

GeoBox

by  VigilLink

S914 User Guide

UHD 4K/60 1x4 HDMI Distribution Amplifier

(with HDCP2.2 and HDMI2.0)

Default IP address: 192.168.0.100



Sales & Technical support

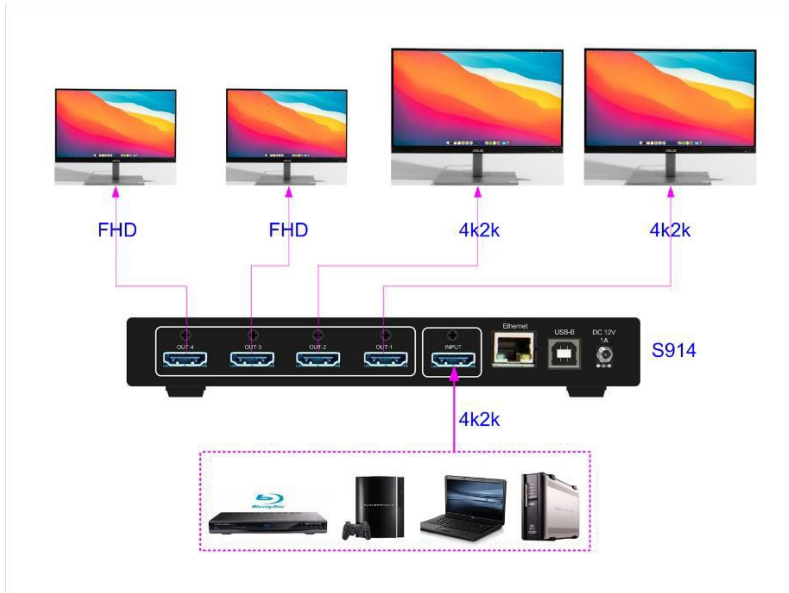
Web site: www.geoboxav.com

E-mail: info@vigillink.com Version: V1.01

Tel: +949-502-4484

Quick User Instructions

System connection



System Control

Users can connect with Ethernet and use Webpage or connect with USB or Ethernet and use GCT PC Tool to control S914:

1. Turn ON/OFF system power
2. Disable/Enable output
3. Set Customized EDID
4. Check system status

Select Dip switch for EDID Setting.

COPY:

1. Output-1 is the prior port. When output-1 is connected to one display to get EDID resolution, all other displays connected to output 2/3/4 will follow the same EDID Resolution of Output-1.
2. Application case: when the user requires an 8k/1k signal for edge blending, it is beyond the EDID setting range. Users can select COPY mode and connect GeoBox to port-1, then execute PC customized settings to get an 8k/1k signal for all output ports.

USER EDID:

1. Default 4K@60Hz input signal for all output ports. When the display can't support 4k @60Hz, it will downsample with FHD output.
2. Users can connect with Ethernet and use Webpage for user EDID settings.
3. When opening the GCT PC tool, the user can set EDID through USB or Ethernet.

Mixed EDID:

1. If connected with a 4k display, the signal will follow a 4k resolution.
2. If some displays can't support the 4k resolution, the output will scale to FHD output.
3. If connected with a display between FHD & 4k, the signal source will select the lowest resolution that all displays can support.

Relation between HDCP and output resolution

The HDCP Version is before EDID; when the source is HDCP2.2, if the TV supports HDCP2.2, it will output 4K@60Hz; if it doesn't support HDCP2.2, it will output 1080p.

Table of Contents

<u>Quick Operation Instruction</u>	2
<u>Introduction</u>	4
<u>Specification</u>	5
<u>Operation instructions</u>	5
1. Front panel	6
2. Back panel	6
3. EDID Setting Mode—Dip switch on front panel	6
3.1. Mixed	7
3.2. User EDID—Via USB or Ethernet through GCT PC Tool	7
3.3. Copy	7
4. HDCP control	7
5. HDR support	8
6. Connection and operation	8
7. CEC control	9
8. System Information	10
9. WebPage and PC Tool	11
9.1. GeoBox Control Tool (GCT)	11
9.2. WebPage	13
<u>Disclaimer/Copyright statement</u>	14

Introduction

S914 is a one-to-four HDMI2 in, HDMI2 out distribution amplifier that supports a signaling rate of up to 18Gbps. It is compatible with the latest HDMI 2.0b and HDCP2.2 specifications. The 18 Gbps bandwidth capability of S914 allows it to support content stream up to DCI-Cinema 4096x2160 60Hz 4:4:4, ultra-high definition 4Kx2K 60Hz, 3D video with 4Kx2K@30Hz, and up to 600MHz pixel clock. Non-VESA standard and PC customized resolutions such as 7680x2160/30Hz and 7680x1200/60Hz are also supported.

