

## USER MANUAL

### MODEL:

**WP-20CT**

**Wall-Plate HDBaseT Auto  
Switcher/Transmitter**



# Contents

<b>Introduction</b>	<b>1</b>
Getting Started	1
Overview	2
Typical Applications	3
<b>Defining WP-20CT Wall-Plate HDBaseT Auto Switcher/Transmitter</b>	<b>4</b>
<b>Mounting WP-20CT</b>	<b>6</b>
<b>Connecting WP-20CT</b>	<b>8</b>
Connecting to WP-20CT via RS-232	9
Wiring RJ-45 Connectors	9
Connecting USB-C Port Directly to PC	9
<b>Principles of Operation</b>	<b>12</b>
Input Auto-Switching	12
Maestro Built-in Automation Configuration	13
<b>Operating and Controlling WP-20CT</b>	<b>15</b>
Browsing WP-20CT Web Pages	16
Switching Input to Output	16
Muting and Adjusting Audio Output	17
Turning Off Video Output	18
Configuring Auto-Switching Mode	18
Defining Signal Timeout Settings	19
Configuring AV Settings	20
Copying EDID	21
Changing Device Name	22
Setting Auto Standby Delay	23
Exporting and Importing a Configuration File	23
Resetting Device	24
Configuring Network Settings	24
Configuring Time and Date	25
Changing Web Pages Access Password	25
Setting Web Pages Auto Logoff Timeout	26
Configuring Device Automation	26
<b>Maintaining Device</b>	<b>31</b>
Upgrading Firmware	31
Monitoring Device Status	31
<b>Technical Specifications</b>	<b>33</b>
Default Communication Parameters	34
Default Control and Automation Settings	34
Default EDID	36
<b>Protocol 3000</b>	<b>39</b>
Understanding Protocol 3000	39
Protocol 3000 Commands	40
Result and Error Codes	43

# 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!

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## 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/WP-20CT](http://www.kramerav.com/downloads/WP-20CT) 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 **WP-20CT** 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 GPIO 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.
- Disconnect the power and unplug the unit from the wall before installing.
- Do not open the unit. High voltages can cause electrical shock! Servicing by qualified personnel only.
- 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](http://www.kramerav.com/il/quality/environment).

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## Overview

Congratulations on purchasing your Kramer **WP-20CT Wall-Plate HDBaseT Auto Switcher/Transmitter**. **WP-20CT** is an intelligent 2x1 automatic wall-plate switcher transmitter over long-reach HDBaseT for 4K USB-C and HDMI™ video signals. **WP-20CT** offers an intelligent switching experience with built-in Maestro room control and the standard priority / last-connected switching function based on active video signal detection.

- High Performance Switcher Transmitter – Professional HDBaseT switcher transmitter for providing long-reach signals over twisted pair copper infrastructures. This switcher transmitter is a standard transmitter that can be connected to any market-available HDBaseT-compliant extension product.
- Simple and Powerful Maestro Room Control – Out-of-the-box configured room control for a typical meeting room setup, and intuitive user interface enables you to control your meeting room elements. Room devices are controlled, locally or remotely via HDBaseT, right out-of-the-box by an extensive range of triggers, including input/output connectivity and routing. By minimizing user intervention, Maestro room control saves meeting prep time and minimizes human error before presentations.
- Automatic Display Operation – Part of the out-of-the-box Maestro configured room automation. Meeting presentation is simplified by automatically turning ON/OFF a CEC-enabled display when the presentation source is plugged in / unplugged with user-defined shut-down delay.
- BYOD Ease and Convenience – Connect any DP-Alt-Mode-capable USB-C device as an AV presentation source, while providing the connected device (if PD-2.0-capable) with up to 60 watts of power.
- Plug & Play Auto Switcher – Automatically plays the switched user device source signal on the connected display according to user-configured preferences, such as priority or last-connected input. When the user manually switches, the auto switching is overridden.
- HDMI™ Signal Switching – HDCP 2.3 compliant, supporting deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS-HD, 2K, 4K, and 3D as specified in HDMI 2.0.
- I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling, processing, locking and pass-through algorithm ensures plug & play operation for HDMI source and display systems.

- Multi-channel Audio Switching – Up to 8 channels of digital stereo uncompressed signals for supporting studio-grade surround sound.
- Audio De-embedding – The digital audio signal passing-through to the output, is de-embedded, converted to an analog signal and sent to the stereo analog audio output. This enables playing the audio on locally connected speakers, in parallel to playing it on the speakers connected to the AV acceptor device (such as TVs with speakers).
- Bidirectional RS-232 Extension – Serial interface data flows in both directions, allowing data transmission and device control.
- Reliable PoE (Power over Ethernet) Powering – Auto-senses the HDBaseT extension line PoE status, it accepts power from a remote PoE provider such as a PoE matrix, with optional mains powering from connected power adapter.
- Cost-effective Maintenance and Management – Status LED indicators for Power, HDMI, and HDBaseT ports facilitate easy local maintenance and troubleshooting. Local device management using built-in web interface via the USB-C connection. Local firmware upgrade via USB-C and RS-232 connection tool ensure lasting, field-proven deployment.
- Easy Installation – Compactly fits into standard US, EU, and UK 1 gang in-wall box size, supporting decorative integration with room deployed user interfaces such as electrical switches. Wall-plate installation is fast and cost-effective via a single twisted pair cable, providing both video signal and power (PoC) connections.

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## Typical Applications

**WP-20CT** is ideal for the following typical applications:

- Podium-mounted switcher in lecture halls, training rooms, auditoriums, and hospitality applications.
- Wall-mounted switcher within any AV distribution system.
- Multimedia and presentation source selection in various enterprise applications.

# Defining WP-20CT Wall-Plate HDBaseT Auto Switcher/Transmitter

This section defines WP-20CT.

US-D Version  
Front

EU/UK Version  
Front

US-D/EU/UK Version  
Rear

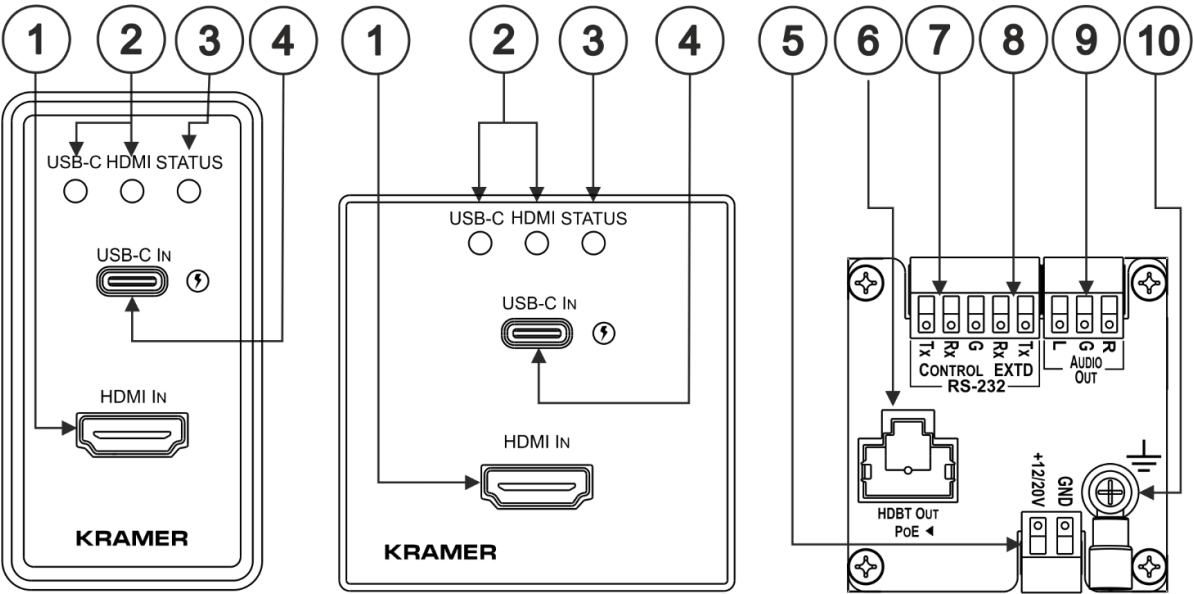


Figure 1: WP-20CT Wall-Plate HDBaseT Auto Switcher/Transmitter Front Panel

#	Feature	Function
①	HDMI™ IN Connector	Connects to an HDMI source.
②	USB-C LED	<ul style="list-style-type: none"><li>Off – an input source is not connected.</li><li>Blue – an active signal is detected on the input.</li><li>Blue, flashing – the source is connected but an active signal is not detected.</li></ul>
	HDMI LED	
③	STATUS LED	<ul style="list-style-type: none"><li>Off – the device is not receiving power.</li><li>Red – the powered device is inactive or booting.</li><li>Green – the device is active and powered via power supply.</li><li>Orange – the device is active and powered via PoE.</li><li>Green or orange (depending on power source), flashing slowly – the device is in the power-save standby mode.</li><li>Green or orange (depending on power source), fast-flashing – firmware is downloading in the background.</li></ul>

#	Feature	Function
④	USB-C IN Port	<p>Connect to a USB-C source (that supports DisplayPort Alternate Mode).</p> <ul style="list-style-type: none"> <li>When powered by a Kramer 20V power supply (optional), charges sources (that support USB Power Delivery 2.0) up to 60W.</li> <li>Use to access <b>WP-20CT</b> embedded web pages via connected browser.</li> </ul>
⑤	12V/20V Power Supply 2-pin Terminal Block Connector	<p>Connect to the power supply (required for USB charging). Connect GND to GND, +12V/20V to +12/20V.</p> <ul style="list-style-type: none"> <li>If you need to charge a device via the USB-C port, use Kramer 20V power supply (optional).</li> </ul>
⑥	HDBT OUT PoE ◀ RJ-45 Connector	<p>Connect to the HDBaseT IN port on a PoE-provider receiver (for example, <b>TP-789R</b>) or a receiver (for example, <b>TP-580R</b>).</p> <ul style="list-style-type: none"> <li>When <b>WP-20CT</b> is connected to a PoE providing receiver, it is not necessary to connect a power supply, unless the USB-C charging feature is used which requires the Kramer 20V power supply.</li> </ul>
⑦	CONTROL RS-232 3-pin Terminal Block Connector (Tx, Rx, and common G)	Connect to a controller to control the device.
⑧	EXTD RS-232 3-pin Terminal Block Connector (Tx, Rx, and common G)	Connect to a controller to extend an RS-232 bi-directional signal (even if no A/V signal is extended).
⑨	AUDIO OUT 3-pin Terminal Block Connector	Connect to an unbalanced analog audio acceptor.
⑩	Ring Tongue Terminal Grounding Screw	Connect to grounding wire (optional).

# Mounting WP-20CT

This section provides instructions for mounting **WP-20CT**. 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.



Before mounting, connect the HDBaseT cable and power



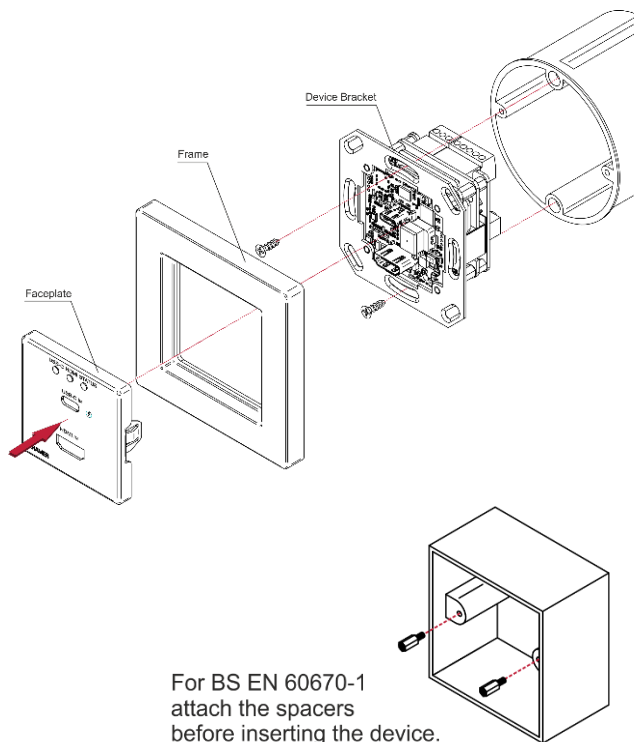
## Warning:

- 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.

