individual channels.

Output Channel	**Output Format**
HDMI	PCM up to 8ch, up to 24Bit, up to 192kHz sampling rate (incl. 32kHz,44.1kHz,48kHz,96kHz,192kHz)
SDI	PCM up to 8ch, up to 24Bit, 48kHz sampling rate
SPDIF	PCM up to 2ch, up to 24Bit, up to 96kHz sampling rate (incl. 32kHz,44.1kHz,48kHz,96kHz)

4.5.4 Analog Audio

Units supporting audio include up-to 8 analog stereo Inputs, two microphone Inputs with phantom power and an audio mixer.

Analog stereo signals are connected to the unit via 3.5 mm jack sockets, except for the CV input that is associated with two RCA connectors. Using the audio menu, any video input can be link with any audio input and mixed with the mic inputs.

Audio models also include stereo audio power amplifier supporting 15W RMS loudspeaker per output and separate stereo balanced line level audio outputs for external amplifier systems. The analog stereo outputs are available on two phoenix connectors.

4.5.5 Supported formats

Horiz. Active Pixels	Vert. Active Lines	Vertical Refresh Rate (Hz)								Outputs		Specification
		60	59.94	50	30	29.97	25	24	23.98	DVI HDMI HDBT	3G-SDI	
640	480	✔	✔	✔						✔		VESA DMT
720	480i		✔							✔	✔	EIA/CEA-861-B Format 6 (NTSC)
720	480p		✔							✔		
720	576i			✔						✔	✔	EIA/CEA-861-B Format 17 (PAL)
720	576p			✔						✔		
800	600	✔	✔	✔						✔		VESA DMT
1024	768	✔	✔	✔						✔		VESA DMT
1280	720	✔	✔	✔	✔	✔		✔	✔	✔	✔	EIA/CEA-861-B Format 4
1280	768	✔	✔	✔						✔		VESA CVT 001M9/VESA DMT
1280	800	✔	✔	✔						✔		VESA CVT 001MA/VESA DMT
1280	1024	✔	✔	✔						✔		VESA DMT
1360	768	✔	✔	✔						✔		VESA DMT
1366	768	✔	✔	✔						✔		proprietary
1440	900	✔	✔	✔						✔		CVT 1.30MA/VESA DMT
1400	1050	✔	✔	✔						✔		VESA CVT 001M3/VESA DMT
1600	1200	✔	✔	✔						✔		VESA DMT
1680	1050	✔	✔	✔						✔		VESA CVT 002MA
1920	1080i	✔	✔	✔	✔	✔		✔	✔	✔		EIA/CEA-861-B Format 5
1920	1080p	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	EIA/CEA-861-B Format 5
1920	1200	✔	✔	✔						✔		VESA CVT 002MA-R/VESA DMT
2048	1080	✔	✔	✔		✔	✔	✔		✔	✔	proprietary
2048	1200		✔							✔		proprietary
2560	1080	✔	✔	✔	✔	✔	✔	✔	✔	✔		EIA/CEA-861-F VIC=86
2560	1440	✔	✔	✔	✔	✔				✔		VESA CVT 004M-R
2560	1600	✔	✔	✔	✔	✔				✔		VESA CVT 004M-R
3840	2160	✔	✔	✔	✔	✔	✔	✔	✔	✔		EIA/CEA-861-F VIC=93
4096	2160	✔	✔	✔	✔	✔	✔	✔	✔	✔		EIA/CEA-861-F VIC=98

5. Unit Control

All models can be controlled via the front panel, a web page built-in into the unit or an API protocol interface. The next two chapters describe the Front Panel and Web Browser control methods. The API interface can be found in a separate document available on our web site.

6. Front Panel Control

You can enter the main menu by pressing the Menu/Sel key from the status screen. You can use the jog wheel and Menu/Sel and Esc buttons to navigate through the different menus.

A complete diagram of the menu tree is shown in Appendix A. The audio menu tree for units fitted with the audio option is shown in Appendix B.

Next, is a brief description of the functions and settings available from the front panel menus.

6.1 Main Menu

The main menu lists the selected input channel and 6 sub menus. The 6 sub menus are:

- Output
- Color
- Geometry
- Video Wall
- Enhancement
- System

Each menu includes an Exit entry to return to the previous level. Some adjustments are not applicable to all signal types or operating modes, in which case those non-applicable functions will be greyed out and are not accessible.

The unit is designed to have separate memories for all the settings in each section. All Input parameters are specific to your chosen input channel and input signal type, and are not global to the unit. For example, if you change the settings for the composite video channel, you will not affect the settings you may have made in the DVI channel.

6.2 Input

This menu provides an additional method of selecting the desired input.

Depending on the specific model, some of these input selections may not be available.

Test patterns can be selected even when there are no inputs connected to the unit. Different test patterns can be selected by scrolling the jog wheel.

Settings:

- SDI-1
- SDI-2
- Display Port
- HDMI-1
- HDMI-2
- HDBaseT
- DVI
- HDMI-3
- VGA
- YPbPr/RGB
- Composite Video
- Test Pattern

Default : HDMI-1

6.3 Output

This menu contains adjustments related with the outputs of the unit.

6.3.1 Display Type

6.3.1.1 Output Mode (Resolution)

The selected output resolution should match the native resolution of the imaging device to avoid double scaling.

The 3GSDI output does not feature the PC resolutions, only 480i/p, 576i/p, 720p and 1080i/p output modes are supported.

Settings: See the Supported format table
Default : 1920x1080p

6.3.1.2 Frame Rate

As with the output resolution, the output frame rate should match the native frame of the imaging device. Some frame rates may not be available depending on the selected resolution.

In auto mode the output frame rate follows the input frame rate if it supported by the output resolution. If the input frame rate is not supported by the output resolution, then the unit determines the output frame according to a procedure programmed in the software.

Settings: 60 Hz, 59.94 Hz, 50 Hz, 48 Hz, 25Hz, 24 Hz, 23.97, Auto
Default : 59.94Hz

6.3.1.3 I/O Lock

From this menu, the user can select the genlock mode of the unit. If I/O Lock is off, the output free-runs with a fixed refresh rate determined by the frame rate setting. In this mode, the output vertical refresh sync deviates slightly from the input vertical refresh sync, even if both are set at the same rate, occasionally causing frame dropping or repeat.
If I/O Lock is set to On, the output refresh rate follows the input video refresh rate if possible. If not, the output is operated with a fixed refresh rate determined by the frame rate setting.
If I/O Lock is set to Genlock, the output refresh rate will follow the vertical sync of the signal connected to the Genlock BNC connector. Genlock is achieved when the Genlock vertical sync rate matches the vertical sync rate set in the output menu. Valid combinations are 50Hz/50Hz, 59.94Hz/59.94H and 60Hz/60Hz. If genlock is not achieved, the output frame rate refresh rate is determined by the frame rate setting.

The LCD main status menu indicates the genlock status: (I/O Locked or Genlocked) or in free run mode (Free Run).

In order to achieve clean switch between input selections, follow the locking settings described in the table below.

	I/O Lock = On (Lock to i/p video)	I/O Lock = Genlock	I/O Lock = Off (Free Run)
Auto Frame Rate	Never Clean	Always Clean	Depends on Inputs
Fixed Frame Rate (any)	Never Clean	Always Clean	Always Clean

If the output Frame rate is set to Auto, Genlock signals all genlock signals can be accepted. On the other hand, if a specific frame is selected, for example 60Hz, a Genlock reference signal od 60Hz can only be accepted and the unit will not lock to a 50Hz reference signal.

If the output Frame rate is set to Auto and I/O lock is off, input switching may-not be clean. Clean switching will depend how close the frame rates of the current and next input channel are.

Settings: Off, On, Genlock (for models supporting genlock)
Default : Off (Free Run)

6.3.1.4 Frame Rate (Enable)

From this menu the user can choose the output frame rates that the unit can output. This is done to prevent the unit from outputting frame rates that cannot be accepted by the display.

Settings: 60 Yes/No, 50 Hz Yes/No, 48 Yes/No, 30/29.97Hz Yes/No, 25 Yes/No, 24/23.98 Yes/No
Default : 60Hz Yes, 50Hz Yes, 48Hz No, 30/29.97Hz Yes, 25Yes, 24/23.98Hz Yes

6.3.2 Gamma/Color

6.3.2.1 Native Color Temp

Native Color Temp allows the user to select from pre-configured color temperatures to match the display. If this value is the same as the Color Temp value in the (Input) Color menu, no conversion is performed.

Settings: 3700, 5500, 6500, 7500, 9300, 10000
Default : 6500K

6.3.2.2 Output Gamma

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.
If you need to reduce the level of certain color in the image, select a higher value for the input color Temp in the Color menu, or a lower number for the Native Color Temp in the Output menu.

Settings: 1.0 to 3.0 in steps of 0.1
Default : 2.2

6.3.3 Output Config

6.3.3.1 Display

Internally, the output interface processes data at a full ten bits per color. The color depth on the HDMI outputs is determined by the supported standard of the attached monitor or device when set to DVI/HDMI.

DVI 1.0 and HDMI 1.1/1.2 devices are set at 24 bit, for HDMI 1.3 or later compliant devices it is up to 36 bit. The DVI forced selection will output video with 24 bit color depth irrespective of the supported standard of the attached monitor.

Settings: DVI forced, DVI/HDMI
Default : HDMI

6.3.3.2 HDCP

HDCP encryption support on the output can be switched off as is in the input. This means the unit pretends to be non-HDCP compliant on the DVI/HDMI output port and consequently does not encrypt data. At the same time, HDCP is also turned off at the input ports. This allows the unit to accept non-HDCP encrypted data. If the source however, is HDCP encrypted, then the output will be black.

Settings: On, Off
Default : On

6.3.3.3 DVI Color Space and DVI Range

When set to Default CEA, the output modes have limited range, and VESA modes have full range. Therefore, an incoming limited range mode is either passed through when the output is set to a CEA output mode or expanded when the output is set to a VESA mode. An incoming full range mode is either compressed when the output is set to a CEA output mode or passed through when the output is set to a VESA mode.

If the HDMI/DVI output does not operate properly, the range can be changed manually. A limited video range is only using the following greyscale for video information - 8 Bit System: 0x10 .. 0xEF, 10 Bit System: 0x040 .. 0x03BF, 12 Bit System: 0x100 .. 0xEFF.

Settings : Color Space: RGB or YPbPr / Range: Default, Limited, and Full
Default : RGB & Full

6.3.4 Video Wall

The Video Wall menu provides controls to set up multiple units in a multi-screen application. Multiple screens are stitched together to provide a bigger display with higher resolution than a single display. Each display is driven by a separate unit.

In a multi projection display, the individual projections typically are chosen to overlap to give seamless transitions. Multiple LED walls or LCD/Plasma screens do not have overlapping regions and the blend Width is set to zero. When using Video Wall to drive one single large screen, it is essential that all units are I/O locked or genlocked, otherwise motion tear will be observed at the boundaries of the image processed by each unit.

6.3.4.1 Auto Zoom

Switches on the auto zoom resizing the video image to display the assigned part of the total image. When Auto zoom is turned on, the processor will cut and scale the portion of the picture selected by the matrix size.

Settings: On/Off
Default: Off

6.3.4.2 Units Wide/Units High

The dimensions of the multi-screen display is defined with this menu. The maximum number of screen supported is 16. This function is used in conjunction with the next function.

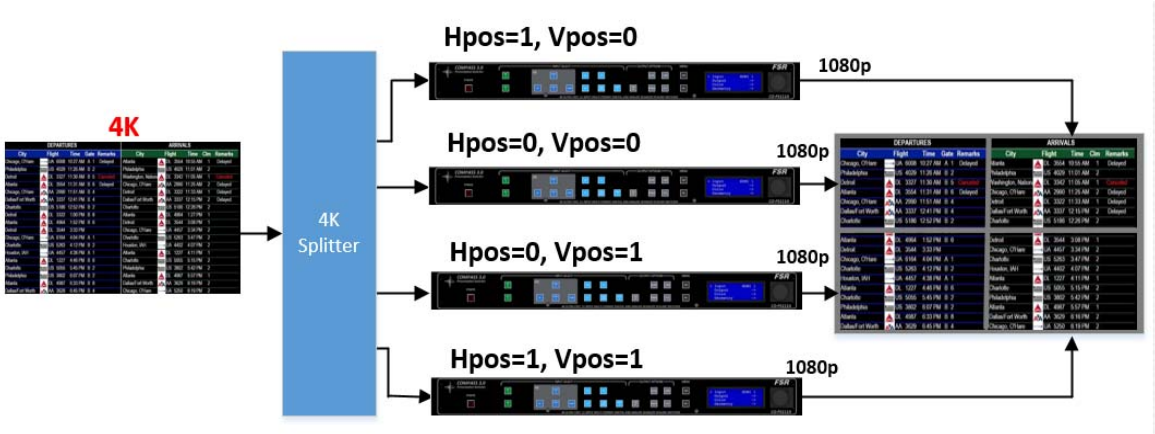
Settings: Units Wide: 1, 2, 3, 4 / Units High: 1, 2, 3, 4
Default: Units Wide: 1 / Units High: 1

6.3.4.3 Horizontal Pos/Vertical Pos

This setting provides the coordinates of the segment of the total image that the unit will process (cut out and resize). This function is used in conjunction with the previous function to select the blend regions to be provided even when auto zoom is turned off.

