USER MANUAL

MODELS:

VP-426C 4K HDMI/USB-C/PC Scaler

VP-424C 4K HDMI/USB-C Scaler

Contents

Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment.

- Review the contents of this user manual.

ⓘ Go to www.kramerav.com/downloads/VP-424C or www.kramerav.com/downloads/VP-426C to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving Best Performance

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables).

- Do not secure the cables in tight bundles or roll the slack into tight coils.

- Avoid interference from neighboring electrical appliances that may adversely influence signal quality.

- Position your Kramer **VP-424C** away from moisture, excessive sunlight and dust.

Safety Instructions

⚠️ **Caution:**
- This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

- For products with relay terminals and GPI\O ports, please refer to the permitted rating for an external connection, located next to the terminal or in the User Manual.

- There are no operator serviceable parts inside the unit.

⚠️ **Warning:**
- Use only the power cord that is supplied with the unit.

- To ensure continuous risk protection, replace fuses only according to the rating specified on the product label which is located on the bottom of the unit.

Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at www.kramerav.com/il/quality/environment.

Overview

Congratulations on purchasing your Kramer **VP-426C** and **VP-424C**.

VP-426C 18G 4K HDR HDMI™ ProScale™ is a digital scaler with HDMI, USB-C and VGA signals with an unbalanced stereo audio input and an HDMI and balanced stereo audio output.

VP-424C 18G 4K HDMI™ ProScale™ is a digital scaler with HDMI and USB-C inputs and an HDMI output.

VP-426C and **VP-424C** are high-performance digital scalers for HDMI, USB Type-C and VGA (for **VP-426C**) signals. The units up- or down-scale the selected video signal to resolutions up to 4K2K at a maximum data rate of 18Gbps (6Gbps per graphic channel). The user selects the input and the scaled output is sent to the HDMI output.

VP-424C and **VP-426C** provide exceptional quality, advanced and user-friendly operation, and flexible control.

Exceptional Quality

- High-Performance Professional Scaler –
    - **VP-426C**: Up-scales or down-scales HDMI, USB type-C and VGA signals to any resolution up to 4K@60 (4:4:4). The scaler supports HDR10, and HDCP 2.2/1.4, and features Input Auto-Switching, Constant Sync on the output even if the input video signal is lost or interrupted, and a built-in ProcAmp for convenient signal adjustment.
    - **VP-424C**: Up–scales or down-scales HDMI and USB type-C signals to any resolution up to 4K@60 (4:4:4). The scaler supports HDCP 2.2/1.4, and features Input Auto-Switching, Constant Sync on the output even if the input video signal is lost or interrupted, and a built- ProcAmp for convenient signal adjustment.
- Fast, Smooth Manual and Auto Switching Between Sources – Select the HDMI, USB Type-C or VGA (for **VP-426C** only) input, or configure the device to automatically select the active source.
- **VP-426C** HDMI Support – HDR, CEC, 4K@60, Deep Color / x.v.Color™, 7.1 PCM, Dolby TrueHD and DTS-HD as specified in HDMI 2.0.
- **VP-424C** HDMI Support – CEC, 4K@60 and Deep Color / x.v.Color™ as specified in HDMI 2.0.

- Input resolutions – up to 4K@60 (4:4:4) with a maximum data rate of 18Gbps (6Gbps per graphic channel).

- Output resolutions – up to 4K2K.

Advanced and User-friendly Operation

- Convenient Control – Control the unit using an OSD (On-Screen Display) via front panel buttons and input selector, video freeze and resolution reset front panel buttons. Additionally, connect to the contact closure connector for remote switching of sources. All settings are saved in non-volatile memory.

- LED indicator for each input and for power status.

- Local firmware upgrade via the USB type-A port ensures lasting, field-proven deployment.

- OSD and FREEZE buttons and a RESET TO XGA/1080P button (to hardware-reset the output resolution).

- An OSD (On-Screen Display) – for configuring the device.

- Efficient power-saving features.

- Advanced EDID management per input.

- Easy Installation – Compact MegaTOOLS® fan-less enclosure for surface mounting or side-by-side mounting of 2 units in a 1U rack space with the recommended rack adapter.

- Control your device directly via the front panel push buttons (with OSD menus).

Flexible Connectivity

- **VP-426C**: Flexible Analog Audio Embedding and Extraction (De-embedding) – The user can select the unbalanced analog audio input to embed into the HDMI output signal. On the output, the user can select to extract the audio signal and output it as balanced analog audio.

- **VP-426C**: 3 selectable inputs, USB Type-C, HDMI and VGA.

- **VP-424C**: 2 selectable inputs, USB Type-C and HDMI.

Typical Applications

VP-424C is ideal for the following typical applications:

- Presentation and multimedia.

- Projection systems in conference rooms, boardrooms, auditoriums, hotels and churches, production studios, rental and staging.

- Any application where high quality conversion and switching of multiple and different video signals to graphical data signals is required for display or projection purposes.

Defining VP-426C and VP-424C

This section defines **VP-426C** and **VP-424C**.
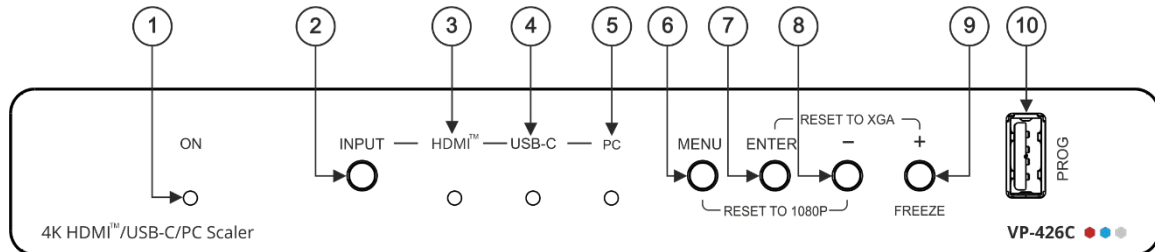
Defining VP-426C 4K HDMI/USB-C/PC Scaler

