

TPG-8K

**8K HDMI 2.1 Test Pattern Generator & Analyzer
with SDVoE Option and AVoIP Tests**



SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.



The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product.



The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.



Be careful with electricity:

- **Power Outlet:** To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use the power adapter and power connection cables designed for this unit.
- **Power Cord:** Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning:** For protection from lightning or when the product is left unattended for an extended period, disconnect it from the power source.



Also follow these precautions:

- **Ventilation:** Do not block ventilation slots, if applicable, on the product, or place any heavy object on top of it. Blocking airflow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating:** Avoid stacking the Aurora product on top of a hot component, such as a power amplifier.
- **Risk of Fire:** Do not place the unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections:** Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry:** To avoid electric shock, never stick anything in the slots on the case, or remove the cover.
- **Water Exposure:** To reduce the risk of fire or electric shock, do not expose the product to rain or moisture.
- **Cleaning:** Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD:** Handle this unit with proper ESD care. Failure to do so can result in failure.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two (2) conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.



Trademarks

All trademarks in this document are the properties of their respective owners.

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PACKAGE CONTENTS

Please make sure the following items are included within your package.

- 1 QTY TPG-8K
- Plastic Case
- Power Cord

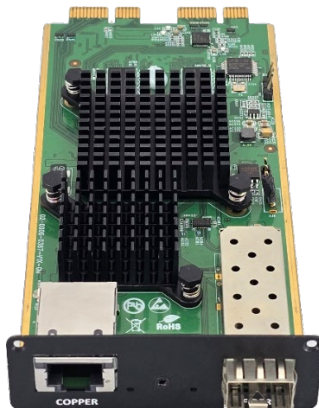
Included Accessories



**Note: Go to www.auroramm.com for the latest manual and firmware.*

OPTIONAL ACCESSORIES

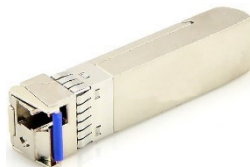
- **TPG-SDVoE**
(10G SDVoE Simultaneous Transceiver Expansion Card)



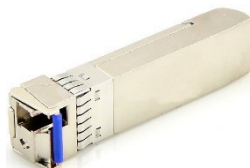
- **IPA-SFP-10GMM-1**
(10G SFP+ Multi-Model LC 50/125 Module)



- **IPA-SFP-10G32C1**
(10G SFP+ BIDI Single Mode 1330/1270nm Module 10KM)



- **IPA-SFP-10G23C1**
(10G SFP+ BIDI Single Mode 1270/1330 Module 10KM)



- **IPA-SFP-10G20**
(10G SFP+ Single Mode Dual Module 1310nm 20KM)



- **PS0081-1**
(48V 24-Watt PoE Injector)
Available in -US, -AU, -EU, and -UK worldwide models



INTRODUCTION

About

The TPG-8K is the first test 8K test pattern generator with analyzer to focus on AV over IP in addition to HDMI. AVoIP has quickly become the leading distribution for our industry which is why we built a device to properly test the image quality from end to end. The latency performance of the stream is just as important which is why we added the ability to measure end to end latency including the network switch latency. Along with HDMI, HDCP, and EDID analyzing assures an install or lab testing goes smooth and quickly. We even made it rack mountable for use at a headend to send patterns or view content on the HDMI or SDVoE with optional expansion card.

Features

- Supports video resolution outputs up to 8K60 4:2:0 10bits, 8K30 4:4:4 & 4K2K 120Hz
- Supports HDR, which is 4K2K@60 4:2:0 10-bits/12-bits
- Built-in motion video patterns
- HDMI input and output support up to HDMI 2.1 & HDCP 1.4/2.3
- Fundamental HDMI feature analysis up to 8K4K@60 4:2:0 8bit HDMI 2.1 input
- HDCP & EDID Analysis
- AV over IP Test Patterns and Latency Analyzer
- 2 Internal Speakers
- HDMI Input Video Preview Display
- 7" Capacitive Touch Screen & Web Server for remote control
- Battery powered for portability; it can extend operation time with full load up to 3 hours
- Supports video resolution outputs up to 8K60 4:2:0 10bits, 8K30 4:4:4 & 4K2K 120Hz

TPG-8K Front



LCD Display

7" Color Touch Display Interface

Power Switch

Left side power on/off switch.

Speakers

Left and right speakers for audio playback.

TPG-8K Rear



TPG-8K Rear View with Option 10G SDVoE Expansion Card

Rear

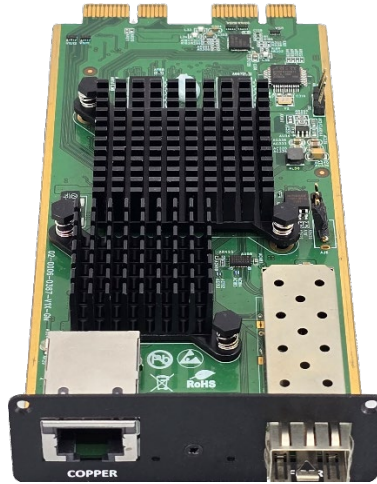
From right to left:

- **12VDC:** 12 Volt DC power connector
- **1G LAN Connector LED's:**
 - Left LED is 10/100 Mbps Link Speed
 - Right LED is LAN Activity & 1G Link

The Ethernet connector is PoE+ capable of powering the TPG-8K. PoE+ will trickle charge the unit and the side power button will not work when PoE+ is supplied.

- **Console:** This is for debugging purpose only.
- **Audio Out:** Analog stereo audio output.
- **F/W:** USB 3.0 Firmware Update Port for USB stick to transfer update.
- **HDMI In:** HDMI input up to 8K60 4:4:4.
- **HDMI Out:** HDMI Output up to 8K60 4:4:4
- **Expansion Board Slot:** For additional options such as the TPG-SDVoE card to enhance capabilities.

TPG-SDVoE Expansion Board



The TPG-SDVoE Expansion board is a 10G AV over IP transceiver board. It will transmit and receive SDVoE simultaneously over RJ-45 or Fiber up to 4K60 4:4:4. Fiber modules are sold separately.