Settings: 0 to 3 indicating co-ordinates 0,0, to 3,3 for the maximum matrix size of 16
Default : 0, 0

In the example below a 4K image is split into four 1080p quadrants in a 2x2 configuration.



6.3.4.4 Enhancement

The enhancement menu provides image enhancement functions. Note that the enhancement settings apply only to video input signal and not to computer graphics signals.

6.3.4.5 Sharpness

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.

Settings: -4 to 4 in steps of 1
Default : 0

6.3.4.6 Detail

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.

Settings: 0, 1, 2, 3
Default : 1

6.4 Color (Input Channel Adjustments)

6.4.1 Black-Level Offset

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

Settings: 0 IRE, 7.5 IRE
Default : 0 IRE

6.4.2 Black-Level

Black level controls the offset applied to the video signal. (same as the brightness control on a TV)

Settings: -50 to 50 in steps of 1
Default : 0

6.4.3 Contrast

Contrast controls the gain applied to the video signal.

Settings: -50 to 50 in steps of 1
Default : 0

6.4.4 Saturation

Controls the video color saturation, (applies individually to all video inputs but not computer input signals or formats).

Settings: -50 to 50 in steps of 1
Default : 0

6.4.5 Hue

Adjusts the color hue of NTSC signals. This is not applicable for computer input signals or formats.

Settings: -50 to 50 in steps of 1
Default : 0

6.4.6 RGB values

This is a user-defined color temperature setting where R,G,B gain (white balance) and offset/bias (black balance) can be adjusted separately in order to match the display device.
This control is not available for output modes with color space format YUV 4:2:0.

Settings : Red/Green/Blue Gain/Bias : -512 to 512
Default : 0

6.4.7 Color Temp

A preset range of Color Temperature allowing the user to select from pre-configured color temperatures to match the color temperature of the incoming signal. If this value Native Color Temp value in the Output menu are the same, no conversion is performed.

Settings: 3700K, 5500K, 6500K, 7500K, 9300K, 10000K
Default : 6500K

6.4.8 Input Gamma

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

Settings: 1.0 to 3.0 in steps of 0.1
Default : 2.2

6.5 Geometry

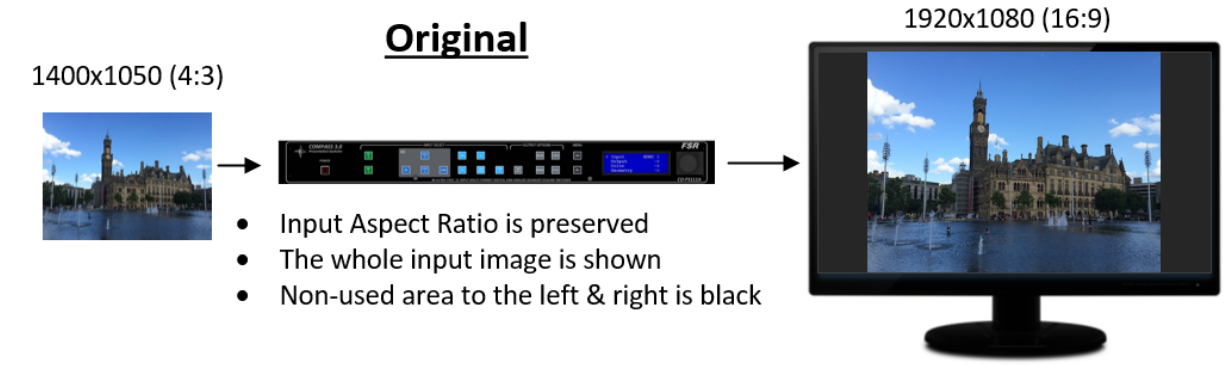
This menu contains adjustments associated with setting up position, aspect ratio and scale of the input signal.

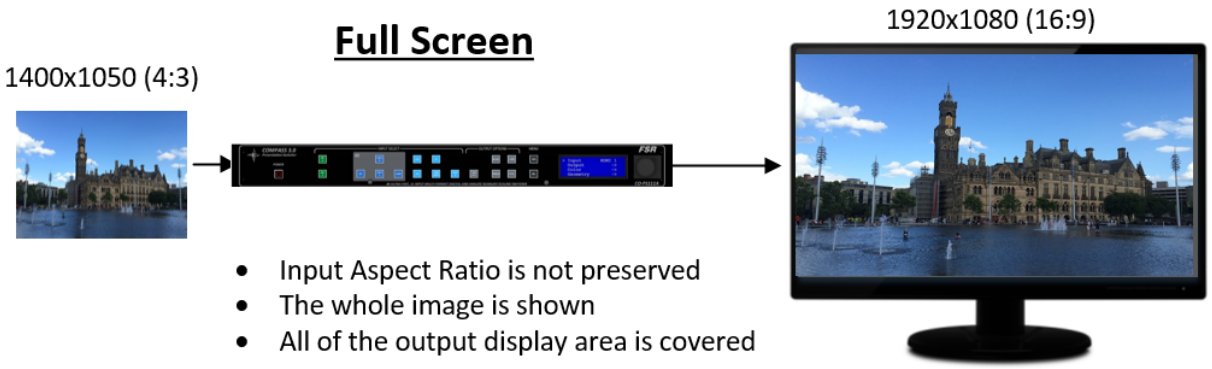
6.5.1 Picture Format

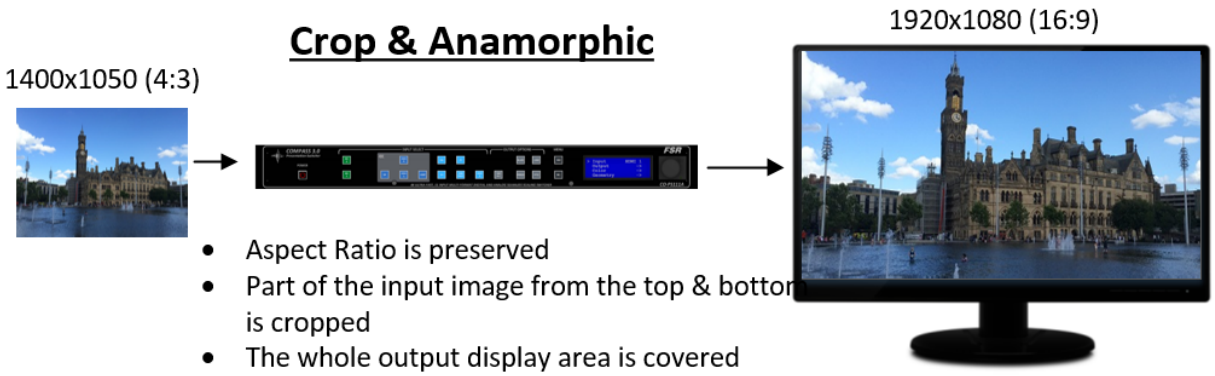
This menu allows users to select the displayed aspect ratio when the input signal aspect ratio is different to the display panel's aspect ratio. Some aspect ratios may not be applicable to all signal types, in which case selecting a non-applicable aspect ratio conversion will have no effect on the displayed image.

Original: Preserves the aspect ratio of the incoming image and scales the image to fit into the size of the panel. Depending 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 preserving the aspect ratio.
Crop: Preserves the aspect ratio and scales the image to fill the screen. Depending 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. Depending 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).

Settings: Original, Full Screen, Crop, Anamorphic
Default: Original







6.5.2 Overscan

Overscan is used to slightly zoom into the image. Therefore, 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. head switching in legacy video images.

Settings: 0 to 10 in steps of 1
Default: 0

6.5.3 Pan Tilt Zoom (PTZ)

This menu provides settings to zoom and shrink the image, pan horizontally and tilt vertically within the image. PTZ can be switched on or off and the settings can be saved per input channel or globally, i.e. if applied globally the same PTZ settings are applied when switching input channels or changing the input mode.

The Zoom setting allows zooming into the image or shrink it.

When Aspect Lock is set to On, vertical zoom is disabled and the horizontal zoom or shrink factor is also used to vertically adjust the image. In this mode the aspect ratio is preserved.

When Aspect Lock is Off, horizontal and vertical scaling factors are set separately, regardless of the input image aspect ratio.

Off raster panning is also allowed, i.e., the image can be shifted outside the active area of the display.

The PTZ settings can be set to the default settings with the reset button.

Settings: On/Off
Default: Off

6.6 System

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

6.6.1 User

Several unit settings can be stored under a user name. Different users can store their preferred settings and recall them by selecting their user name.

User settings are stored automatically and no special action is required by the user. For example, if the setting is changed from USER1 to USER2, then all of unit's parameters at the time of the change will be stored under USER1. When the unit is changed back to USER1, the USER1 settings will be loaded back t the unit.

Using the Web interface, any number of settings can also be stored/restored to/from the PC.

Settings: USER 1, 2, 3, 4, 5, 6, 7, 8, 8, 10
Default : USER 1

6.6.2 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 unit itself can be given a name. The default name is VIDEOPROC. This name followed by the MAC address is used by the web server and being displayed in the unit line of the web page.

6.6.3 Input Config

Inputs can be configured through the following sub-menus:

6.6.3.1 Analog Inputs

6.6.3.1.1 VGA Setup:

- Clock & Phase: Frequency (Clock) and phase can also be altered manually, as the vertical and horizontal position

Settings: 0 to 32
Default : 0

- Color Space

Settings: RGB or YCbCr
Default : RGB

- The greyscale range can be reduced by switching from full to limited (see range values discussed in the output config section)

Settings: Full / Limited
Default : Full

- A reset button to factory defaults is provided, to return the phase, clock and positional settings to the original positions.
- The preferred video mode can be selected in the EDID Input Format menu. This setting can force the source to output a certain video mode provided the driver of the graphic card reads the preferred timing in the EDID. Most likely the PC needs to be rebooted for the driver to notice the EDID change.

Default : 1920x1080p

6.6.3.1.2 RGB/YPbPr Setup:

- Same as VGA Setup, except there is no concept of EDID with component video and thus no EDID Input Format menu.

o CVBS Setup:

- 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.

Default : On

6.6.3.2 Digital Inputs

6.6.3.2.1 DP Config:

The automatic HDMI Color Space and Range settings can be overwritten in this menu.

- Color space

Settings: RGB or YCbCr, if Auto setting does not give the desired result
Default: Auto

- Range

Settings: Limited. Full or Auto range.
Default: Auto

- Deep Color: The EDID can be configured to enable deep color capability. The unit can process color depth of 24/30 per channel. Deep Color can be off, if the source outputs 24bits, or set to on when the source outputs 30bits. The detected source output color depth is reported on the corresponding menu.

Settings: On/Off
Default: Off

- EDID In: The preferred video resolution can be selected in the EDID Input Format menu. This setting can force the source to output the selected format provided the driver of the graphic

card takes notice of the preferred timing in the EDID. The PC most likely has to be rebooted for the driver to take notice.

Default : 1920x1080p

6.6.3.2.2 HDMI 1, HDMI 2, HDMI 2, DVI & HDBT Config.

- Color space

Settings: RGB or YCbCr, if Auto setting does not give the desired result
Default: Auto

- Range

Settings: Limited. Full or Auto range.
Default: Auto

- Deep Color: The EDID can be configured to enable deep color capability. The unit can process color depth of 24/30/36bit per channel. Deep Color can be off if the source outputs 24bit, or set to on if the source outputs either 30bit or 36bit. The detected source output color depth is reported on the corresponding menu.

Settings: On/Off
Default: Off

- EDID In: The preferred video resolution can be selected in the EDID Input Format menu. This setting can force the source to output the selected format provided the driver of the graphic card takes notice of the preferred timing in the EDID. The PC most likely has to be rebooted for the driver to take notice.

Default : 1920x1080p

- HDCP: When setting HDCP Input to off, the unit pretends to be non HDCP compliant allowing the source to not encrypt data. The source will only non-encrypt only when the material is not protected. When the HDCP capability is set to off, the output is unencrypted and this menu item is greyed out.

Settings: On/Off
Default: On

6.6.3.2.3 DVI Config

- The preferred video mode for DVI input can be selected. This setting may force the source to output a certain video mode provided the driver of the graphic card takes notice of the preferred timing in the EDID. The PC most likely has to be rebooted for the driver to take notice.

Settings: HDMI / DVI only
Default: HDMI

6.6.3.2.4 HDMI Audio Support

- The audio capabilities of the HDMI port can be configured by means of overwriting the EDID. The unit described in this manual is part of an audio/video processing chain and devices behind the unit may not be able to cope with advanced audio. The unit can signal the source to match with the audio capabilities of the display (setting Match Display 1/2), or to be S/PDIF friendly or to be SDI friendly (48kHz PCM only, 2ch or 8ch). If the unit is set to Full the capabilities of the unit are communicated by means of the EDID to an audio source.

Settings: On/Off
Default: On

6.6.3.2.5 SDI Setup

- SDI audio input is routed to the HDMI and 3GSDI output connector. Two consecutive SDI audio channels can be output on the HDMI/3GSDI output interface. The group can be chosen. Or all eight SDI audio channels can be transmitted

Settings: Stereo ch(1,2)/(3,4)/(5,6)/(7,8)/Multichannel
Default: Stereo ch (1,2)

6.6.3.2.6 Level B Priority

Since only one Level B signal can be processed by the unit, in this entry the user needs to prioritized the SDI input with the Level B signal.

Settings: SDI1 / SDI2
Default: SDI1

6.6.3.2.7 SDI1/SDI2 Level B Stream

Selects which of the two video streams (Stream 1 or 2) to use.

