



# VP-796 Operating Instructions





**This manual explains how to operate your VP-796 Presentation Scaler-Switcher.**

**If you have any queries relating to this or any other product supplied by Kramer please visit our web site [www.kramerelectronics.com](http://www.kramerelectronics.com).**

All trademarks acknowledged

Kramer operates a policy of continued product improvement, therefore specifications are subject to change without notice as products are updated or revised.

E&OE.



## Contents

SAFETY WARNING	5
INTRODUCTION	6
1.1. General Introduction	6
1.2. Packing List	7
QUICK SET-UP FLOW CHART	8
2.1. Basic Switcher Set-Up	8
VP SYSTEM DESCRIPTION	9
3.1. Product Overview	10
3.2. Product Specification	10
3.2.1. Power Supply Requirement	10
3.2.2. Video Inputs	10
3.2.3. Component Video Inputs	10
3.2.4. Computer (SVGA) Inputs VESA formats	11
3.2.5. HDMI & DVI Inputs	11
3.2.6. DP Input	11
3.2.7. HDBT Input	11
3.2.8. Audio Output	12
3.2.9. Display Output	13
UNIT CONTROL	16
4.1. LCD Panel Control	16
4.2. Web Browser Control	19
4.3. Introduction	24
4.4. Main Menu	26
4.5. Input	26
4.6. Output	26
4.6.1. Display Type	26
4.6.2. Gamm/Color/Crush	28
4.6.3. Output Config	29
4.7. Colour	29
4.7.1. Black-Level Offset	29
4.7.2. Black-Level	29
4.7.3. Contrast	30
4.7.4. Saturation	30
4.7.5. Hue	30
4.7.6. RGB values	30
4.7.7. Colour Temp	30
4.7.8. Input Gamma	30
4.8. Geometry	30
4.8.1. Picture Format	30
4.8.2. Overscan	31
4.8.3. Pan Tilt Zoom	31
4.9. Enhancement	32
4.9.1. Sharpness	32
4.9.2. Detail	32
4.10. System	33
4.10.1. User	33
4.10.2. Names/Profiles	33
4.10.3. Input Config	33
4.10.4. Menu Settings	35
4.10.5. Network Settings	35
4.10.6. Security Settings	36
4.10.7. Factory Defaults	36
4.11. Status	36
FIRMWARE UPDATE	37
5.1. Introduction	37
5.2. Updating Firmware	37
ENVIRONMENTAL AND EMC	38
6.1. Recommended Operating Conditions	38



6.2. Storage	38
6.3. CE and FCC Compliance	38
6.4. PAT Testing	38



### **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**

VP-796 features excellent image processing algorithms for the very best scaling, and market leading HD & SD per-pixel multiple low-angle motion-adaptive de-interlacing and automatic film 3:2 and 2:2 pull-down correction, significantly outperforming the capabilities of benchmark competitor products.

The unit can be operated as a seamless switcher with extremely fast switching transitions.

VP-796 uses a very flexible high performance video input front end including true component video support in analogue YPbPr and RGBS formats as well as composite (CVBS) inputs. A very high performance video decoder is utilised with 4x oversampling and 3D Y/C separation for outstanding video image clarity.

HDMI, DVI, HDBT and Display Port video with HDCP encryption is also supported, as are computer graphics inputs in SVGA analogue and HDMI/DVI digital formats.

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, e.g. for driving basic screens which are not 50Hz-compatible. The output format can also be set to lock to an externally provided synchronization signal on various models (see model matrix).

Outputs are available in HDMI/DVI digital and HDBaseT formats on various models which are useable simultaneously.

Please 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. HDCP capability can be switched off by the units, so that a source may be forced to output non content protected material unencrypted.

VP-796 supports Pan, Tilt and Zoom to select a 'region of interest' portion of the input image, fill the screen and pan/tilt within it.

System control is via a menu system through the inbuilt TCP/IP web server or via the built in LCD panel and jog dial. Additionally a free API manual is published on our website of the LAN remote control port.



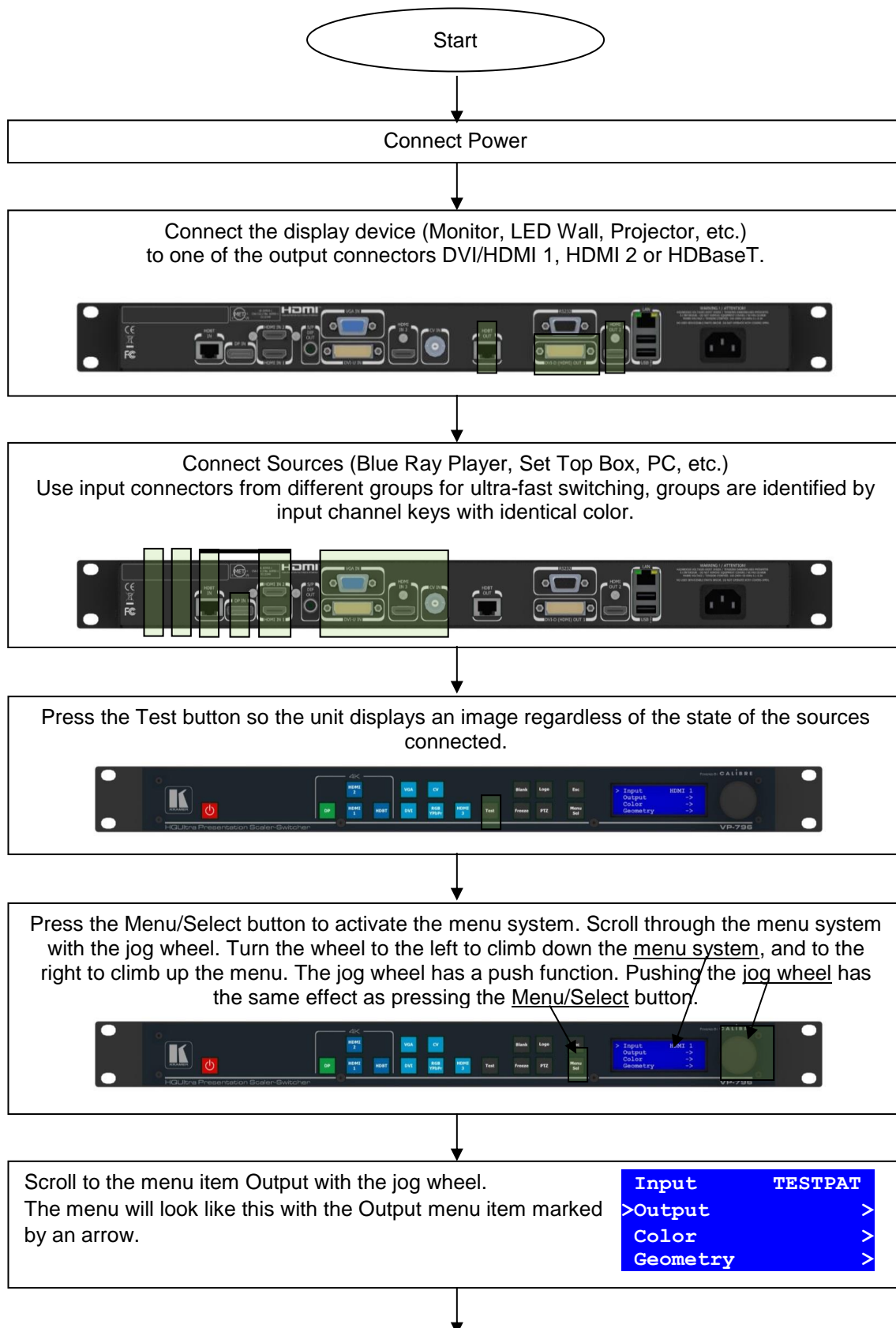
## 1.2. **Packing List**

VP-796 is supplied with the following:

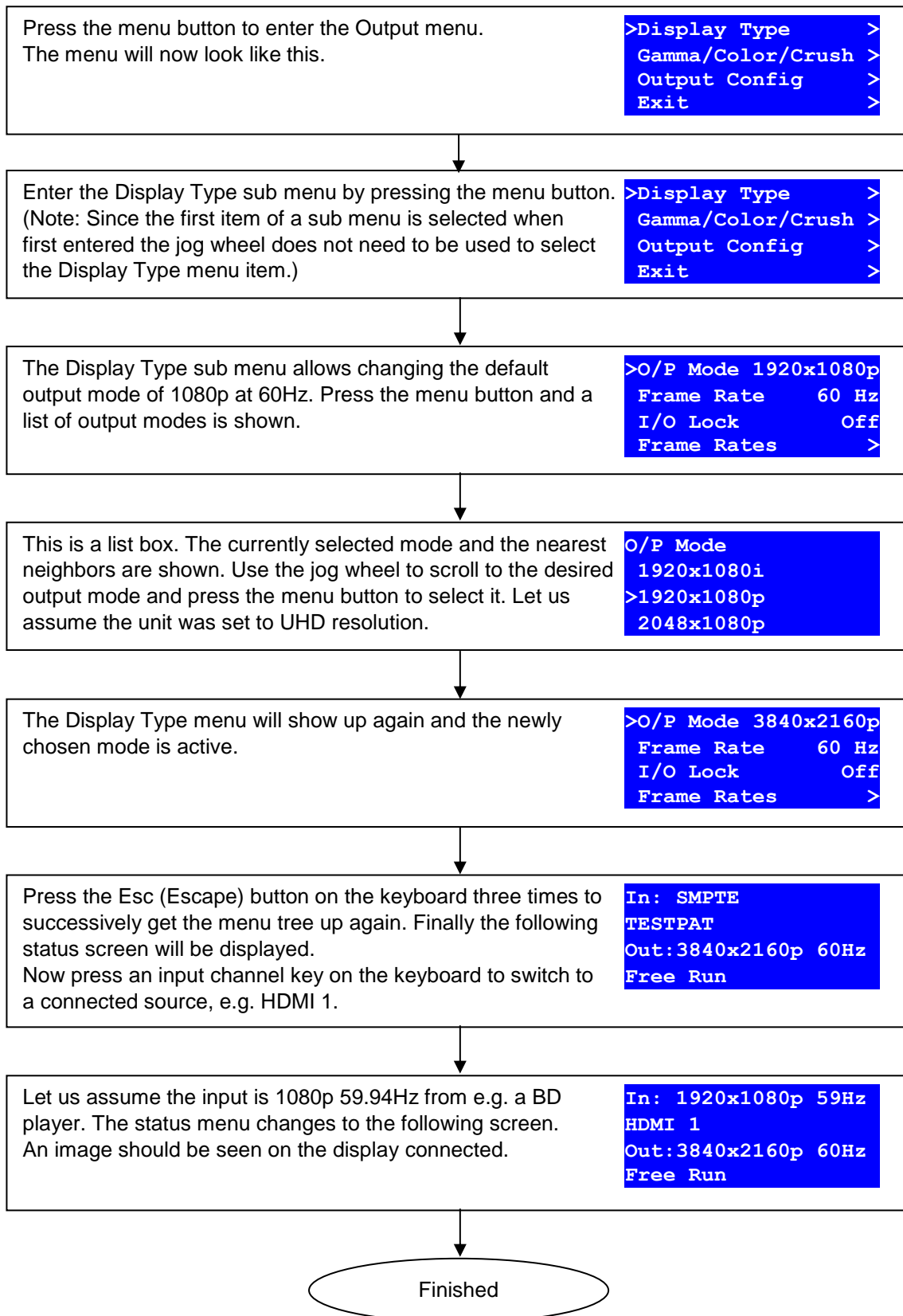
- 1) 3 pin plug IEC mains cable
- 2) CD (w/ documentation)

## QUICK SET-UP FLOW CHART

### 2.1. Basic Switcher Set-Up









## VP SYSTEM DESCRIPTION

### 3.1. Product Overview

The unit designed to accept the following input signals:

Model	VP-796	VP-797	VP-798
2x 3G-SDI/HD-SDI/SDI (Serial Digital Interface) via BNC	✗	✓	✓
Display Port via DP connector	✓	✓	✓
2x HDMI (4k) via HDMI connector	✓	✓	✓
HDBaseT Via RJ45 connector	✓	✓	✓
DVI via DVI-U (supporting a digital and a YPbPr input)	✓	✓	✓
VGA analogue via 15HDD	✓	✓	✓
Composite Video via BNC	✓	✓	✓
HDMI (1080p deep color) via HDMI connector	✓	✓	✓

### 3.2. Product Specification

This section provides technical details for all possible inputs.

#### 3.2.1. Power Supply Requirement

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

#### 3.2.2. 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

#### 3.2.3. Component Video Inputs

Via DVI-U connector and appropriate adapter cable

YPbPr (YUV), YPbPrS and RGB 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.



### **3.2.4. 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.

### **3.2.5. 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.

The 4k capable HDMI 1 and HDMI 2 inputs also support: 3840x2160p & 4096x2160p 23.97, 24, 25, 29.94, 30, 50, 59.94 & 60Hz (50, 59.94 & 60Hz supported in YUV 4:2:0 colour 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

Note: As of now HDMI1/2 and HDBT inputs support RGB and YUV 4:2:0 colour space formats. Signals with YUV 4:4:4 and YUV 4:2:2 colour space formats need to be connected to the HDMI3 or DVI input.

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

### **3.2.6. DP Input**

Display Port without HDCP, 36-bit video compatible.

Signal formats as HDMI 1 and HDMI 2.

### **3.2.7. 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.



### 3.2.8. Audio Output

Audio is embedded in HDMI video streams and brought into the unit through the respective input channels. The audio is passed through the system and re-embedded into the HDMI output signals.

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

When HDMI is selected as the input channel the HDMI EDID is read by a video source such as a Blue 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 SPDIF output are muted on the individual channels.

<b>Output Channel</b>	<b>Output Format</b>
HDMI	PCM up to 8ch, up to 24Bit, up to 192kHz sampling rate (incl. 32kHz,44.1kHz,48kHz,96kHz,192kHz) Dolby Digital (AC3) up to 5.1 channels, up to 640kBit/sec bit stream rate MPEG2 up to 8ch, up to 112kBit/sec bit stream rate DTS up to 6.1 channels, up to 1536kBit/sec bit stream rate
SPDIF	PCM up to 2ch, up to 24Bit, up to 96kHz sampling rate (incl. 32kHz,44.1kHz,48kHz,96kHz) Dolby Digital (AC3) up to 5.1 channels DTS up to 6.1 channels



### 3.2.9. Display Output

Three output channels are provided which are useable simultaneously. That is an HDMI, a DVI-I output connector for DVI/HDMI connectivity and an RJ45 connector for HDBaseT connectivity.

When the input signal has HDCP encryption, the DVI-D, HDMI and HDBaseT output connectors will carry a similarly HDCP encrypted signal.

***When an HDCP encrypted signal is input, but the display device does not support HDCP, the output image will turn black and a message indicating HDCP Signal will come up to the LCD menu screen to indicate this.***

There is a DVI-D and HDMI output. Both conform to normal VESA standards for connectors and pin outs for these signal types.

The DVI-D connector will support HDMI with 36-bit video and audio formats when connected to a suitable HDMI receiver. The colour depth of the HDMI signal is determined by the set-up of the unit and the capabilities of the monitor.

4096x2160 currently is supported at 23.97/24Hz/29.97/30/50. 4096x2160 at 59.94/60 is not supported.