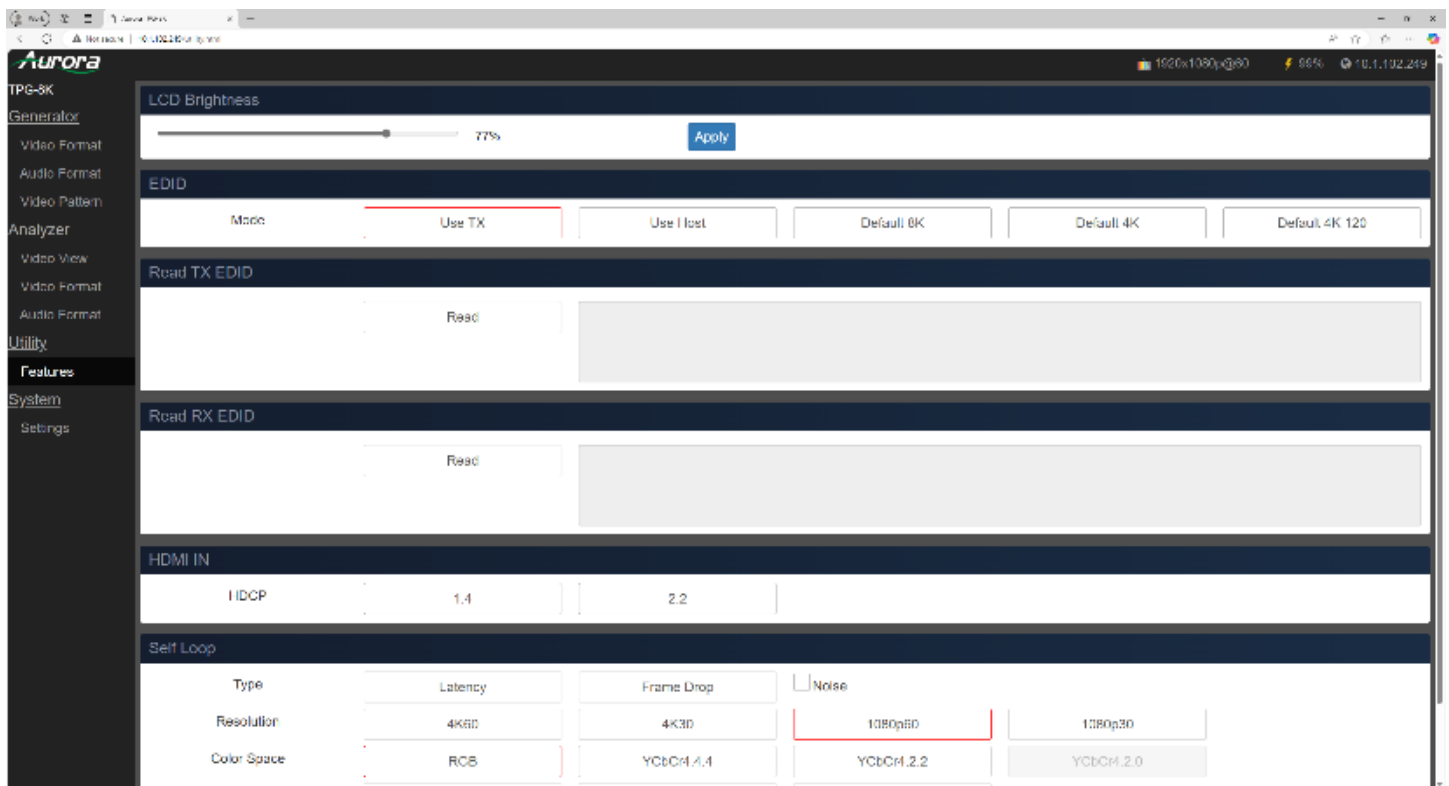
OPERATION

1. Using the power switch on the left side of the unit, toggle it to the “on” state. Note if PoE+ is used the unit will always be powered.
2. The TPG-8K will boot within a minute and a variety of choices will appear on the screen for use. The left most column are the page selections.
3. View the Touch Interface/Web Interface section for more details of each function.
4. Connect the HDMI Output to the destination device to view or ingest the test patterns.
5. Connect the HDMI Input to the source to be analyzed and viewed on the panel.
6. If remote access is required, the Ethernet port will allow control from a browser using the IP address of the unit which can be found on the setup screen.