Settings: SDI1(2) Level B Stream: Stream 1(2)
Default: SDI1 Level B Stream: Stream 1 / SDI2 Level B Stream: Stream 2

6.6.3.3 Test Pattern Setup

- When the menu is off, the test pattern can be selected by turning the jog wheel. For unit control through a web browser or to set up a certain default test pattern please use the input configuration menu.
- Custom test patterns loaded into the unit through the web interface, and selected as the other test patterns.
- Depending on the Output resolutions, test pattern images are resized dynamically by the software resolution to completely fit the output raster space.
- Available Test Patterns:
    - Red Curtain
    - Green Curtain
    - Blue Curtain
    - Grey V Bars

- Grey H Bars
- Aspect Test
- Multi Test
- Warp Adjust
- SMPTE
- PLUGE
- Moving Cross
- Custom 1
- Custom 2
- Custom 3
- Custom 4

Default: Pattern: SMPTE

6.6.3.3.1 Test Pattern Tone
A test tone can be set to accompany the test pattern

Settings: On / Off
Default: Off

6.6.3.3.2 Color (FG) of the Moving Cross

Settings: 0 to 7 0 = black; 1 = white; 2 = yellow; 3 = cyan; 4 = green; 5 = magenta; 6 = red; 7 = blue
Default: 1 (White)

6.6.3.3.3 Moving Cross Background (BG) color

Settings: 0 to 8 0 to 8 (0 = black; 1 = white; 2 = yellow; 3 = cyan; 4 = green; 5 = magenta; 6 = red; 7 = blue; 8 = multicolour, sets the four quadrant colours as red, green, blue and black)

Default: 8: (Multicolor)

6.6.3.3.4 Moving Cross Speed

Number of pixels that the test pattern moves per frame

Settings: 1 to 10
Default: 1

6.6.3.3.5 Moving Cross Width

The width of the moving cross in pixels
Settings: 4 to 40
Default: 40

6.6.3.4 Input Enable
Individual selections are provided to enable or disable each input

Settings: On or Off for each Input
Default: All on

6.6.3.5 Switching Transition:

The switching transition can be selected to be Freeze, Blank, Fast Fade and Slow Fade.

- Freeze : Halts the prior channel image until the new channel image is stable. Freeze is the default mode.
- Blank : Switches the output to a black screen instead of the last shown image.
- Fast and Slow Fade : Fades between the channels with different transition times

Settings: Freeze, Blank, Fast Fade and Slow Fade
Default: Freeze

6.6.4 Menu Settings

This menu allows users to change the menu display time, i.e. the time after which the LCD menu is switched back to the main status screen again with no user interaction.
From this menu you can change the language and also lock the keyboard. To unlock the keyboard a combination of keys has to be pressed at the same time. The locking of the keyboard is indicated by a message that the keypad is locked. The message also specifies the key press combination necessary to unlock the unit. When successfully unlocking the keypad the message shows up: Keypad unlocked.

The backlight level of the LCD can be set in this menu.

The background color of the web pages can be changed from dark to light to match the ambient conditions.

6.6.4.1.1 Language

Settings: English (AE), English (BE), Deutsch
Default: English (AE)

6.6.4.1.2 Keypad Lock

Settings: Off, Menu Only, All Keys
Default: Lock: Off

6.6.4.1.3 Menu Time

Settings: 5, 10, 15, 20, 25, 30, Infinite
Default: 15 secs

6.6.4.1.4 LCD Backlight

Settings: 0 ..10
Default: 10

6.6.4.1.5 Jog Push Enable

Settings: On, Off
Default: On

6.6.4.1.6 Web Colors

Settings: Dark, Light
Default: Dark

6.6.5 Network Settings

The Network Settings menu allows users to configure the unit´s TCP/IP address. Under Address Type a static or DHCP leased address can be chosen. The static address, gateway address and netmask needs to be entered manually.

The Network Settings menu provides information on the DHCP Status and IP address assigned to the unit, as well as the fixed MAC Address programmed into the unit. The DHCP status can be Off when a static assignment is used. When DHCP is on, the menu displays the leased address. If the lease is unsuccessful, the menu displays "none"

When changing from DHCP to Static mode or vice versa it is strongly recommended that you cycle the power to the unit in order the change is properly recognized by other devices on the network.

Settings: Static, DHCP
Default: DHCP

Make sure you push the Apply button for the setting changes to become effective

6.6.6 Security Settings

The password for ftp and web access to the unit can be changed in this menu.

FTP password Default: user
WWW password : Off

6.6.7 Factory Defaults

This button allows users to restore all settings to the default values of the unit, allowing the unit to return to a known (good) system state. A confirmation is requested prior to actual system settings restore.

6.7 Audio

This selection contains functions required to manage the audio inputs and outputs

6.7.1 Mic 1,2 Level, Mix, Mute

The Level setting defines the audio level for the Microphone inputs. Mix adjustment controls the mixing between Mic and the selected audio source.

Settings:

Level: -12 to +60
Mix : 0 to 100 (100 is full microphone sound)
Mute: Yes, No

Default :

Level: -6
Mix : 50
Mute: No

6.7.2 Balance, Treble, Bass

Balance highlights the sound from the left or right output channels. Treble adjusts high frequency sounds and bass the low frequency sounds.

Settings:

Balance: -100 to +100
Treble : -15 to +15
Bass: -15 to +15

Default :

Balance: 0
Treble : 0
Bass: 0

6.7.3 Audio Setup

6.7.3.1 Audio Delay

This settings allows the users to adjust the delay between the video and audio sources. This feature is used to correct lip-sync issues

Settings: -100 to 500 ms

Default : 0 ms

6.7.3.2 Input Level

Input level adjusts the gain of the incoming audio signal

Settings: -12 to +6 db

Default : 0 db

6.7.3.3 Input Mode

Defines whether the incoming audio signal is stereo and mono

Settings: Stereo / Mono
Default : Stereo

6.7.3.4 Input Mute

Enables of the mute function for the selected audio source

Settings: Yes / No
Default : No

6.7.3.5 Amp Gain

Amp gain adjusts the gain for the D-power amp driving speakers.

Settings: 0 to +38 db
Default : 0 db

6.7.3.6 Audio Assign

This menu allows users to assign any analog audio source or mics to the selected input. If the selected input is digital, the user can also select the audio that is embedded to the video signal. These selections can be performed on per input basis or globally.

6.7.3.6.1 Config

Selects whether the Audio assignments are done per source or globally

Settings: Per Inp / Globally
Default : Per Inp

6.7.3.6.2 Audio In

This menu is enabled when the audio assignments are done globally. If an Analog source is selected, the user can also choose the analog audio source from the next menu (Analog In). If a Digital source is selected, the embedded audio in the selected audio source will be used.

Settings: Stereo Analog / Analog with Mic / Digital
Default : Stereo Analog

6.7.3.6.3 Analog In

This menu is enabled when the audio assignments are done globally. From this menu the user selects the audio source to be assigned to the selected input

Settings: CVBS / HDBaseT / Display Port / HDMI 1 / HDMI 2 / VGA / DVI / HDMI 3
Default : CVBS

6.7.3.6.4 Analog Inputs

This menu is enabled when the audio assignments are done per Input.
For each of the analog video sources the user can select a Stereo Analog source or a Stereo analog source with the mics. The user can also selected which of the analog source will be assigned to the input.

Settings: Stereo Analog / Analog with mic
Default : Stereo Analog

For the analog audio source:

Settings: CVBS / HDBaseT / Display Port / HDMI 1 / HDMI 2 / VGA / DVI / HDMI 3
Default : The corresponding analog input associated with the video input

6.7.3.6.5 Digital Inputs

This menu is enabled when the audio assignments are done per Input.
For each of the digital video sources the user can select a Stereo Analog source, a Stereo analog source with the mics, or the corresponding embedded audio within the video signal. If an analog source is selected, the user can also selected which of the analog source will be assigned to the input.

Settings: Stereo Analog / Analog with Mic / Digital
Default : Digital

If an analog audio source is selected :

Settings: CVBS / HDBaseT / Display Port / HDMI 1 / HDMI 2 / VGA / DVI / HDMI 3
Default : The corresponding analog input associated with the video input

6.7.3.7 Mic Config

This menu allows users to enable phantom power for condenser mics. When phantom power is enabled, a voltage of +48V is sent to the condenser microphone via the XLR socket.

6.7.3.8 Audio Out Mute

This menu allows users to mute audio output source individually.

6.8 Status

This menu provides status information of the connections to the HDMI2, DVI/HDMI1 and HDBT outputs. The unit reads the EDID of the attached monitor and makes decision based on its capabilities and the configuration of the unit (Deep Color and HDCP support). The type of attached monitor (DVI or HDMI), video bit depth (8, 10 or 12 bit per color channel) and HDCP encryption (on/off) is displayed.

7. Web Browser Control

The unit can be remotely controlled from a PC or any mobile device. No additional software needs to be installed on the PC. The PC web browser is used as the graphical user interface for all control items. To connect to the unit 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 the unit can be found in the System/Network Settings menu.

7.1 Connecting to the unit

The Network Settings menu of the unit allows to configure the unit's TCP/IP address. Under Address Type a static or DHCP leased address mode can be selected. he factory default of the unit is DHCP. The static address and Netmask needs to be entered manually.

The Network Settings menu provides information on the DHCP Status and the IP address assigned to the unit as well as the fixed MAC Address of the unit. The DHCP status is Off when the static assignment is selected. If the unit has an assigned address, then the menu displays the address, or "None" if the lease was not successful.

> When changing from DHCP to Static mode or vice versa, it is strongly recommended that you cycle the power to the unit in order the change is properly recognized by other devices on the network

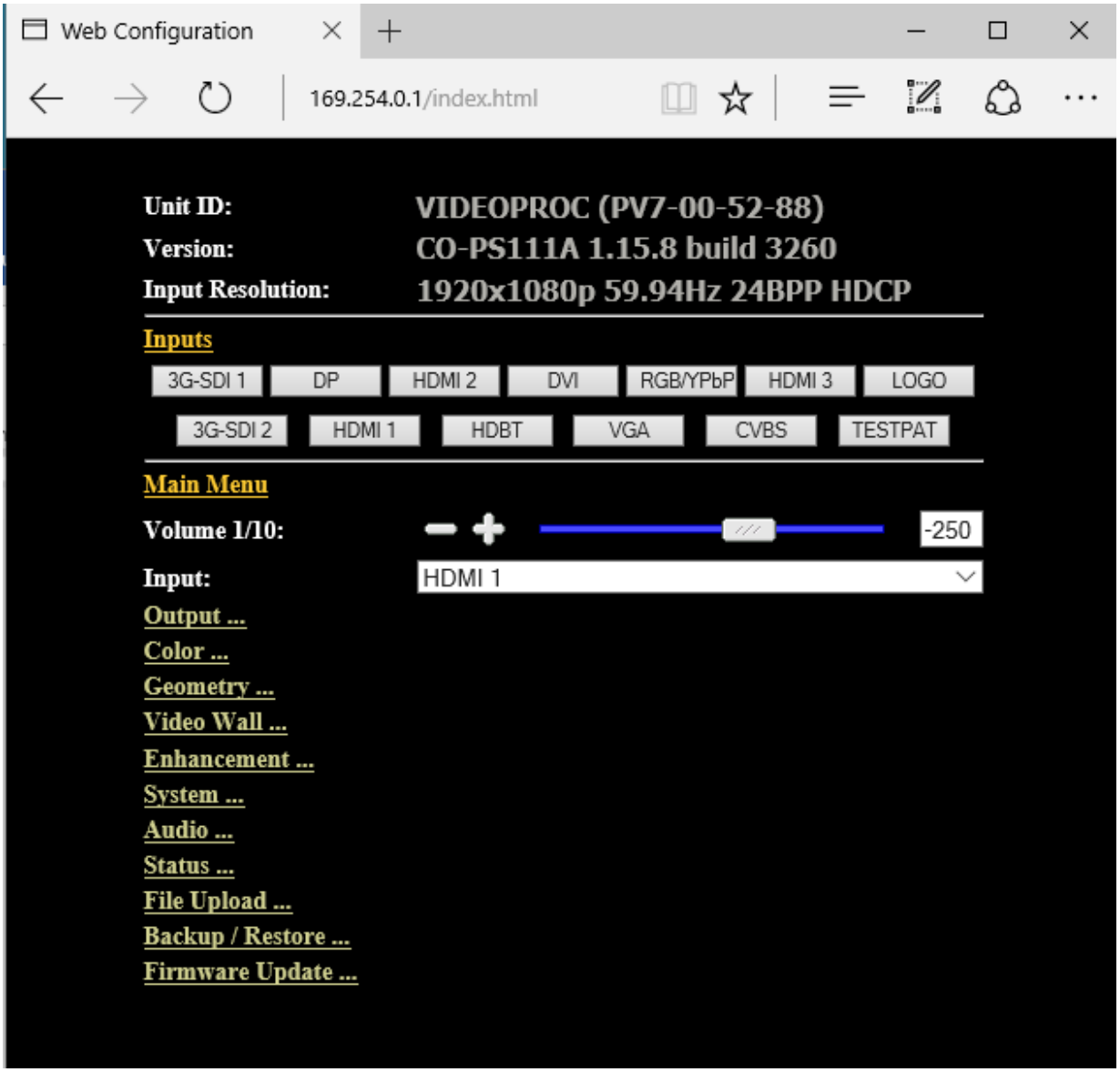
After the correct IP address is entered into the address bar, the web browser starts to load the menus mirroring the status of the unit. All menu items are shown as their respective buttons, sliders and list boxes and can be accessed and altered with the PC mouse or corresponding navigational key presses. From the web Browser, under security settings, the user name and Password can be turned on. The default settings are:

User Name: user
Password: user

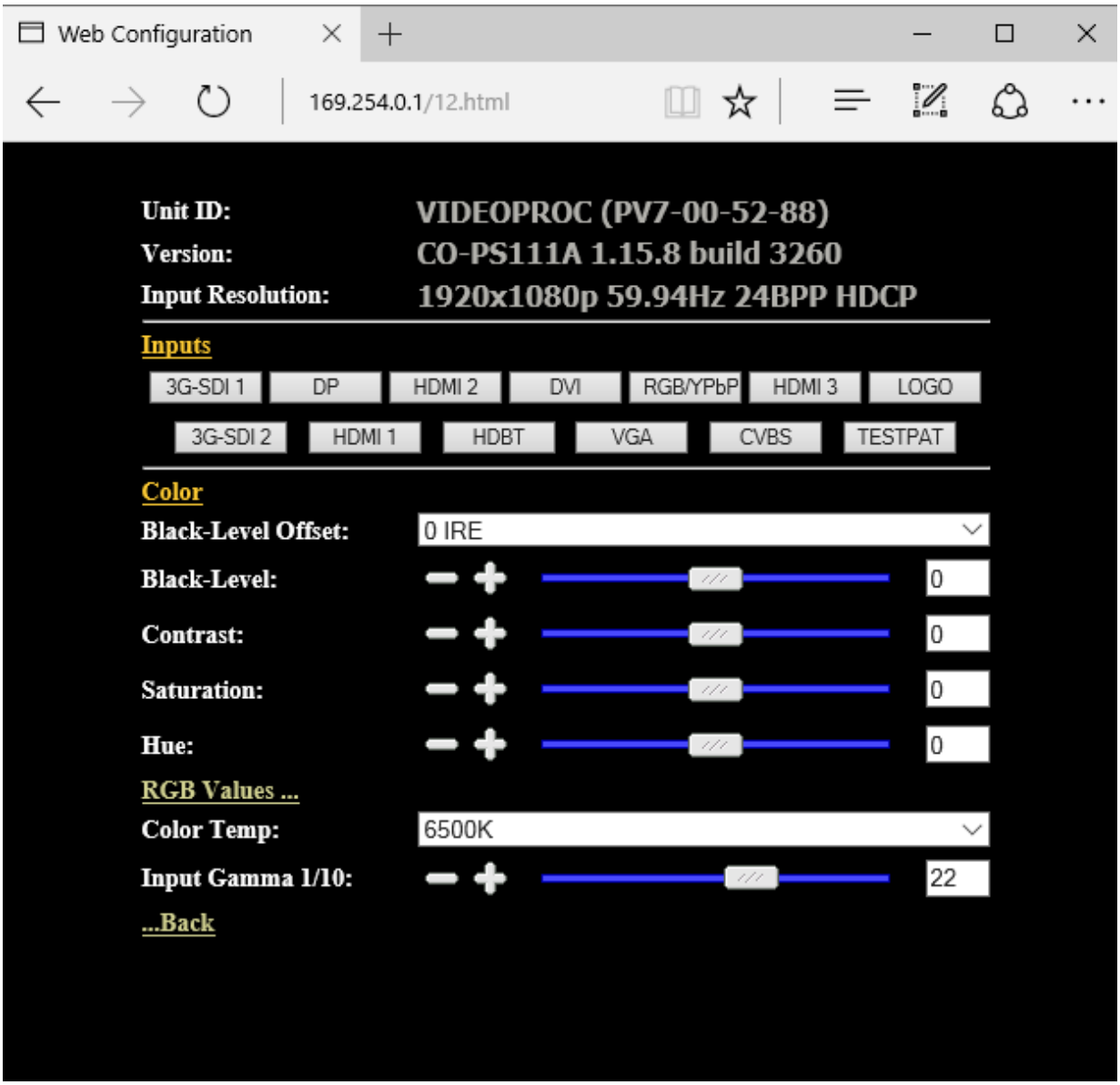
7.2 Web page menu Orientation

The main page of the web browser is shown below. The Unit ID is displayed on the first line and is composed of the identifier followed by the MAC address. The firmware version number and information on the input mode are listed next.

Under the information pane the available input channels are shown and can be activated directly.



The menu system can be navigated with the PC mouse. Move the mouse pointer over the menu item and click the left mouse button to open a submenu. Submenus have three dots followed by the menu name. Move the mouse pointer over the Back item and click the left mouse button to go back to the prior menu.



Menu items can be lists, sliders or alpha numeric fields.

A list item can be activated by moving the mouse pointer over the list item and clicking the left mouse button. The list comes up and an item can be selected by moving the mouse pointer to the desired value (here: 0 IRE) and clicking the left mouse button again.

A slider value can be changed by moving the mouse pointer over the slider, click and hold the left mouse button and move the mouse to the right or left to decrease or increase the value. Also, the slider can be controlled in single steps with the mouse wheel. Or by moving the mouse pointer over the – or + fields and clicking the left mouse button..

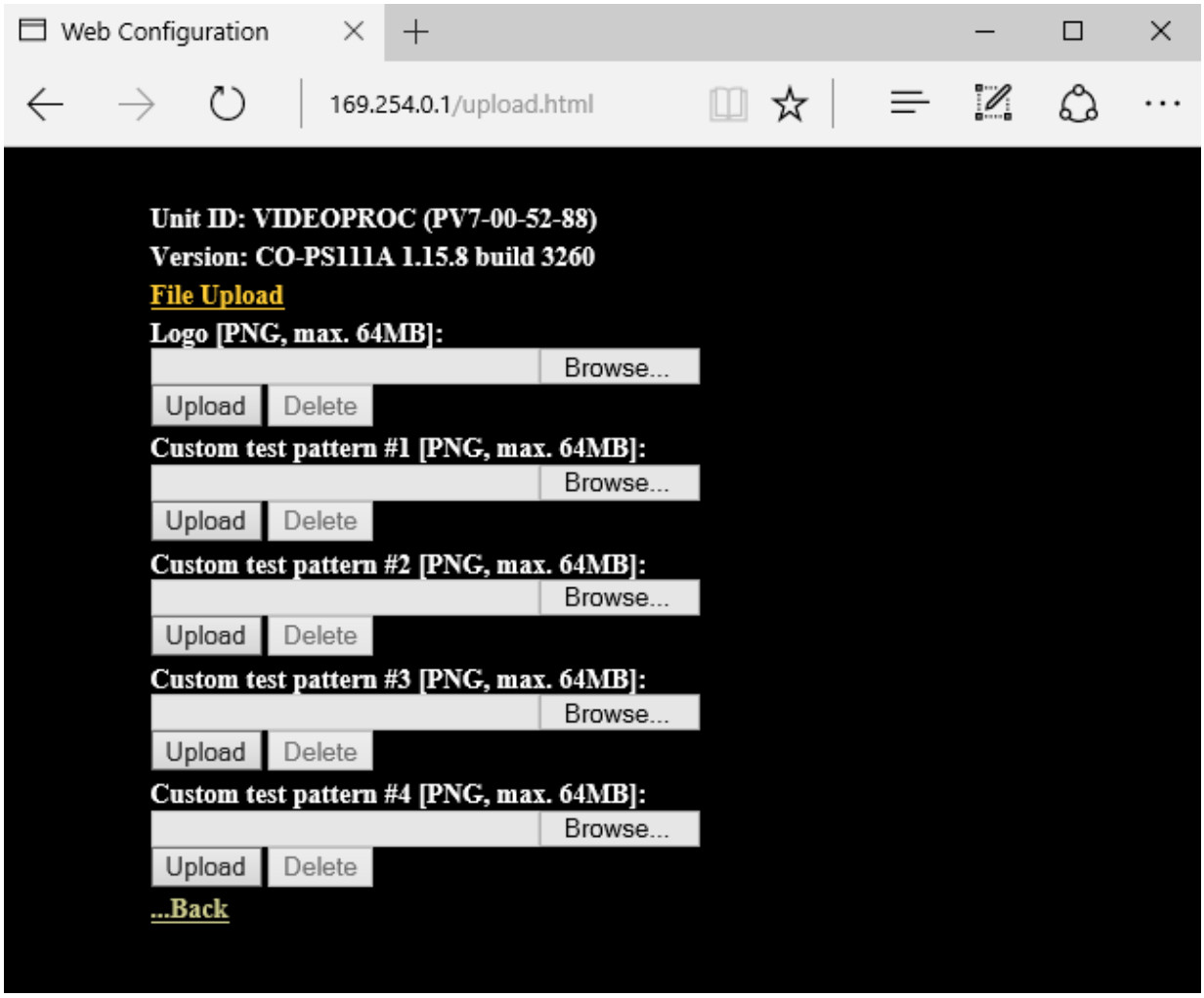
Values can be entered directly in the field beneath the slider. Click into the field, enter the new value through the PC keyboard and click with the left mouse button to any location outside the field to update to the new value.

Renaming the input channel is used as an example to explain the alpha numeric field changes. Move the mouse pointer into the alpha numeric field and click on the left mouse button. The cursor can be controlled with the right/left and back space keys of the PC keyboard. The new name for the input channel can be entered.

The new name is stored when clicking with the left mouse button to any location outside the field.

7.3 Software Update

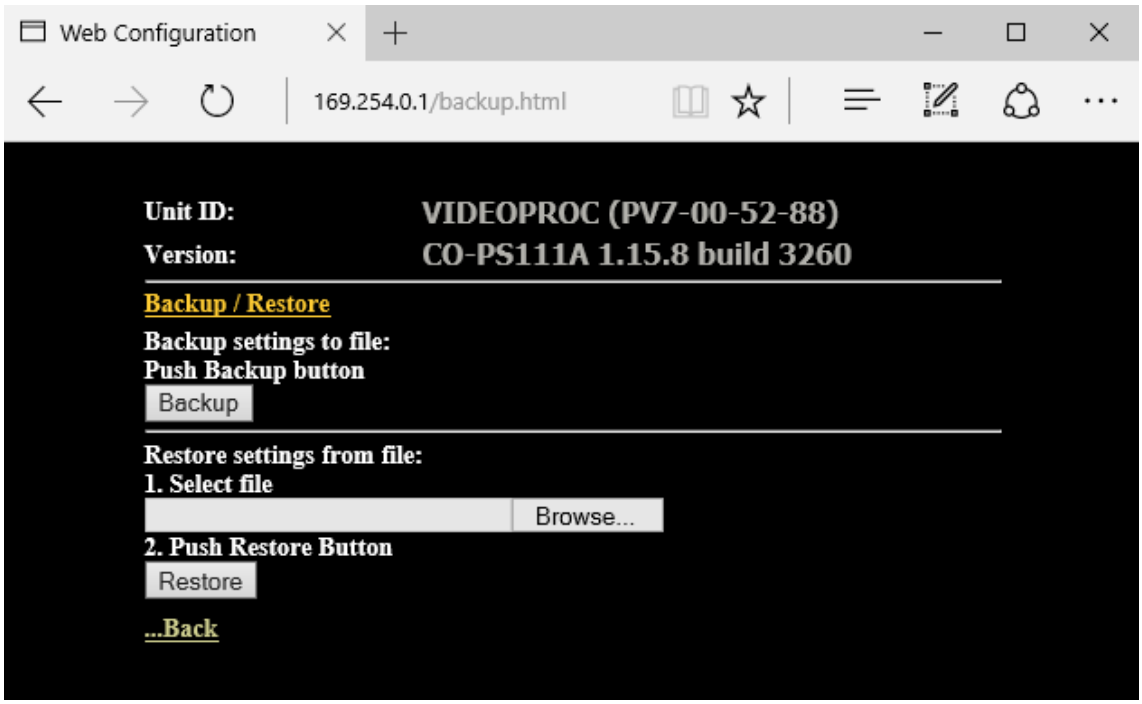
A page for file uploads is provided. Browse a firmware file (extension .bin) and select it. The path and name will be shown in the field left to the Browse button. Now click the update button.



7.4 Backup and restore

The unit set-ups can be backed up to a PC and restored later through the web browser When pressing the Backup button a l file download dialog box appears. The default name of a backup is nvram.bin. This name can be changed and stored on the PC in any location.