***Note: The processor's HDCP compliance can be turned off. This is of importance particularly when using a MAC computer as the source. A MAC will encrypt its output signal if a compliant device is seen attached to its output regardless of copy protection requirements to the content. By turning off the unit processor's compliance 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.***

***Note: The DVI/HDMI1 output of HDBaseT enabled products works fine with most displays at 4k. However, this cannot be guaranteed. There may be occasional short video drop outs which immediately recover. The frequentness depends on the display input electrical circuitry, the input format measurement of the display and the quality of the cable being used.***



The following output modes can be set up:

(HFP/VFP: horizontal/vertical front porch, HBP/VBP: horizontal/vertical front porch, HS/VS: horizontal/vertical sync, HTot/VTot: horizontal/vertical total pixels)

Hor Pix	Ver Pix	HTot	HFP	HS	HBP	VTot	VFP	VS	VBP	Hor Freq	Ver Freq	Pix Clock	Specification
640	480	800	16	96	48	525	10	2	33	31.47	59.94	25.175	VESA DMT
640	480	800	16	96	48	629	62	2	85	31.46	50.02	25.170	proprietary
640	480	800	16	96	48	629	62	2	85	30.19	48.00	24.154	proprietary
800	600	1056	40	128	88	628	1	4	23	37.88	60.31	40.000	VESA DMT
800	600	1056	40	128	88	628	1	4	23	31.40	50.00	33.158	VESA 60 - CLK wind down
800	600	1056	40	128	88	628	1	4	23	30.14	48.00	31.832	proprietary
1024	768	1344	24	136	160	806	3	6	29	48.36	60.00	65.000	VESA DMT
1024	768	1312	40	104	144	793	3	4	18	39.63	49.98	52.000	VESA CVT 001M3
1024	768	1312	40	104	144	793	3	4	18	38.11	48.06	50.000	proprietary
1280	768	1664	64	128	192	798	3	7	20	47.78	59.87	79.500	VESA CVT 001M9/VESA DMT
1280	768	1648	56	128	184	793	3	7	15	39.59	49.93	65.250	VESA CVT001M9
1280	768	1648	56	128	184	793	3	7	15	38.06	48.00	62.730	proprietary
1280	800	1680	72	128	200	831	3	6	22	49.70	59.81	83.500	VESA CVT 001MA/VESA DMT
1280	800	1680	72	128	200	831	3	6	22	41.55	50.00	69.804	proprietary
1280	800	1680	72	128	200	831	3	6	22	39.89	48.00	67.012	proprietary
1280	1024	1688	48	112	248	1066	1	3	38	63.98	60.02	108.000	VESA DMT
1280	1024	1688	48	112	248	1066	1	3	38	53.32	50.02	90.000	VESA 60 - CLK wind down
1280	1024	1688	48	112	248	1066	1	3	38	51.17	48.00	86.370	proprietary
1360	768	1792	64	112	256	795	3	6	18	47.71	60.02	85.500	VESA AddDMT
1360	768	1744	56	136	192	793	3	5	17	39.56	49.89	69.000	VESA CVT 001M9
1360	768	1688	48	112	248	1066	1	3	38	51.17	48.00	86.370	proprietary
1366	768	1792	26	100	300	795	4	3	20	47.70	60.00	85.478	proprietary
1366	768	1792	26	100	300	795	4	3	20	39.75	50.00	71.232	proprietary
1400	1050	1864	88	144	232	1089	3	4	32	65.31	59.98	121.750	VESA CVT 001M3/VESA DMT
1400	1050	1864	88	144	232	1089	3	4	32	54.43	49.98	101.458	VESA 60 - CLK wind down
1400	1050	1864	88	144	232	1089	3	4	32	52.27	48.00	97.435	proprietary
1440	900	1904	80	152	232	934	3	6	25	55.93	59.89	106.500	CVT 1.30MA/VESA DMT
1440	900	1872	72	144	216	929	3	6	20	46.34	49.88	86.750	VESA CVT 001MA
1600	1200	2160	64	192	304	1250	1	3	46	75.00	60.00	162.000	VESA DMT
1600	1200	2128	96	168	264	1238	3	4	31	61.80	49.92	131.500	VESA CVT 002M3
1600	1200	2128	96	168	264	1238	3	4	31	59.42	48.00	126.450	proprietary
1680	1050	2240	104	176	280	1089	3	6	30	65.29	59.95	146.250	VESA CVT 002MA
1680	1050	2208	88	176	264	1083	3	6	24	54.12	49.97	119.500	VESA CVT 002MA
1680	1050	2208	88	176	264	1083	3	6	24	51.98	48.00	114.780	proprietary
1920	1200	2080	48	32	80	1235	3	6	26	74.04	59.95	154.000	VESA CVT 002MA-R/VESA DMT
1920	1200	2080	48	32	80	1129	3	6	20	61.42	49.97	127.750	VESA CVT calculated
1920	1200	2080	48	32	80	1235	3	6	26	29.64	24.00	61.650	proprietary
1920	1200	2080	48	32	80	1129	3	6	20	59.28	48.00	123.300	proprietary
720	480	858	19	62	57	525	27	3	15	31.47	59.94	13.500	EIA/CEA-861-B Format 6
720	576	864	12	63	69	625	27	3	19	31.25	50.00	13.500	EIA/CEA-861-B Format 24
720	576	864	12	63	69	625	28	3	18	30.00	48.00	12.960	proprietary
720	480	858	16	62	60	525	9	6	30	31.47	59.94	27.000	EIA/CEA-861-B Format 2
720	576	864	12	64	68	625	5	5	39	31.25	50.00	27.000	EIA/CEA-861-B Format 17
720	576	864	12	64	68	625	5	5	39	30.00	48.00	25.920	proprietary
1280	720	1650	110	40	220	750	5	5	20	44.95	59.94	74.176	EIA/CEA-861-B Format 4
1280	720	1980	440	40	220	750	5	5	20	37.50	50.00	74.250	EIA/CEA-861-B Format 19
1280	720	4125	2585	40	220	750	5	5	20	17.98	23.98	74.176	SMPTE 296M-1997 Format 8
1280	720	2063	483	40	260	750	5	5	20	35.97	47.96	74.176	proprietary
1920	1080	2200	88	44	148	1125	25	5	15	67.43	59.94	74.176	EIA/CEA-861-B Format 5
1920	1080	2640	528	44	148	1125	25	5	15	56.25	50.00	74.250	EIA/CEA-861-B Format 20
1920	1080	2750	638	44	148	1125	25	5	15	53.95	47.95	74.176	SMPTE 274-1998 Format 11
1920	1080	2750	638	44	148	1125	25	5	15	53.95	47.95	74.176	SMPTE 274-1998 Format 10
1920	1080	2200	88	44	148	1125	4	5	36	67.43	59.94	148.352	EIA/CEA-861-B Format 16
1920	1080	2640	528	44	148	1125	4	5	36	56.25	50.00	148.500	EIA/CEA-861-B Format 31
1920	1080	2750	638	44	148	1125	4	5	36	26.97	23.98	74.176	EIA/CEA-861-B Format 32
1920	1080	2640	440	88	192	1125	3	5	37	53.95	47.95	142.418	proprietary