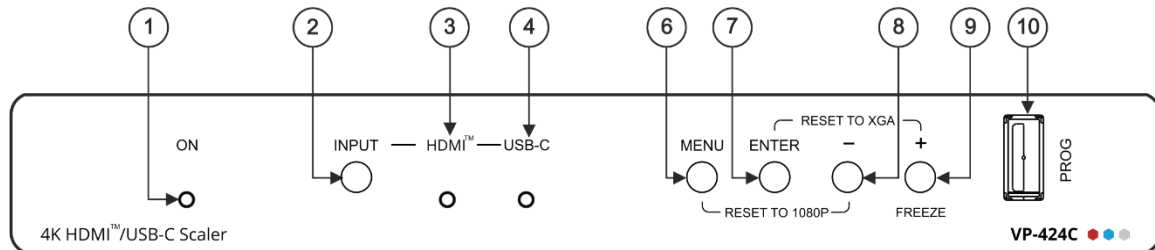Figure 1: VP-426C 4K HDMI/USB-C/PC Scaler Front Panel

Figure 2: VP-424C 4K HDMI/USB-C Scaler Front Panel

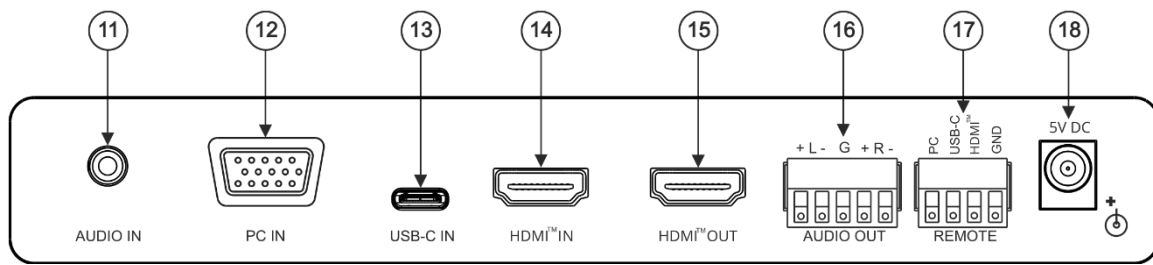| #	Feature	Function
1	ON LED	Lights green when the unit is powered.
2	INPUT Button	**VP-426C**: Press to cycle the input between HDMI™, USB-C and PC. **VP-424C**: Press to cycle the input between HDMI™ and USB-C.
3	HDMI™ LED	Lights when the HDMI input is selected.
4	USB-C LED	Lights when the USB-C input is selected.
5	PC LED	Lights when the PC input is selected.
6	MENU Button	Press to enter/escape the on-screen display (OSD) menu. Press together with the – button to reset the output resolution to 1080p (RESET TO 1080P).
7	ENTER Button	In OSD, press to choose the highlighted menu item. Press together with the + button to reset the output resolution to XGA (RESET TO XGA).
8	– Button	In OSD, press to move backward through the list or to decrement the parameter value.
9	+/FREEZE Button	In OSD, press to move forward through the list or to increment the parameter value. When not in OSD, press to freeze/unfreeze the display.
10	PROG USB Connector	Connect to a USB memory stick for upgrading the firmware.

Defining VP-424C 4K HDMI/USB-C Scaler

Figure 3: VP-426C 4K HDMI/USB-C/PC Scaler Rear Panel
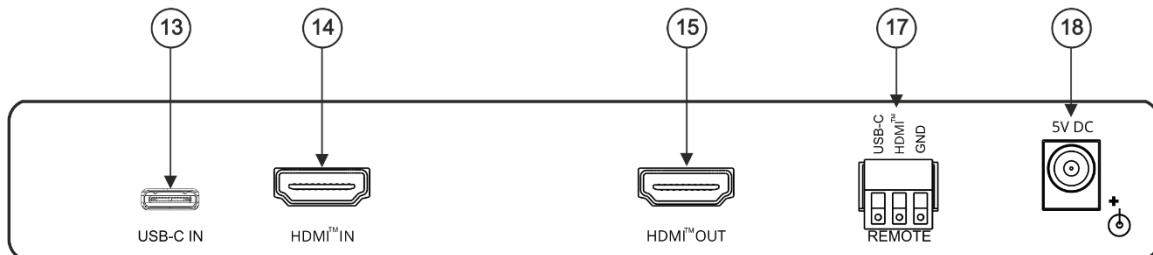
Figure 4: VP-424C 4K HDMI/USB-C Scaler Rear Panel

#	Feature	Function
11	AUDIO IN PC 3.5mm Mini Jack	Connect to an unbalanced stereo audio PC source. Can also be selected as the audio input for HDMI and USB-C (instead of the embedded audio).
12	PC IN 15-pin HD Connector	Connect to a VGA source (for example, a laptop).
13	USB-C IN USB Type C Port	Connect to a USB type-C audio-video source.
14	HDMI™ IN Connector	Connect to an HDMI source.
15	HDMI™ OUT Connector	Connect to an HDMI acceptor.
16	AUDIO OUT Terminal Block Connector	Connect to a balanced stereo audio acceptor.
17	REMOTE Terminal Block Connector	Connect to contact closure switches (by momentary contact between the desired pin and GND pin) to select an input.
18	5V DC	+5V DC connector for powering the unit.

Mounting VP-426C and VP-424C

This section provides instructions for mounting **VP-426C** and **VP-424C**. Before installing, verify that the environment is within the recommended range:

- Operation temperature – 0° to 40°C (32 to 104°F).
- Storage temperature – -40° to +70°C (-40 to +158°F).
- Humidity – 10% to 90%, RHL non-condensing.

- **VP-424C** must be placed upright in the correct horizontal position.

Caution:
- Mount **VP-426C** and **VP-424C** before connecting any cables or power.

Warning:
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment should be maintained.

To mount VP-426C and VP-424C in a rack:

Mount the unit in a rack using the recommended rack adapter
(see www.kramerav.com/product/VP-424C).

To mount VP-426C and VP-424C on a table or shelf:

- Attach the rubber feet and place the unit on a flat surface.
- Fasten a bracket (included) on each side of the unit and attach it to a flat surface.
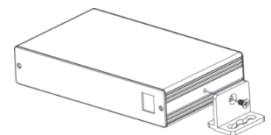
For more information go to www.kramerav.com/downloads/VP-424C

Connecting the Devices

This section describes how to connect the **VP-426C** and **VP-424C**.

Connecting VP-426C

ⓘ Always switch off the power to each device before connecting it to your **VP-426C**. After connecting your **VP-426C**, connect its power and then switch on the power to each device.