APPLICATIONS

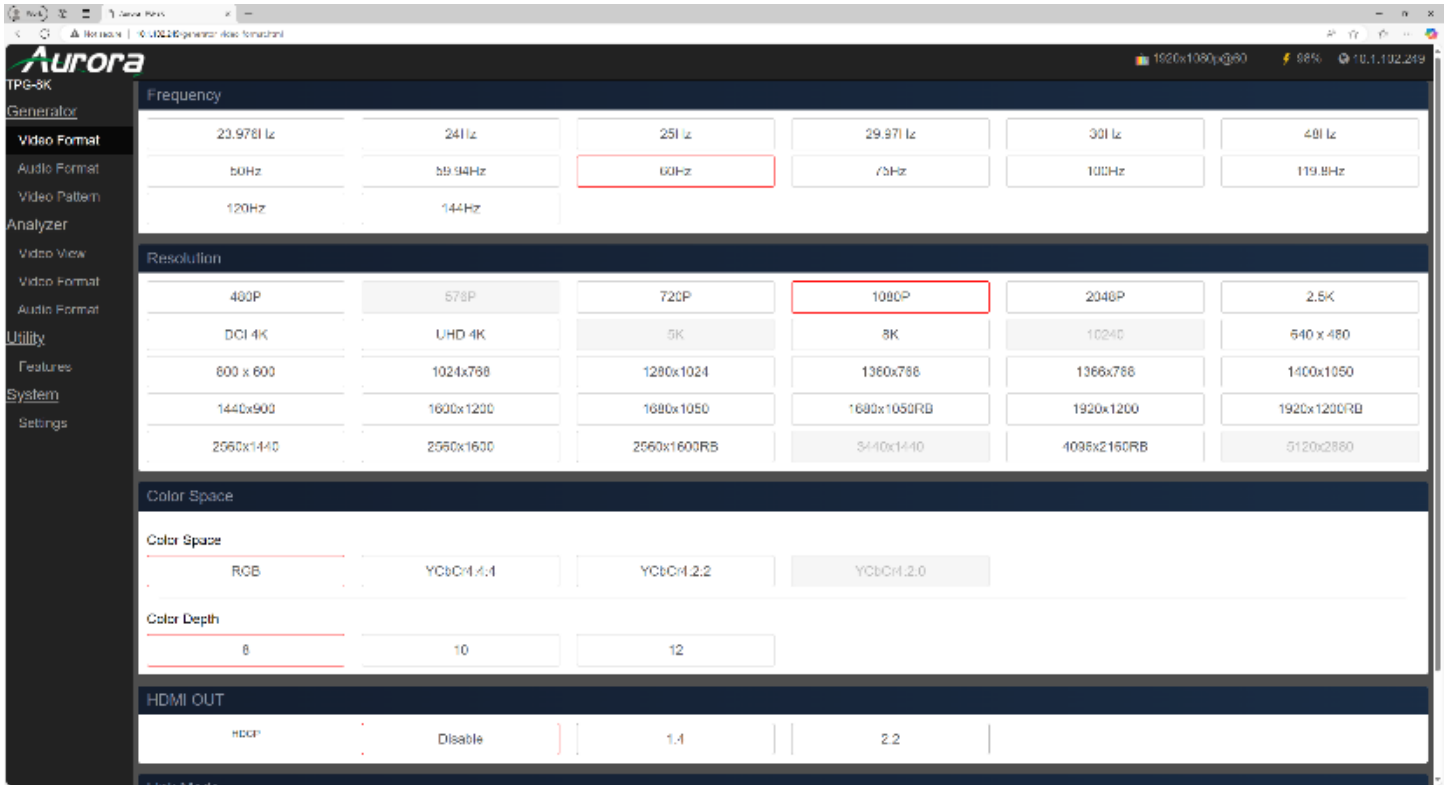
Latency/Frame Drop Testing of AVoIP

To test frame latency, connect the HDMI Output to the encoder and the HDMI decoder to the HDMI input. Please note at this time if a scaler is being used it may interfere with the process if it is doing frame rate conversion. Try to bypass the scaler by putting it into passthrough or genlock mode as some devices may label the function. The OSD will show the latency in real time once the test is run under the Utility Features menu. Select the type of test, resolution and color space.