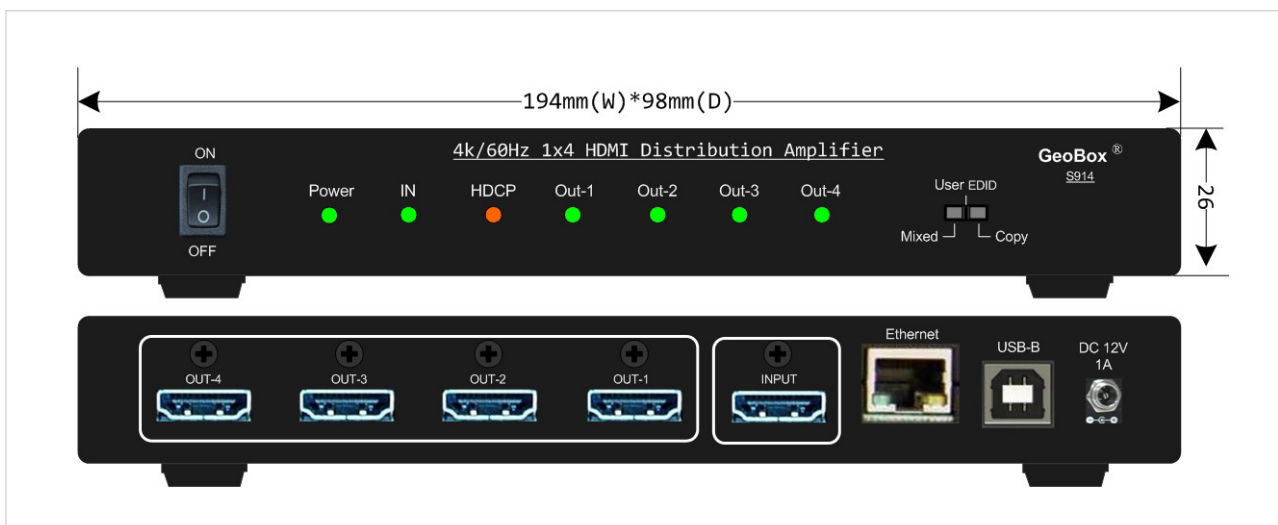
GeoBox Intelligent EDID management allows users to set non-VESA standard EDID timings and ensure Plug and Play operation for HDMI source and display systems.

GeoBox on-chip CSC Technology allows users to implement YCbCr 420/422/444 up or down and RGB/YCbCr conversion. With the 4:1 down-sampling function, the user can display the proper video stream and color to each connected display device according to its EDID and cable length, even with different display resolutions.

The installed HDCP2.2 engines and keys on both receiving and transmitting sides make it S914 possible to act as an HDCP2.2/1.x Repeater, an HDCP2.2 to 1.x converter and HDCP1.x to 2.2 converters, to automatically control the appearance of HDCP-protected and protection-free contents and eliminate HDCP compatibility issues.

Embedded CEC/RCP hardware for easy-to-implement remote control through high-level API. Users can select the output channel for CEC/RCP control.

GeoBox Equalization & re-Lock Technology allows S914 to equalize incoming TMDS signal to optimal outputs and retimed data to downstream sinks. The highly acclaimed GeoBox Equalization Technology supports long or low-quality HDMI cables at even the highest speeds.