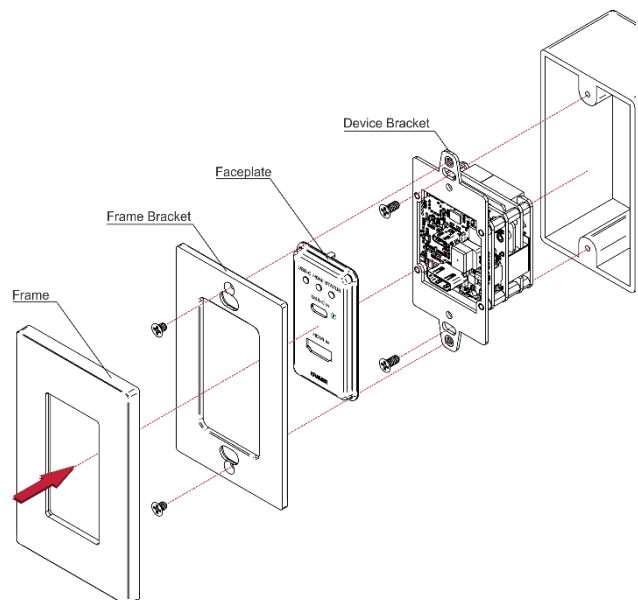
## To mount WP-20CT:

Insert the device into the in-wall box (note that first you need to connect the HDBaseT cable and power) and connect the parts as shown in the illustrations below:

### EU/UK Version



### US-D Version



DECORA® design frames are included in US-D models. DECORA® is a registered trademark of Leviton Manufacturing Co., Inc.



We recommend that you use any of the following standard 1 Gang in-wall junction boxes (or their equivalent):

- **US-D:** 1 Gang US electrical junction boxes.
- **EU:** 1 Gang in-wall junction box, with a cut-hole diameter of 68mm and depth that can fit in both the device and the connected cables (DIN 49073).
- **UK:** 1 Gang in-wall junction box, 75x75mm (W, H) and depth that can fit in both the device and the connected cables (BS 4662 or BS EN 60670-1 used with supplied spacers and screws).

# Connecting WP-20CT



Always switch off the power to each device before connecting it to your **WP-20CT**.

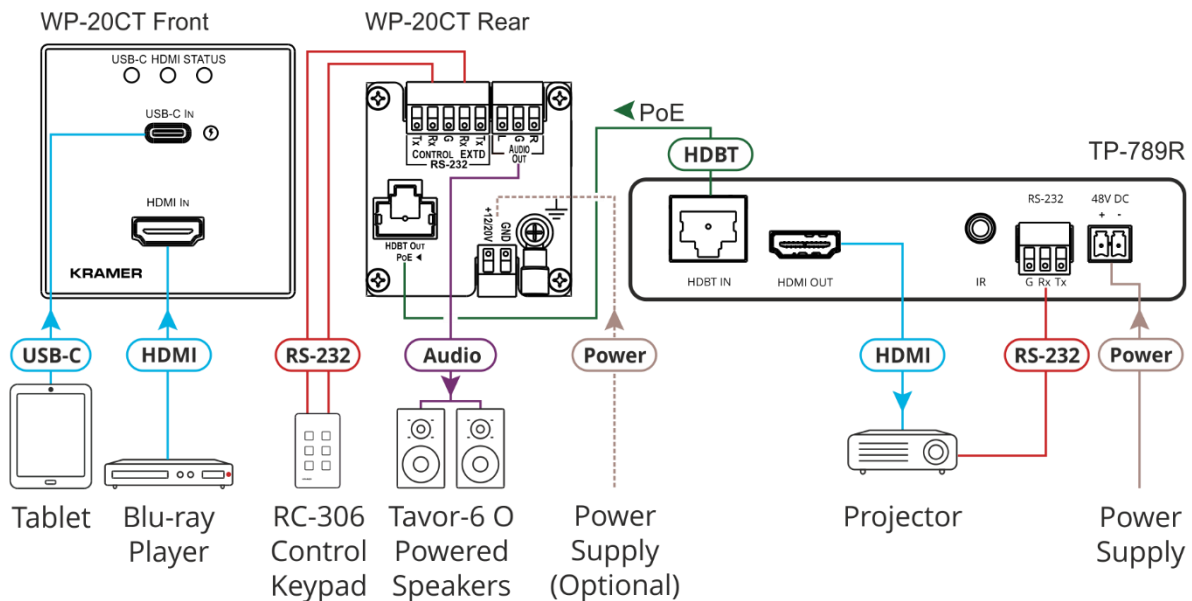


Figure 2: Connecting to the WP-20CT Rear Panel

To connect WP-20CT as illustrated in the example in [Figure 2](#):

1. Connect the HDMI source (for example, a Blu-ray player) to the HDMI IN connector ①.
2. Connect the USB-C source (for example, a tablet) to the USB-C IN connector ④.
3. Connect a controller (for example, **RC-306** control keypad) to the Control RS-232 connector ⑦ to control **WP-20CT** and to the EXTENDED RS-232 connector ⑧ to control a device on the receiver side via serial communication.
4. Connect the HDBaseT OUT connector ⑥ to the HDBaseT input of a PoE-provider receiver (for example, **TP-789R**) or a non-PoE receiver (for example, **TP-580R**).
5. Connect an RS-232-controlled device (for example, a projector) to the receiver HDMI input and RS-232 connector.
6. Connect the included 12V power supply to the 12V/20V connector ⑥ for powering the unit when connected to a non-PoE receiver.

-OR-

Connect an optional PS-2006-O 20V/6A Kramer power supply to the 12V/20V connector ⑥ to enable the USB-C charging feature.

## Connecting to WP-20CT via RS-232

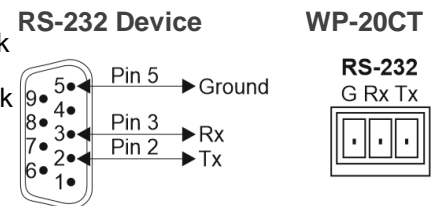
You can connect to **WP-20CT** via an RS-232 connection <sup>(13)</sup> using, for example, a PC.

**WP-20CT** features an RS-232 3-pin terminal block connector allowing the RS-232 to control **WP-20CT**.

Connect the RS-232 terminal block on the rear panel of **WP-20CT** to a PC/controller, as follows:

From the RS-232 9-pin D-sub serial port connect:

- Pin 2 to the TX pin on the **WP-20CT** RS-232 terminal block
- Pin 3 to the RX pin on the **WP-20CT** RS-232 terminal block
- Pin 5 to the G pin on the **WP-20CT** RS-232 terminal block



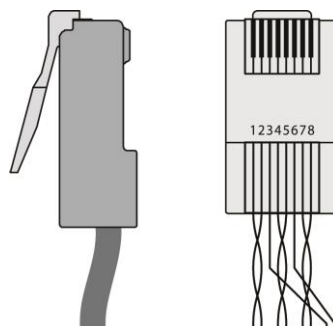
## Wiring RJ-45 Connectors

This section defines the HDBT pinout, using a straight pin-to-pin cable with RJ-45 connectors.



For HDBaseT cables, it is recommended that the cable ground shielding be connected/soldered to the connector shield.

EIA /TIA 568B	
PIN	Wire Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown



## Connecting USB-C Port Directly to PC

You can connect the USB-C IN port of **WP-20CT** directly to the USB port on your PC using a USB-C to USB-C cable. This enables you to configure and operate the device using the embedded web pages (see [Operating and Controlling WP-20CT](#) on page 15).

After connecting **WP-20CT** to the USB-C port, configure your PC as follows:

1. Click **Start > Control Panel > Network and Sharing Center**.
2. Click **Change Adapter Settings**.
3. Highlight the **ASIX** network adapter to connect to the device and click **Change settings of this connection**.

The Ethernet Properties window for the selected network adapter appears as shown in [Figure 3](#).

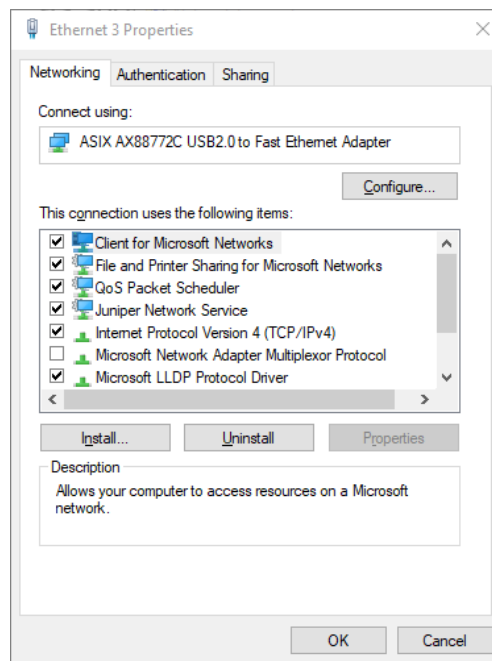


Figure 3: Local Area Connection Properties Window

4. Highlight **Internet Protocol Version 4 (TCP/IPv4)** depending on the requirements of your IT system.

5. Click **Properties**.

The Internet Protocol Properties window relevant to your IT system appears as shown in [Figure 4](#) or [Figure 5](#).

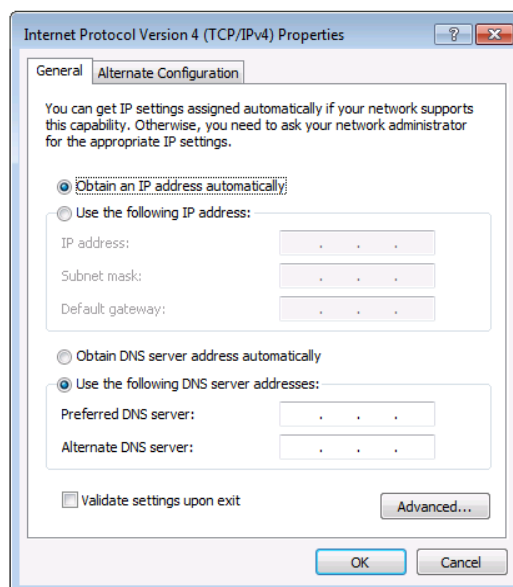


Figure 4: Internet Protocol Version 4 Properties Window

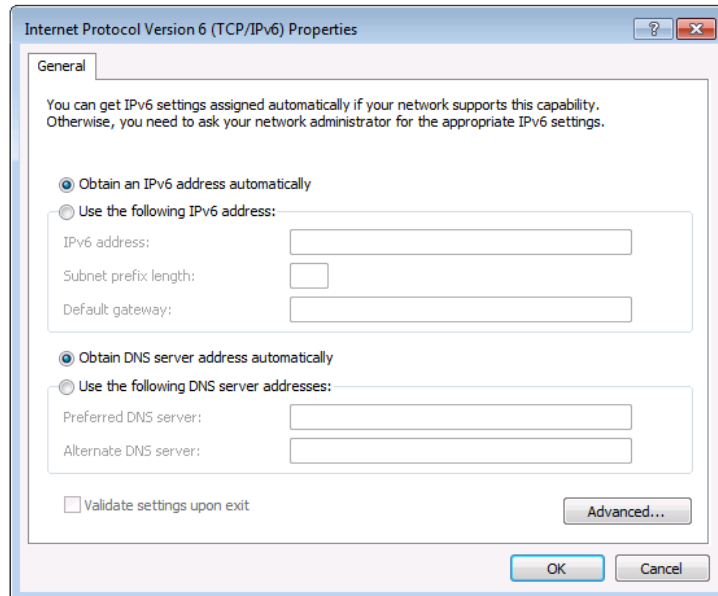


Figure 5: Internet Protocol Version 6 Properties Window

6. Select **Use the following IP Address** for static IP addressing and fill in the IP address and Subnet mask as shown in [Figure 6](#).

You can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.39) that is provided by your IT department.