Hor Pix	Ver Pix	HTot	HFP	HS	HBP	VTot	VFP	VS	VBP	Hor Freq	Ver Freq	Pix Clock	Specification
2048	1080	2750	510	148	44	1125	4	36	5	27.000	24.00	74.250	proprietary
2048	1080	2200	24	84	44	1125	4	36	5	33.716	29.97	74.176	proprietary
2048	1080	2750	510	148	44	1125	4	36	5	54.000	48.00	148.500	proprietary
2048	1080	2640	464	84	44	1125	4	36	5	56.250	50.00	148.500	proprietary
2048	1080	2200	24	84	44	1125	4	36	5	67.432	59.94	148.351	proprietary
2048	1080	2200	24	84	44	1125	4	36	5	67.500	60.00	148.500	proprietary
2560	1080	3750	998	44	148	1100	4	5	11	26.400	24.00	99.000	EIA/CEA-861-F VIC=86
2560	1080	3200	448	44	148	1125	4	5	36	28.125	25.00	90.000	EIA/CEA-861-F VIC=87
2560	1080	3520	768	44	148	1125	4	5	36	33.750	30.00	118.800	EIA/CEA-861-F VIC=88
2560	1080	3300	548	44	148	1125	4	5	36	56.250	50.00	185.625	EIA/CEA-861-F VIC=89
2560	1080	3000	248	44	148	1100	4	5	11	66.000	60.00	198.000	EIA/CEA-861-F VIC=90
2560	1440	2640	8	32	40	1474	20	8	6	73.626	49.950	194.374	VESA CVT 004M-R
2560	1440	2640	8	32	40	1481	27	8	6	88.771	59.940	234.356	VESA CVT 004M-R
2560	1600	2640	8	32	40	1638	24	8	6	81.818	49.950	216.000	VESA CVT 004M-R
2560	1600	2640	8	32	40	1646	32	8	6	98.661	59.940	260.466	VESA CVT 004M-R
3840	2160	5500	1276	88	296	2250	8	10	72	54.000	24.00	297.000	EIA/CEA-861-F VIC=93
3840	2160	5280	1056	88	296	2250	8	10	72	56.250	25.00	297.000	EIA/CEA-861-F VIC=94
3840	2160	4400	176	88	296	2250	8	10	72	67.500	30.00	297.000	EIA/CEA-861-F VIC=95
4096	2160	5500	1020	88	296	2250	8	10	72	54.000	24.00	297.000	EIA/CEA-861-F VIC=98
4096	2160	5280	968	88	128	2250	8	10	72	56.250	25.00	297.000	EIA/CEA-861-F VIC=99
4096	2160	4400	88	88	128	2250	8	10	72	67.500	30.00	297.000	EIA/CEA-861-F VIC=100
4096	2160	5280	968	88	128	2250	8	10	72	112.500	50.00	297.000	EIA/CEA-861-F (VIC=101) 4:2:0
4096	2160	4400	88	88	128	2250	8	10	72	135.000	60.00	297.000	EIA/CEA-861-F (VIC=102) 4:2:0



## UNIT CONTROL

### 4.1. LCD Panel Control

VP-796 has a front panel LCD to control the unit. The menu structure is also available through a web browser allowing control from a PC. When pressing the Menu/Sel key the start screen will be replaced by the main menu. Navigation through the menu system is by means of the jog wheel and the Menu/Sel button. To exit a submenu press the Esc key.

1 <sup>st</sup> Level	
>Input	HDMI 1
Output	>
Color	>
Geometry	>
Enhancement	>
System	>
Status	>
Exit	>

2 <sup>nd</sup> Level	3 <sup>rd</sup> Level	4 <sup>th</sup> Level	5 <sup>th</sup> Level
>Display Type > Gamma/Color/Crush > Output Config > Exit >	>O/P Mode 720p Frame Rate 60 Hz I/O Lock Off Frame Rates > Genlock Offsets > Exit >	>50 Hz Yes 48 Hz No 30/29.97 Hz Yes 24/23.98 Hz Yes Exit >	
	>Native Color 6500K Output Gamma 2.2 Black Crush 0 Exit >		
	>Display DVI HDCP On DVI Colspace RGB DVI Range Default Exit >		
>BL-Offset 7.5 IRE Black-Level 0 Contrast 0 Saturation 0 Hue 0 RGB Values > Color Temp 6500K Input Gamma 2.2 Exit >	>Red Bias 0 Red Gain 0 Green Bias 0 Green Gain 0 Blue Bias 0 Blue Gain 0 Exit >		
>Pict.Format Std. Overscan 1 PTZ > Exit >	>PTZ Enable On PTZ Settin Use Glob Pan 0.0 Tilt 0.0 Zoom H 100.0 Aspect Lock Off Zoom V 100.0 PTZ Reset Exit >		
>Sharpness 0 Detail 1 Exit >			





<pre>&gt;User          USER 1 Names/Profiles &gt; Input Config   &gt; Menu Settings  &gt; Network Settings &gt; Security Settings &gt; Factory Defaults &gt; Exit           &gt;</pre>	<pre>&gt;Unit name Input Name &gt; User name  &gt; Exit       &gt;</pre>	<pre>&gt;Display Port HDMI 1 HDMI 2 HDBaseT DVI VGA RGB/YPbPr CVBS HDMI 3 Exit &gt;</pre>	
		<pre>&gt;User 1  USER 1 User 2  USER 2 User 2  USER 2 User 2  USER 2 Exit    &gt;</pre>	
	<pre>&gt;Analog Inputs &gt; Digital Inputs &gt; Test Pattern Setup&gt; Input Enable   &gt; Switching      Freeze Exit           &gt;</pre>	<pre>&gt;VGA Setup &gt; RGB/YPbPr Setup &gt; CVBS Setup &gt; Exit       &gt;</pre>	<pre>&gt;Auto setup Clock          1764 Phase          15 H-Position     0 V-Position     0 Color Space    RGB Range          Full Reset Mode EDID 1920x1080p59.9 Exit          &gt;</pre>
			<pre>&gt;Phase          0 H-Position     0 V-Position     0 Color Space    RGB Reset Mode Exit          &gt;</pre>
			<pre>&gt;CCS           On Exit          &gt;</pre>
		<pre>&gt;DP Config &gt; HDMI1 Config &gt; HDMI2 Config &gt; HDBT Config &gt; DVI Config &gt; HDMI3 Config &gt; HDMI Audio   Full Exit        &gt;</pre>	<pre>&gt;DP Colspace   Auto DP Range       Auto Deep Color     Yes EDID In 1920x1080p Exit          &gt;</pre>
			<pre>&gt;HDMI Colspace Auto HDMI Range     Auto Deep Color     Off EDID 1920x1080p59.9 HDCP           On Exit          &gt;</pre>



			<pre>&gt;DVI Colspace  Auto DVI Range      Auto Deep Color     Off EDID 1920x1080p59.9 HDCP           On Exit           &gt;</pre>
			<pre>&gt;HDMI Colspace  Auto HDMI Range      Auto Deep Color     Off EDID 1920x1080p59.9 HDCP           On Exit           &gt;</pre>
			<pre>&gt;Audio Map  Stereo12 Exit       &gt;</pre>
		<pre>&gt;Test Pat.   Moving Test Tone    Off Exit         &gt;</pre>	
	<pre>&gt;Language  English Keypad Lock  Off MenuTime   15 sec LCD Backlight  10 Jog Push Enable  On Web Colors  Dark Exit       &gt;</pre>		
	<pre>&gt;Address Type  DHCP [IP N/A       ] [Net N/A      ] [Gateway N/A  ] DHCP Addr.obtained IP 192.168.251.005 NM 255.255.255.000 GW 000.000.000.000 M 9C-5E-73-00-39-AA Exit         &gt;</pre>		
	<pre>&gt;FTP Password WWW Password</pre>		



#### 4.2. **Web Browser Control**

The unit can be remotely controlled from a PC (or tablet, or smartphone, ...). No extra 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.

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 can be chosen. The factory default of the unit is DHCP. The static address and Netmask needs 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 board. 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 the unit is powered down after such a change, then powered back up, so that it is properly recognised by other devices on the network.

Kramer provides a DiscoveryTool.exe Windows application to identify Kramer boxes in the network.

[http://www.calibreuk.com/downloads/LEDView/DiscoveryTool\\_V1.0.exe](http://www.calibreuk.com/downloads/LEDView/DiscoveryTool_V1.0.exe)

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 "PV7" in followed by the MAC address. The MAC address of the box can be found in the System/Network Settings menu.

Note: This is for use on a network not on a single wire connection.

Once the address has been entered into the web browser starts to load pages from the unit mirroring the menu system. 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.