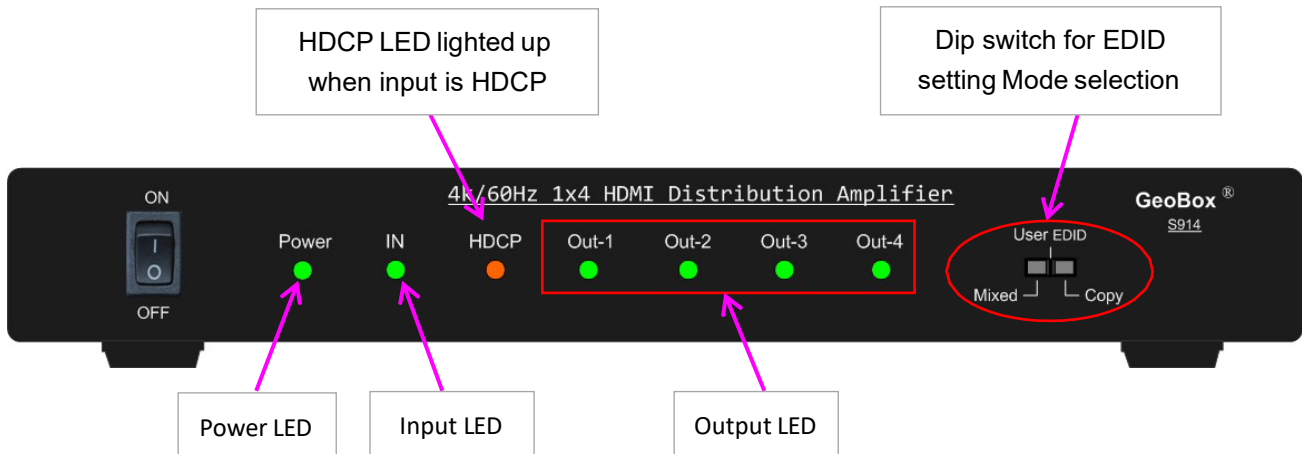
Specification

- Video input: 1x HDMI 2.0b
- Video output: 4x HDMI 2.0b
- Bandwidth: 18 Gbps, up to 600 MHz pixel clock.
- HDMI Version: HDMI 1. x / 2.0
- HDCP Version: HDCP 1. x / 2.2
- Resolution:
 - Support video from 408i up to 4096*2160 @60Hz (DCI/Cinema) with 4:4:4 chroma sampling.
 - Support special resolution for projector edge blending applications, such as 7680x2160/30Hz and 7680x1200/60Hz.
 - Support DVI, interlaced, and progressive video signals.
- Support xvYCC 8/10/12-bit wide color gamut input signal processing. Color depth: 24/30/36 bits.
- Support HDR (High Dynamic Range) 10-bit signal at 4k/60Hz, 4:2:0 and 4k 24Hz 4:4:4.
- Audio: LPCM & HBR (High Bit Rate) digital audio up to 7.1 CH audio
- Extreme low power consumption: full function: 3W (12V / 0.24A), standby: 2W (12V / 0.16A)
- Operation temperature: 0-50 degrees C, Operation humidity: 5%-90% RH
- Dimension: 194mm (W)*98mm (D)*26mm (H), Weight: 458g
- Certifications: CE/FCC/RoHS/UKCA/KC

Features

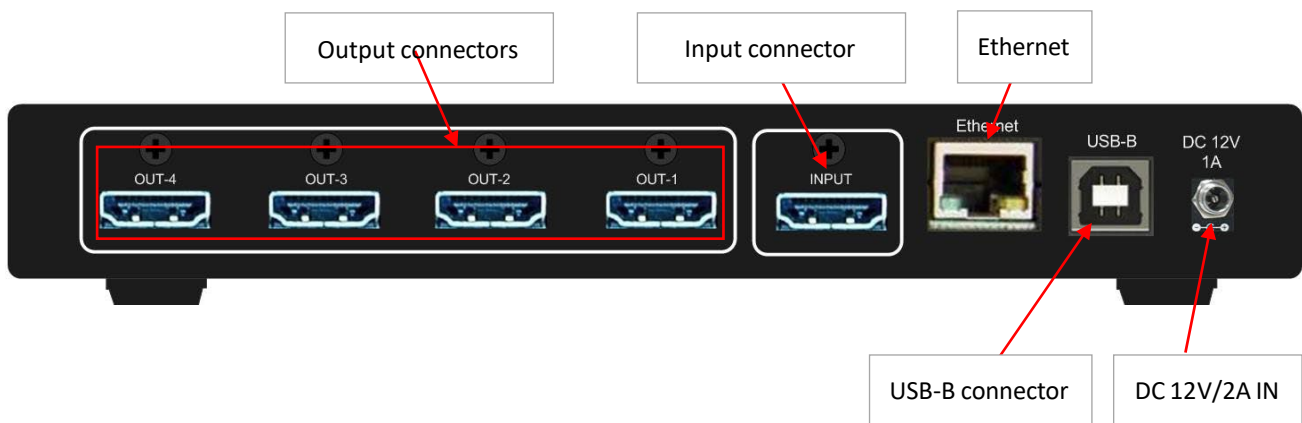
- Intelligent EDID management, the range is H=1024-4080 (8 p/step), V= 720-3840 (1p/step).
- Support PC customized resolution for projector edge blending applications, such as 4096x2160/60Hz, 7680x2160/30Hz, and 7680x1200/60Hz.
- On-chip CSC conversion (including YCbCr 420/422/444 up or down and RGB/YCbCr conversion)
- 4:1 down-sampling function to display 4k/2k input for 4k and FHD monitors simultaneously.
- HDCP 1. x / 2.2 and auto resolution change to support HDCP 2.2 content on HDCP1.x device.
- Embedded CEC/RCP hardware. Users can select all outputs or individual outputs to implement CEC/RCP control.
- Auto-equalization technology to support long or low-quality HDMI cables at the highest speed.
- Multiple layers of splitting/Cascade up to 10 layers, supporting thousands of displays.
- Firmware upgradable via USB or Ethernet.
- Support 3DTV pass-through.
- Individual output channel signal ON/OFF control.
- LED indicator for power, HDCP, and in/out active status.
- USB and Ethernet control via GCT tool or direct control through Webpage, including power ON/OFF, individual channel output ON/OFF, customized EDID setting, signal resolution & properties status.
- Zero latency among all output ports.