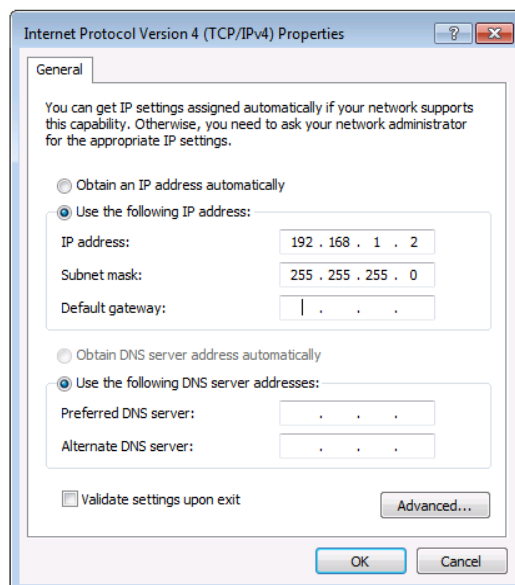


Figure 6: Internet Protocol Properties Window

7. Click **OK**.
8. Click **Close**.
9. Browse to the fallback IP address or default hostname of the device.

# Principles of Operation

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## Input Auto-Switching

Input selection is set via the web pages (see [Configuring Auto-Switching Mode](#) on page 18) to one of the following modes:

- Manual
- Last connected
- Priority

By default, switching is set to Last connected.



When in Manual mode, note the following:

- Switching to an unconnected input, results in a blank screen on the output.
- Manual switching overrides auto-switch mode.

In manual mode, select an input by:

- Sending RS-232 serial commands control (see [Protocol 3000 Commands](#) on page 40).
- Using the embedded web pages (see [Browsing WP-20CT Web Pages](#) on page 16).

In auto-switching mode, switching selection is performed based on either last connected or priority input:

- In last connected mode, if the signal on the current input is lost, **WP-20CT** automatically selects the last connected input (the delay depends on a configurable timeout).
- In priority mode, when the input sync signal is lost for any reason, the input with a live signal and next in priority is selected automatically, (the delay depending on the configurable signal-lost timeout, (see [Defining Signal Timeout Settings](#) on page 19).

## Maestro Built-in Automation Configuration

**WP-20CT** built-in Maestro automation enables configuring triggers to simply create a sequence of actions that are carried out following trigger activation (see [Configuring Device Automation](#) on page 26).

Thanks to out-of-the-box default configuration, **WP-20CT** is ready to control the following typical room configuration that can be controlled via several Maestro triggers.

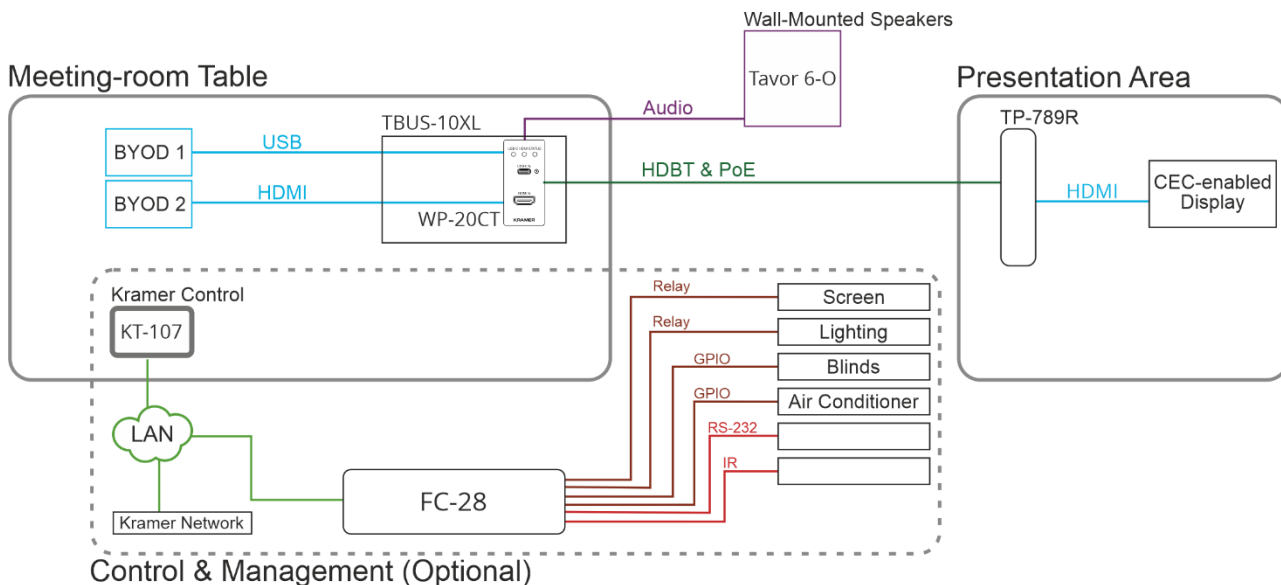


Figure 7: Typical Room Configuration

This room includes a meeting-room table, a presentation area, and so on, as follows:

On the meeting table:	<ul style="list-style-type: none"> <li><b>WP-20CT</b> mounted onto a <b>TBUS-10XL</b> table mount.</li> <li>Various BYOD sources, of which one or two are connected to the <b>WP-20CT</b> HDMI port (for example, a laptop) and/or the USB-C port (for example, a tablet).</li> <li>A <b>KT-107</b> touch panel supporting Kramer Control controller and connected to the LAN.</li> </ul>
On the Wall:	<ul style="list-style-type: none"> <li><b>Tavor 6-O</b> wall-mounted speakers connected to <b>WP-20CT</b>.</li> </ul>
In the presentation area:	<ul style="list-style-type: none"> <li><b>TP-789R</b> receiver, connected via HDBT to <b>WP-20CT</b>.</li> <li>A CEC-enabled display connected to the <b>TP-789R</b> HDMI output.</li> </ul>
In the room:	<ul style="list-style-type: none"> <li>The window blinds, projector screen, lighting, and air conditioning are connected to GPIO/relay ports on the <b>FC-28</b> IP control gateway.</li> </ul>
LAN connections	<ul style="list-style-type: none"> <li><b>KT-107 Kramer Control</b> touch panel controller to <b>FC-28</b> IP control gateway and a <b>Kramer Network</b> management system.</li> </ul>

**WP-20CT**, built-in Maestro configuration enables almost immediate control over these elements for different scenarios, once all the elements in the room are connected (with minimal settings via built-in Maestro automation embedded web pages, such as device-specific IP addresses, see [Configuring Device Automation](#) on page 26).



**KT-107** and **FC-28** (in the optional control and management system) are not included in the built-in Maestro configuration, and should be configured separately.

For example, an active input that is detected, is a trigger (First On) for starting a presentation.

Once the input signal is detected, the **Presentation Start**, built-in script, runs a series of actions such as unmuting the audio and video outputs, turning the display ON via CEC, lowering the screen rolling the blinds down, etc.

In this example, the display is turned on via the HDBT CEC channel connection through the **TP-789R** receiver, and audio and video are unmuted by the internal port.

Factory default triggers, Scripts, actions and ports are listed in [Default Control and Automation Settings](#) on page [34](#).



# Operating and Controlling WP-20CT

You can operate **WP-20CT** using the embedded web pages, by connecting to **WP-20CT** with a computer via the USB-C connector (see [Connecting USB-C Port Directly to PC](#) on page 9).

**WP-20CT** enables you to do the following:

- [Browsing WP-20CT Web Pages](#) on page 16.
- [Switching Input to Output](#) on page 16.
- [Muting and Adjusting Audio Output](#) on page 17.
- [Turning Off Video](#) Output on page 18.
- [Configuring Auto-Switching Mode](#) on page 18.
- [Defining Signal Timeout Settings](#) on page 19.
- [Configuring AV Settings](#) on page 20.
- [Copying EDID](#) on page 21.
- [Changing Device Name](#) on page 22.
- [Setting Auto Standby Delay](#) on page 23.
- [Exporting and Importing a Configuration](#) File on page 23.
- [Resetting Device](#) on page 24.
- [Configuring Network Settings](#) on page 24.
- [Configuring Time and Date](#) on page 25.
- [Changing Web Pages Access Password](#) on page 25.
- [Setting Web Pages Auto](#) Logoff Timeout on page 26.
- [Configuring Device Automation](#) on page 26.

## Browsing WP-20CT Web Pages



If a web page does not update correctly, clear your Web browser's cache.

If security is enabled, the Login window appears.

Figure 8: Embedded Web Pages Login Window

10. Enter the Username (default = Admin) and Password (default = Admin) and click **Sign in**.

The Main > AV Routing page appears.

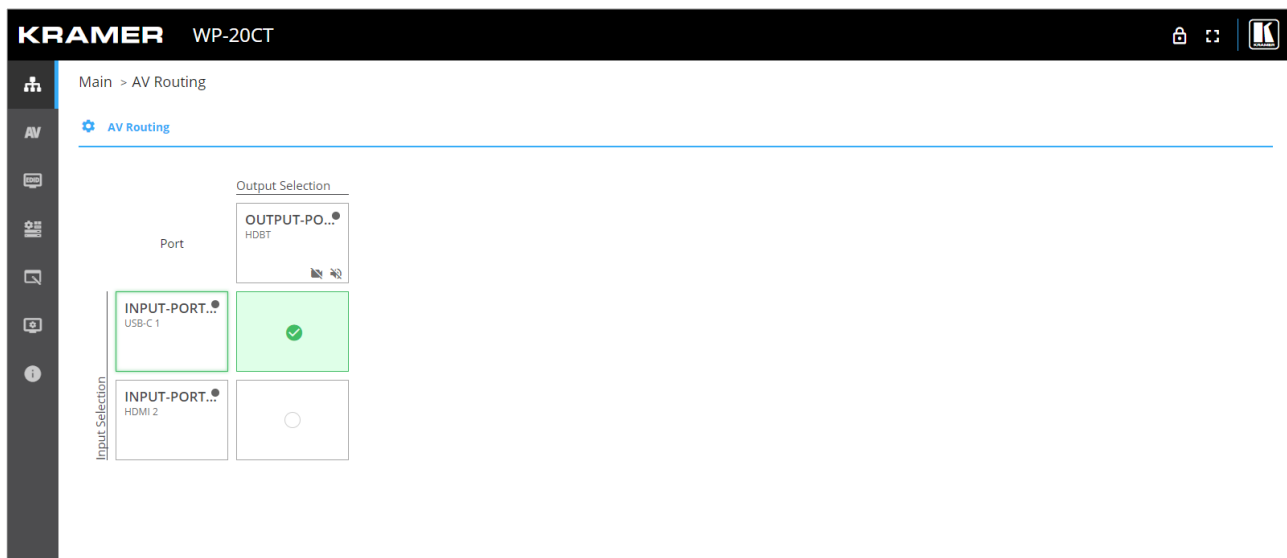


Figure 9: Embedded Web Pages Main > AV Routing Page

11. Click the Navigation Pane on the left side of the screen to access the relevant web page.



Hover over the icons on the navigation pane to hide/show the names of the pages.

## Switching Input to Output

WP-20CT enables you to switch one of the two inputs to the output.

The AV Routing page shows the following information:

- Name of each input and output (to change the name, see [Configuring AV Settings](#) on page 20).
- Connection status of each input and output – The indicator next to the name lights green when an active input or output is connected.
- Switching status – The input that is currently connected to the output shows a green checkmark in the column next to it.

**To switch an input to the output:**

1. Go to the Main > AV Routing page.

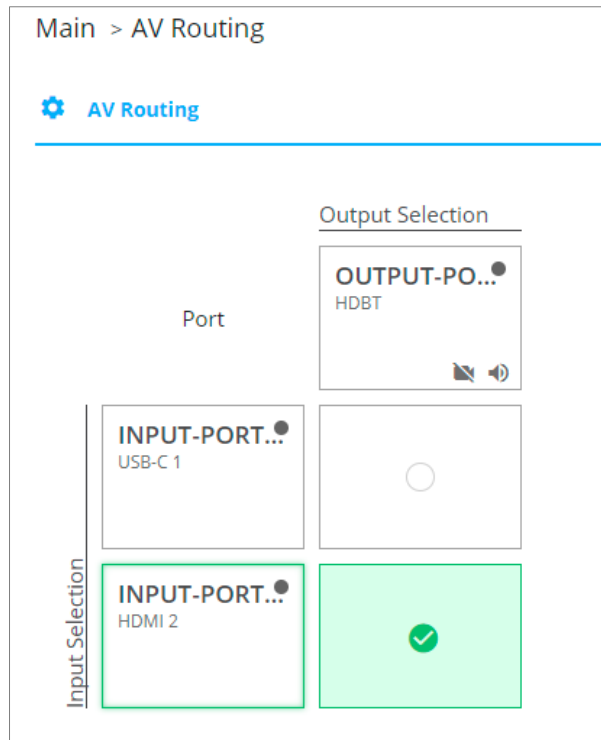


Figure 10: Main > AV Routing Page

2. Click the box next to the input to which you would like to switch the output.  
A green check appears in the selected box and the input is switched.