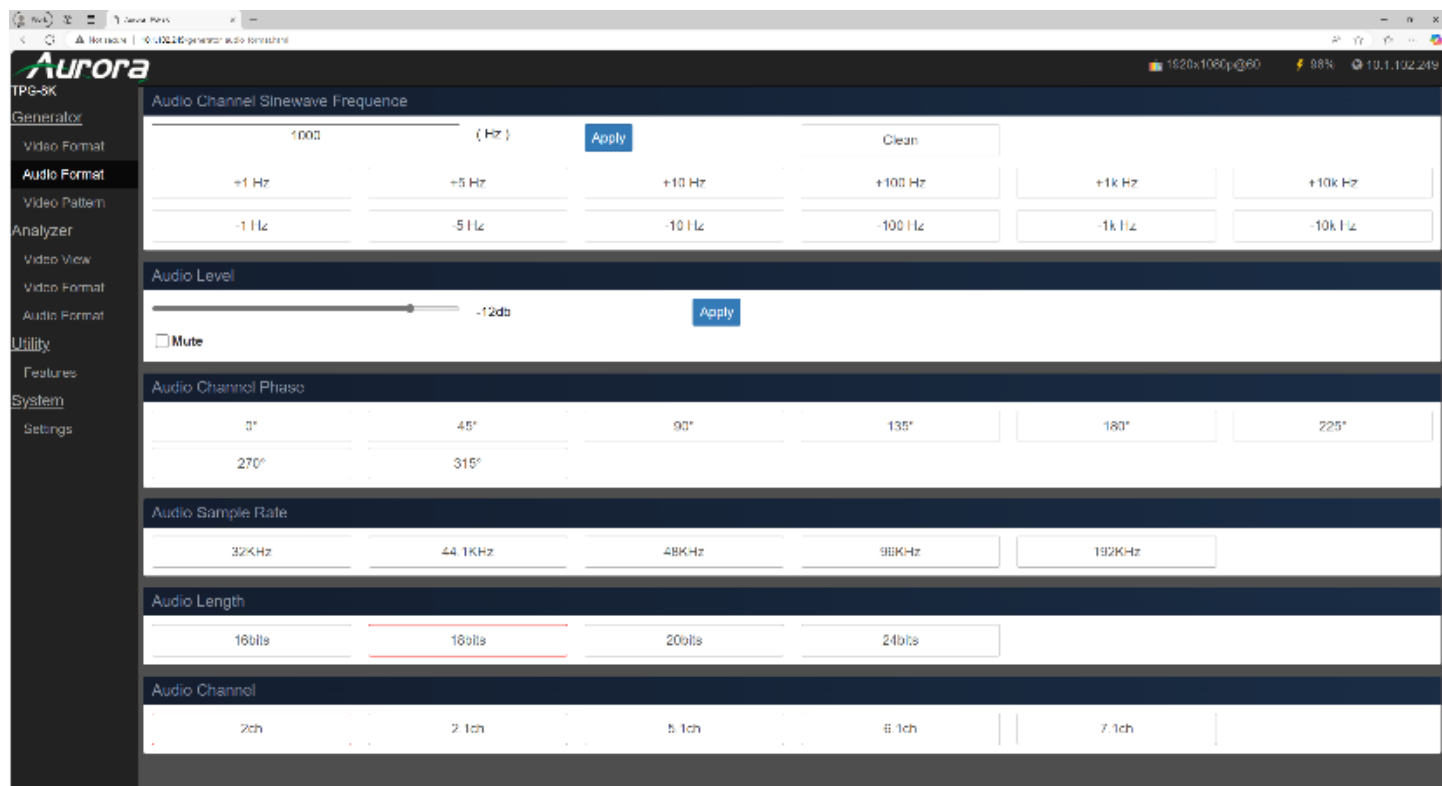
Touch Interface and Webpage Functions

Generator Video Format



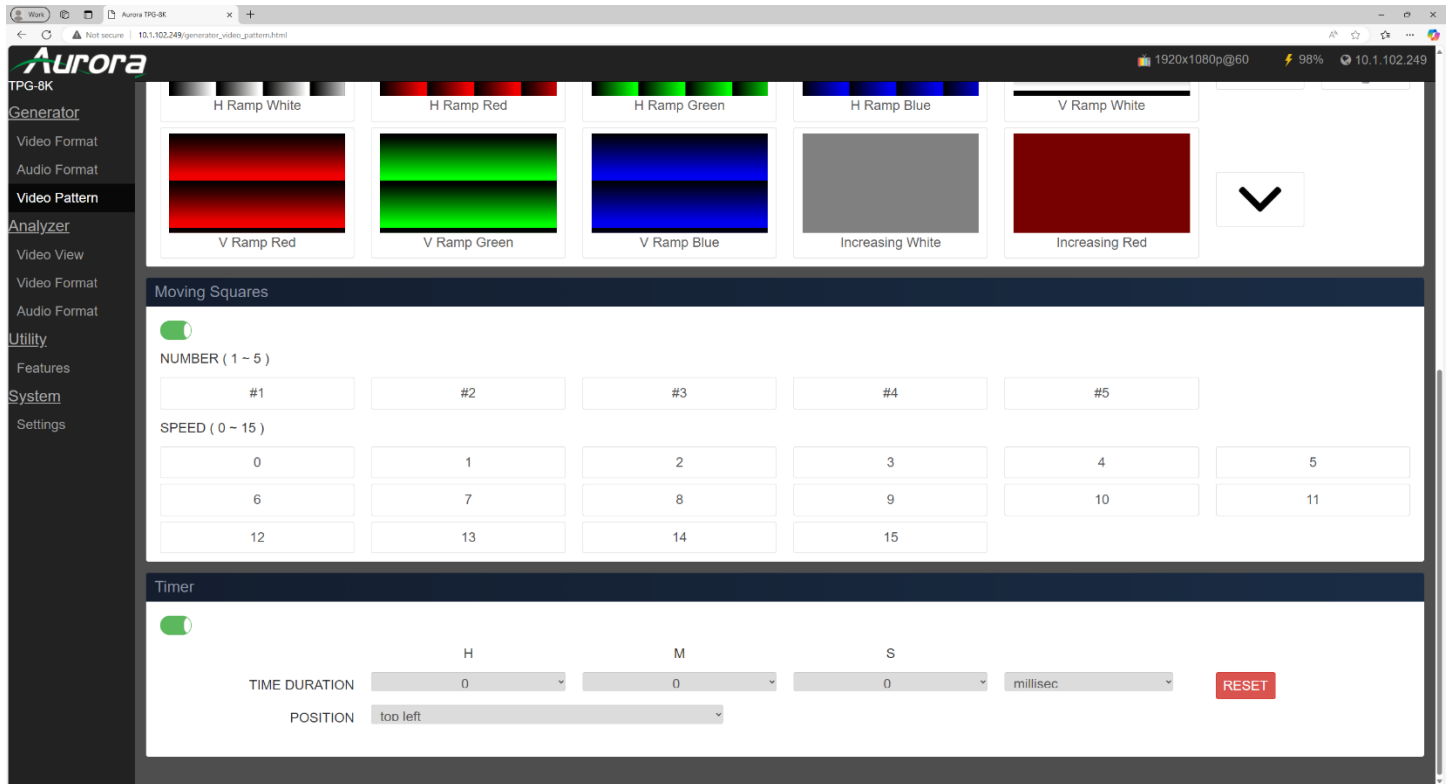
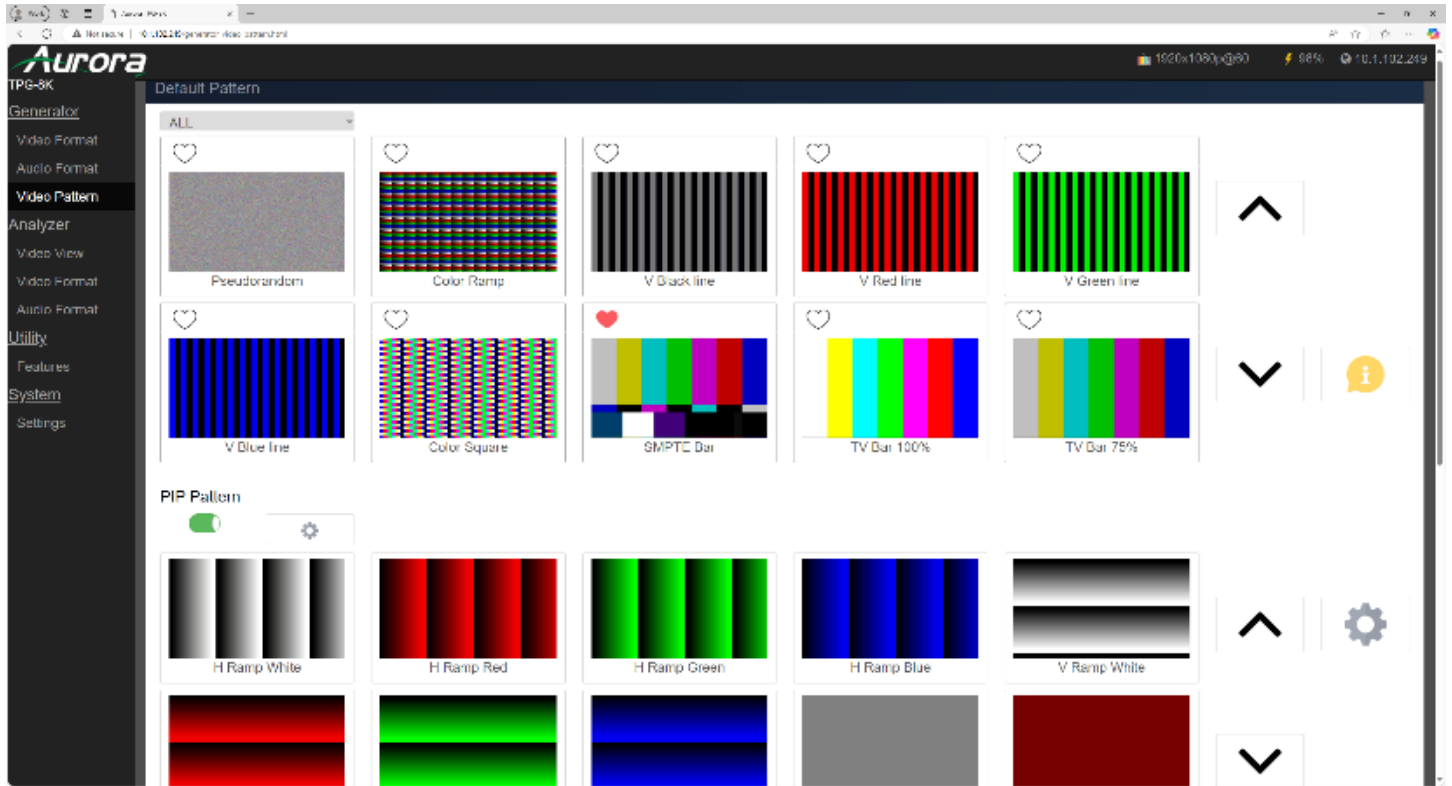
The video format page allows the selection of the resolution, frame rate, color space, and HDCP type.