To control the unit through a network start a Web Browser and enter the TCP/IP address of the unit in the address field of the browser. The web server will ask for a user name and password which are:

**User Name:** user  
**Password:** user

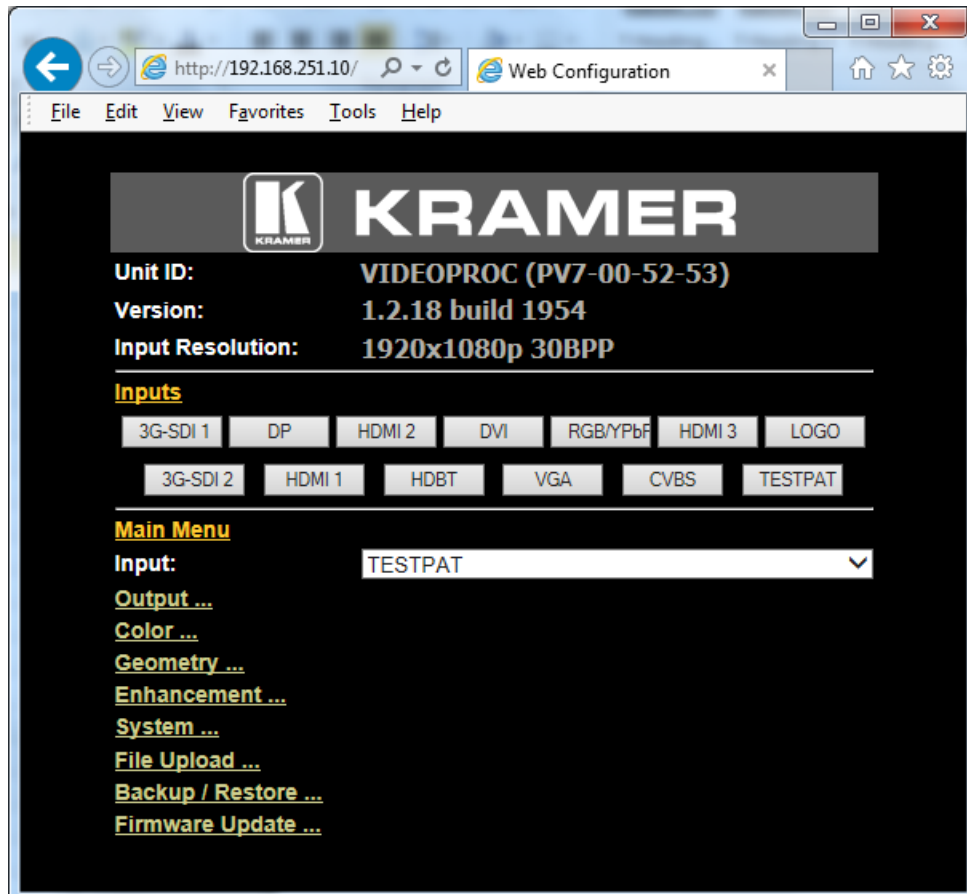
A "Loading... Please Wait." message will appear in the browser window and the web server of the unit will mirror the menu into the browser.



The main page will be displayed. The Unit ID above the menu is composed of the board identifier PV7 followed by the MAC address. Also the firmware version number and information on the input mode is shown.

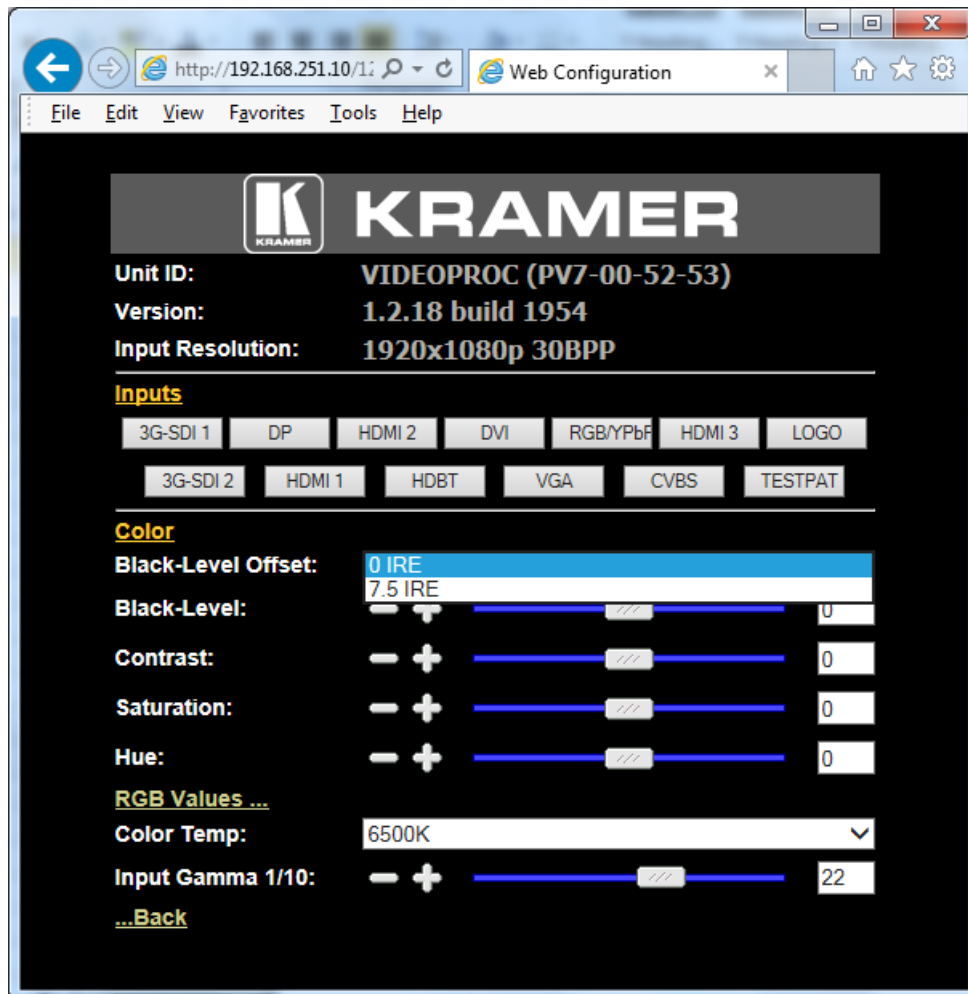
Under the information pane the available input channels are shown and can be activated directly.

Below the input channel buttons the menu system is shown.





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.