## Muting and Adjusting Audio Output

**WP-20CT** enables you to mute the audio output and adjust it from -100dB to +15dB (default = 0bD).

**To mute and adjust the audio output:**

- On the Main > AV Routing page ([Figure 10](#)), click the audio icon under the output name and mute or adjust the audio as needed.

## Turning Off Video Output

**WP-20CT** enables you to turn off the video output so that the connected display goes blank. The audio output is not affected by this setting.

**To turn off the video output:**

- On the Main > AV Routing page ([Figure 10](#)), click the video icon under the output name.  
The video output is turned off and the connected display goes blank.



Click the disabled video icon to turn on the video output.

## Configuring Auto-Switching Mode

**WP-20CT** enables you to configure how the system automatically decides which input to switch to the output.

**To configure auto-switching:**

- Go to the AV Settings > Auto switching tab.

AV Settings > Auto switching

Auto switching AV

**Video**

Video Selection Mode Last Connect...

High Low

USB-C 1 HDMI 2

Drag to change the priority.

SET VIDEO CANCEL

**Timeout** **AV**

**New AV signal**  
Leave 5V ON & delay switching for 5 sec

**AV cable unplugged**  
Delay switching for 0 sec

**AV signal lost**  
Delay switching for 10 sec

**No active AV signal**  
Delay manual-override exit for 10 sec

SET TIMEOUT CANCEL

Figure 11: AV Settings > Auto switching Tab

2. Select one of the following auto-switching modes from the Video Selection Mode dropdown:
  - Manual – Switching is only done manually. Auto-switching is disabled.
  - Last Connected (default) – When a new source is connected, automatically switch to that input.
  - Priority – The system first looks to switch to the priority input (default = USB-C input). Drag the input name to change the priority.
3. Click **SET VIDEO**.  
Auto-switching mode is configured.

---

## Defining Signal Timeout Settings

**WP-20CT** enables you to define a time delay before an automatic switching operation is initiated by the system.

**To define timeout settings:**

1. Go to the AV Settings > Auto switching tab ([Figure 11](#)).
2. Define timing for the following:
  - New AV signal – When a new AV source is connected to the inactive input, delay switching to this new signal (from 0 to 90 sec, default = 0).
  - AV cable unplugged – When the active input is unplugged, delay switching to the other input (from 0 to 90 sec, default = 0).
  - AV signal lost – When the active input signal is lost without being unplugged (for example when player is on stop), delay switching to the other input (from 5 to 90 sec, default = 10).
  - No active AV signal – In a case where the active input was switched manually, and then this signal is lost, this setting delays switching back to the other input (from 5 to 90 sec, default = 10).
3. Click **SET TIMEOUT**.

## Configuring AV Settings

AV Settings > AV

Auto switching AV

SETTINGS	USB-C Input 1	HDMI Input 2	HDBT Output
Label	INPUT-PORT-1-USBC	INPUT-PORT-2-HDMI	OUTPUT-PORT-1-HDBT
HDCP	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> Yes	<input checked="" type="radio"/> Always On <input type="radio"/> Follow Output
Device Color Depth	<input checked="" type="radio"/> Follow Output <input type="radio"/> Force 8 bit		
Force RGB on Output	<input type="button" value="Enable"/> <input checked="" type="button" value="Disable"/>		
Device Auto-Unmute on volume change	<input checked="" type="button" value="Enable"/> <input type="button" value="Disable"/>		
Auto Sleep Delay	<input checked="" type="button" value="Enable"/> <input type="button" value="Disable"/>		
No input signal Delay output 5V power-off for	900 sec		
<input type="button" value="SET TIMEOUT"/> <input type="button" value="CANCEL"/>			

Figure 12: AV Settings > AV Tab

**WP-20CT** enables you to configure the following general settings on the AV Settings > AV tab:

- **Label** – Change the name of an input or output as it appears on the Main (switching) page and EDID Management page.
- **HDCP** – For the inputs, select the **Yes** (default) /**No** switch to enable/disable HDCP for that input. For the output, select **Always On** keep HDCP enabled or **Follow Input** (default) to define the output HDCP setting according to the active input.
- **Device Color Depth** – **Follow Output** (default) or **Force 8 bit**.
- **Force RGB on Output** – **Enable** or **Disable** (default).
- **Device Auto-Unmute on volume change** – When enabled (default), changing the volume will unmute the device.
- **Auto Sleep Delay** – When no input signal is detected, the device automatically goes into sleep mode. When this setting is enabled (default), it delays sleep mode for an amount of time specified in the next setting.
- **No input signal** – Set the number of seconds (30 to 60,000 seconds; default = 900 seconds) after there is no signal detected, until the device goes into sleep mode. Click **SET TIMEOUT** after defining this setting.

# Copying EDID

WP-20CT enables you to copy an EDID from one of several different sources to the inputs.

To copy the EDID to the inputs:

1. Go to the EDID Management page.

EDID Management > EDID Settings

EDID Settings

**STEP 1: SELECT SOURCE**

**Outputs**

OUTPUT...

**Default**

Default  
WP-20CT  
1920x1080  
false  
Audio  
256

**File**

Upload file

☐ Prevent device modification data

**Inputs**

INPUT... WP-20CT 1920x1080 false Audio 256

INPUT... WP-20CT 1920x1080 false Audio 256

**STEP 2: SELECT DESTINATION/S**

☐ Select all

INPUT... WP-20CT 1920x1080 false Audio

INPUT... WP-20CT 1920x1080 false Audio

COPY

Figure 13: EDID Management Page

2. Under Step 1, select the EDID source.
3. Under Step 2, select one or both of the inputs as the destination for the EDID.
4. Click **Copy**.

The EDID is copied.

## Changing Device Name

WP-20CT enables you to change the DNS name of the device.

To change the device name:

1. Go to the Device Settings > General page.

The screenshot displays the 'Device Settings > General' page. At the top, there are four tabs: 'General' (selected), 'Network', 'Time and Date', and 'Security'. Below the tabs, the 'Device Name' field is set to 'WP-20CT-0001'. Other fields include 'Model' (WP-20CT), 'Serial Number' (1), and 'Firmware Version' (1.0.62123) with an 'UPGRADE' button. The 'Auto Standby' section has 'Enable' and 'Disable' buttons, with 'Enable' selected. Below this is the 'No Device Activity Timeout' section, showing 'Delay standby entry for' set to '30 min' with a dropdown arrow. At the bottom of this section is a 'Standby Status: On' label and an 'EXIT' button. Further down is the 'Global System Settings' section, containing four buttons: 'IMPORT', 'EXPORT', 'RESTART' (labeled 'Device Restart'), and 'RESET' (labeled 'Factory Reset' with a warning icon). At the very bottom are 'SAVE' and 'CANCEL' buttons.

Figure 14: Device Settings > General Page

2. Under General Preferences, change the device name and click **SAVE**.  
The device name is changed.



---

## Setting Auto Standby Delay

**WP-20CT** enables you to set the delay time (up to 900min, never 0; default = 30min) before the device goes into standby mode after a period of no device activity.

**To set auto standby delay time:**

1. Go to the Device Settings > General page ([Figure 14](#)).
2. Under Auto Standby, click **ENABLE**.
3. Under No Device Activity Timeout, set the delay time.
4. Click **Save**.

Auto standby delay time is set.



To manually enter or exit standby mode where the 5V signal is turned off, under Standby Status, click **ENTER/EXIT**.

---

## Exporting and Importing a Configuration File

**WP-20CT** enables you to export a configuration file that records all current device settings except the switching configuration. This file can then be imported to the same or different **WP-20CT** device to load the recorded settings.

**To export a configuration file of the current device settings:**

1. Go to the Device Settings > General page ([Figure 14](#)).
2. Under Global System Settings, click **Export**.
3. Select the location on your computer to save the configuration file and click **Save**.

The configuration file is exported and saved.

**To import a configuration file of the current device settings:**

1. Go to the Device Settings > General page ([Figure 14](#)).
2. Under Global System Settings, click **Import**.
3. Select the relevant configuration file and click **Save**.

The configuration file is imported and the device restarts with the settings from the configuration file.

# Resetting Device

Two types of resets can be performed:

- Restart – Reboots your device and keeps all your device settings, including the IP address and password.
- Reset – Reboots your device and restores all factory settings including input/output definitions, switching configuration, IP address and password.

To restart the device:

- Click **Restart** on the Device Settings > General page ([Figure 14](#)).

To perform a factory reset on the device:

- Click **Reset** on the Device Settings > General page ([Figure 14](#)).

# Configuring Network Settings

To configure network settings:

- Change settings as needed on the Device Settings > Network page.

Device Settings > Network

General

**Network**

Time and Date

Security

IP Address	<u>192 , 168 , 1 , 39</u>
Mask Address	<u>255 , 255 , 0 , 0</u>
Gateway Address	<u>192 , 168 , 0 , 1</u>
MAC Address	<u>00-1d-56-05-57-b1</u>
TCP Port	<u>5000</u>
UDP Port	<u>50000</u>

Figure 15: Device Settings > Network Page

## Configuring Time and Date

To configure time and date settings:

- Change settings as needed on the Device Settings > Time and Date page.

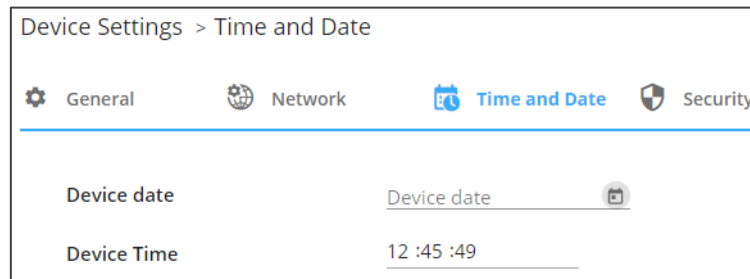


Figure 16: Device Settings > Time and Date Page

## Changing Web Pages Access Password

To change the password for accessing the embedded web pages:

1. Go to the Device Settings > Security page.

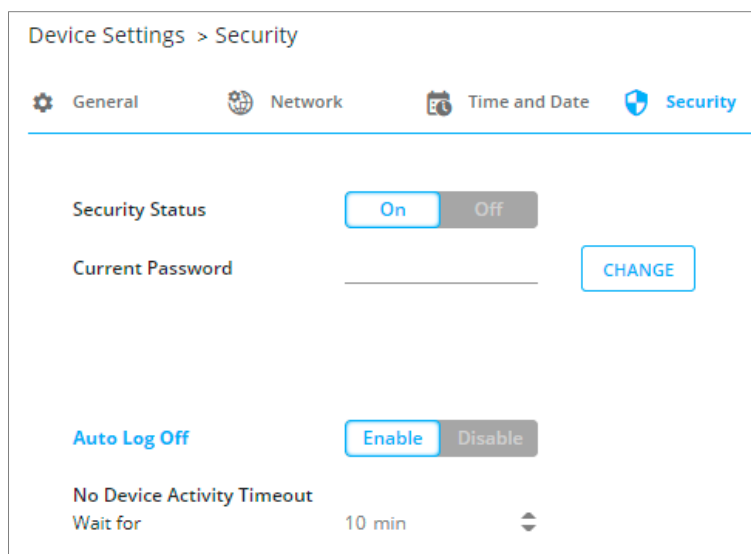


Figure 17: Device Settings > Security Page

2. Under Current Password, enter a new password and click **CHANGE**.  
The new password settings appear.
3. Enter the new password and confirmation password and click **SAVE**.  
The password is changed.

---

## Setting Web Pages Auto Logoff Timeout

**WP-20CT** enables you to set the time delay before being logged out of the web pages if no activity is detected.

To set the web pages timeout:

1. Go to the Device Settings > Security page ([Figure 17](#)).
2. Under Auto Logoff, click **ENABLE** and set the timeout duration (up to 60min, never 0; default = 10min).