Figure 5: Connecting to the VP-426C Rear Panel

To connect the VP-426C as illustrated in the example in Figure 5:

1. Connect a computer graphics source (for example, a laptop):

   ▪ The unbalanced stereo audio PC source to the AUDIO IN 3.5mm mini jack ⑪.

   ▪ The VGA signal to the PC 15-pin HD connector ⑫.

2. Connect a USB-C source (for example, a laptop) to the USB-C port ⑬.

3. Connect an HDMI source (for example, a Blu-ray player) to the HDMI IN connector ⑭.

4. Connect the HDMI OUT connector ⑮ to an acceptor (for example, a display).

5. Connect the AUDIO OUT 5-pin terminal block connector ⑯ to a balanced stereo audio acceptor (for example, Kramer **TAVOR 6-O** active speakers).

6. Connect the REMOTE 4-pin terminal block connector ⑰ to contact closure switches (for example, Kramer **RC-22TB**).

7. Connect the power adapter to the **VP-426C** power connector ⑱ and to the mains electricity (not shown in Figure 5).

Connecting the Remote Control Switches

Momentarily connect the desired pin to the GND pin to select an input:

Pin Name	Function
PC	Select the PC input.
USB-C	Select the USB-C input.
HDMI	Select the HDMI input.

Connecting the Balanced Output to a Balanced/Unbalanced Stereo Audio Acceptor

The following are the pinouts for connecting the balanced output to a balanced or unbalanced stereo audio source:
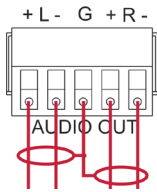
Figure 6: Connecting the Balanced Output to a Balanced Stereo Audio Acceptor
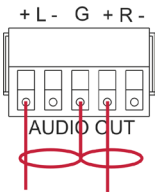
Figure 7: Connecting the Balanced Output to an Unbalanced Stereo Audio Acceptor

Connecting VP-424C

ⓘ Always switch off the power to each device before connecting it to your **VP-424C**. After connecting your **VP-424C**, connect its power and then switch on the power to each device.
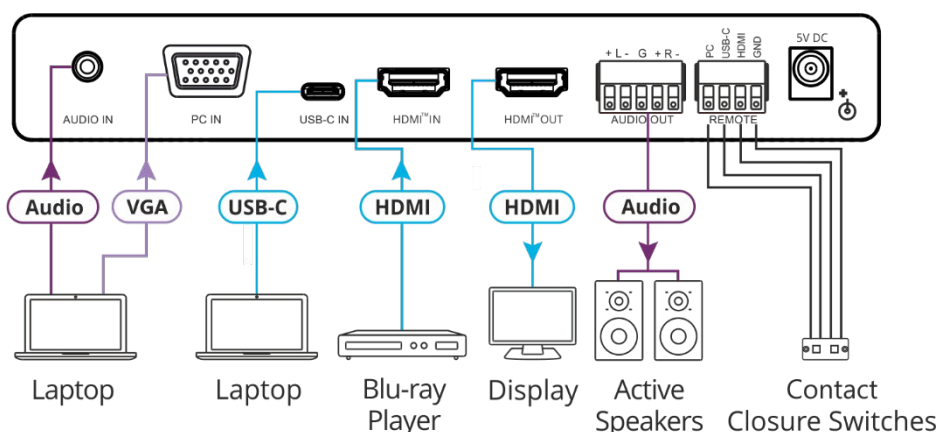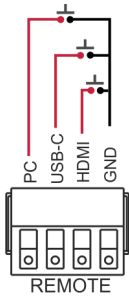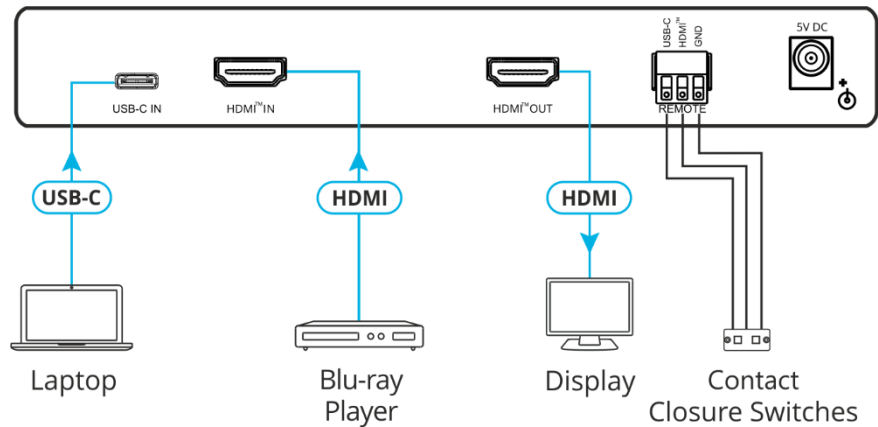

Figure 8: Connecting to the VP-424C Rear Panel

To connect the VP-424C as illustrated in the example in Figure 5:

1. Connect a USB-C source (for example, a laptop) to the USB-C port ⑬.

2. Connect an HDMI source (for example, a Blu-ray player) to the HDMI IN connector ⑭.

3. Connect the HDMI OUT connector ⑮ to an acceptor (for example, a display).

4. Connect the REMOTE 4-pin terminal block connector ⑰ to contact closure switches (for example, Kramer **RC-22TB**).

5. Connect the power adapter to the **VP-424C** power connector ⑱ and to the mains electricity (not shown in Figure 5).

Connecting the Remote Control Switches

Momentarily connect the desired pin to the GND pin to select an input:

Pin Name	Function
USB-C	Select the USB-C input.
HDMI	Select the HDMI input.
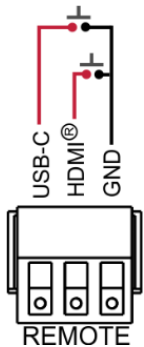
Operating and Controlling VP-426C and VP-424C

Control the devices via the front panel buttons, the OSD menu or via the remote control contact closure switches.

Using the Front Panel Buttons

On the front panel buttons:

- Press **INPUT** ② to select the Input (HDMI/USB-C/PC or HDMI/USB-C) to switch to the output.
- Press **MENU** ⑥ and **–** ⑧ to reset the RESOLUTION 1080p.
- Press **ENTER** ⑦ and **+** (**FREEZE**) ⑨ to reset the RESOLUTION to XGA.
- Press **MENU**, **ENTER** (when in the OSD menu), **+** and **–** buttons to control the device (see Controlling the Device Via the OSD Menu on page 10).