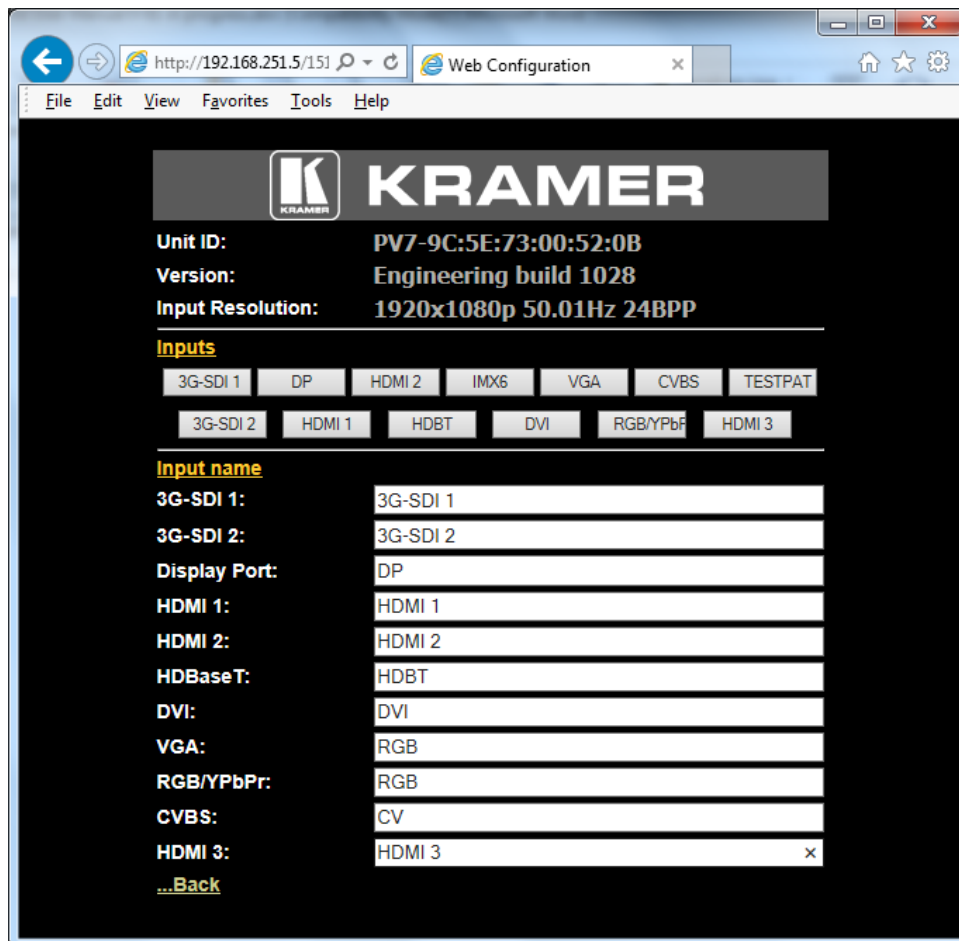
A slider value can be changed by moving the mouse pointer over the slider, click and hold the left mouse button and move the mouse to the right or left to decrease or increase the value. Also, the slider can be controlled in single steps with the mouse wheel. Or by moving the mouse pointer over the –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



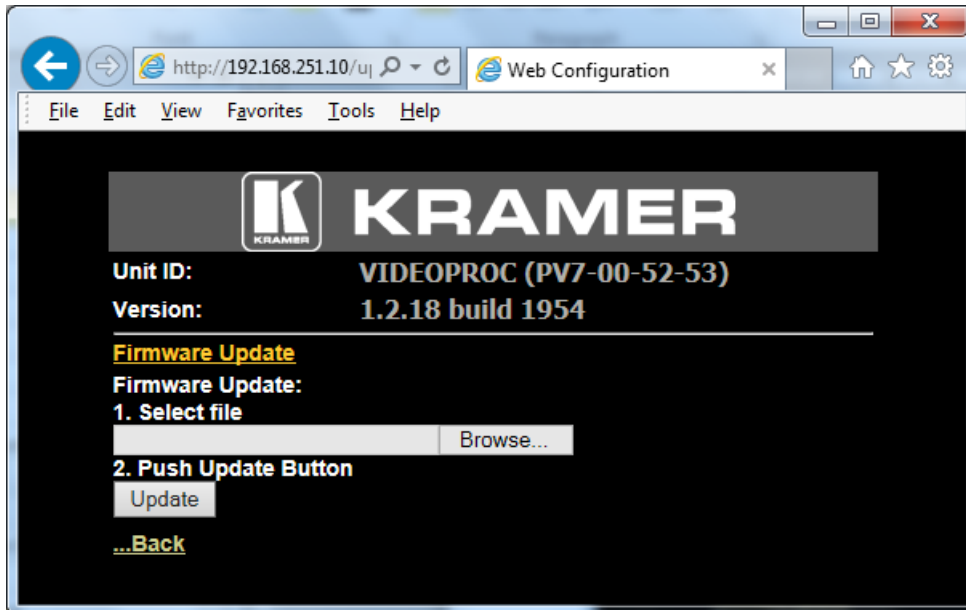
Renaming the input channel is used as an example to explain the alpha numeric field changes. Move the mouse pointer into the alpha numeric field and click on the left mouse button. The cursor can be controlled with the right/left and back space keys of the PC keyboard. The new name for the input channel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

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



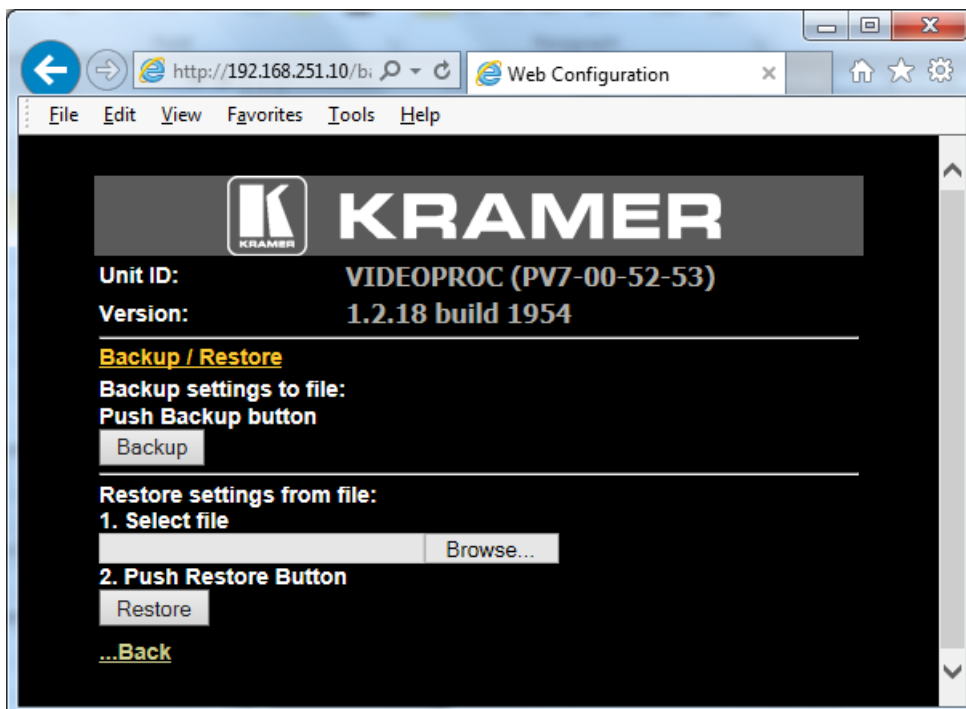


A page for file uploads is provided. Browse a firmware file (extension .bin) and select it. The path and name will be shown in the field left to the Browse button. Now click the update button.



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

To restore a setting browse for the file. A selected file will be shown in the field left to the Browse button. Now press the restore button.



### 4.3. Introduction

The front panel has keys and a jog wheel for OSD and local LCD menu navigation and direct keys for input channel selection. The amount of input channels supported vary throughout the product line. All other front panel controls are identical.



When applying power to the unit it starts up. This is indicated by the red Standby key flashing. Once the unit is operational, the key is illuminated permanently.

1 – Standby key: By pressing the Standby key, the unit is put into standby mode. This is indicated by a “STANDBY” message in the LCD with back light turned off.

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 toggle through the available test patterns.

4 – Direct function keys: Four functions can be directly called by pressing the 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: With the Menu/Sel key the menu is activated, this key also 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: The Menu is also shown on the LCD front panel.

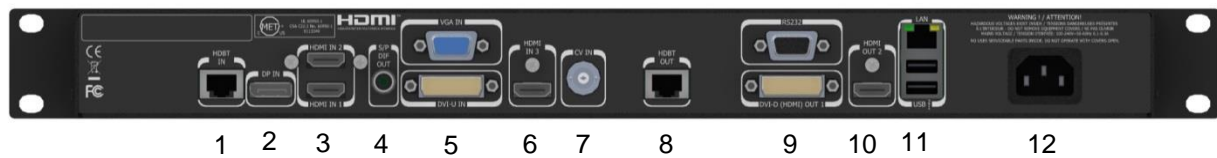
6 – Jog wheel: The wheel is used for navigating through the menu system and making value changes. The jog wheel has a push function. Pushing the knob has the same effect as pushing the Menu/Sel key.