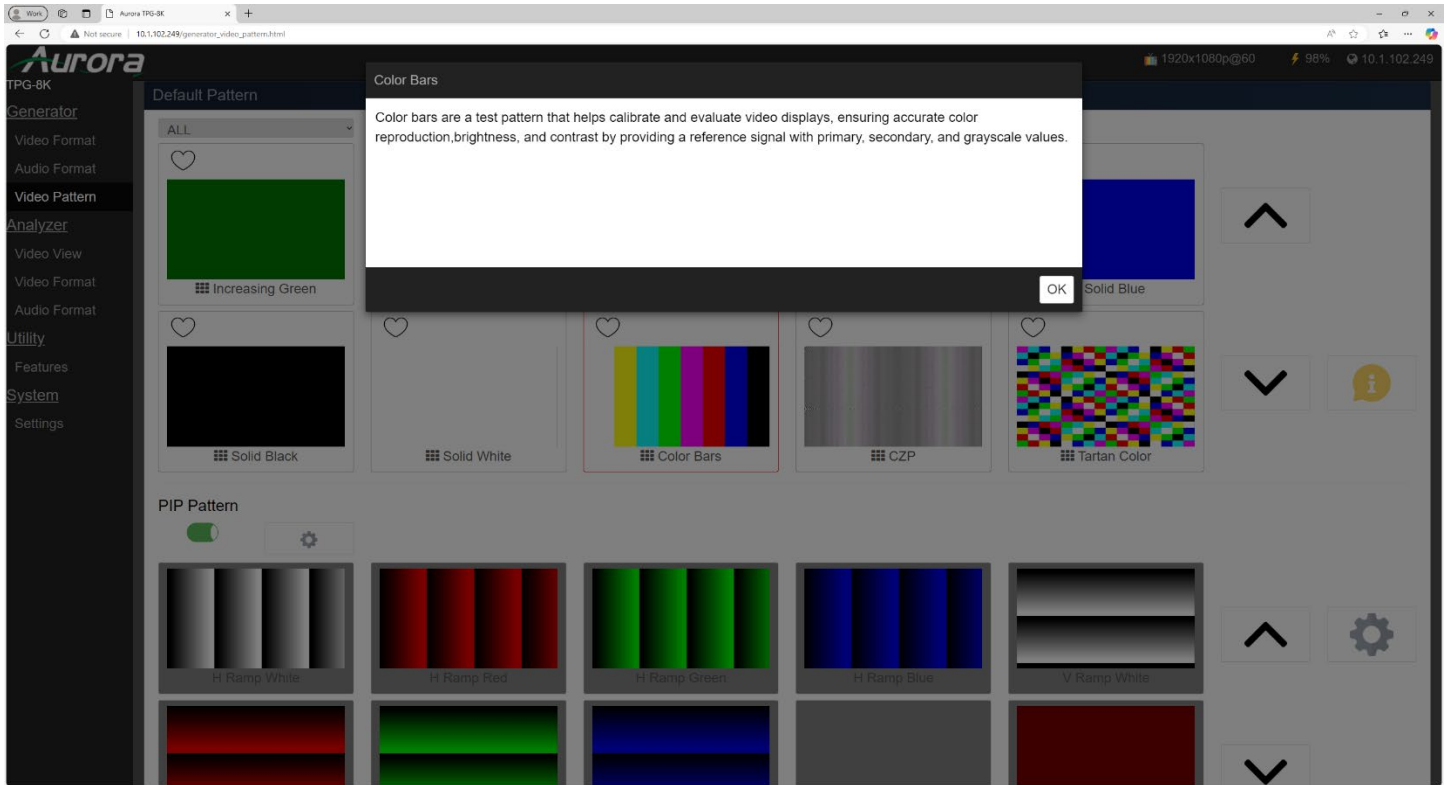
Generator Audio Format



The audio format page allows a variety of audio control for testing. This includes tone generation at different frequencies, audio level, phase of the audio, sample rate, the bit length, and how many channels of audio.

Generator Video Pattern

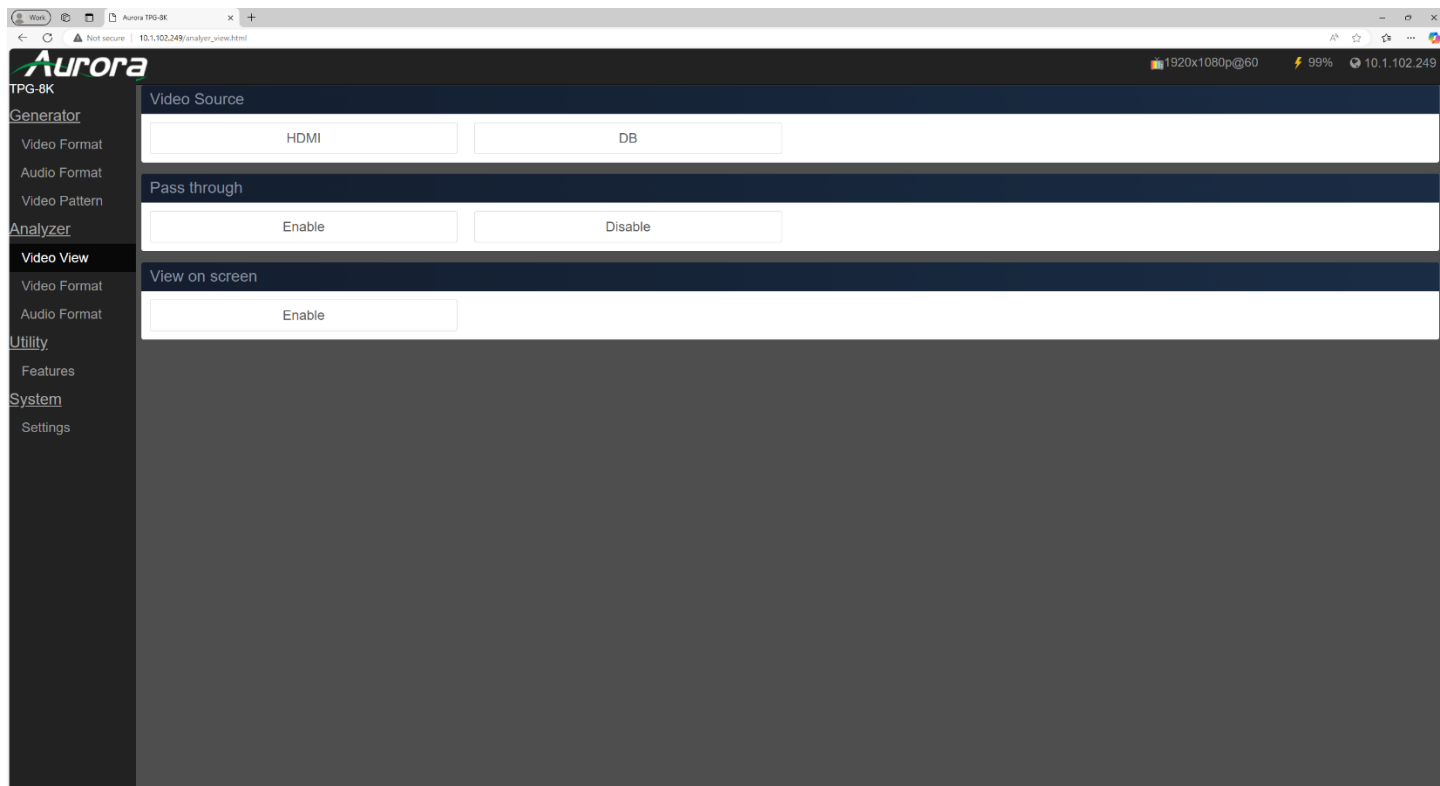




The video pattern selection page has a variety of test patterns to choose from for a variety of different purposes. There is a “i” info button that has a description of the test pattern. The heart symbol is to save your favorite patterns for easy recall. The PiP pattern is for turning on a secondary picture in picture window with a different simultaneous window pattern.