Controlling the Device Via the OSD Menu

Use the OSD buttons to control the **VP-426C**/**VP-424C** via the OSD menu.

To enter and use the OSD menu buttons:

1. Press MENU.
2. Press:
   - **ENTER** to accept changes and to change the menu settings.
   - **+** and **–** to move through the OSD menu, which is displayed on the video output.
   - **EXIT** to exit the menu.

ⓘ The default OSD timeout is set to 10 seconds.

Use the OSD menu to perform the following operations:

- Setting Image Parameters on page 11.
- Selecting the Input Signal on page 11.
- Setting Output Parameters on page 12.
- VP-426C – Setting the Audio Source on page 12.
- Setting OSD Parameters on page 13.
- Setting HDCP on page 13.
- Setting Sleep Mode on page 14.

ⓘ Although **VP-426C** and **VP-424C** have similar OSD menus there are some differences, which are described within the text.

Setting Image Parameters

To set the image parameters:

1. On the front panel click **MENU**. The menu appears.

2. Click **PICTURE** and set the following:

Menu Item	Function		
CONTRAST	Set the contrast.		
BRIGHTNESS	Set the brightness.		
FINETUNE	**Input Signal**	**Function**	
	HDMI/USB-C	HUE – set the color hue.	
		SATURATION – set the color saturation.	
		SHARPNESS – set the sharpness of the picture.	
		NOISE REDUCTION – select the noise reduction: OFF (default), LOW, MIDDLE, HIGH or AUTO.	
	VGA (**VP-426C**)	PHASE – set the phase.	
		CLOCK – set the clock.	
		H-POSITION – set the horizontal position.	
		V-POSITION – set the vertical position.	
		PC MODE – select the PC resolution mode. ⓘ Greyed out except for cases where the H or V timing on the input can represent more than one resolution, in order to allow the user to manually select the exact resolution on the input. (For example, a 720 line resolution can be selected as 1280x720 or 1680x720.)	
COLOR	Set the RED, GREEN and BLUE shades.		

Selecting the Input Signal

To set the input source:

1. On the front panel click **MENU**. The menu appears.

2. Click **INPUT** and set select the input source:

   - **VP-426C**: HDMI, TYPE-C (USB-C) or PC.

   - **VP-424C** : HDMI, TYPE-C (USB-C).

Setting Output Parameters

To set the output parameters:

1. On the front panel click **MENU**. The menu appears.

2. Click **OUTPUT** and set the following:

Menu Item	Function			
SIZE	Set the size of the image: OVER SCAN, FULL, BEST FIT (default), PAN SCAN, LETTER BOX, UNDER 2, UNDER 1, FOLLOW IN.			
RESOLUTION	Select the output resolution (default, NATIVE):			
	Appears as	**Output Resolution**	**Appears as**	**Output Resolution**
VP-424C and **VP-426C**	640x480 60	640x480 @60Hz	800x600 60	800x600 @60Hz
	1024x768 60	1024x768 @60Hz	1280x768 60	1280x768 @60Hz
	1280x800 60	1280x800 @60Hz	1280x1024 60	1280x1024 @60Hz
	1360x768 60	1360x768 @60Hz	1400x1050 60	1400x1050 @60Hz
	1440x900 60	1440x900 @60Hz	1600x1200 60	1600x1200 @60Hz
	1680x1050 60	1680x1050 @60Hz	1920x1200 60 RB	1920x1200 @60Hz RB
	2560x1600 60 RB	2560x1600 @60Hz RB	1920x1080 60	1920x1080 @60Hz
	1280x720 60	1280x720 @60Hz	2048x1080 50	2048x1080 @50Hz
	2048x1080 60	2048x1080 @60Hz	2560x1440 60 RB	2560x1440 @60Hz RB
	720x480P 60	720x480P @60Hz	720x576P 50	720x576P @50Hz
	1280x720P 50	1280x72P @50Hz	1280x720P 60	1280x720P @60Hz
	1920x1080P 24	1920x1080P @24Hz	1920x1080P 25	1920x1080P @25Hz
	1920x1080P 30	1920x1080P @30Hz	1920x1080P 50	1920x1080P @50Hz
	1920x1080P 60	1920x1080P @60Hz	2560x1080P 50	2560x1080P @50Hz
	2560x1080P 60	2560x1080P @60Hz	3840x2160P 24	3840x2160P @24Hz
	3840x2160P 25	3840x2160P @25Hz	3840x2160P 30	3840x2160P @30Hz
	3840x2160P 50	3840x2160P @50Hz	3840x2160P 60	3840x2160P @60Hz
VP-426C	3840x2160P 50(420)	4k2k @50Hz (4:2:0)	3840x2160P 60(420)	4k2k @60Hz (4:2:0)
BYPASS ENABLE (**VP-426C**)	Select ON for the HDMI signal to bypass the scaler (no video processing). Select OFF to process the HDMI signal via the scaler.			

VP-426C – Setting the Audio Source

To set the audio source:

1. On the front panel click **MENU**. The menu appears.

2. Click **AUDIO** and set the following:

Menu Item	Function
DELAY	Set the audio delay time to 40ms (default), 110ms or 150ms.
INPUT	Set to AUTOMATIC (default) or LINE IN.
OUTPUT VOLUME	Set volume from 0 to 100 (80 is 0dB).

Setting OSD Parameters

To set the OSD parameters:

1. On the front panel click **MENU**. The menu appears.

2. Click **OSD** and set the following:

Menu Item	Function
H POSITION	Set the horizontal position of the OSD.
V POSITION	Set the vertical position of the OSD.
TIMER	Set the timeout period in seconds.
TRANSPARENCY	Set the OSD background between 100 (transparent) and 0 (opaque).
DISPLAY	Select the information displayed on-screen during operation: INFO (default) – the information appears for 10 seconds. ON – the information appears constantly. OFF – the information does not appear.

Setting HDCP

To set the HDCP on the inputs and output:

1. On the front panel click **MENU**. The menu appears.

2. Click **ADVANCED** and select the following:

Menu Item	Function
HDCP ON INPUT HDMI	Set HDCP on HDMI input: either ON (default) or OFF. Setting HDCP support to enabled (ON) or disabled (OFF) on the input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer).
HDCP ON INPUT TYPE C	Set HDCP on USB-C: either ON (default) or OFF. Setting HDCP support to enabled (ON) or disabled (OFF) on the input allows the source to transmit a non-HDCP signal if required (for example, when working with a Mac computer).
HDCP (OUT)	Select FOLLOW OUTPUT (recommended) for the scaler to match its HDCP output to the HDCP setting of the HDMI/HDCP acceptor to which it is connected. Select FOLLOW INPUT, to change its HDCP output setting according to the HDCP of the input (recommended when the HDMI/HDCP output is connected to a splitter/switcher).