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

<b>Keypad unlock:</b>	Esc + Menu/Sel
Mode reset:	Esc + CV
<b>Factory reset:</b>	Esc + YPbPr (in live operation or at power up)
Set output mode to 720p:	Esc + VGA



The back panel features all input and output connectors, communication ports and the power supply connector.



- |   |                        |
|---|------------------------|
| 1 – HDBaseT   | 2 – Display Port input |
| 3 – 2x HDMI (UHD/4k) input  | 4 – S/PDIF output      |
| 5 – DVI-U (DVI-D and YPbPr through a cable adapter) and VGA input | 6 – 1x HDMI (HD) input |
| 7 – Composite Video (BNC)   | 8 – HDBT output        |
| 9 – DVI/HDMI1 output and RS232 port                               |                        |
| 10 – HDMI2 output   | 11 – TCP/IP and 2x USB |
| 12 – Power supply connector                                       |                        |



#### **4.4. Main Menu**

The main menu lists the input channel select item, and 6 sub menus. The 6 sub menus are Output, Colour, Geometry, Enhancement, Status and System.

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 greyed out and are not accessible.

Navigating the menu system or changing values is done with the jog wheel.

To set up your unit it is recommended that you follow this procedure:

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

For a LED screen set window size to match the LED module to be driven.

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: The processor 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, they are not global to the unit. If you change the settings in for example the composite video channel you will not affect the settings you may have made in for example the DVI channel.

All Output parameters only affect the output, they do not affect any of the inputs but please note that the appearance on the screen because it is the output these adjustments will appear to be global.

#### **4.5. Input**

The list of available inputs can be scrolled through using the jog wheel. The new input is not selected until the Menu key is pressed. The list of inputs include: Display Port, HDMI1, HDMI2, HDBaseT, DVI, VGA, YPbPr/RGB, Composite Video and Test Pattern. Depending on the specific model some of these inputs are not implemented and thus not present.

Test patterns can be generated by the unit without needing an input connected.

When Test Pattern is selected as the input and menu is off, the required test pattern can be chosen by the jog wheel.

#### **4.6. Output**

This menu contains adjustments associated with setting up outputs from the unit. The items are organized in four sub menus, Display Type, Gamma/Colour/Crush, Output Config and Output Window Size. Use the jog wheel to scroll to the required item and press the Menu key. Output Window size is not supported on models without the LED wall per edge-sizing feature.

##### **4.6.1. Display Type**

###### **Output Mode**

Settings: 640x480, 800x600, 1024x768, 1280x768, 1280x800, 1280x1024, 1400x1050, 1600x1200, 1920x1200, 480i, 576i, 480p, 576p, 1080i, 720p, 1080p, 2024x1080, 2560x1080, 2560x1440, 2560x1600, 3860x2160, 4096x2160

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.

Note: If selecting for an LED display choose a setting that is equal or greater than the display and then use the window size adjustment to accurately scale to the LED wall.

The default output resolution as set by the factory or after a user issued factory reset is 720p.



## **Frame Rate**

Available settings: 60 Hz, 59.94, 50 Hz, 48 Hz, 25Hz, 24 Hz, 23.97, Auto

Not all settings may be available. Through the Frame Rates submenu frame rates can be banned from the list, e.g. to cope with a display connected known to only support a subset of the rates above.

In auto mode the output frame rate follows the input frame rate with the limitation set under the Frame Rates menu..

Signals with 23.97, 24Hz, 25Hz, 48Hz, 50Hz, 59.94Hz input modes get special treatment. Modes with other refresh rates are displayed at 60Hz.

As a general rule first a mode with the exact same refresh rate is picked up. If that is not available the mode with a refresh rate with a factor of 1.001 or 1/1.001 is taken. If that is not available a mode with twice the rate is chosen. Next a mode with twice the rate with a factor of 1.001 or 1/1.001 is taken. If that is also not available 60Hz (or 59.94Hz) is used.

E.g. 23.97Hz input modes will be output at 23.97Hz if the output resolution is set to a resolution that supports 23.97Hz timings (check the output timing list). If no 23.97Hz exists but a 24Hz mode this refresh rate will be used. If neither 23.97Hz or 24Hz exists but a mode at twice the rate, that one will be used. If that does not exist either the 60Hz (or 59.94Hz) mode will be used.

A 25Hz input mode is output at twice the frame rate 50Hz.

50Hz input modes are displayed at 50Hz output rate.

The output frame rate can also manually be set to 23.97, 24Hz, 25Hz, 48Hz, 50Hz, 59.94Hz or 60Hz if possible, i.e. such output modes are available.

## **I/O Lock**

Available settings: Off, On, Genlock

If I/O Lock is switched off the output is run with a fixed refresh rate determined by the frame rate setting. This setting will result in the output vertical refresh rate deviating 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 set to On the output refresh rate is following 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 is following the vertical sync of an externally provided signal (GENLOCK BNC) if locking is possible. This is the case if 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 not the output is operated with a fixed refresh rate determined by the frame rate setting.

Locking is achieved by locking the output clock to the input clock and deriving the VSync and HSync by calculation.

The LCD menu main page indicates if the output signal is locked to the input signal (I/O Locked or Genlocked) or in free run mode (Free Run).

If the unit is to be used as a clean switcher the settings for Frame Rate and I/O lock need to be chosen carefully. Obviously, clean switching cannot be achieved if output frame rate locking to input video is selected. Even if the to be switched input channels have signals attached with nominally the same frame rate they always differ slightly and a new lock has to be established causing disturbances.

The following combinations of Frame Rate and I/O Lock settings determine the switching behaviour:

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



Note 1: The Auto Frame Rate vs Fixed Frame Rate function determines Genlock behaviour as well as I/O Lock and Free Run behaviour. In Auto Frame Rate mode Genlock signals of 50Hz or 59.94/60Hz are accepted, but in Fixed Frame Rate mode only a Genlock signal which matches the chosen Frame Rate is accepted. So for example if the unit is fixed at 60Hz frame rate output it will not lock to a 50Hz genlock reference, but will only lock to a 60Hz genlock reference.

Note 2: In Auto Frame Rate mode with Free Run Mode selected input switching may or may-not be clean, this depends on how close the frame rates of the current and next input channel are.

### **Frame Rates**

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

Limits the possible output frame rates that can be selected. It is primarily to be able to limit the choices available for the Auto refresh rate configuration.

Certain frame rates can be deactivated, so that output modes are not displayed with said rates. That is to prevent the unit to send modes to a display which is not capable of displaying these frame rates.

### **4.6.2. Gamm/Color/Crush**

#### **Native Color Temp**

Settings: 5500, 6500, 7500, 9300, 10000

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

#### **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) Colour Temp in the Colour menu, or a lower number for the Native Colour Temp in the Output menu.



### 4.6.3. Output Config

This Menu provides items to configure the output port.

#### Display

Settings: DVI forced, DVI/HDMI

Internally, the display interface processes data at a full ten bits per colour. The colour depth on the HDMI outputs 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 or later 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.

#### HDCP

Settings: On, Off

HDCP encryption support on the output can be switched off. 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 the unit pretends that the input ports are not HDCP compliant and either encrypted data is no longer sent to the unit because it is not necessary or the unit will not show such content on the display.

#### DVI Colour Space and DVI Range

The colour space of the HDMI output ports can be set to RGB or YPbPr.

The range can be set to Default, Limited, and Full. When set to Default CEA 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 behave as expected, e.g. because the HDMI display is not evaluating AVInfoFrames 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.

### 4.7. Colour

This is an input channel menu containing adjustments associated with setting up **inputs** to the unit.

#### 4.7.1. 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 and NTSC video inputs and should usually be off for PAL analog video inputs.

#### 4.7.2. Black-Level

Settings: -50 to 50 in steps of 1

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



#### **4.7.3. Contrast**

Settings: -50 to 50 in steps of 1

Contrast controls the gain applied to the video signal.