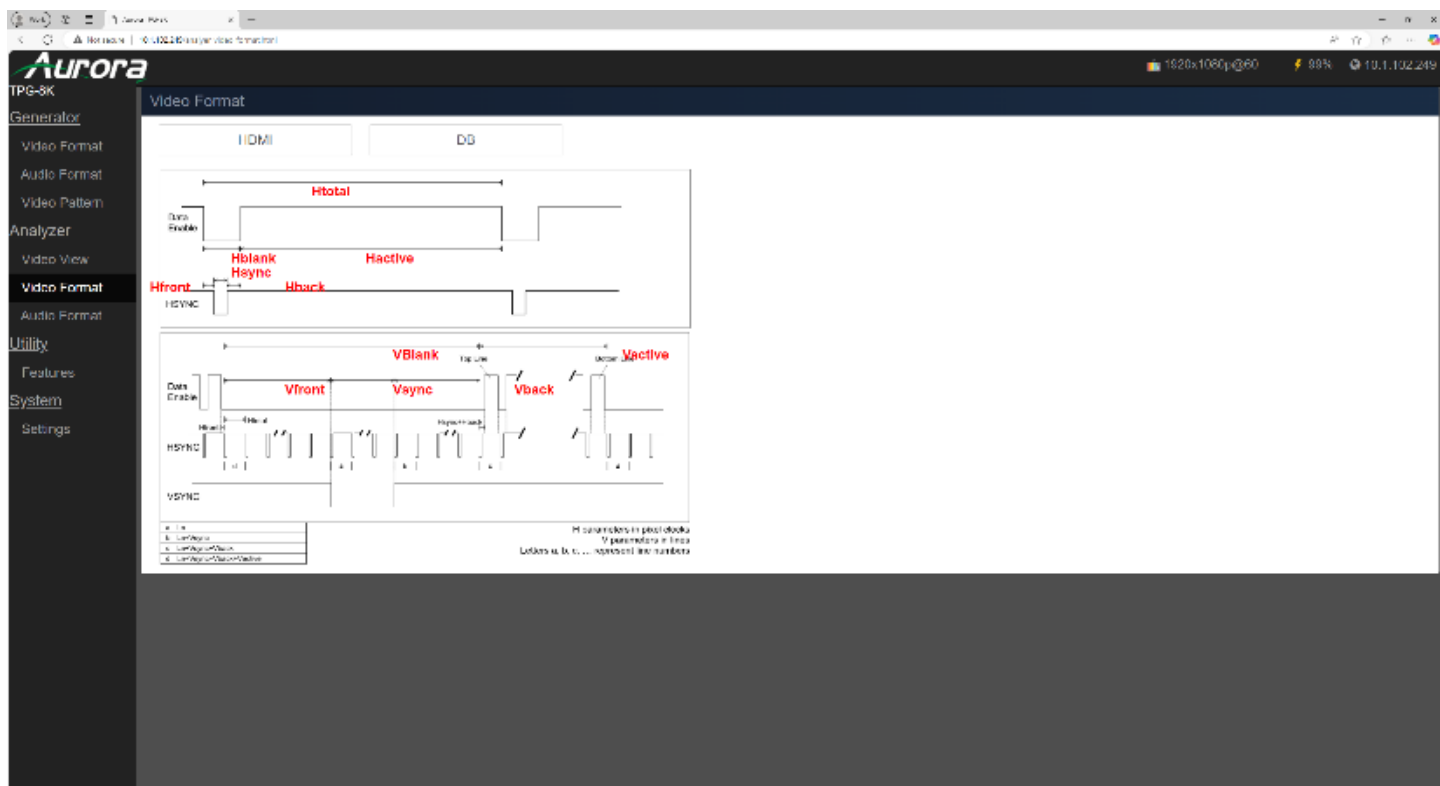
Motion patterns can be enabled with the moving squares section and even a timer as well.

Analyzer Video View



This selection allows the viewing of the HDMI Input.