The web pages inactivity timeout is set.

---

## Configuring Device Automation

Use the Automation page to configure **Kramer Maestro** V1.5 room automation for **WP-20CT**. **Kramer Maestro** is a powerful software tool that enables you to configure trigger-based room control and automation scenarios without the need for complicated programming.

To use Maestro control and automation, you need to define triggers that, upon an event, execute scripts which include a sequence of actions (commands, which can appear in different scenarios) that can be carried out via any defined ports.

Download the **Kramer Maestro** User Manual from the Kramer web site at [www.kramerav.com/downloads/WP-20CT](http://www.kramerav.com/downloads/WP-20CT) to learn how to use **Kramer Maestro**.



Note that all the ports, actions and triggers that are relevant to **WP-20CT** are included in the **Kramer Maestro** interface, as well as ports, actions and triggers that are relevant to other Kramer devices.

# Configuring Ports

Maestro enables configuring the ports used to control specific room devices. For a full list of default ports (see [Ports List](#) on page 34).

Automation

SAVE ALL

CANCEL

PORTS

Name	Type	Details
RS232 EXT	RS-232	2,9600,1,None,8
Internal	Internal	
CEC-TV	CEC	0
CEC-Broadcast	CEC	15

ACTIONS

SCRIPTS

TRIGGERS

Port

Name

RS232 EXT

Type

RS-232

Properties

Port ID

2

Baud Rate

9600

Stop Bits

1

Parity

None

Data Bits

8

CANCEL

Figure 18: Maestro Page – Ports List

# Configuring Actions

In the Actions tab you can create new commands, and also view and edit the default commands (see [Actions List](#) on page 34) that are device specific.

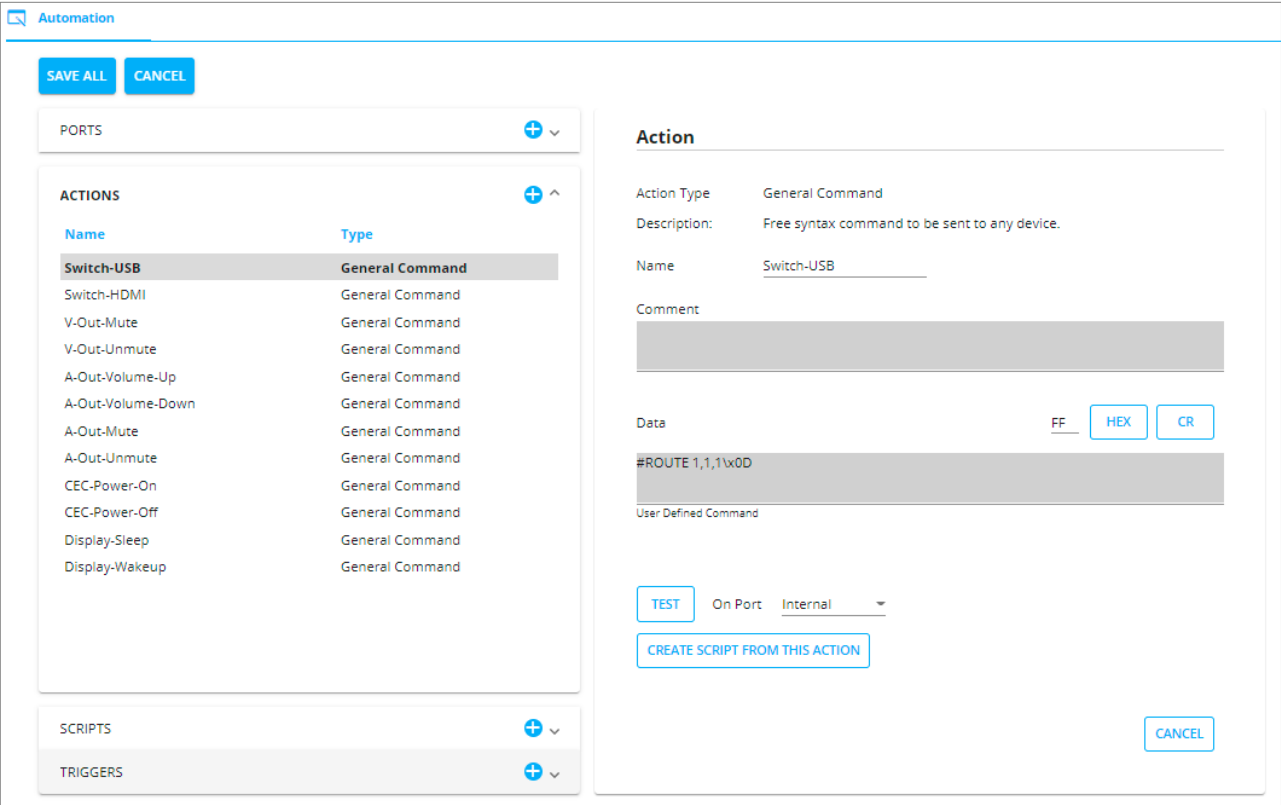


Figure 19: Maestro Page – Actions List

You can add actions by duplicating an action from the list of built-in actions and changing it as required, or by a creating new action altogether (see [www.kramerav.com/downloads/WP-20CT](http://www.kramerav.com/downloads/WP-20CT)).

# Configuring Scripts

A script includes several actions. You can add commands to an existing script, create new scripts or use the available built-in scripts (see [Scripts List](#) on page 35). For example, click the Presentation Start script to view its list of actions.

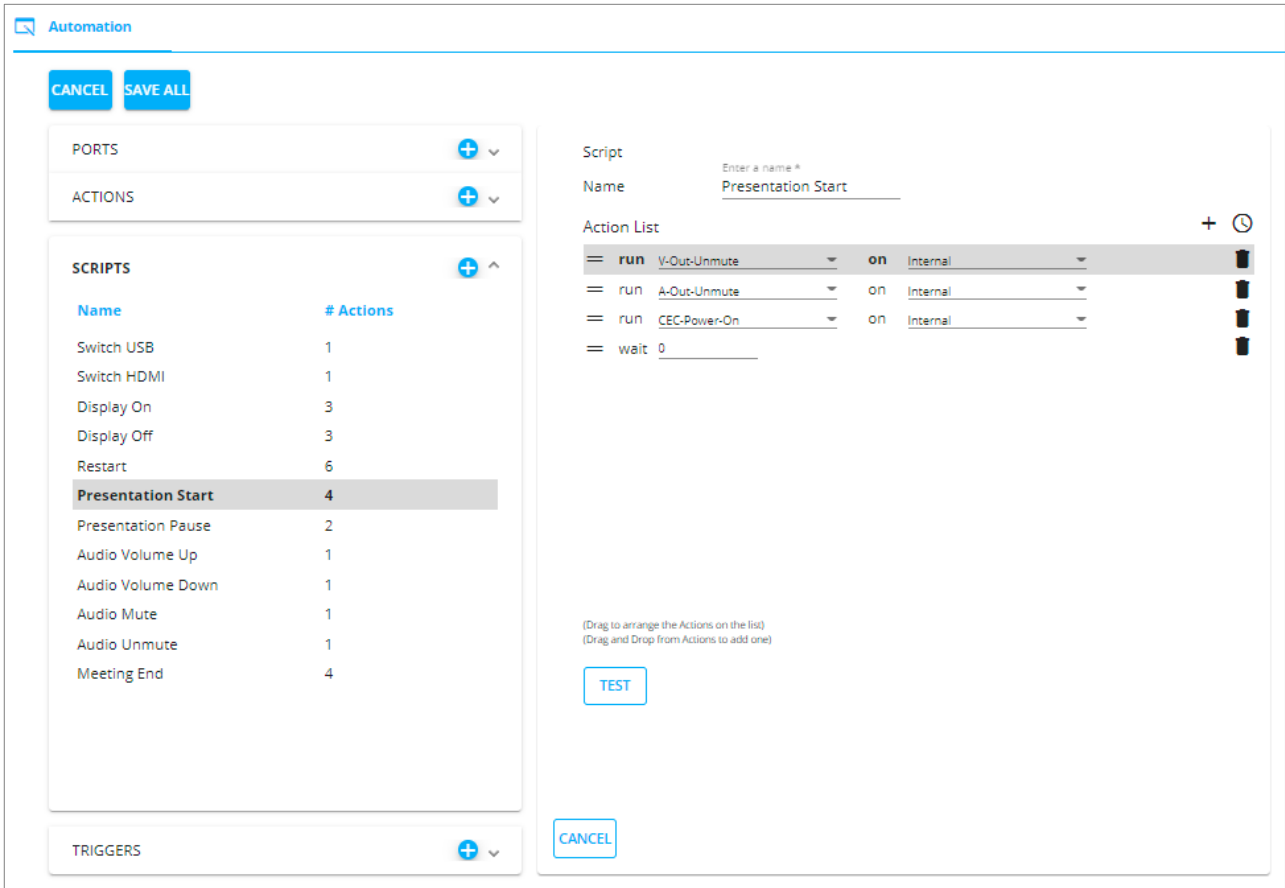


Figure 20: Maestro Page – Scripts List

You can add, delete, or change the order of the actions in the list.

# Configuring Triggers

The trigger is a predefined event that, when activated, causes the script associated to it to run. For example, click the built-in First On trigger that triggers the Presentation Start script so that when an active input signal is detected, the Presentation Start script runs automatically. See list of default triggers in [Triggers List](#) on page 36.

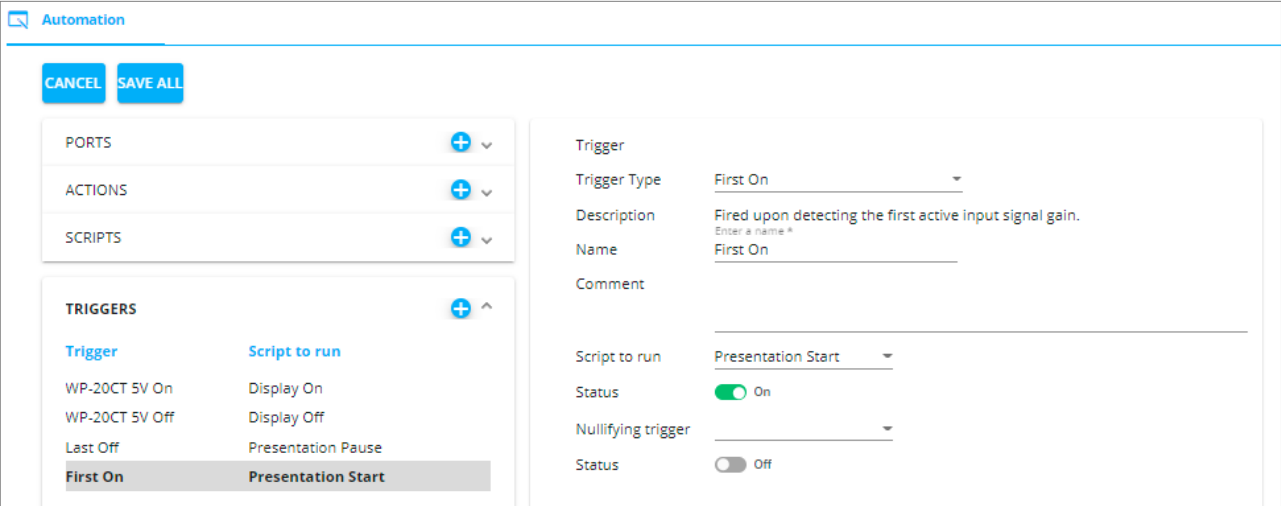


Figure 21: Automation Page – Triggers List

You can add, delete, or modify a trigger (see [www.kramerav.com/downloads/WP-20CT](http://www.kramerav.com/downloads/WP-20CT)).



# Maintaining Device

WP-20CT enables you to perform the following maintenance activities:

- [Upgrading Firmware](#) on page [31](#).
- [Monitoring Device Status](#) on page [31](#).

---

## Upgrading Firmware

To upgrade the device firmware:

1. Go to the Device Settings > General page ([Figure 14](#)).
2. Under General Preferences, click **UPGRADE** and open the relevant firmware file and follow the instructions.

---

## Monitoring Device Status

Go to the Diagnostics page Status tab to monitor overall device status, temperature, and input/output activity status.