#### **4.7.4. Saturation**

Settings: -50 to 50 in steps of 1

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

#### **4.7.5. Hue**

Settings: -50 to 50 in steps of 1

Control of the hue of the colour of a video signal, Normally only needed when playing NTSC signals or video transferred poorly from an NTSC origination. (applies to all video inputs but not computer input signals or formats).

#### **4.7.6. RGB values**

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

#### **4.7.7. Colour Temp**

Settings: 5500, 6500, 7500, 9300

A preset range of Colour Temperature which allows the user to select from pre-configured colour temperatures to match the colour temperature of the incoming signal. If both Colour Temp set here in the Colour menu and Native Colour Temp set in the Output menu are set to the same value, no conversion is performed.

#### **4.7.8. Input Gamma**

Available 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.

### **4.8. Geometry**

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

#### **4.8.1. Picture Format**

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

Picture Format allows a user to select the displayed aspect ratio where the signal input is different to 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.



**Original** 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).

#### **4.8.2. 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. head switching in legacy video images.

#### **4.8.3. 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.

PTZ settings can be saved per mode or globally, i.e. if applied globally 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.



## **4.9. Enhancement**

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

### **4.9.1. Sharpness**

Settings: -4 to 4 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.

### **4.9.2. 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.





#### **4.10. System**

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

##### **4.10.1. User**

Settings: USER 1, 2, 3, 4

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

Note: Using the Web interface, (any number of) settings can also be stored/restored to/from a PC disc drive.

##### **4.10.2. 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.

##### **4.10.3. Input Config**

Inputs can be configured through the following sub-menus:

###### **Analog Inputs**

VGA Setup:

A button for resetting the adjustments for a given mode to factory defaults is provided. Press this button if phase, clock and positional settings have been set beyond a point of return.

Frequency (Clock) and phase can also be altered manually. Also the vertical and horizontal position can be fine adjusted.

The Color Space and (greyscale) Range can be chosen. The color space can be set to RGB or YCbCr, The greyscale range can be reduced by switching from full to limited (see range values discussed in the output config section).

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

RGB/YPbPr Setup:

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

RGB/YPbPr 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 colours in regions of fine details.



## **Digital Inputs**

### DP Config:

The automatic HDMI Color Space and Range settings can be overwritten in this menu. The Range attribute can be overwritten to limited or full range in case the AVInfoFrames are wrong. The color space can be set to RGB or YCbCr if the Auto setting does not give the desired result.

The EDID can be configured to pretend certain deep color capability. The unit can process color depth of 24/30bit per channel. Deep Color can be off (source outputs 24bit) or on (source decides to output 30bit). The source output of 24bit or 30bit color depth can be monitored by means of the web server.

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

### HDMI 1, HDMI 2, HDBT Config:

The automatic Color Space and Range settings can be overwritten in this menu. The Range attribute can be overwritten to limited or full range in case the AVInfoFrames are wrong. The color space can be set to RGB or YCbCr if the Auto setting does not give the desired result.

The EDID can be configured to pretend certain deep color capability. The unit can process color depth of 24/30/36bit per channel. Deep Color can be off (source outputs 24bit) or on (source decides to output either 30bit or 36bit). The source output of 24bit, 30bit or 36bit color depth can be monitored by means of the web server.

The preferred video mode 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.

The DDC can be taken off line. When setting HDCP Input to off the unit pretends to be non HDCP compliant forcing the source to not encrypt data which is not copy protected. When the HDMI HDCP capability is set to off through the output config menu, i.e. it outputs unencrypted by all means this menu item is greyed out. In fact HDCP is set to off on the input internally.

### DVI and HDMI 3 Config:

The automatic Colour Space and Range settings can be overwritten in this menu. The Range attribute can be overwritten to limited or full range in case the AVInfoFrames are wrong. The colour space can be set to RGB or YCbCr if the Auto setting does not give the desired result.

Deep Color can be off (source outputs 24bit) or on (source decides to output either 30bit or 36bit). The source output of 24bit, 30bit or 36bit color depth can be monitored by means of the web server.

The DDC can be taken off line. When setting HDCP Input to off the unit pretends to be non HDCP compliant forcing the source to not encrypt data which is not copy protected. When the DVI HDCP capability is set to off through the output config menu, i.e. it outputs unencrypted by all means this menu item is greyed out. In fact HDCP is set to off on the input internally.

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.

### 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. If the unit is set to Full the capabilities of the unit are communicated by means of the EDID to an audio source.



### **Test Pattern Setup:**

When the menu is off the test pattern can be toggled through 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 file system of the unit through the web interface, can be accessed through the same means.

A test tone to accompany the test pattern can be switched on and off.

### **Switching Transition:**

When switching input channels by default the last frame of the prior displayed image is frozen and displayed until a stable image of the new input channel can be shown.

The switchover process is supposed to be as seamless as possible. The source and monitor add switching noise due to unforeseeable activity of the firmware in said devices. By default the unit in auto frame rate switching and I/O lock mode. In order to get a best smooth switching result with the source and monitor I/O lock and auto frame rate switching have to be switched off in the Output/Display Type menu.

The switching transition of the unit can be set to **Freeze and Blank..**

Freeze halts the prior channel image until the new channel image is stable.

Blank switches the output to show a black screen instead of the last channel image.

#### **4.10.4. Menu Settings**

This menu provides an item 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.

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 that the keypad is locked and which keys need pressing 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 colour of the web pages can be changed from dark to light to adjust viewing experience to match the ambient conditions.

#### **4.10.5. Network Settings**

The Network Settings menu allows 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 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 unit. 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.

Push the Apply button for setting changes to become effective.

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



#### **4.10.6. Security Settings**

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

#### **4.10.7. Factory Defaults**

This button let you restore all settings to the default values of the unit, 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.

#### **4.11. 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 Colour and HDCP support). The type of attached monitor (DVI or HDMI), video bit depth (8, 10 or 12 bit per colour channel) and HDCP encryption (on/off) is displayed.



## **FIRMWARE UPDATE**

### **5.1. Introduction**

The latest firmware version for your processor is published on our website at the bottom of this page:-

<http://www.calibreuk.com/HQViewDownloads.htm>

Save the correct file for your specific unit (model number) to your computer.

There are two methods of updating. First, through a TCP/IP connection by means of the web server and second, through the USB port by means of a USB pen drive.

### **5.2. Updating Firmware**

Update by means of the web server: See section on web browser control.

Update by means of a USB pen drive: Copy the firmware file with extension .bin on your USB pen drive. The firmware files typically come with a file name pv7update-XXXX.bin with XXXX being the build number of the firmware release. Rename the file to **pv7update.bin**. This step is important. The unit will only recognize firmware update files with this specific name.

Power off the unit and plug the USB pen drive into one of the USB ports of the unit to be updated. Power on the unit. The following messages will come up on the LCD. Remove the USB pen drive once this is requested.

UPDATING...

TRANSFERING -> REMOVE USB DRIVE -> VERIFYING CHECKSUM -> EXTRACTING

STARTING...

Note: Not all USB pen drives in the market are compatible with PV7. All 16GB and 32GB pen drives being tested so far have been identified as not compatible. The following USB pen drives have been proven to work:

Transcent 8GB USB3

Kingston 8GB USB2.

Intenso 8GB 24-1008



## ENVIRONMENTAL AND EMC

### **6.1. Recommended Operating Conditions**

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

### **6.2. Storage**

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

### **6.3. 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.

### **6.4. 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.

In fact, VP is IT equipment and the IEE Code of Practise to check earth continuity suggests an alternative 20-200mA test. If the PAT tester does not provide this method and a high current test is to be used instead a 8A or 10A test will be acceptable under the same IEE Code of Practise (a minimum of 1.5 times of the VP internal 5A fuse).

You have to be careful where you connect the earth bond test lead when using 8A or 10A. It is to the metal chassis that you must connect the test lead (mains earth). DO NOT CONNECT to the connectors of the rear panel (signal earth). The VP may never work again.