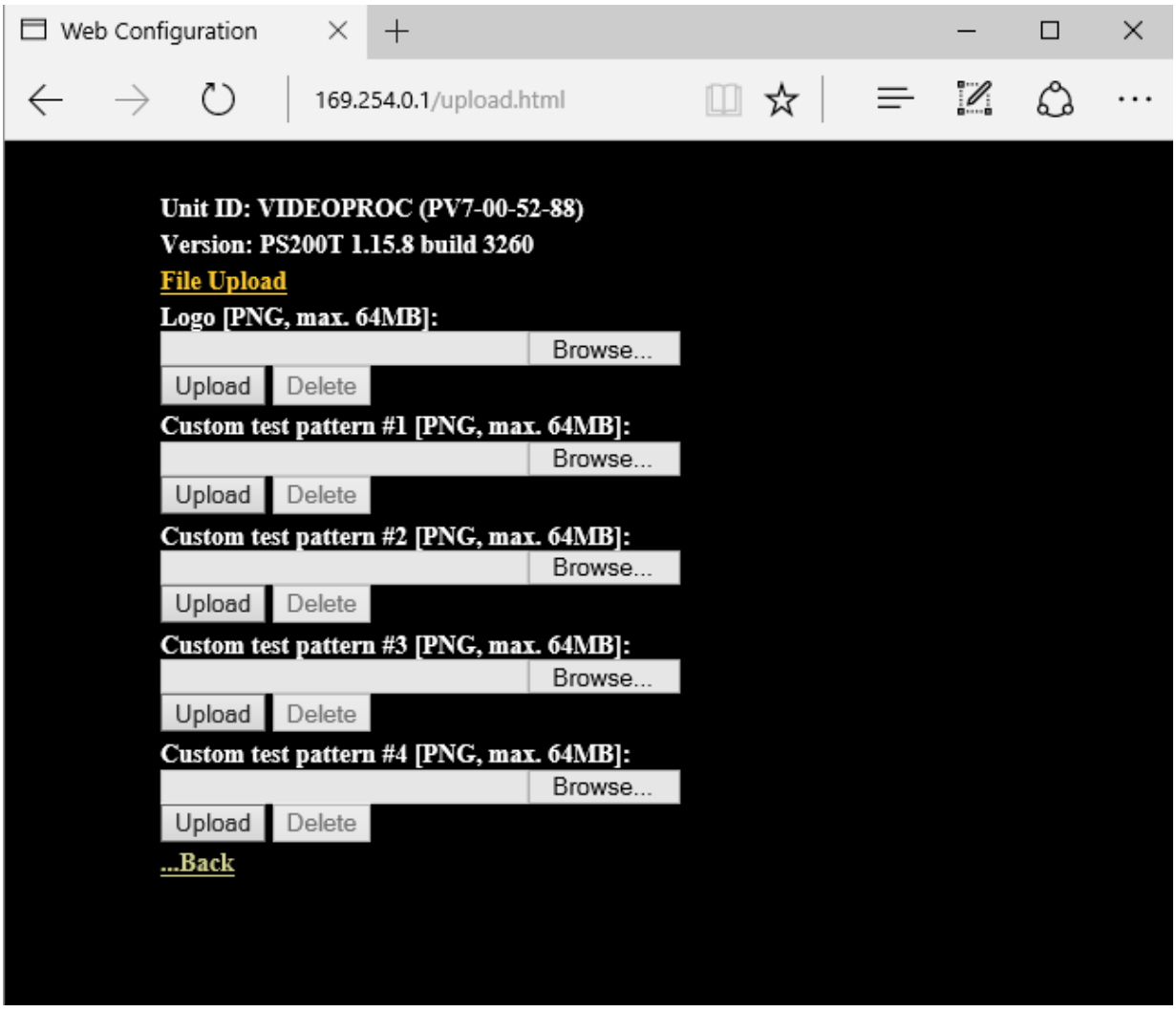
To restore the unit's settings, browse and select the file on your PC. The selected file will be shown in the field left to the Browse button. Now press the restore button.



7.5 LOGO & Custom Test Pattern Capture

Any image in PNG format can be selected from your PC and loaded to the unit to be used as a LOGO. This name can be changed and stored on the PC in any location. The image size limitation is 64MB.

From the same menu you can select up-to four images and download them as custom test patterns. These images will appear as Custom1,2,3 or 4 in the Test pattern menu



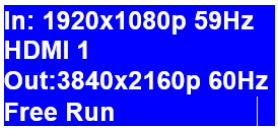
8. Firmware Update

The latest firmware is found on FSR's download website at:

There are two methods of updating your unit's firmware. First, through a USB port with a USB memory drive and second, through TCP/IP connection with the web server.

8.1 USB update

- From the firmware dropdown menu, select the "PV7S PQV6xx_HQU7xx_LED7xx-2\xxxx.bin" file where XXXX is the latest firmware built number.
- Download the .bin file and rename it "PV7update.bin"
- Copy the file to the root directory of a USB memory stick
- Power Off the unit and plug the USB drive into one of the USB ports
- Power On the unit and wait few seconds for the message to remove the USB drive
- After the USB is removed, the unit will continue the boot-up process.
- Wait until the boot up processes is completed, and the status menu appears on the front panel screen. The Status menu indicates the detected source, Output resolution and I/O lock state.



8.2 Web Browser update

To update via the web server, please follow the steps outlined previously in the web browser control chapter.

9. ENVIRONMENTAL AND EMC

9.1 Recommended Operating Conditions

Temperature 0°C to 40°C
Humidity (non-condensing) 5% to 95%

9.2 Storage

Temperature -25°C to +85°C
Humidity 0% to 95%

9.3 CE and FCC Compliance

CE: This product complies with the requirements of 2004/108/EC Electromagnetic Compatibility Directive, and 2006/95/EC 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.

9.4 PAT Testing

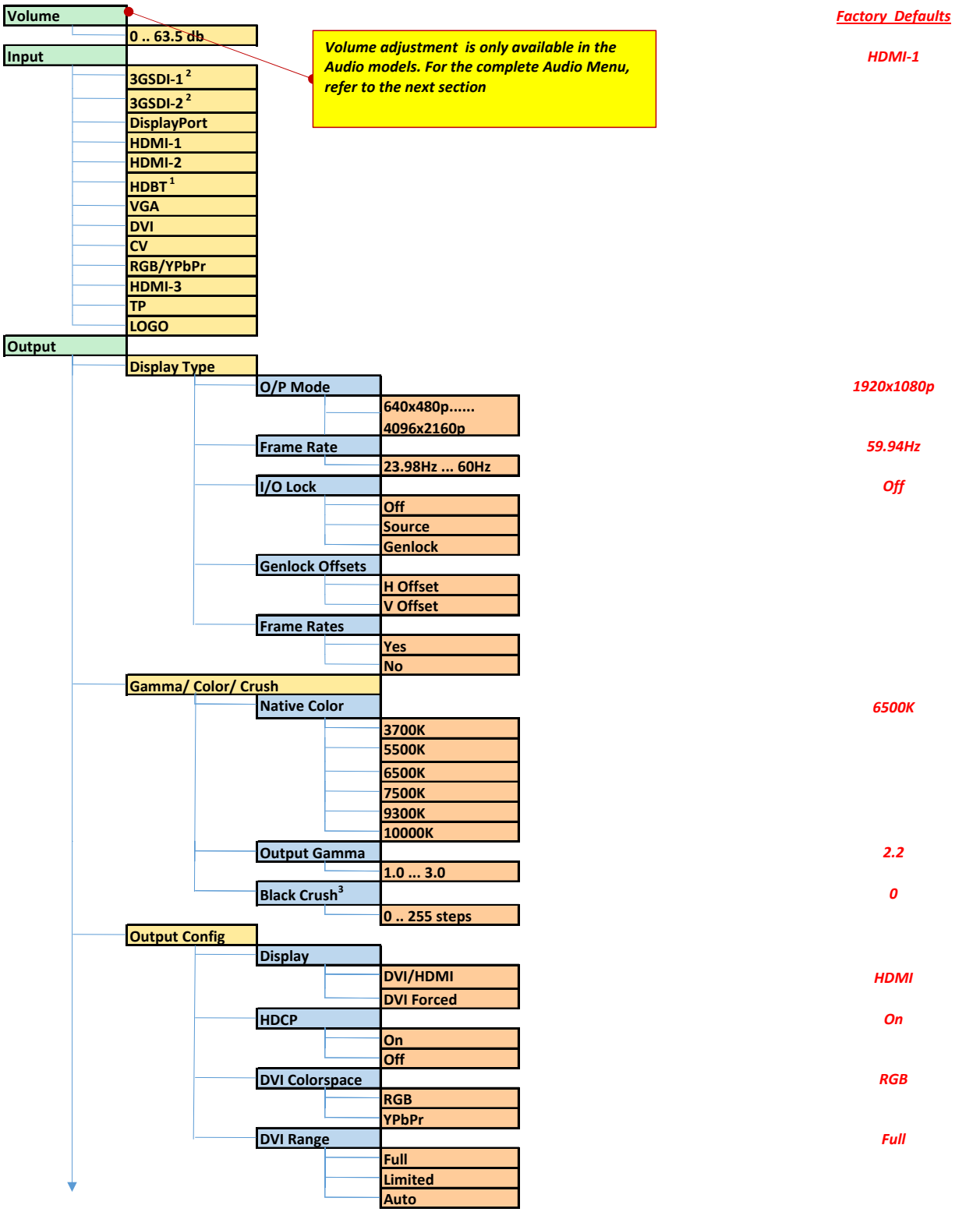
Earth continuity testing under PAT regulations shall be done to the product with 8A or 10A only. A test with 25A may damage the product.

Since the unit is classified as an IT equipment, according to the IEE Code of Practice, the test can also be performed with 20-200mA. If this method is not available, and a high current test is to be used instead, a 8A or 10A test is also acceptable (a minimum of 1.5 times of the unit's internal 5A fuse).

You have to be careful where you connect the earth bond test lead when using 8A or 10A. Always connect the test lead (mains earth) to the metal chassis. DO NOT CONNECT to the connectors of the rear panel (signal earth), because you may damage the unit beyond repair.