1. Front panel

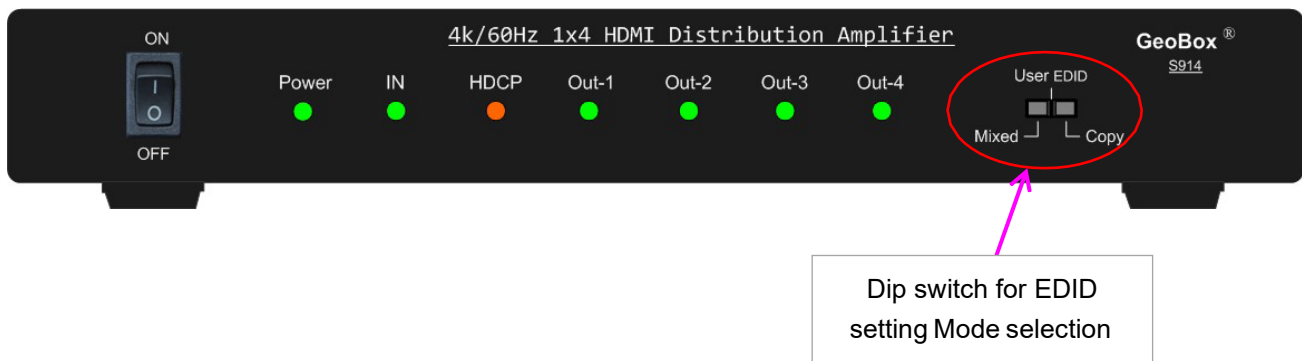


2. Back panel

Users can connect the signal source to the input port and the display to the output port.



3. EDID setting Mode—Dip Switch on the front panel



3.1 Mixed

GeoBox always follows the lowest resolution of the displays connected to 4 outputs to support all displays simultaneously with the same signal source. For example, if a 4k and FHD monitor are connected to S914, G914 will output FHD to all displays.

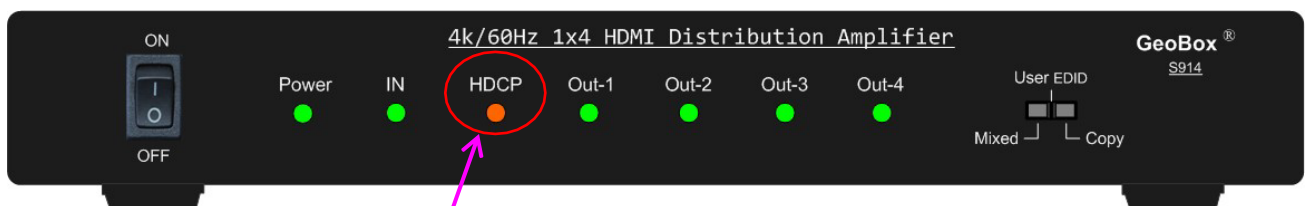
3.2 User EDID: Via USB or Ethernet through GCT PC Tool