Analyzer Video Format

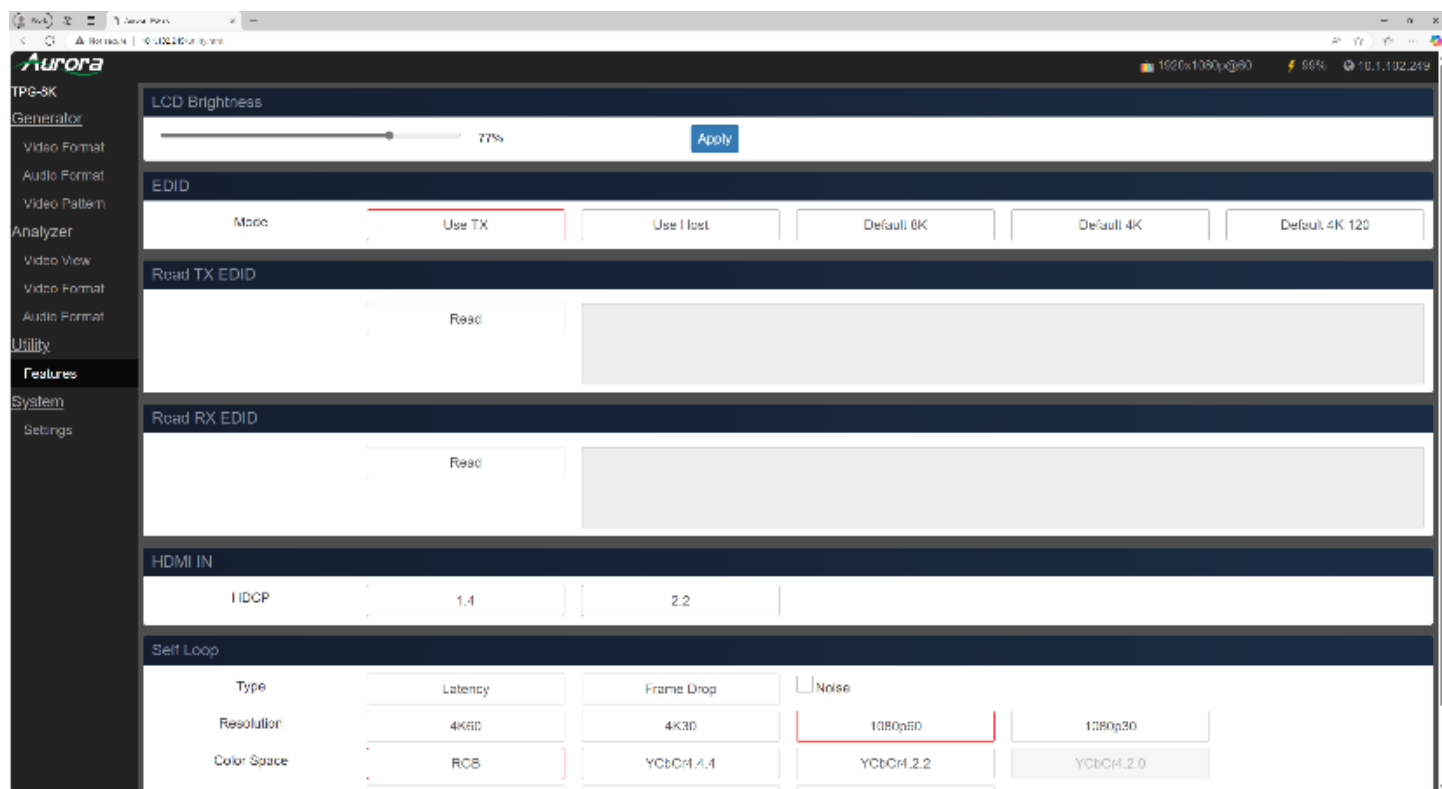


Video format shows the type of information being analyzed but at this time will not show the actual values. It is for reference only at this time.

Analyzer Audio View

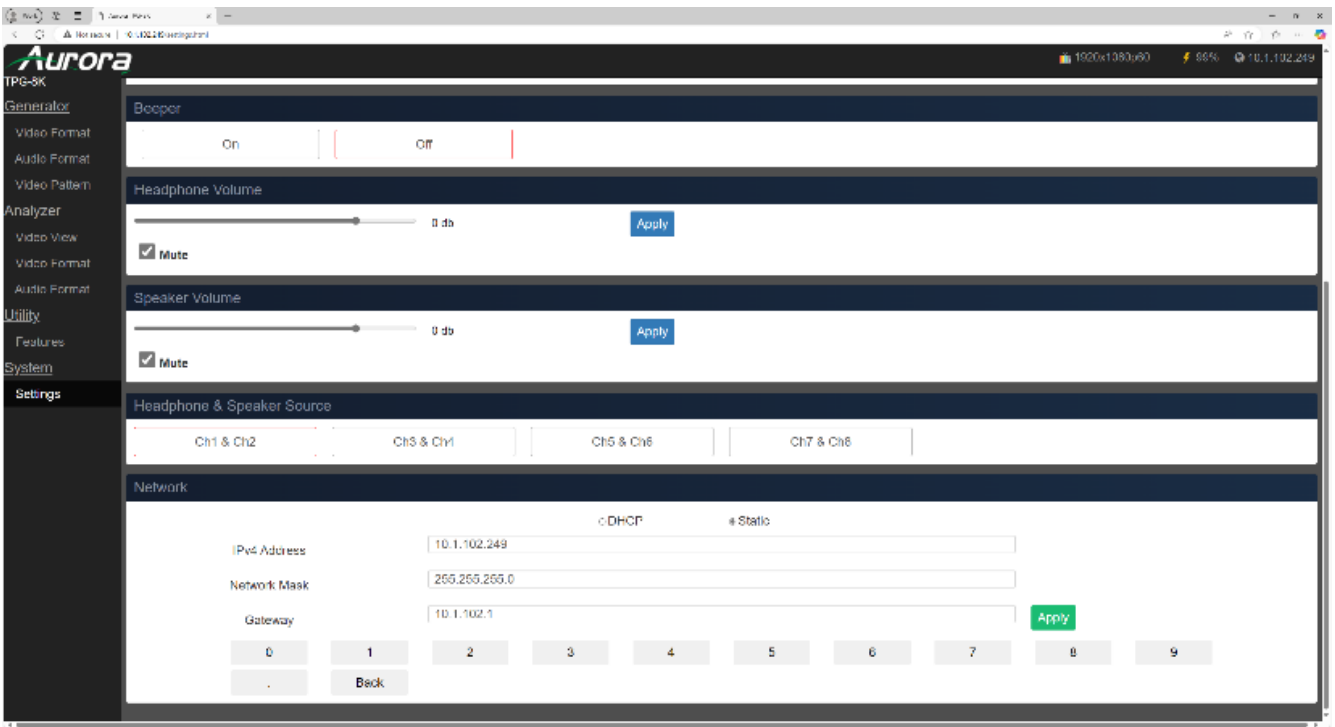
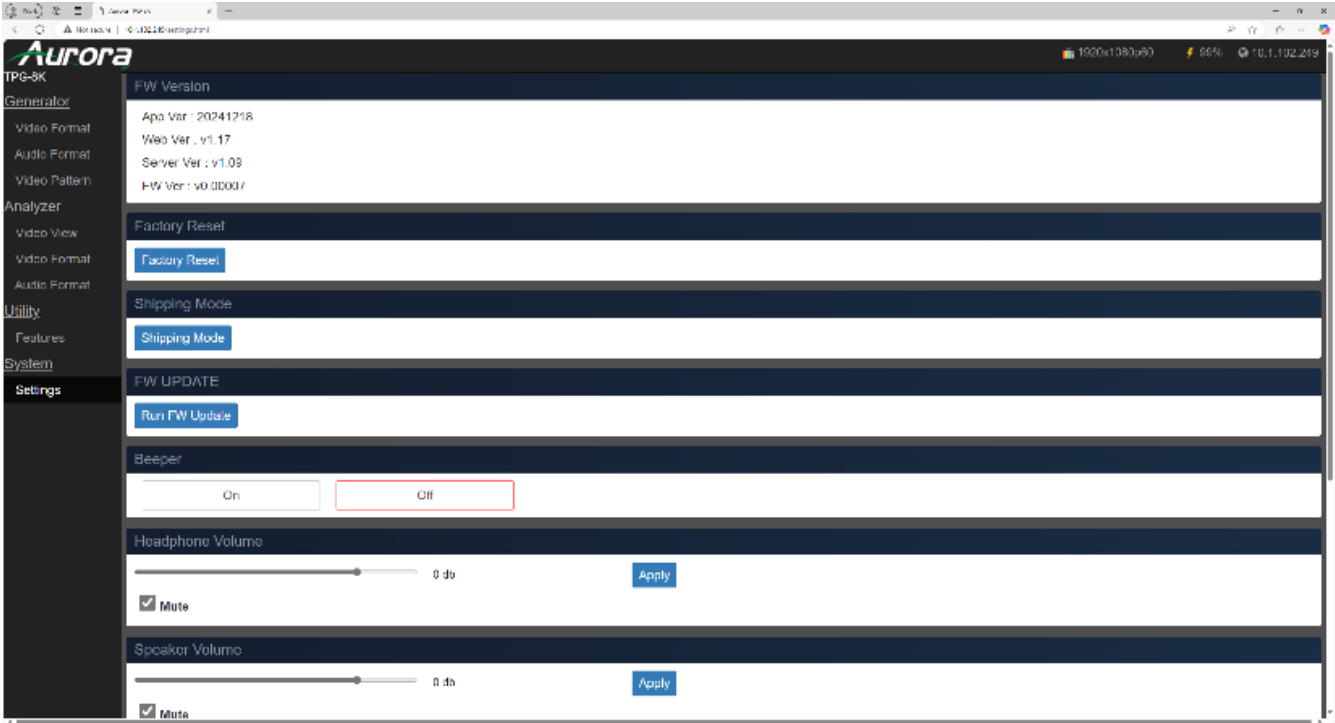
This is a place holder for future audio analyzing features.