APPENDIX A

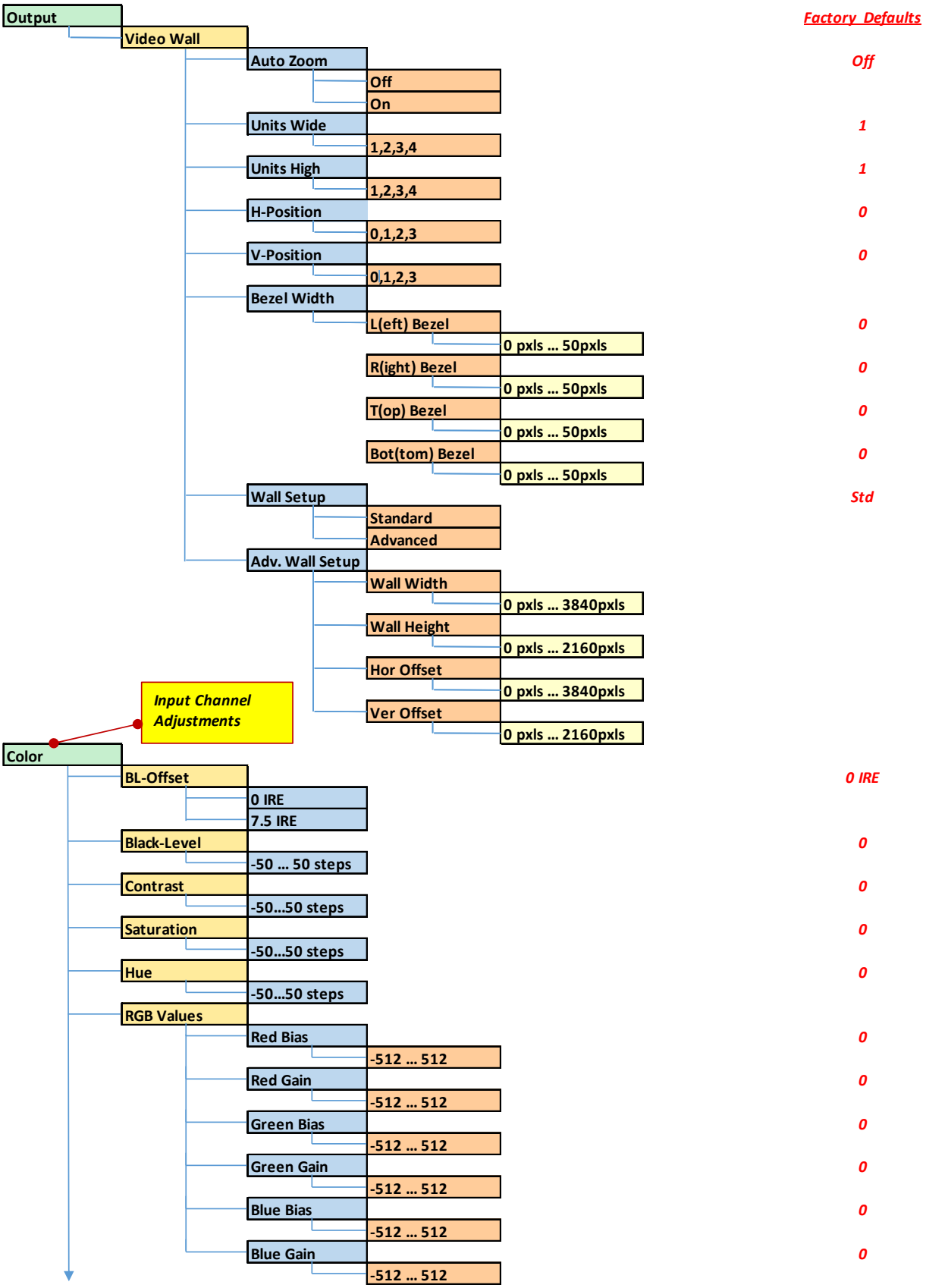
Front Panel Menu Tree Structure



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

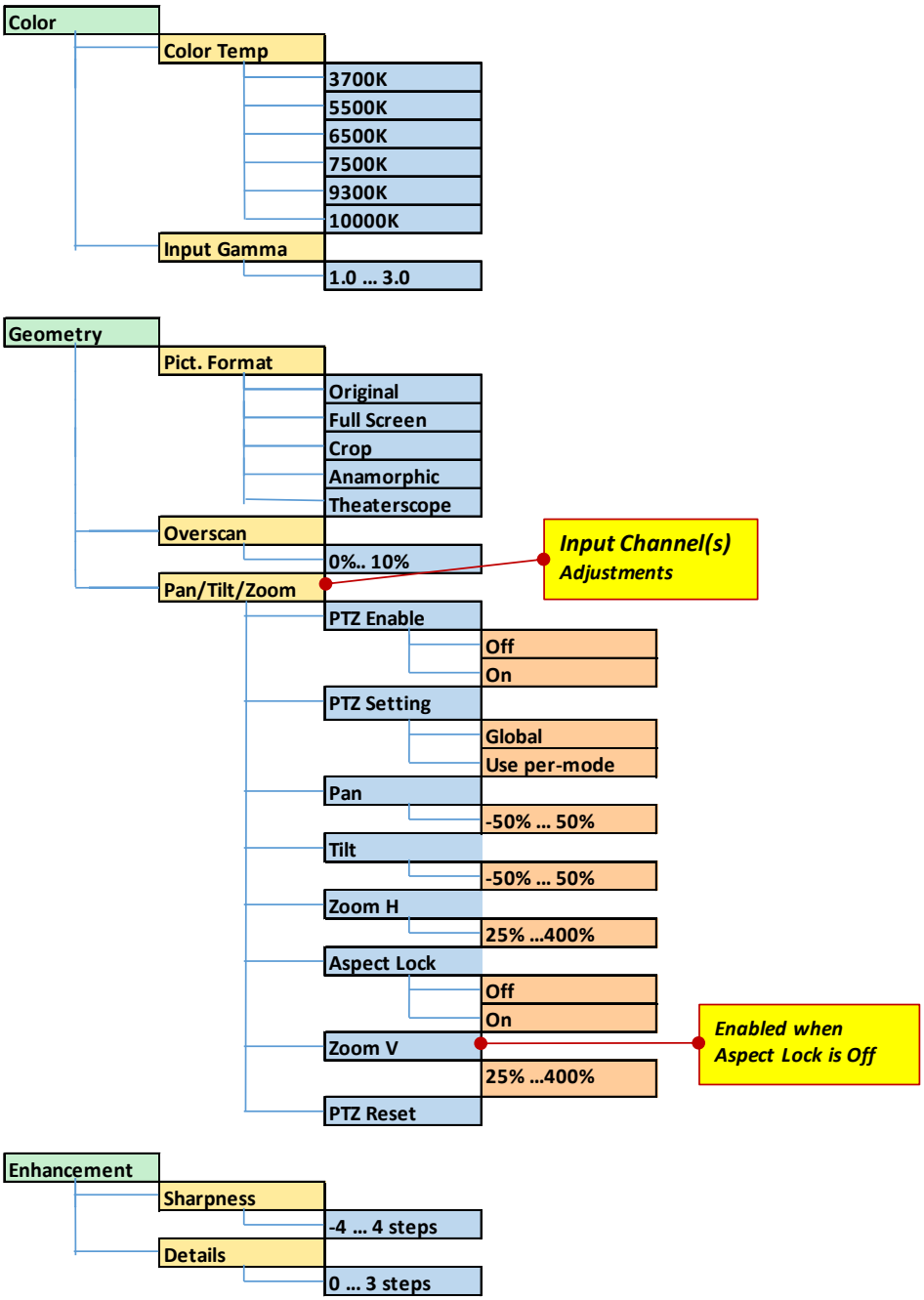
Compass 3.0 Presentation Switcher



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

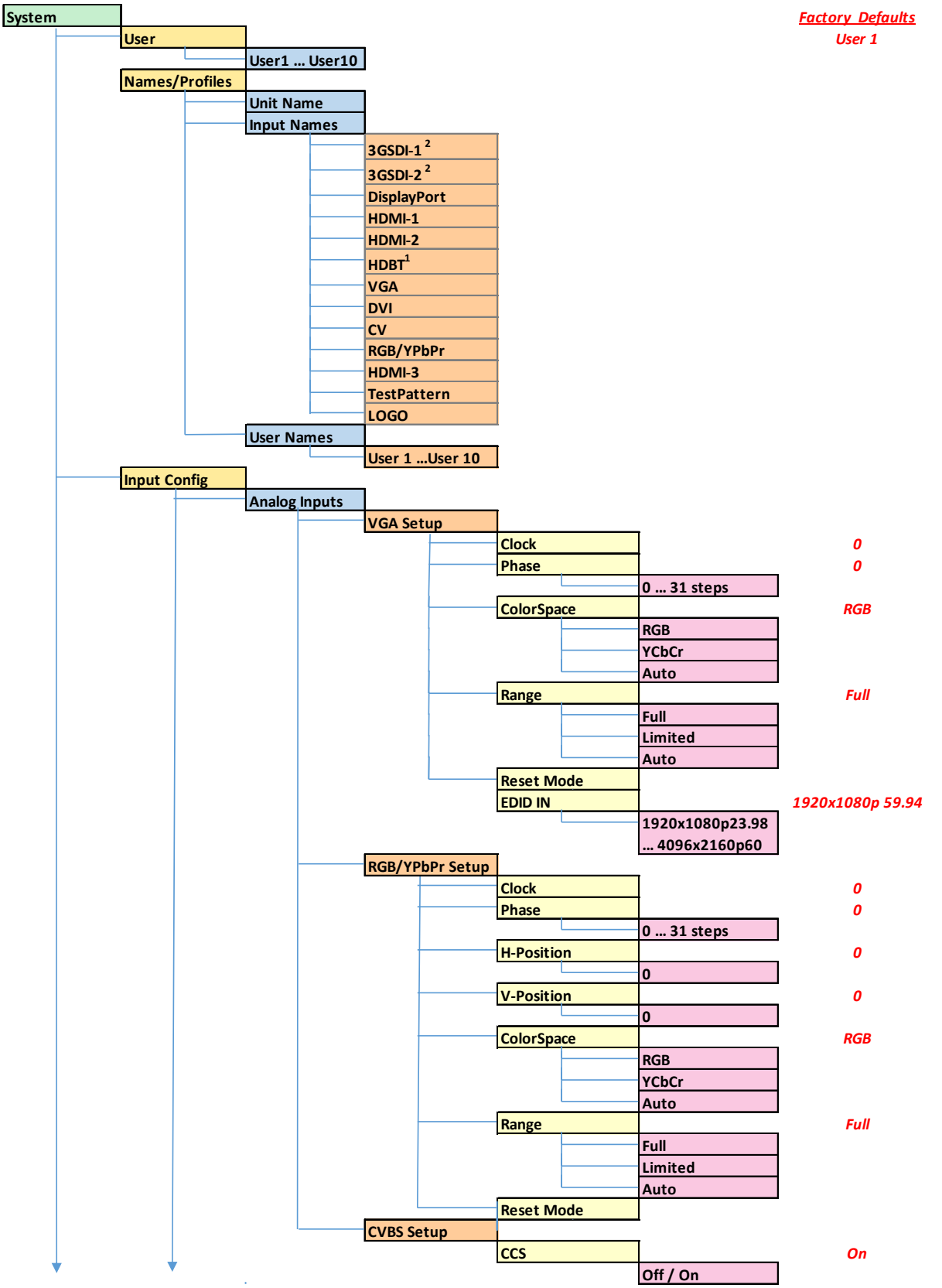
Compass 3.0 Presentation Switcher



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

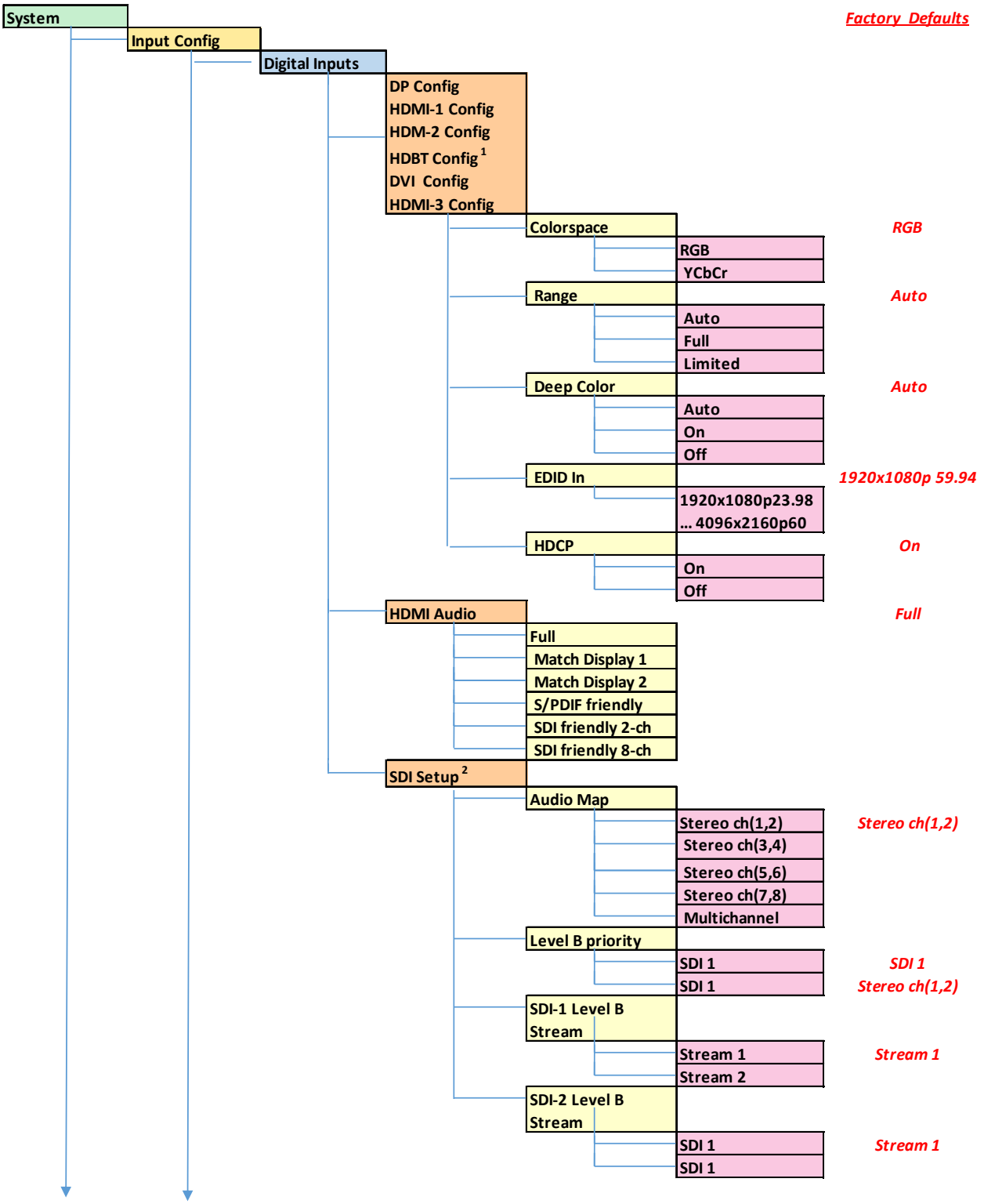
Compass 3.0 Presentation Switcher