Setting Sleep Mode

To set the Auto SYNC OFF:

1. On the front panel click **MENU**. The menu appears.

2. Click **ADVANCED** and select the following:

Menu Item	Function
AUTO SYNC OFF:	Turns off the output after a period of not detecting a valid video signal on the input(s) until a valid input is again detected or any keypad is pressed. Set to: Slow – to disable outputs after 2 minutes. Fast – to disable outputs after 10 seconds. Disable – to leave outputs active at all times.

Setting the Switching Mode

To set the switching mode:

1. On the front panel click **MENU**. The menu appears.

2. Click **ADVANCED** and select the following:

Menu Item	Function
AUTO SWITCH	Set to: OFF (default) – for manual switching. AUTO SCAN (default) – scans for a valid input when no signal is found on the selected input. LAST CONNECT – switches to the last connected input.

Setting Auto Image on the PC

To set the PC Auto Image Adjustment:

1. On the front panel click **MENU**. The menu appears.

2. Click **ADVANCED** and select the following:

Menu Item	Function
PC AUTO SETUP (**VP-426C**)	When ON, auto image is implemented every time the input is switched to VGA or when the input resolution changes. The auto-image feature calculates the positioning based on the picture connected to the VGA input. Only a "full screen" picture can be used for this auto-positioning – a test pattern (or some other picture) which has black along the entire top, bottom or one of the sides would not be suitable).

Setting Freeze Button functionality

To set the functionality of the FREEZE front panel button:

1. On the front panel click **MENU**. The menu appears.

2. Click **ADVANCED** and select the following:

Menu Item	Function
FREEZE:	Select to freeze and/or mute the display FREEZE ONLY / FREEZE + MUTE (default) / MUTE ONLY.

Managing EDID

You can read the EDID to the HDMI input or the USB-C input from:

- The default EDID list.

- An external custom EDID file (see Uploading EDID from an External File on page 15).

- The output.

To copy an EDID from an input (or output) to an input:

1. On the front panel click **MENU**. The menu appears.

2. Select **ADVANCED.**

3. Select **EDID** and then select an input (TYPE C or HDMI).

4. For the selected input set one of the EDID options:

EDID Selection	Operation
Def. 1080P	Select a built-in EDID from the list and press enter.
Def. 1080P(AUD)	
Def. 4K2K(3G)	
Def. 4K2K(3G-AUD)	
Def. 4K2K(6G)	
Def. 4K2K(6G-AUD)	
USER1	Select the EDID uploaded from an external file (see Uploading EDID from an External File on page 15).
USER2	
OUTPUT	**To read the EDID from a connected output:** Make sure that the output is connected to an acceptor and then select OUTPUT.

Uploading EDID from an External File

To select the EDID from an external file:

1. Save the EDID file to a memory stick.
   The EDID file name should include USER 1 or USER 2.
   For example, use USER_EDID1.bin for USER 1 and USER_EDID2 for USER 2.

2. Plug the memory stick into the PROG USB port ⑩ on the device front panel.

3. On the front panel click **MENU**. The OSD menu appears.

4. Select **EDID UPLOAD**.

5. Select **USER EDID**. The external EDID file (USER_EDID1.bin, in this example) is stored to USER 1.

You can now read the uploaded EDID to an input by selecting USER 1 in a selected input in the ADVANCED>EDID menu.

Viewing Device Information

To view the information:

1. On the front panel click **MENU**. The menu appears.

2. Click **INFO** and view the following information: the selected source, the input and output resolutions, and the software version.

Performing Factory Reset

To perform factory reset:

1. On the front panel click **MENU**. The menu appears.

2. Click **FACTORY** and click **YES**.
    Wait for completion of factory reset (resolution is set to Native).

Upgrading the Firmware

To upgrade the firmware:

1. Save the new firmware file to a memory stick.

2. Verify that an input and output are connected to the device with a valid signal on the acceptor.

3. Plug the memory stick into the PROG USB port ⑩ on the device front panel.

4. Press and hold both the MENU button ⑥ and the ENTER button ⑦ until LEDs flash and then release.
During upgrade the LEDs flash and once complete, one of the INPUT LEDs turns on and a valid signal appears on the output.

5. Check that the OSD Info screen shows the latest FW version.

6. Perform factory reset.

Technical Specifications

This section describes the technical specifications.

VP-426C

Inputs	Computer Graphics (VGA)	On a female 15-pin HD connector
	Unbalanced Stereo Audio	On a 3.5mm mini jack
	HDMI	On a female HDMI connector
	USB-C	DP Alternate Mode on a female USB–C connector
Outputs	HDMI	On a female HDMI connector
	Balanced Analog Stereo Audio	On a 5-pin terminal block connector
Ports	3 Remote Contact Closure Switches	On a 4-pin terminal block connector for input selection
	USB	On a USB-A connector for firmware upgrade
Video	Max Data Rate	18Gbps (6 Gbps per graphic channel)
	Max Input Resolution	4K@60Hz (4:4:4)
	Latency	1–2 frames
	Compliance	HDMI 2.0 and HDCP 2.2/1.4
Audio	Maximum Input Level	6.5vpp
	Maximum Output Level	11vpp (14dBu)
Controls	Rear Panel	Contact closure switches
	Front Panel	Input select, OSD, resolution reset and freeze buttons
Indication LEDs	Front Panel	2 Input LEDs
		1 Power on LED
Power	Consumption	5V DC, 2400mA
	Source	5V DC, 4A
Environmental Conditions	Operating Temperature	0° to +40°C (32° to 104°F)
	Storage Temperature	-40° to +70°C (-40° to 158°F)
	Humidity	10% to 90%, RHL non-condensing
Regulatory Compliance	Safety	CE
	Environmental	RoHs, WEEE
Enclosure	Size	MegaTOOLS®
	Type	Aluminum
	Cooling	Convection ventilation
General	Net Dimensions (W, D, H)	18.8cm x 14.5cm x 2.5cm (7.4" x 5.7" x 1")
	Shipping Dimensions (W, D, H)	34.4 cm x 20.9 cm x 6.8cm (13.5" x 8.2" x 2.7")
	Net Weight	0.7 kg (1.5lbs)
	Shipping Weight	1.3kg (2.8lbs) approx.
Accessories	Included	Power adapter cord
Specifications are subject to change without notice at www.kramerav.com		