For Heat status, when the temperature is in the normal range (up to 65°), the indication light appears green; when above normal (65° to 70°), appears orange, when it exceeds temperature limits (over 70°) the indication light appears red.

## Viewing Status Diagnostics

To view status diagnostics:

1. Go to the Diagnostics > Status. The Diagnostics page appears.

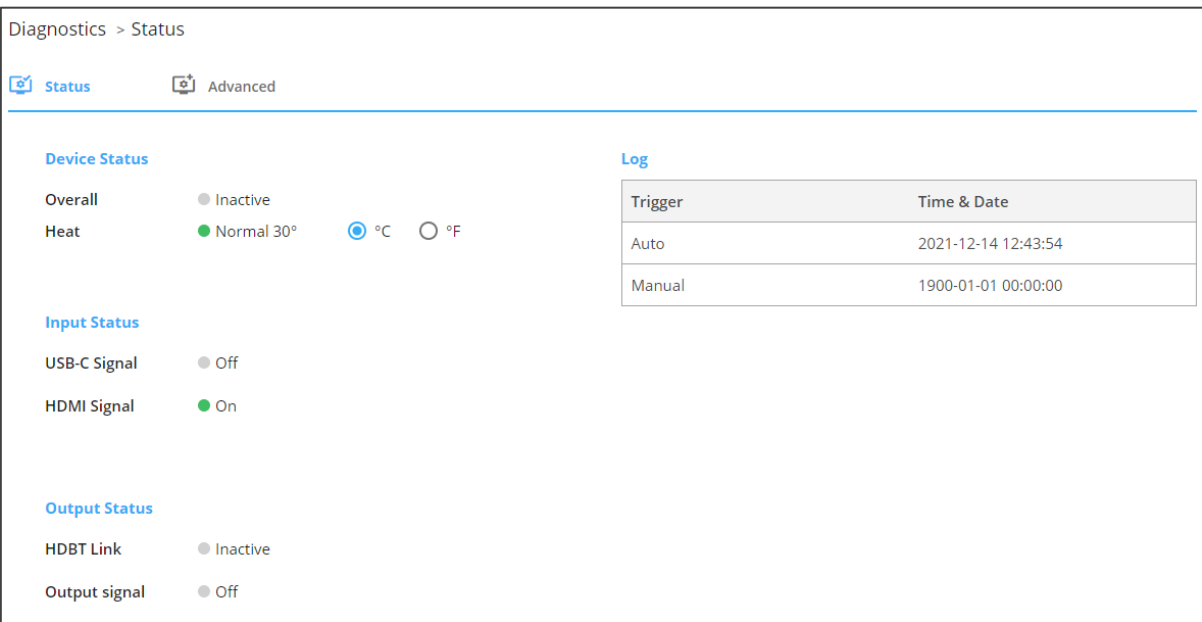


Figure 22: Diagnostics – Status Tab

2. Set Heat temperature to Celsius or Fahrenheit.
3. View inputs signal status.
4. View HDBT Link status:
  - **Inactive** indication off – the receiver is connected (linked) to the output.
  - **Inactive** indication on – a receiver is not connected to the output.
5. On the window right-hand side, view the reset log (auto or manual).

Status diagnostics are viewed.

## Viewing Advanced Diagnostics

To view status diagnostics:

1. Go to the Diagnostics > Status. The Diagnostics page appears.
2. Click **Advanced** tab. The Advanced tab appears.

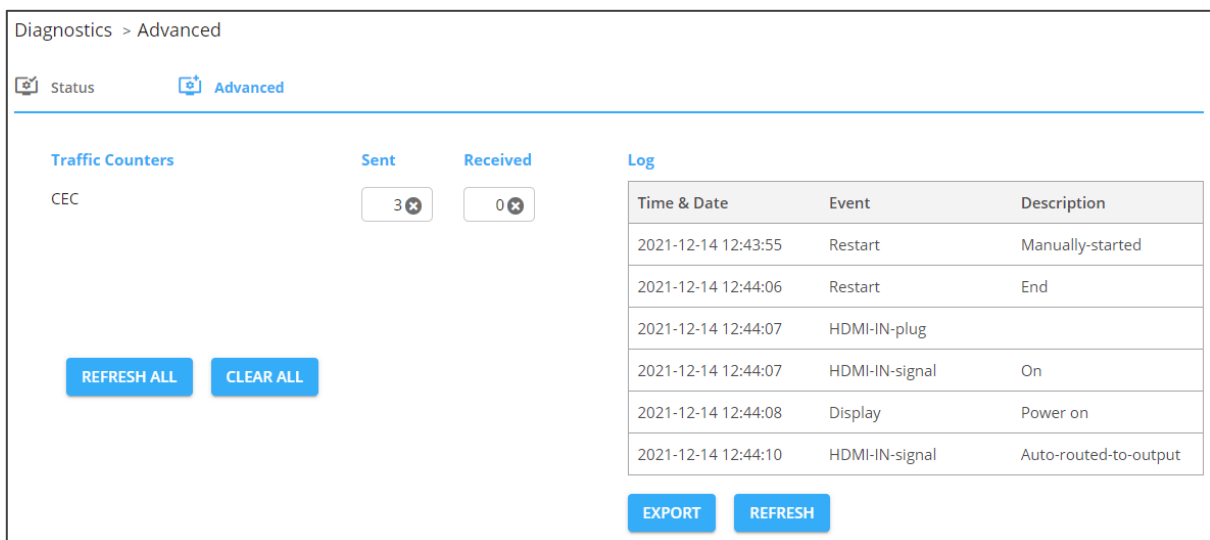


Figure 23: Diagnostics – Advanced Tab

3. Under Traffic Counters, view the Sent and Received CEC commands to and from the display.
4. Perform the following actions if required:
  - Click to clear the sent / received CEC command counters.
  - Click **CLEAR ALL** to clear both sent and received counters.
  - Click **REFRESH ALL** to refresh counting status view.
5. On the window right-hand side, view the event log and click:
  - REFRESH, to refresh the list.
  - EXPORT, to export the log to text file.

Advanced diagnostics are viewed.

# Technical Specifications

Inputs	1 DP Alt Mode & PD 3.0 USB-C	On a USB type-C connector
	1 HDMI	On HDMI connector
Outputs	1 HDBaseT	On an RJ-45 connector
	1 Unbalanced Stereo Audio	On 3-pin terminal block connector
Ports	1 RS-232	On a 3-pin terminal block for serial link extension
	1 RS-232	On a 3-pin terminal block for device serial control
	1 DC Power Input	On a 2-pin terminal block connector
Video	Max. Data Rate	10.2Gbps (3.4Gbps per graphic channel)
	Max. Resolution	4K@60Hz (4:2:0) 24bpp resolution
	HDMI Support	Deep color, x.v.Color™, lip sync, HDMI uncompressed audio channels, Dolby TrueHD, DTS HD, 2K, 4K, and 3D as specified in HDMI 2.0
	Compliance	HDCP 2.3 & 1.4
Extension line	Up to 40m (130ft)	At 4K @60Hz (4:2:0)
	Up to 70m (230ft)	At full HD (1080p @60Hz 36bpp)
	Note	To achieve specified extension distances, use the recommended Kramer HDBaseT cables.
	Compliance	HDBaseT 1.0
Extended RS-232	Baud rate	300 to 115200
Control RS-232	Baud Rate	115200
Power	Source	12V DC 2A (included) 20V DC 6A (optional) PoE
	Consumption	12V: 0.6A 20V: 3.7A
	Standby Power Savings	12V: ~5W 20V: ~71W
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
Enclosure	Cooling	Convection
	Type	Aluminum
	Size	1 Gang
Regulatory Compliance (Standards Compliance)	Environmental	RoHs, WEEE, and CE
Accessories	Included	12V Power adapter

Specifications are subject to change without notice at [www.kramerav.com](http://www.kramerav.com)

## Default Communication Parameters

RS-232	
Baud Rate:	115,200
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	ASCII
Example (Set the auto switching timeout to 5 seconds in the event of 5V disable when no input signal is detected):	#AV SW TIMEOUT 4,5<CR>
IP	
IP Address:	192.168.1.39
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.39
TCP Port #:	5000
UDP Port #	50000
Default username:	Admin
Default password:	Admin
Full Factory Reset	
Embedded Web Pages:	Click <b>Reset</b> on the Device Settings > General page.

## Default Control and Automation Settings

### Ports List

Port Name	Type	Port Properties	Port Description	Comment
CEC-TV	CEC	0		
CEC-Broadcast	CEC	15		
Local-serial	RS232	2, 9600, 1, None, 8	Local serial port	For custom use
Device-internal	Internal			

### Actions List


Action Name	Commands List	On Port	Comment
Switch-USB	#ROUTE 1,1,1\x0D	Device-internal	USB web-UI
Switch-HDMI	#ROUTE 1,1,2\x0D		USB web-UI
V-Out-Mute	#VMUTE 1,1\x0D		Display sleep via USB web-UI
V-Out-Unmute	#VMUTE 1,0\x0D		Display wake-up via USB web-UI
A-Out-Volume-Up	#AUD-LVL 1,1,++\x0D		USB web-UI audio output port action
A-Out-Volume-Down	#AUD-LVL 1,1,--\x0D		
A-Out-Mute	#AUD-MUTE 1,1\x0D		
A-Out-Unmute	#AUD-MUTE 1,0\x0D		
CEC-Power-On	0x04	CEC-TV	
CEC-Power-Off	0x36	CEC-Broadcast	
Display-Sleep	#VMUTE 1,1\x0D	Device-internal	
Display-Wakeup	#VMUTE 1,0\x0D		

## Scripts List

Script Name	Actions List	Relevant Ports	Comment
Switch HDMI	Switch-HDMI	Device-internal	Web-UI button
Switch USB	Switch-USB	Device-internal	Web-UI button
Display On	V-Out-Unmute Wait (0) CEC-Power-On	Device-internal, - CEC-TV	Trigger
Display Off	V-Out-Mute Wait (900) CEC-Power-Off	Device-internal, - CEC-Broadcast	Trigger
Restart	Wait 2sec V-Out-Mute A-Out-Mute Notify-Restart Wait 1sec CEC-Power-Off Wait 0sec	- Device-internal, Device-internal, HDBT-OUT-K-Link, - CEC-Broadcast, -	Trigger
Presentation Start	V-Out-Unmute A-Out-Unmute CEC-Power-On Notify-PresentationStart Wait 0sec	Device-internal, Device-internal, CEC-TV, HDBT-OUT-K-Link, -	Trigger
Presentation Pause	V-Out-Mute A-Out-Mute Notify-PresentationPause Wait 0sec	Device-internal, Device-internal, HDBT-OUT-K-Link, -	Trigger
Audio Volume Up	A-Out-Volume-Up	Device-internal	Web-UI button
Audio Volume Down	A-Out-Volume-Down	Device-internal	Web-UI button
Audio Mute	A-Out-Mute	Device-internal	Web-UI button
Audio Unmute	A-Out-Unmute	Device-internal	Web-UI button
Meeting End	V-Out-Mute A-Out-Mute CEC-Power-Off Notify-MeetingEnd Wait 0sec	Device-internal, Device-internal, CEC-Broadcast, HDBT-OUT-K-Link, -	Schedule-trigger

## Triggers List

The following triggers are included in the default Maestro automation parameters:

Trigger Name	Description	Triggered Script	Comment
First IN Plugged	1 <sup>st</sup> input connected	Presentation Start	First ON
Last IN Unplugged	Last input disconnected	Presentation Pause	Last Off
5V On (Input detected)	When input activity is detected	Display On	
5V Off (No input detected)	When "delay power off" timeout period expires with no input activity	Display Off	
Power On	Device powered on	Restart	<p>This recommended trigger is NOT included in Maestro default settings to prevent undesired auto-triggering of its associated script. You may set the trigger accordingly upon device installation or later.</p> <p> This script works well when the room is inactive (e.g. at night time, turning off active TVs), but may cause disruption when running during actual meetings.</p>
After Office Hours	Prescheduled event occurred	Meeting End	<p>This recommended trigger is NOT included in Maestro default settings to prevent undesired auto-triggering of its associated script. You can set the trigger accordingly upon device installation or later and customize the After Office Hours duration according to your needs.</p> <p>For example, set After Office Hours Day/Time scheduling to:  Monday-to-Friday: 18:00  Saturday-Sunday: 00:00.</p>