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

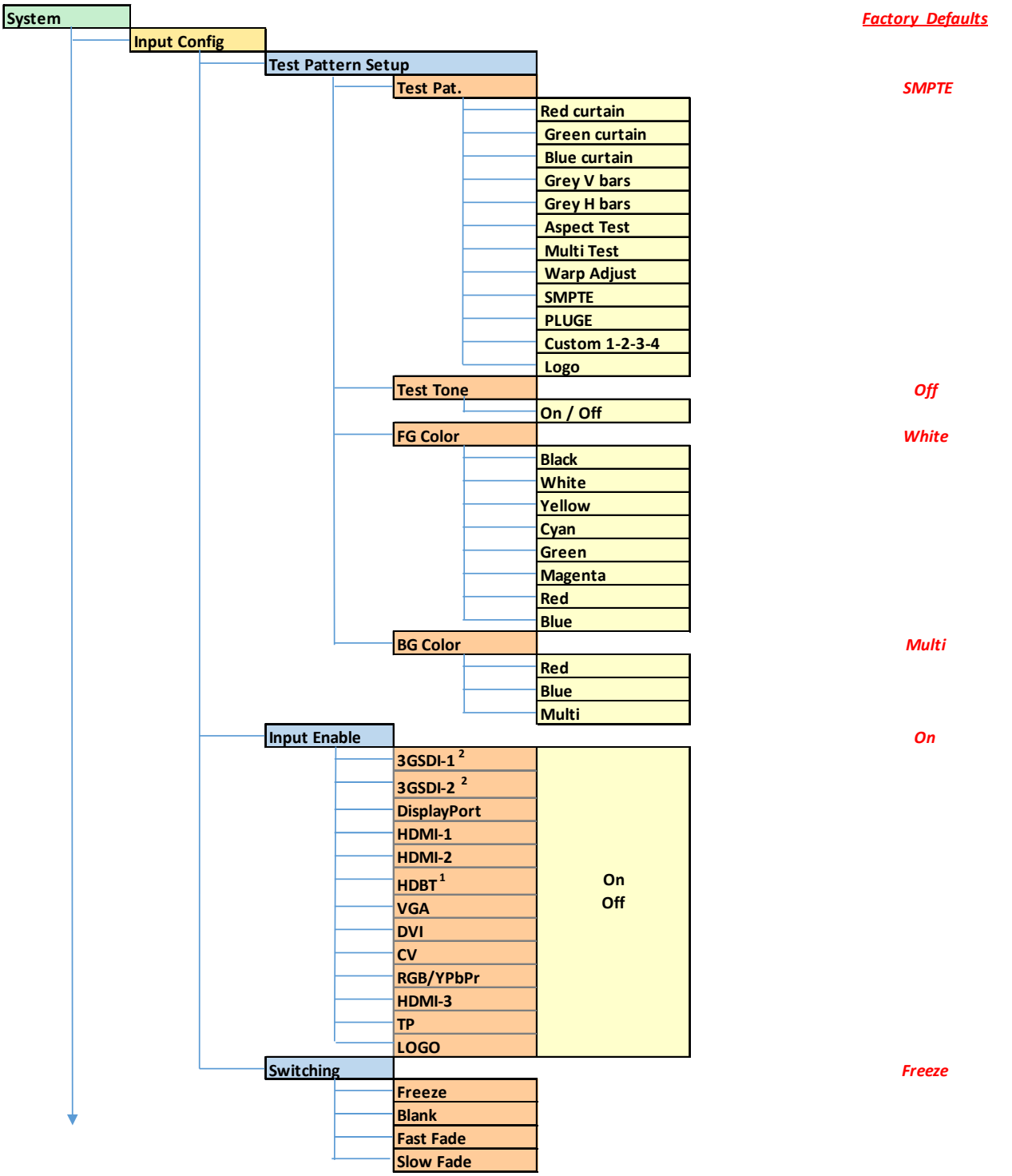
Compass 3.0 Presentation Switcher



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

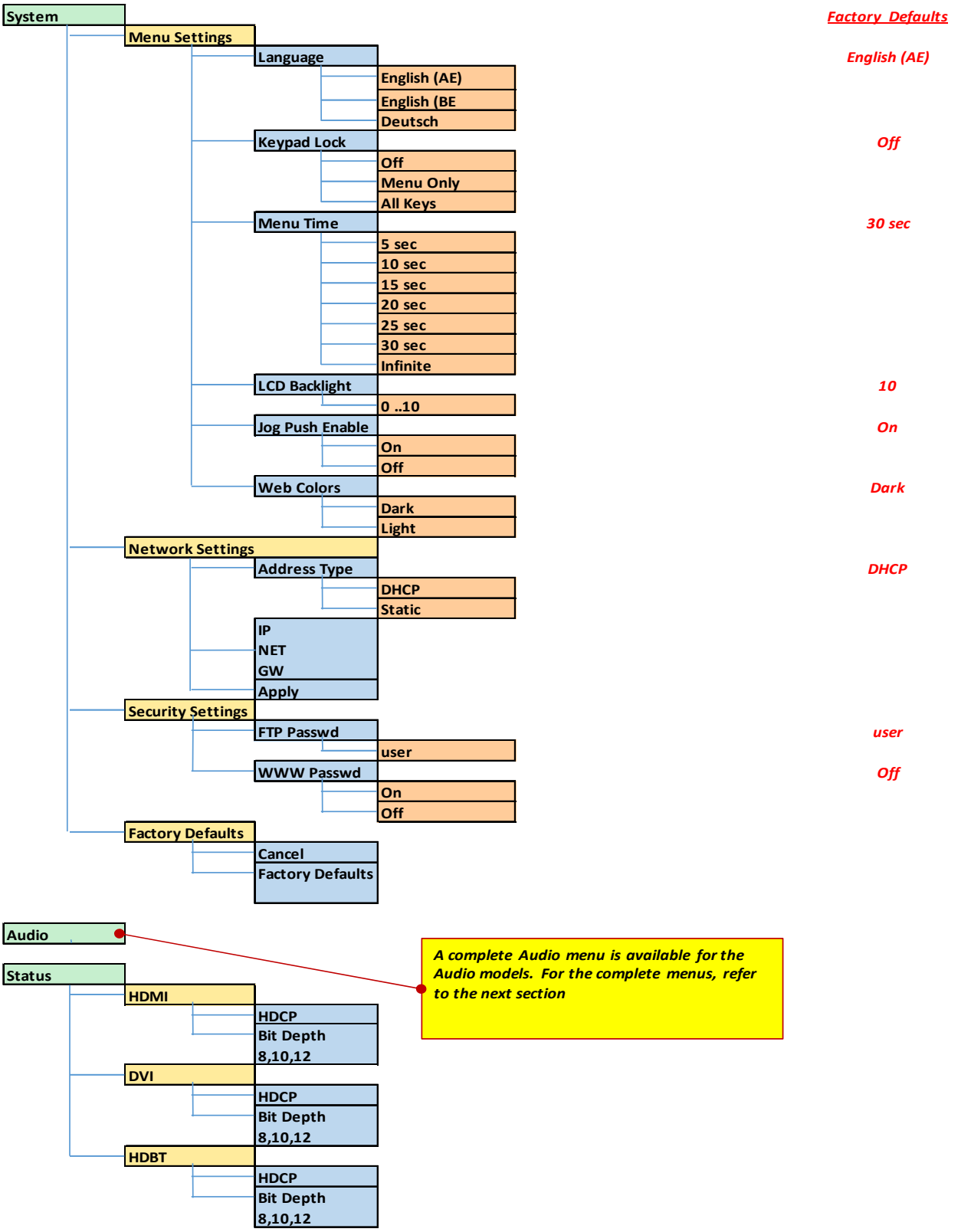
Compass 3.0 Presentation Switcher



[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

Compass 3.0 Presentation Switcher



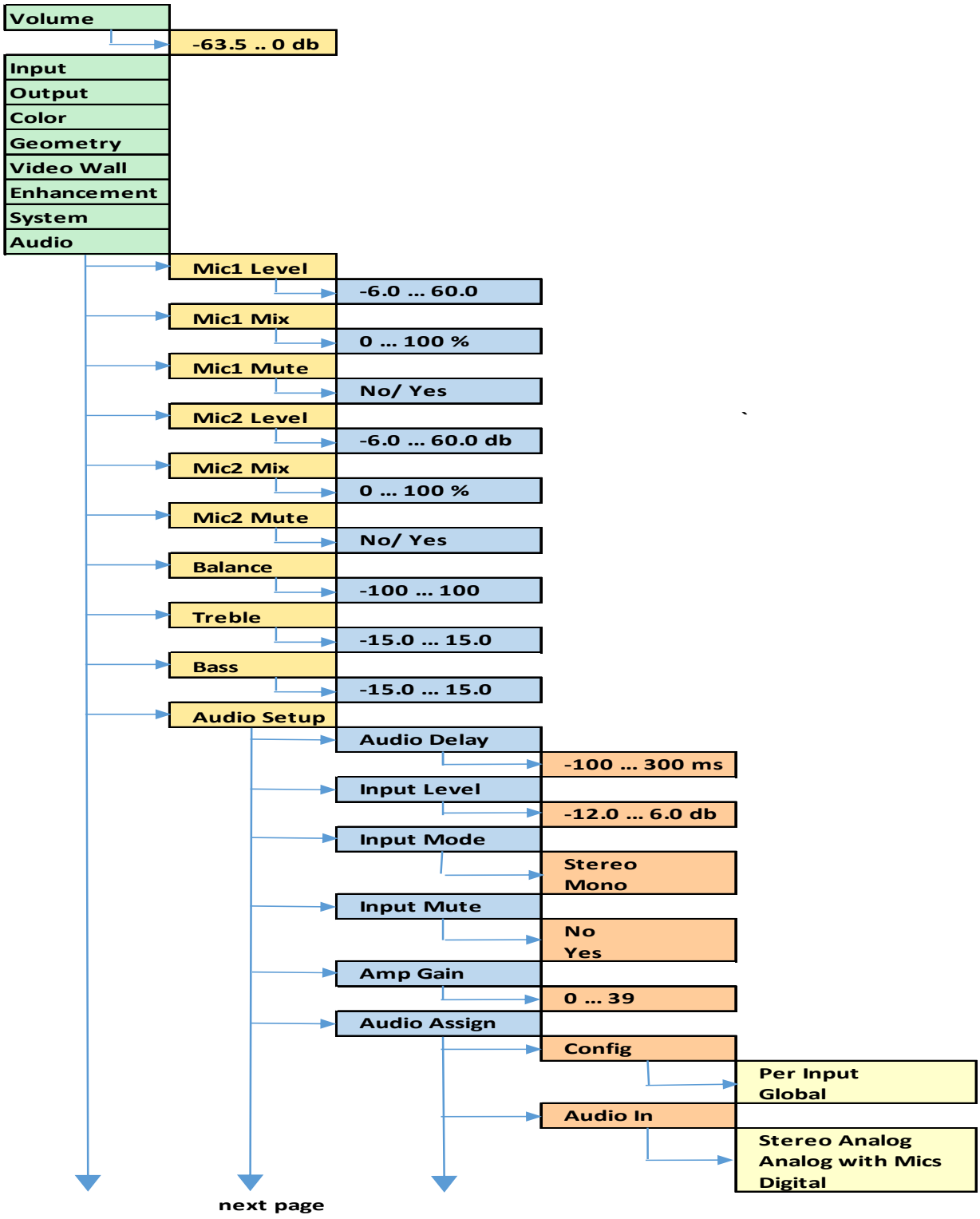
[1] HDBT models: CO-PS91, CO-PS91A, CO-PS111, CO-PS111A