VP-424C

Inputs	HDMI	On a female HDMI connector
	USB-C	DP Alternate Mode on a female USB–C connector
Outputs	HDMI	On a female HDMI connector
Ports	2 Remote Contact Closure Switches	On a 3-pin terminal block connector for input selection
	USB	On a USB-A connector for firmware upgrade
Video	Max Data Rate	18Gbps (6 Gbps per graphic channel)
	Max Input Resolution	4K@60Hz (4:4:4)
	Latency	1–2 frames
	Compliance	HDMI 2.0 and HDCP 2.2/1.4
Controls	Rear Panel	Contact closure switches
	Front Panel	Input select, OSD, resolution reset and freeze buttons
Indication LEDs	Front Panel	2 Input LEDs
		1 Power on LED
Power	Consumption	5V DC, 1800mA
	Source	5V DC, 4A
Environmental Conditions	Operating Temperature	0° to +40°C (32° to 104°F)
	Storage Temperature	-40° to +70°C (-40° to 158°F)
	Humidity	10% to 90%, RHL non-condensing
Regulatory Compliance	Safety	CE
	Environmental	RoHs, WEEE
Enclosure	Size	MegaTOOLS®
	Type	Aluminum
	Cooling	Convection ventilation
General	Net Dimensions (W, D, H)	18.8cm x 14.5cm x 2.5cm (7.4" x 5.7" x 1")
	Shipping Dimensions (W, D, H)	34.4 cm x 20.9 cm x 6.8cm (13.5" x 8.2" x 2.7")
	Net Weight	0.7 kg (1.5lbs)
	Shipping Weight	1.3kg (2.8lbs) approx.
Accessories	Included	Power adapter cord
Specifications are subject to change without notice at www.kramerav.com		

Input Resolutions

Resolution/Refresh Rate	Type C	HDMI	PC (only)
480I/576I	√	√	X
480P/576P	√	√	X
720P@(60/50)	√	√	X
1080I@(60/50)	√	√	X
1080P@(60/50)	√	√	X
1080P@(24/25/30)	√	√	X
640x480@(60/67/72/75/85)	√	√	√
800x600@(56/60/72/75)	√	√	√
1024x768@(60/70/75)	√	√	√
1280x1024@(60/75)	√	√	√
1280X960@60	√	√	√
1280X720@60	√	√	√
1920X1080@60	√	√	√
1600X1200@60	√	√	√
1280x768@60	√	√	√
1280x800@60	√	√	√
1360x768@60	√	√	√
1366x768@60	√	√	√
1400x1050@60	√	√	√
1600X900@60 RB	√	√	√
1680x1050@60	√	√	√
1920x1200@60 RB	√	√	√
2048x1080@(24/25/30/50/60)	√	√	x
4K2K@(24/25/30/50/60)	√	√	x
4K2K(4:2:0)@(50/60)	√	√	x

Output Resolutions

Resolution/Refresh Rate	VP-426C	VP-424C
640x480 60Hz	Yes	Yes
800x600 60Hz	Yes	Yes
1024x768 60Hz	Yes	Yes
1280x768 60Hz	Yes	Yes
1280x800 60Hz	Yes	Yes
1280x1024 60Hz	Yes	Yes
1360x768 60Hz	Yes	Yes
1400x1050 60Hz	Yes	Yes
1440x900 60Hz	Yes	Yes
1600x1200 60Hz	Yes	Yes
1680x1050 60Hz	Yes	Yes
1920x1200 RB 60Hz	Yes	Yes
2560x1600 RB 60	Yes	Yes

Resolution/Refresh Rate	VP-426C	VP-424C
1920x1080 60Hz	Yes	Yes
1280x720 60Hz	Yes	Yes
2048x1080 50/60Hz	Yes	Yes
2560x1440 60Hz	Yes	Yes
720x480p 60Hz	Yes	Yes
720x576p 50Hz	Yes	Yes
1280x720p 50/60Hz	Yes	Yes
1920x1080p 24/25/30/50/60Hz	Yes	Yes
2560x1080p 50/60Hz	Yes	Yes
4K2K 24/25/30/50/60Hz	Yes	Yes
4K2K (4:2:0) 50/60Hz	Yes	No

Default EDID

VP-426C

Monitor
  Model name............... VP-426C
  Manufacturer............. KMR
  Plug and Play ID......... KMR060D
  Serial number............ 49
  Manufacture date........ 2018, ISO week 6
  Filter driver............ None

  EDID revision............ 1.3
  Input signal type........ Digital
  Color bit depth.......... Undefined
  Display type............. Monochrome/grayscale
  Screen size.............. 360 x 360 mm (20.0 in)
  Power management........ Standby, Suspend
  Extension blocs.......... 1 (CEA/CTA-EXT)

  DDC/CI................... Not supported

Color characteristics
  Default color space...... Non-sRGB
  Display gamma............ 2.40
  Red chromaticity......... Rx 0.611 - Ry 0.329
  Green chromaticity....... Gx 0.313 - Gy 0.559
  Blue chromaticity........ Bx 0.148 - By 0.131
  White point (default).... Wx 0.320 - Wy 0.336
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 15-136kHz
  Vertical scan range...... 23-61Hz
  Video bandwidth.......... 600MHz
  CVT standard............. Not supported
  GTF standard............. Not supported
  Additional descriptors... None
  Preferred timing......... Yes
  Native/preferred timing.. 3840x2160p at 60Hz (16:9)
    Modeline............... "3840x2160" 594.000 3840 4016 4104 4400 2160 2168 2178 2250 +hsync +vsync
  Detailed timing #1....... 1920x1080p at 60Hz (16:9)
    Modeline............... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

Standard timings supported
   640 x 480p at 60Hz - IBM VGA
   640 x 480p at 72Hz - VESA
   640 x 480p at 75Hz - VESA
   800 x 600p at 56Hz - VESA
   800 x 600p at 60Hz - VESA
   800 x 600p at 72Hz - VESA
   800 x 600p at 75Hz - VESA
  1024 x 768p at 60Hz - VESA
  1024 x 768p at 70Hz - VESA
  1024 x 768p at 75Hz - VESA