## Default EDID

Model name..... WP-20CT  
Manufacturer..... KMR  
Plug and Play ID..... KMR1200  
Serial number..... 295-883450100  
Manufacture date..... 2018, ISO week 255  
Filter driver..... None  
-----  
EDID revision..... 1.3  
Input signal type..... Digital  
Color bit depth..... Undefined  
Display type..... Monochrome/grayscale  
Screen size..... 520 x 320 mm (24.0 in)  
Power management..... Standby, Suspend, Active off/sleep  
Extension blocs..... 1 (CEA-EXT)  
-----  
DDC/CI..... n/a  
  
Color characteristics  
Default color space..... Non-sRGB  
Display gamma..... 2.20  
Red chromaticity..... Rx 0.674 - Ry 0.319

Green chromaticity..... Gx 0.188 - Gy 0.706  
 Blue chromaticity..... Bx 0.148 - By 0.064  
 White point (default).... Wx 0.313 - Wy 0.329  
 Additional descriptors... None

#### Timing characteristics

Horizontal scan range.... 30-83kHz  
 Vertical scan range..... 56-76Hz  
 Video bandwidth..... 170MHz  
 CVT standard..... Not supported  
 GTF standard..... Not supported  
 Additional descriptors... None  
 Preferred timing..... Yes  
 Native/preferred timing.. 1920x1080p at 60Hz (16:9)  
 Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync

#### Standard timings supported

720 x 400p at 70Hz - IBM VGA  
 720 x 400p at 88Hz - IBM XGA2  
 640 x 480p at 60Hz - IBM VGA  
 640 x 480p at 67Hz - Apple Mac II  
 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  
 832 x 624p at 75Hz - Apple Mac II  
 1024 x 768i at 87Hz - IBM  
 1024 x 768p at 60Hz - VESA  
 1024 x 768p at 70Hz - VESA  
 1024 x 768p at 75Hz - VESA  
 1280 x 1024p at 75Hz - VESA  
 1152 x 870p at 75Hz - Apple Mac II  
 1280 x 1024p at 75Hz - VESA STD  
 1280 x 1024p at 85Hz - VESA STD  
 1600 x 1200p at 60Hz - VESA STD  
 1024 x 768p at 85Hz - VESA STD  
 800 x 600p at 85Hz - VESA STD  
 640 x 480p at 85Hz - VESA STD  
 1152 x 864p at 70Hz - VESA STD  
 1280 x 960p at 60Hz - VESA STD

#### EIA/CEA-861 Information

Revision number..... 3  
 IT underscan..... Supported  
 Basic audio..... Supported  
 YCbCr 4:4:4..... Not supported  
 YCbCr 4:2:2..... Not supported  
 Native formats..... 1  
 Detailed timing #1..... 1920x1080p at 60Hz (16:10)  
 Modeline..... "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089 1125 +hsync +vsync  
 Detailed timing #2..... 1920x1080i at 60Hz (16:10)  
 Modeline..... "1920x1080" 74.250 1920 2008 2052 2200 1080 1084 1094 1124 interlace +hsync +vsync  
 Detailed timing #3..... 1280x720p at 60Hz (16:10)  
 Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync  
 Detailed timing #4..... 720x480p at 60Hz (16:10)  
 Modeline..... "720x480" 27.000 720 736 798 858 480 489 495 525 -hsync -vsync

#### CE audio data (formats supported)

LPCM 2-channel, 16/20/24 bit depths at 32/44/48 kHz

#### CE video identifiers (VICs) - timing/formats supported

1920 x 1080p at 60Hz - HDTV (16:9, 1:1) [Native]  
 1920 x 1080i at 60Hz - HDTV (16:9, 1:1)  
 1280 x 720p at 60Hz - HDTV (16:9, 1:1)  
 720 x 480p at 60Hz - EDTV (16:9, 32:27)  
 720 x 480p at 60Hz - EDTV (4:3, 8:9)  
 720 x 480i at 60Hz - Doublescan (16:9, 32:27)  
 720 x 576i at 50Hz - Doublescan (16:9, 64:45)  
 640 x 480p at 60Hz - Default (4:3, 1:1)  
 NB: NTSC refresh rate = (Hz\*1000)/1001

#### CE vendor specific data (VSDB)

IEEE registration number. 0x000C03  
 CEC physical address..... 1.0.0.0  
 Maximum TMDS clock..... 165MHz

#### 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

#### Report information

Date generated..... 26/08/2019  
 Software revision..... 2.60.0.972  
 Data source..... File - NB: improperly installed  
 Operating system..... 6.2.9200.2

#### Raw data

00,FF,FF,FF,FF,FF,FF,00,2D,B2,00,12,00,00,00,00,FF,1C,01,03,80,34,20,78,E2,B3,25,AC,51,30,B4,26,  
 10,50,54,FF,FF,FF,80,81,8F,81,99,A9,40,61,59,45,59,31,59,71,4A,81,40,02,3A,80,18,71,38,2D,40,58,2C,  
 45,00,A0,5A,00,00,00,1E,00,00,00,FF,00,32,39,35,2D,38,38,33,34,35,30,31,30,30,00,00,00,FC,00,56,  
 53,2D,34,31,31,58,0A,20,20,20,20,00,00,00,FD,00,38,4C,1E,53,11,00,0A,20,20,20,20,20,01,AA,  
 02,03,1B,C1,23,09,07,07,48,90,05,04,03,02,07,16,01,65,03,0C,00,10,00,83,01,00,00,02,3A,80,18,71,  
 38,2D,40,58,2C,45,00,07,44,21,00,00,1E,01,1D,80,18,71,1C,16,20,58,2C,25,00,07,44,21,00,00,9E,01,  
 1D,00,72,51,D0,1E,20,6E,28,55,00,07,44,21,00,00,1E,8C,0A,D0,8A,20,E0,2D,10,10,3E,96,00,07,44,21,  
 00,00,18,00,77



# Protocol 3000

Kramer devices can be operated using Kramer Protocol 3000 commands sent via serial or Ethernet ports.

## Understanding Protocol 3000

Protocol 3000 commands are a sequence of ASCII letters, structured according to the following.

- **Command format:**

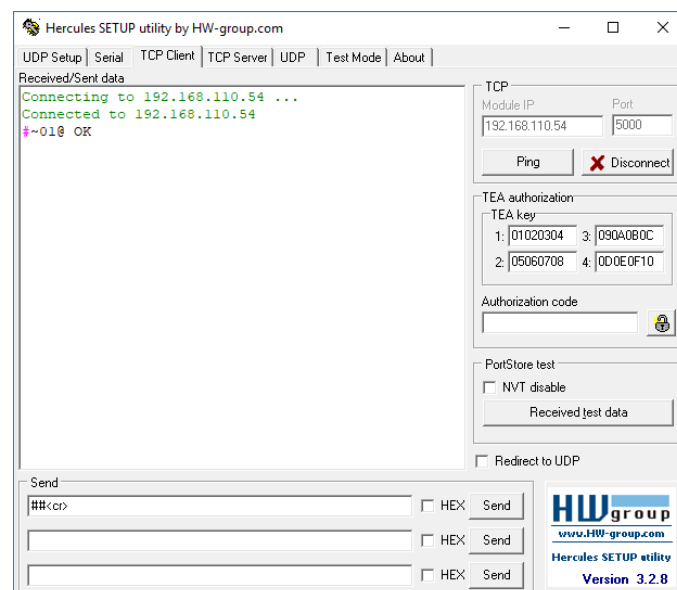
Prefix	Command Name	Constant (Space)	Parameter(s)	Suffix
#	Command	_	Parameter	<CR>

- **Feedback format:**

Prefix	Device ID	Constant	Command Name	Parameter(s)	Suffix
~	nn	@	Command	Parameter	<CR><LF>

- **Command parameters** – Multiple parameters must be separated by a comma (,). In addition, multiple parameters can be grouped as a single parameter using brackets ([ and ]).
- **Command chain separator character** – Multiple commands can be chained in the same string. Each command is delimited by a pipe character (|).
- **Parameters attributes** – Parameters may contain multiple attributes. Attributes are indicated with pointy brackets (<...>) and must be separated by a period (.).

The command framing varies according to how you interface with **WP-20CT**. The following figure displays how the # command is framed using terminal communication software (such as Hercules):



# Protocol 3000 Commands

Function	Description	Syntax	Parameters/Attributes	Example
#	Protocol handshaking.  ① Validates the Protocol 3000 connection and gets the machine number.  Step-in master products use this command to identify the availability of a device.	<b>COMMAND</b> #<CR> <b>FEEDBACK</b> ~nn@_ok<CR><LF>		#<CR>
AV-SW-TIMEOUT	Set auto switching timeout.	<b>COMMAND</b> #AV-SW-TIMEOUT_ <u>switching_mode</u> , <u>time_out</u> <CR> <b>FEEDBACK</b> ~nn@AV-SW-TIMEOUT_ <u>switching_mode</u> , <u>time_out</u> <CR><LF>	<b>switching_mode</b> – Switching mode 0 – Video signal lost 1 – New video signal detected 4 – Disable 5V on video output if no input signal detected 5 – Video cable unplugged 7 – Video signal lost for signal routed as a result of a manual override action <b>time_out</b> – Timeout in seconds 0 - 60000	Set the auto switching timeout to 5 seconds in the event of 5V disable when no input signal is detected: #AV-SW-TIMEOUT_ <u>4</u> , <u>5</u> <CR>
BUILD-DATE?	Get device build date.	<b>COMMAND</b> #BUILD-DATE?_<CR> <b>FEEDBACK</b> ~nn@BUILD-DATE_ <u>date</u> , <u>time</u> <CR><LF>	<b>date</b> – Format: YYYY/MM/DD where YYYY = Year MM = Month DD = Day <b>time</b> – Format: hh:mm:ss where hh = hours mm = minutes ss = seconds	Get the device build date: #BUILD-DATE?<CR>
CEC-SND	Send CEC command to port.	<b>COMMAND</b> #CEC- SND_ <u>port_index</u> , <u>sn_id</u> , <u>cmd_name</u> , <u>cec_len</u> , <u>cec_command</u> <CR> <b>FEEDBACK</b> ~nn@CEC- SND_ <u>port_index</u> , <u>sn_id</u> , <u>cmd_name</u> , <u>cec_mode</u> <CR><LF>	<b>port_index</b> – CEC port transmitting the command: 1 <b>sn_id</b> – 1 <b>cmd_name</b> – command name <b>cec_len</b> – 1–16 <b>cec_command</b> – CEC format command (in HEX format, no leading zeros, no '0x' prefix) <b>cec_mode</b> – CEC mode 0 – Sent 1 – Gateway disabled 2 – Inactive CEC-Master 3 – Busy 4 – Illegal Message Parameter 5 – Illegal CEC Address Parameter 6 – Illegal CEC Command 7 – Timeout 8 – Error	Send TV-OFF CEC command to the HDBaseT port: #CEC-SND_ <u>1</u> , <u>1</u> ,TV-OFF, <u>2</u> ,e004<CR>
CEC-GW-PORT-ACTIVE	Set the CEC activation state.	<b>COMMAND</b> #CEC-GW-PORT- ACTIVE_ <u>direction_type</u> , <u>port_format</u> , <u>port_index</u> , <u>state</u> <CR> > <b>FEEDBACK</b> ~nn@CEC-GW-PORT- ACTIVE_ <u>direction_type</u> , <u>port_format</u> , <u>port_index</u> , <u>state</u> <CR><LF>	<b>direction_type</b> – Direction of the port: out <b>port_format</b> – Type of signal on the port: hdbt <b>port_index</b> – The port number: 1 <b>state</b> – Global gateway activation state: o 0 – as a passthrough o 1 – as a gateway	Activate CEC for the HDBaseT port as a passthrough: #CEC-GW-PORT-ACTIVE_ <u>i</u> n, <u>hdmi</u> , <u>1</u> , <u>0</u> <CR>
CPEDID	Copy EDID data from the output to the input EEPROM.  ① Destination bitmap size depends on device properties (for 64 inputs it is a 64-bit word).  Example: bitmap 0x0013 means inputs 1,2 and 5 are loaded with the new EDID.  In certain products Safe_mode is an optional parameter. See the HELP command for its availability.	<b>COMMAND</b> #CPEDID_ <u>edid_io</u> , <u>src_id</u> , <u>edid_io</u> , <u>dest_bitmap</u> <CR> or #CPEDID_ <u>edid_io</u> , <u>src_id</u> , <u>edid_io</u> , <u>dest_bitmap</u> , <u>safe_mode</u> <CR> <b>FEEDBACK</b> ~nn@CPEDID_ <u>edid_io</u> , <u>src_id</u> , <u>edid_io</u> , <u>dest_bitmap</u> <CR><LF> ~nn@CPEDID_ <u>edid_io</u> , <u>src_id</u> , <u>edid_io</u> , <u>dest_bitmap</u> , <u>safe_mode</u> <CR><LF>	<b>edid_io</b> – EDID source type (usually output) 0 – Input 1 – Output 2 – Default EDID 3 – Custom EDID <b>src_id</b> – Number of chosen source stage 0 – Default EDID source 1 – HDBaseT OUT or USB-C IN 2 – HDMI IN <b>edid_io</b> – EDID destination type 0 – Input <b>dest_bitmap</b> – Bitmap representing destination IDs. Format: XXXX...X, where X is hex digit. The binary form of every hex digit represents corresponding destinations. 0 – indicates that EDID data is not copied to this destination. 1 – indicates that EDID data is copied to this destination. <b>safe_mode</b> – Safe mode (optional parameter) 0 – device accepts the EDID as is without trying to adjust (default value if no parameter is sent) 1 – device tries to adjust the EDID	Copy the EDID data from the HDBaseT Output to the HDMI Input: #CPEDID_ <u>1</u> , <u>1</u> , <u>0</u> , <u>0x1</u> <CR>