[2] SDI/Genolock Models: CO-PS101, CO-PS101A, CO-PS111, CO-PS111A

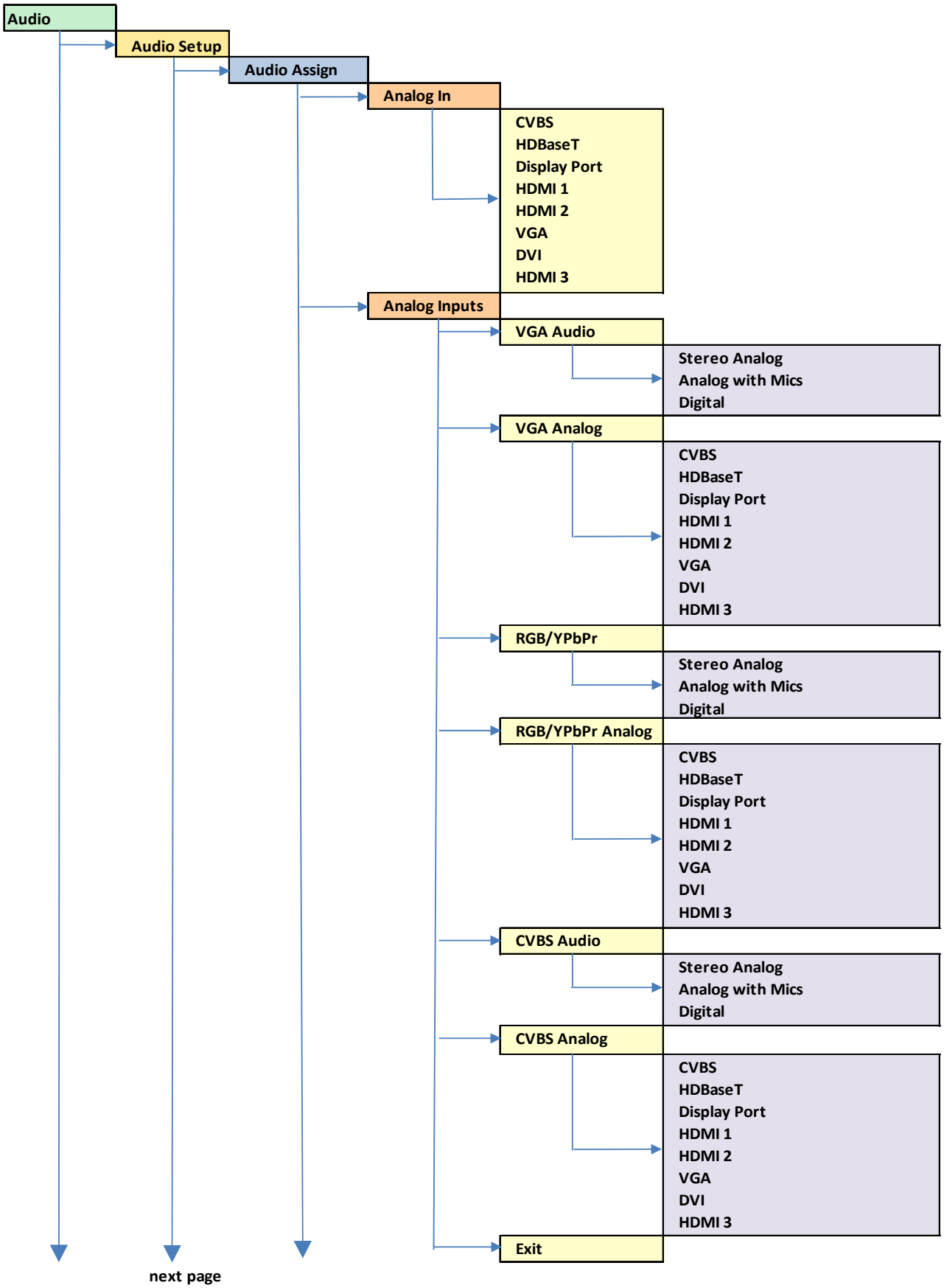
APPENDIX B

Front Panel Audio Menu Tree Structure

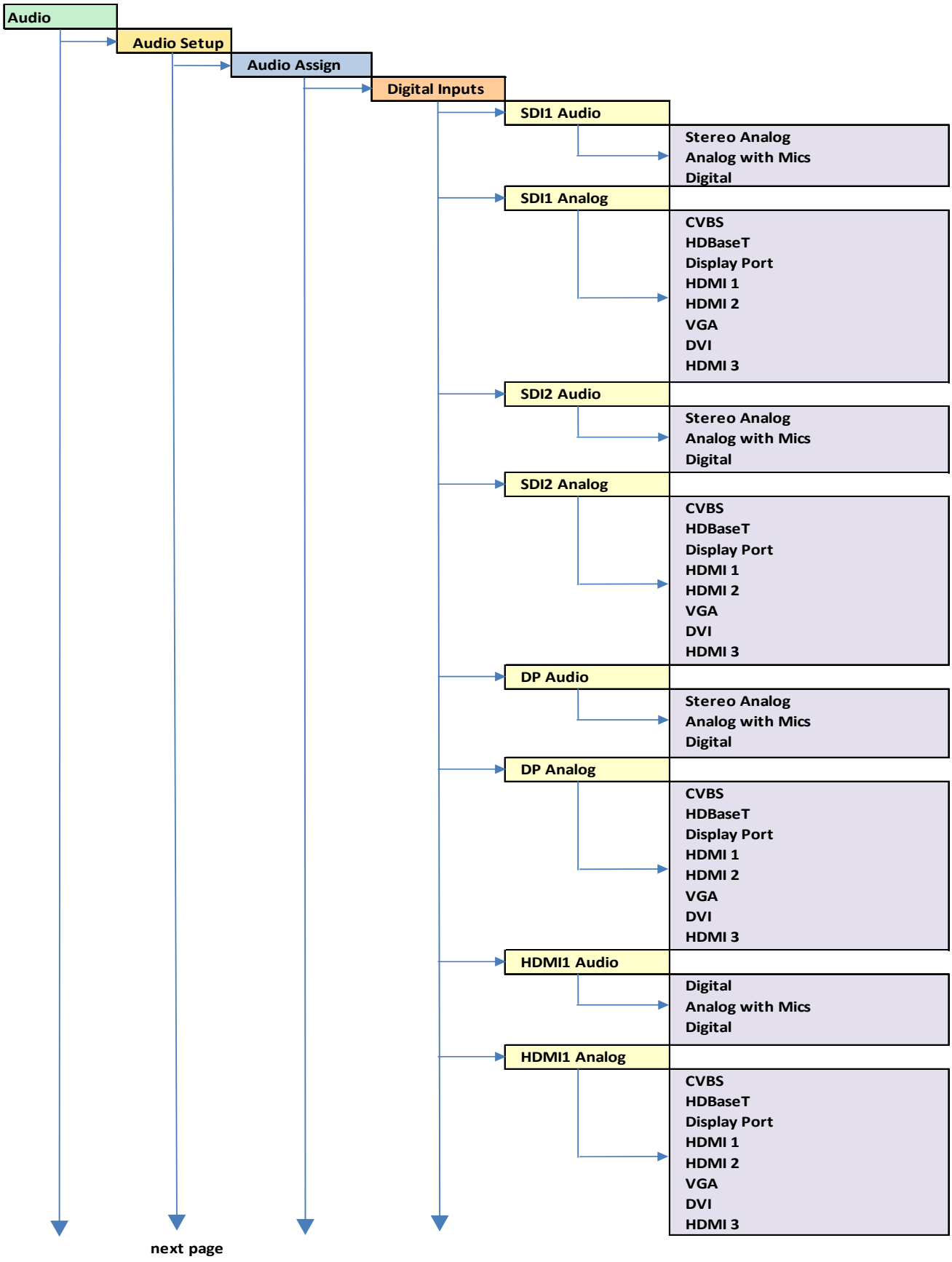
Compass 3.0 Presentation Switcher



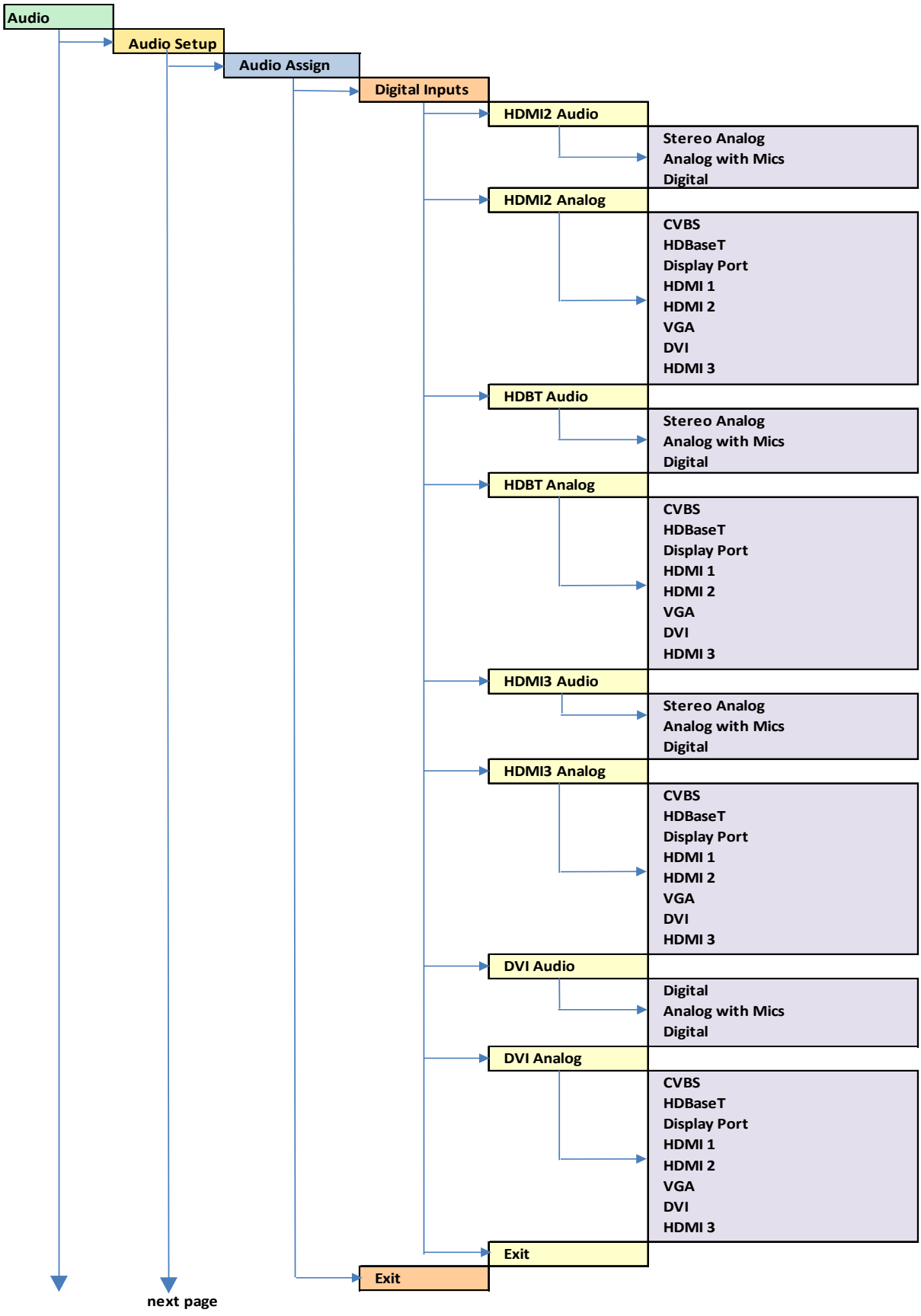
Compass 3.0 Presentation Switcher

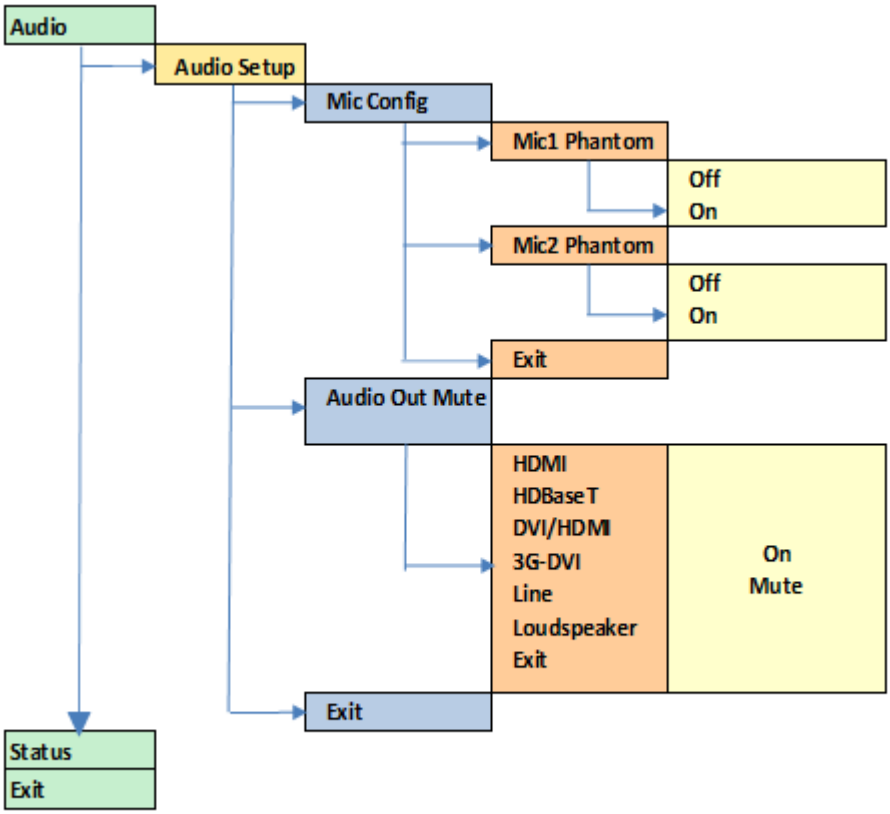


Compass 3.0 Presentation Switcher



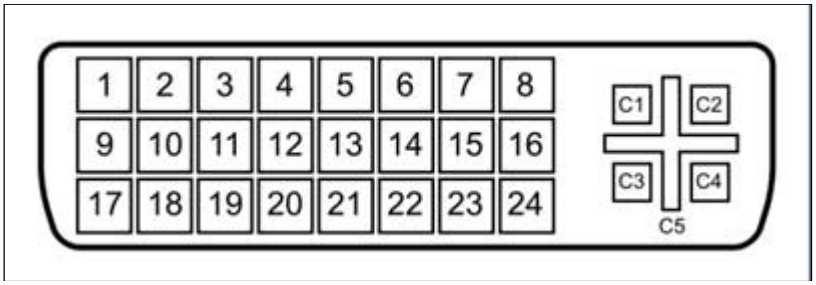
Compass 3.0 Presentation Switcher




Audio
Audio Setup
Mic Config
Mic1 Phantom
Off
On
Mic2 Phantom
Off
On
Exit
Audio Out Mute
HDMI
HDBaseT
DVI/HDMI
3G-DVI
Line
Loudspeaker
Exit
On
Mute
Exit
Status
Exit

APPENDIX C

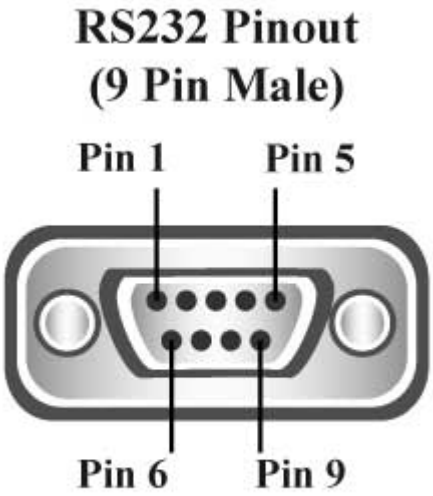
Single Link DVI-U Pinout



Pin 1	TMDS data 2−	Digital red−
Pin 2	TMDS data 2+	Digital red+
Pin 3	TMDS data 2/4 shield	
Pin 4	TMDS data 4−	
Pin 5	TMDS data 4+	
Pin 6	DDC clock	
Pin 7	DDC data	
Pin 8	Analog vertical sync	
Pin 9	TMDS data 1−	Digital green−
Pin 10	TMDS data 1+	Digital green+
Pin 11	TMDS data 1/3 shield	
Pin 12		
Pin 13		
Pin 14	+5 V	Power for monitor when in standby
Pin 15	Ground	Return for pin 14 and analog sync
Pin 16	Hot plug detect	
Pin 17	TMDS data 0−	Digital blue and digital sync
Pin 18	TMDS data 0+	Digital blue+ and digital sync
Pin 19	TMDS data 0/5 shield	
Pin 20		
Pin 21		
Pin 22	TMDS clock shield	
Pin 23	TMDS clock+	Digital clock+
Pin 24	TMDS clock−	Digital clock−
C1	Analog red	
C2	Analog green	
C3	Analog blue	
C4	Analog horizontal sync	
C5	Analog ground	Return for R, G, and B signals

APPENDIX C

RS-232 Pinout



Pin 2 Received Data
Pin 3 Transmit Data
Pin 5 Signal Ground