Utility Features



The utility page is for miscellaneous functions like LCD brightness, EDID, HDMI Input HDCP settings, and frame latency/frame drop testing.

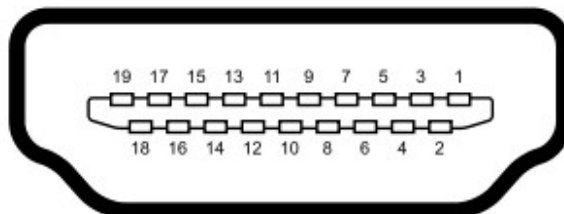
System Settings



On the system settings page you will find the firmware info, factory reset, firmware update, headphone and speaker volume, as well as network settings.

CONNECTOR PIN DEFINITION

HDMI



Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0-	Pin 16	SDA
Pin 3	TMDS Data2-	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock-	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1-	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

CAT5e/6/6A

T568A and T568B Wiring

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (socket is reversed)
1	3	2	tip	white/green stripe	white/orange stripe	
2	3	2	ring	green solid	orange solid	
3	2	3	tip	white/orange stripe	white/green stripe	
4	1	1	ring	blue solid	blue solid	
5	1	1	tip	white/blue stripe	white/blue stripe	
6	2	3	ring	orange solid	green solid	
7	4	4	tip	white/brown stripe	white/brown stripe	
8	4	4	ring	brown solid	brown solid	

APPENDIX 1

Troubleshooting

It is advisable to make certain all units are using the latest firmware before troubleshooting. Also make sure all network connections are operating on 1G.

Power not shutting off when switch is in off position

If PoE+ power is supplied, it will bypass the power switch.

Web Server is Not Responding

- Check if the IP address is correct on the settings page.
- Check to see if the PC is on the same network IP address and subnet range as the TPG-8K.

Frame Latency/Drop Test not working

- Make certain there is no frame rate conversion in the path.

Unit keeps shutting off

- Make certain the unit has been charged and is plugged in.

APPENDIX 2

Firmware Update

For the latest firmware updates please go www.auroramm.com.

You must sign up to the Customer Portal to download firmware with instructions on how to update.

APPENDIX 3

Recommended Cabling

1G Ethernet Control Port

Cat 5e UTP (Unshielded): 100m (330ft)

Any brand on the market is made to Category 5e or better specification.

Cat 6 UTP (Unshielded): 143m (470ft)

Cable Brand: West Penn Wire

Part Number: 4246. Cat 6 UTP CMR Part Number: 254246. Cat 6 UTP CMP

Cat 6A UTP (Unshielded): 182m (600ft)

Cable Brand: West Penn Wire

Part Number: 4246A. Cat6 A UTP CMR Part Number: 254246A. Cat6A UTP CMP

SDVoE

Cat 6A UTP (Unshielded): 182m (600ft)

Cable Brand: West Penn Wire

Part Number: 4246A. Cat6 A UTP CMR Part Number: 254246A. Cat6A UTP CMP

CAT 6 can be used but the distance will be reduced to 55 meters.

APPENDIX 4

Technical Specifications

Model Name	TPG-8K
Technical	
Role of usage	HDMI 2.1 Installation Gear
Video Bandwidth	Input up to FRL 5 (48G) Output up to FRL 5 (48G) Frequency Range: 25MHz~1188MHz
HDMI Compliance	HDMI 2.1 and below
HDCP Compliance	HDCP 2.3 and below
Video Support	up to 8K60 4:2:0 10bits, 8K30 4:4:4 & 4K2K 120Hz
ESD protection	Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]
Video Format Support	HDMI & SDVoE
Input	1x HDMI 2.1
Output	1x HDMI 2.1
Control	7" Capacitive Touch Screen (1280 x 800) & Mouse Control
Audio	2 Internal Speakers (2W per channel)
HDMI connector	Type A [19-pin female]
USB Type A	Firmware update
USB micro connector	Console Debugging
Option Card Slot	SDVoE Option Card Slot (TPG-SDVoE)
Mechanical	
Housing	Metal Case
Mounting	Desktop Feet, Optional Rack Mount
Dimensions (L x W x H)	11.25" x 7" x 3" (285.75mm x 177.8mm x 76.2mm)
Weight	4.6lbs (2.087kg)
Power Supply	12v DC, PoE+, & Battery
Power Consumption	23 Watts with Option Card
Operation Temperature	0~40° C [32~104° F]
Storage Temperature	-20~60° C [-4~140° F]
Relative Humidity	20~90% RH [No Condensation]
Warranty	Limited 2 Years
Package Contents	1x TPG-8K, 1x Plastic Protective Case

***Note: Specifications subject to change without notice.**

APPENDIX 5

Warranty

Limited 3 Warranty

Aurora Multimedia Corporation (“Manufacturer”) warrants that this product is free of defects in both materials and workmanship for a period of 3 years as defined herein for parts and labor from date of purchase. This Limited Warranty covers products purchased in the year 2025 and after. Motorized mechanical parts (Hard Drives, DVD, etc.), mechanical parts (buttons, doors, etc.), remotes and cables are covered for a period of 1 year. Touch screen displays are covered for 1 year; touch screen overlay components are covered for 90 days. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

- A. The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,
- B. The product has not been operated in accordance with procedures specified in operating instructions; or,
- C. The product has been repaired and or altered by other than manufacturer or authorized service center; or,
- D. The product's original serial number has been modified or removed; or,
- E. External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product; or,
- F. Part(s) are no longer available for product.

In the event the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

No other warranty, express or implied other than Manufacturer's shall apply.

- Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.

Aurora Multimedia Corporation

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