Function	Description	Syntax	Parameters/Attributes	Example										
FACTORY	Reset device to factory default configuration.  ⓘ This command deletes all user data from the device. The deletion can take some time.  Your device may require powering off and powering on for the changes to take effect.	<b>COMMAND</b> #FACTORY<CR> <b>FEEDBACK</b> ~nn@FACTORY_ok<CR><LF>		Reset the device to factory default configuration: #FACTORY<CR>										
FCT-MODEL	Set model name.  ⓘ Used where a single firmware file is adaptable for many devices, but the user needs to know (by protocol) which specific model is used.	<b>COMMAND</b> #FCT-MODEL_model_name<CR> <b>FEEDBACK</b> ~nn@FCT-MODEL_model_name<CR><LF>	model_name – String of printable ASCII chars (up to 19 chars)	Set model name: #FCT-MODEL_dip-20<CR>										
FCT-SN	Set serial number.	<b>COMMAND</b> #FCT-SN_serial_num<CR> <b>FEEDBACK</b> ~nn@FCT-SN_serial_num<CR><LF>	serial_num – 14 decimal digits	Set serial number: #FCT-SN_19763840581123<CR>										
HDCP-MOD?	Get HDCP mode.  ⓘ Get HDCP working mode on the device input:  HDCP supported – HDCP ON (default).  HDCP not supported - HDCP OFF.  HDCP support changes following detected sink - MIRROR OUTPUT.	<b>COMMAND</b> #HDCP-MOD?_in_index<CR> <b>FEEDBACK</b> ~nn@HDCP-MOD_in_index,mode<CR><LF>	in_index – Number that indicates the specific input: 1 – USB-C IN 2 – HDMI IN mode – HDCP mode: 0 – HDCP Off 1 – HDCP On 2 – Follow Input 3 – HDCP defined according to the connected output	Get the input HDCP-MODE of HDMI IN : #HDCP-MOD?_2<CR>										
HDCP-STAT?	Get HDCP signal status of a connected device.  ⓘ io_mode =1 – get the HDCP signal status of the sink device connected to the specified output.  io_mode =0 – get the HDCP signal status of the source device connected to the specified input.	<b>COMMAND</b> #HDCP-STAT?_io_mode,in_index<CR> <b>FEEDBACK</b> ~nn@HDCP-STAT_io_mode,in_index,status<CR><LF>	io_mode – Input/Output 0 – Input 1 – Output io_index – Number that indicates the specific number of inputs or outputs (based on io_mode): 1 – HDBaseT OUT or USB-C IN 2 – HDMI IN status – Signal encryption status - valid values On/Off: 0 – HDCP Off 1 – HDCP On	Get the HDCP status of the source device connected to USB-C IN: #HDCP-STAT?_0,1<CR>										
HELP	Get command list or help for specific command.	<b>COMMAND</b> #HELP<CR> #HELP_cmd_name<CR> <b>FEEDBACK</b> 1. Multi-line: ~nn@Device_cmd_name,_cmd_name..<CR><LF>  To get help for command use: HELP (COMMAND_NAME)<CR><LF> ~nn@HELP_cmd_name:<CR><LF> description<CR><LF> USAGE:usage<CR><LF>	cmd_name – Name of a specific command	Get the command list: #HELP<CR>  To get help for AV-SW-TIMEOUT: HELP_av-sw-timeout<CR>										
LDFW	Load new firmware file.  ⓘ In most devices firmware data is saved to flash memory, but the memory does not update until receiving the "UPGRADE" command and is restarted.	<b>COMMAND</b> Step 1: #LDFW_size<CR> <b>FEEDBACK</b> Step 2: If ready was received, send FIRMWARE_DATA Response 1: ~nn@LDFW_size_ready<CR><LF> or ~nn@LDFW_errnn<CR><LF> Response 2: ~nn@LDFW_size_ok<CR><LF>	size – Size of firmware data that is sent firmware_data – HEX or KFW file in protocol packets <b>Using the Packet Protocol</b> Send a command: LDRV, LOAD, IROUT, LDEDID Receive Ready or ERR### If Ready: a. Send a packet, b. Receive OK on the last packet, c. Receive OK for the command Packet structure: Packet ID (1, 2, 3...) (2 bytes in length) Length (data length + 2 for CRC) – (2 bytes in length) Data (data length -2 bytes) CRC – 2 bytes <table border="1"><tr><td>01</td><td>02</td><td>03</td><td>04</td><td>05</td></tr><tr><td>Packet ID</td><td>Length</td><td>Data</td><td>CRC</td><td></td></tr></table> 5. Response: ~nnnn_ok<CR><LF> (Where NNNN is the received packet ID in ASCII hex digits.)	01	02	03	04	05	Packet ID	Length	Data	CRC		Load new firmware file: Step 1: #LDFW_size<CR> Step 2: If ready was received, send firmware_data
01	02	03	04	05										
Packet ID	Length	Data	CRC											
MODEL?	Get device model.	<b>COMMAND</b> #MODEL?_<CR> <b>FEEDBACK</b> ~nn@MODEL_model_name<CR><LF>	model_name – String of up to 19 printable ASCII chars	Get the device model: #MODEL?_<CR>										

Function	Description	Syntax	Parameters/Attributes	Example
PROT-VER?	Get device protocol version.	<b>COMMAND</b> #PROT-VER?_<CR> <b>FEEDBACK</b> ~nn@PROT-VER_3000:version<CR><LF>	version – XX.XX where X is a decimal digit	Get the device protocol version: #PROT-VER?_<CR>
RESET	Reset device. <i>ⓘ</i> To avoid locking the port due to a USB bug in Windows, disconnect USB connections immediately after running this command. If the port was locked, disconnect, and reconnect the cable to reopen the port.	<b>COMMAND</b> #RESET<CR> <b>FEEDBACK</b> ~nn@RESET_ok<CR><LF>		Reset the device: #RESET<CR>
SN?	Get device serial number.	<b>COMMAND</b> #SN?_<CR> <b>FEEDBACK</b> ~nn@SN_serial_num<CR><LF>	serial_num – 14 decimal digits, factory assigned	Get the device serial number: #SN?_<CR>
UPGRADE	Perform firmware upgrade. <i>ⓘ</i> Not necessary for some devices. Firmware usually uploads to a device via a command like LDFW. Reset the device to complete the process.	<b>COMMAND</b> #UPGRADE<CR> <b>FEEDBACK</b> ~nn@UPGRADE_ok<CR><LF>		Perform firmware upgrade: #UPGRADE<CR>
VERSION?	Get firmware version number.	<b>COMMAND</b> #VERSION?_<CR> <b>FEEDBACK</b> ~nn@VERSION_firmware_version<CR><LF>	firmware_version – XX.XX.XXXX where the digit groups are: major.minor.build version	Get the device firmware version number: #VERSION?_<CR>

## Result and Error Codes

### Syntax

In case of an error, the device responds with an error message. The error message syntax:

- **~NN@ERR XXX<CR><LF>** – when general error, no specific command
- **~NN@CMD ERR XXX<CR><LF>** – for specific command
- **NN** – machine number of device, default = 01
- **XXX** – error code

### Error Codes

Error Name	Error Code	Description
P3K_NO_ERROR	0	No error
ERR_PROTOCOL_SYNTAX	1	Protocol syntax
ERR_COMMAND_NOT_AVAILABLE	2	Command not available
ERR_PARAMETER_OUT_OF_RANGE	3	Parameter out of range
ERR_UNAUTHORIZED_ACCESS	4	Unauthorized access
ERR_INTERNAL_FW_ERROR	5	Internal FW error
ERR_BUSY	6	Protocol busy
ERR_WRONG_CRC	7	Wrong CRC
ERR_TIMEDOUT	8	Timeout
ERR_RESERVED	9	(Reserved)
ERR_FW_NOT_ENOUGH_SPACE	10	Not enough space for data (firmware, FPGA...)
ERR_FS_NOT_ENOUGH_SPACE	11	Not enough space – file system
ERR_FS_FILE_NOT_EXISTS	12	File does not exist
ERR_FS_FILE_CANT_CREATED	13	File can't be created
ERR_FS_FILE_CANT_OPEN	14	File can't open
ERR_FEATURE_NOT_SUPPORTED	15	Feature is not supported
ERR_RESERVED_2	16	(Reserved)
ERR_RESERVED_3	17	(Reserved)
ERR_RESERVED_4	18	(Reserved)
ERR_RESERVED_5	19	(Reserved)
ERR_RESERVED_6	20	(Reserved)
ERR_PACKET_CRC	21	Packet CRC error
ERR_PACKET_MISSED	22	Packet number isn't expected (missing packet)
ERR_PACKET_SIZE	23	Packet size is wrong
ERR_RESERVED_7	24	(Reserved)
ERR_RESERVED_8	25	(Reserved)
ERR_RESERVED_9	26	(Reserved)
ERR_RESERVED_10	27	(Reserved)
ERR_RESERVED_11	28	(Reserved)
ERR_RESERVED_12	29	(Reserved)
ERR_EDID_CORRUPTED	30	EDID corrupted
ERR_NON_LISTED	31	Device specific errors
ERR_SAME_CRC	32	File has the same CRC – not changed
ERR_WRONG_MODE	33	Wrong operation mode
ERR_NOT_CONFIGURED	34	Device/chip was not initialized

The warranty obligations of Kramer Electronics Inc. ("Kramer Electronics") for this product are limited to the terms set forth below:

### **What is Covered**

This limited warranty covers defects in materials and workmanship in this product.

### **What is Not Covered**

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

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The standard limited warranty for Kramer products is seven (7) years from the date of original purchase, with the following exceptions:

1. All Kramer VIA hardware products are covered by a standard three (3) year warranty for the VIA hardware and a standard three (3) year warranty for firmware and software updates; all Kramer VIA accessories, adapters, tags, and dongles are covered by a standard one (1) year warranty.
2. Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, ring mounted adapters, portable power chargers, Kramer speakers, and Kramer touch panels are covered by a standard one (1) year warranty. Kramer 7-inch touch panels purchased on or after April 1st, 2020 are covered by a standard two (2) year warranty.
3. All Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a lifetime warranty.

### **Who is Covered**

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

### **What Kramer Electronics Will Do**

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product. If a direct or similar replacement product is supplied, the original product's end warranty date remains unchanged and is transferred to the replacement product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

### **What Kramer Electronics Will Not Do Under This Limited Warranty**

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

### **How to Obtain a Remedy Under This Limited Warranty**

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, visit our web site at [www.kramerav.com](http://www.kramerav.com) or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number).

You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

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This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, visit our web site at [www.kramerav.com](http://www.kramerav.com) or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

# KRAMER



**HDMI™**  
HIGH-DEFINITION MULTIMEDIA INTERFACE



P/N: 2900-301523



Rev: 1



## 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.

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