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1280 x 1024p at  75Hz - VESA
1600 x 1200p at  60Hz - VESA STD
1280 x 1024p at  60Hz - VESA STD
1400 x 1050p at  60Hz - VESA STD
1920 x 1080p at  60Hz - VESA STD
 640 x  480p at  85Hz - VESA STD
 800 x  600p at  85Hz - VESA STD
1024 x  768p at  85Hz - VESA STD
1280 x 1024p at  85Hz - VESA STD
```

EIA/CEA/CTA-861 Information
  Revision number.......... 3
  IT underscan............. Supported
  Basic audio.............. Supported
  YCbCr 4:4:4.............. Supported
  YCbCr 4:2:2.............. Supported
  Native formats........... 0
  Detailed timing #1....... 1440x900p at 60Hz (16:10)
    Modeline.............. "1440x900" 106.500 1440 1520 1672 1904 900 903 909 934 -hsync +vsync
  Detailed timing #2....... 1366x768p at 60Hz (16:9)
    Modeline.............. "1366x768" 85.500 1366 1436 1579 1792 768 771 774 798 +hsync +vsync
  Detailed timing #3....... 1920x1200p at 60Hz (16:10)
    Modeline.............. "1920x1200" 154.000 1920 1968 2000 2080 1200 1203 1209 1235 +hsync -vsync

CE video identifiers (VICs) - timing/formats supported
    1920 x 1080p at 60Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 50Hz - HDTV (16:9, 1:1)
    1280 x 720p at 60Hz - HDTV (16:9, 1:1)
    1280 x 720p at 50Hz - HDTV (16:9, 1:1)
    1920 x 1080i at 60Hz - HDTV (16:9, 1:1)
    1920 x 1080i at 50Hz - HDTV (16:9, 1:1)
     720 x 480p at 60Hz - EDTV (4:3, 8:9)
     720 x 576p at 50Hz - EDTV (4:3, 16:15)
     720 x 480i at 60Hz - Doublescan (4:3, 8:9)
     720 x 576i at 50Hz - Doublescan (4:3, 16:15)
    1920 x 1080p at 30Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 25Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    NB: NTSC refresh rate = (Hz*1000)/1001

CE audio data (formats supported)
  LPCM   2-channel, 16/20/24 bit depths at 32/44/48 kHz

CE speaker allocation data
  Channel configuration.... 2.0
  Front left/right......... Yes
  Front LFE................ No
  Front center............. No
  Rear left/right.......... No
  Rear center.............. No
  Front left/right center.. No
  Rear left/right center... No
  Rear LFE................. No

CE vendor specific data (VSDB)
  IEEE registration number. 0x000C03
  CEC physical address..... 1.0.0.0
  Supports AI (ACP, ISRC).. No
  Supports 48bpp........... Yes
  Supports 36bpp........... Yes
  Supports 30bpp........... Yes
  Supports YCbCr 4:4:4..... Yes
  Supports dual-link DVI... No
  Maximum TMDS clock....... 300MHz
  Audio/video latency (p).. n/a
  Audio/video latency (i).. n/a
  HDMI video capabilities.. Yes
  EDID screen size......... No additional info
  3D formats supported..... Not supported
  Data payload............. 030C001000783C20008001020304

CE vendor specific data (VSDB)
  IEEE registration number. 0xC45DD8
  CEC physical address..... 0.1.7.8
  Supports AI (ACP, ISRC).. Yes
  Supports 48bpp........... No
  Supports 36bpp........... No

Supports 30bpp........... No
Supports YCbCr 4:4:4..... No
Supports dual-link DVI... No
Maximum TMDS clock....... 35MHz

YCbCr 4:2:0 capability map data
  Data payload............. 0F000003

Report information
  Date generated........... 24/09/2019
  Software revision........ 2.91.0.1043
  Data source.............. Real-time 0x0041
  Operating system......... 10.0.17134.2

Raw data
00,FF,FF,FF,FF,FF,00,2D,B2,0D,06,31,00,00,00,06,1C,01,03,80,24,24,8C,C2,90,20,9C,54,50,8F,26,
21,52,56,2F,CF,00,A9,40,81,80,90,40,D1,C0,31,59,45,59,61,59,81,99,08,E8,00,30,F2,70,5A,80,B0,58,
8A,00,BA,88,21,00,00,1E,02,3A,80,18,71,38,2D,40,58,2C,45,00,BA,88,21,00,00,1E,00,00,00,FC,00,56,
50,2D,34,32,36,43,0A,20,20,20,20,20,00,00,00,FD,00,17,3D,0F,88,3C,00,0A,20,20,20,20,20,20,01,0A,
02,03,3B,F0,52,10,1F,04,13,05,14,02,11,06,15,22,21,20,5D,5E,5F,60,61,23,09,07,07,83,01,00,00,6E,
03,0C,00,10,00,78,3C,20,00,80,01,02,03,04,67,D8,5D,C4,01,78,80,07,E4,0F,00,00,03,9A,29,A0,D0,51,
84,22,30,50,98,36,00,10,0A,00,00,00,00,1C,66,21,56,AA,51,00,1E,30,46,8F,33,00,10,09,00,00,00,1E,28,
3C,80,A0,70,B0,23,40,30,20,36,00,10,0A,00,00,00,00,1A,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,E0

VP-424C

Monitor
  Model name............... VP-424C
  Manufacturer............. KMR
  Plug and Play ID......... KMR060D
  Serial number............ 49
  Manufacture date......... 2018, ISO week 6
  Filter driver............ None

  EDID revision............ 1.3
  Input signal type........ Digital
  Color bit depth.......... Undefined
  Display type............. Monochrome/grayscale
  Screen size.............. 360 x 360 mm (20.0 in)
  Power management......... Standby, Suspend
  Extension blocs.......... 1 (CEA/CTA-EXT)

  DDC/CI................... Not supported

Color characteristics
  Default color space...... Non-sRGB
  Display gamma............ 2.40
  Red chromaticity......... Rx 0.611 - Ry 0.329
  Green chromaticity....... Gx 0.313 - Gy 0.559
  Blue chromaticity........ Bx 0.148 - By 0.131
  White point (default).... Wx 0.320 - Wy 0.336
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 15-136kHz
  Vertical scan range...... 23-61Hz
  Video bandwidth.......... 600MHz
  CVT standard............. Not supported
  GTF standard............. Not supported
  Additional descriptors... None
  Preferred timing......... Yes
  Native/preferred timing.. 3840x2160p at 60Hz (16:9)
    Modeline............... "3840x2160" 594.000 3840 4016 4104 4400 2160 2168 2178 2250 +hsync +vsync
  Detailed timing #1....... 1920x1080p at 60Hz (16:9)
    Modeline............... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

Standard timings supported
   640 x 480p at 60Hz - IBM VGA
   640 x 480p at 72Hz - VESA
   640 x 480p at 75Hz - VESA
   800 x 600p at 56Hz - VESA
   800 x 600p at 60Hz - VESA
   800 x 600p at 72Hz - VESA
   800 x 600p at 75Hz - VESA
  1024 x 768p at 60Hz - VESA
  1024 x 768p at 70Hz - VESA
  1024 x 768p at 75Hz - VESA
  1280 x 1024p at 75Hz - VESA
  1600 x 1200p at 60Hz - VESA STD
  1280 x 1024p at 60Hz - VESA STD
  1400 x 1050p at 60Hz - VESA STD

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    1920 x 1080p at  60Hz - VESA STD
    640  x  480p at  85Hz - VESA STD
    800  x  600p at  85Hz - VESA STD
    1024 x  768p at  85Hz - VESA STD
    1280 x 1024p at  85Hz - VESA STD
```

EIA/CEA/CTA-861 Information
  Revision number.......... 3
  IT underscan............. Supported
  Basic audio.............. Supported
  YCbCr 4:4:4.............. Supported
  YCbCr 4:2:2.............. Supported
  Native formats........... 0
  Detailed timing #1....... 1440x900p at 60Hz (16:10)
    Modeline.............. "1440x900" 106.500 1440 1520 1672 1904 900 903 909 934 -hsync +vsync
  Detailed timing #2....... 1366x768p at 60Hz (16:9)
    Modeline.............. "1366x768" 85.500 1366 1436 1579 1792 768 771 774 798 +hsync +vsync
  Detailed timing #3....... 1920x1200p at 60Hz (16:10)
    Modeline.............. "1920x1200" 154.000 1920 1968 2000 2080 1200 1203 1209 1235 +hsync -vsync

CE video identifiers (VICs) - timing/formats supported
    1920 x 1080p at 60Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 50Hz - HDTV (16:9, 1:1)
    1280 x 720p at 60Hz - HDTV (16:9, 1:1)
    1280 x 720p at 50Hz - HDTV (16:9, 1:1)
    1920 x 1080i at 60Hz - HDTV (16:9, 1:1)
    1920 x 1080i at 50Hz - HDTV (16:9, 1:1)
    720 x 480p at 60Hz - EDTV (4:3, 8:9)
    720 x 576p at 50Hz - EDTV (4:3, 16:15)
    720 x 480i at 60Hz - Doublescan (4:3, 8:9)
    720 x 576i at 50Hz - Doublescan (4:3, 16:15)
    1920 x 1080p at 30Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 25Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
    1920 x 1080p at 24Hz - HDTV (16:9, 1:1)
  NB: NTSC refresh rate = (Hz*1000)/1001

CE audio data (formats supported)
  LPCM   2-channel, 16/20/24 bit depths at 32/44/48 kHz

CE speaker allocation data
  Channel configuration.... 2.0
  Front left/right......... Yes
  Front LFE................ No
  Front center............. No
  Rear left/right.......... No
  Rear center.............. No
  Front left/right center.. No
  Rear left/right center... No
  Rear LFE................. No

CE vendor specific data (VSDB)
  IEEE registration number. 0x000C03
  CEC physical address..... 1.0.0.0
  Supports AI (ACP, ISRC).. No
  Supports 48bpp........... Yes
  Supports 36bpp........... Yes
  Supports 30bpp........... Yes
  Supports YCbCr 4:4:4..... Yes
  Supports dual-link DVI... No
  Maximum TMDS clock....... 300MHz
  Audio/video latency (p).. n/a
  Audio/video latency (i).. n/a
  HDMI video capabilities.. Yes
  EDID screen size......... No additional info
  3D formats supported..... Not supported
  Data payload............. 030C001000783C20008001020304

CE vendor specific data (VSDB)
  IEEE registration number. 0xC45DD8
  CEC physical address..... 0.1.7.8
  Supports AI (ACP, ISRC).. Yes
  Supports 48bpp........... No
  Supports 36bpp........... No
  Supports 30bpp........... No
  Supports YCbCr 4:4:4..... No
  Supports dual-link DVI... No
  Maximum TMDS clock....... 35MHz

VP-426C, VP-424C – Technical Specifications

YCbCr 4:2:0 capability map data
  Data payload............. 0F000003

Report information
  Date generated........... 24/09/2019
  Software revision........ 2.91.0.1043
  Data source.............. Real-time 0x0041
  Operating system......... 10.0.17134.2
Raw data
  00,FF,FF,FF,FF,FF,FF,00,2D,B2,0D,06,31,00,00,00,06,1C,01,03,80,24,24,8C,C2,90,20,9C,54,50,8F,26,
  21,52,56,2F,CF,00,A9,40,81,80,90,40,D1,C0,31,59,45,59,61,59,81,99,08,E8,00,30,F2,70,5A,80,B0,58,
  8A,00,BA,88,21,00,00,1E,02,3A,80,18,71,38,2D,40,58,2C,45,00,BA,88,21,00,00,1E,00,00,00,FC,00,56,
  50,2D,34,32,34,43,0A,20,20,20,20,20,00,00,00,FD,00,17,3D,0F,88,3C,00,0A,20,20,20,20,20,20,01,0C,
  02,03,3B,F0,52,10,1F,04,13,05,14,02,11,06,15,22,21,20,5D,5E,5F,60,61,23,09,07,07,83,01,00,00,6E,
  03,0C,00,10,00,78,3C,20,00,80,01,02,03,04,67,D8,5D,C4,01,78,80,07,E4,0F,00,00,03,9A,29,A0,D0,51,
  84,22,30,50,98,36,00,10,0A,00,00,00,1C,66,21,56,AA,51,00,1E,30,46,8F,33,00,10,09,00,00,00,1E,28,
  3C,80,A0,70,B0,23,40,30,20,36,00,10,0A,00,00,00,1A,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,E0

P/N: 2900-301245   Rev: 6

⚠ SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our website where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

www.kramerav.com
support@kramerav.com