- User can set desired EDID and let signal source output required resolution.
- The settings can go through GCT PC Tool via USB or Ethernet.
- If the user didn't set user EDID, 4k/2k 60Hz 4:4:4 will be defaulting EDID.
- Below are the preset EDID lists that the user can select. The signal is progressive.
1024*768/60, 1024*768/120, 1280*720/60, 1280*720/120, 1280*800/60, 1280*800/120, 1920*1080/60, 1920*1200/60, 1920*2160/60, 2560*1440/60, 2560*1600/60, 3840*1080/60, 3840*2160/30, 3840*2160/60, 3840*2400/30, 3840*2400/60
- Customize EDID: user can also apply customized EDID for Non-standard resolution. The adjusting ranges are H=1024-4080 and V=720-3840. The default refresh rate is 60Hz.
- If the required resolution exceeds the above Customize range, such as 7680x1200/60, the user can use COPY mode to execute customized output resolution on the PC.

3.3 Copy

- Output-1 is the prior port. When output-1 is connected to one display, all the other displays connected to output 2/3/4 will follow the same Resolution as output-1.
- If a special resolution is required, such as 7680*1200/60, the user can connect the display to Output- 1, then set PC Customized Output with Output-1 display. After finishing the PC Customized output setting, all the output will follow the Output-1 setting resolution.

4. HDCP control



If input signal is HDCP compliant, this LED will light up.

- The HDCP Version is before EDID.
- When the source is HDCP2.2, if the TV supports HDCP2.2, it will output 4K@60Hz.
- If the TV doesn't support HDCP2.2, it will output 1080p.
- Please see the below table:

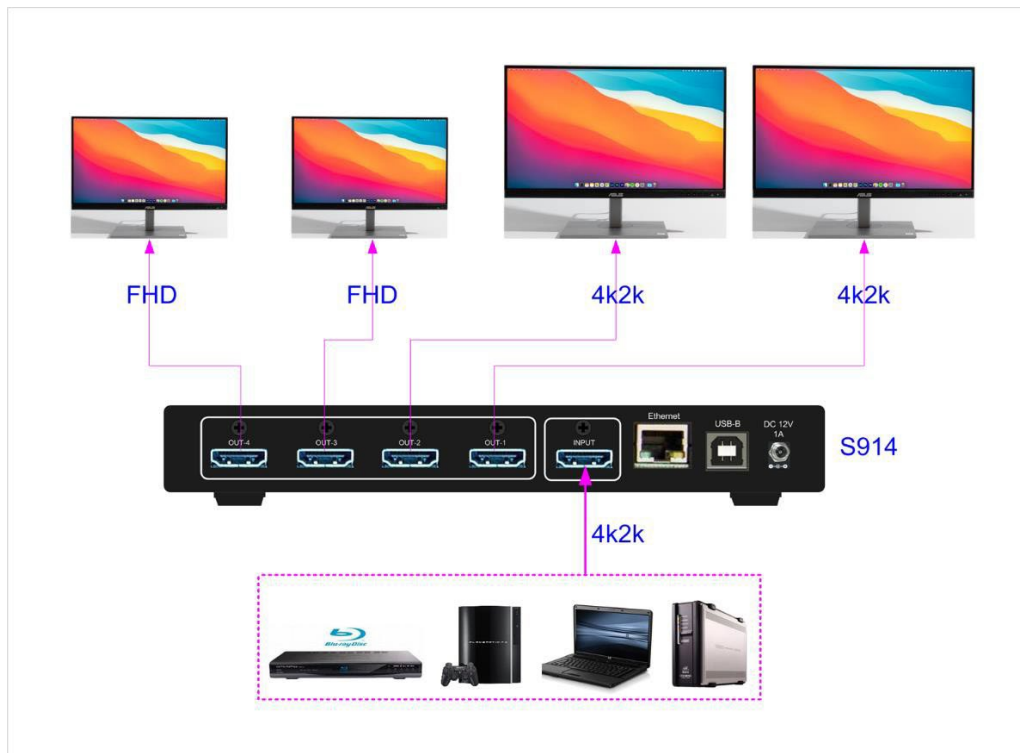
Input Source	HDMI Display Support HDCP 2.2	HDMI Display doesn't Support HDCP 2.2
HDCP2.2 4K@60Hz	HDCP2.2 4K@60Hz	HDCP1.4 1080p@60Hz
HDCP2.2 4K@24Hz	HDCP2.2 4K@24Hz	HDCP1.4 1080p@24Hz
HDCP1.4 4K@24Hz	HDCP1.4 4K@24Hz	HDCP1.4 4k@24Hz

5. HDR support

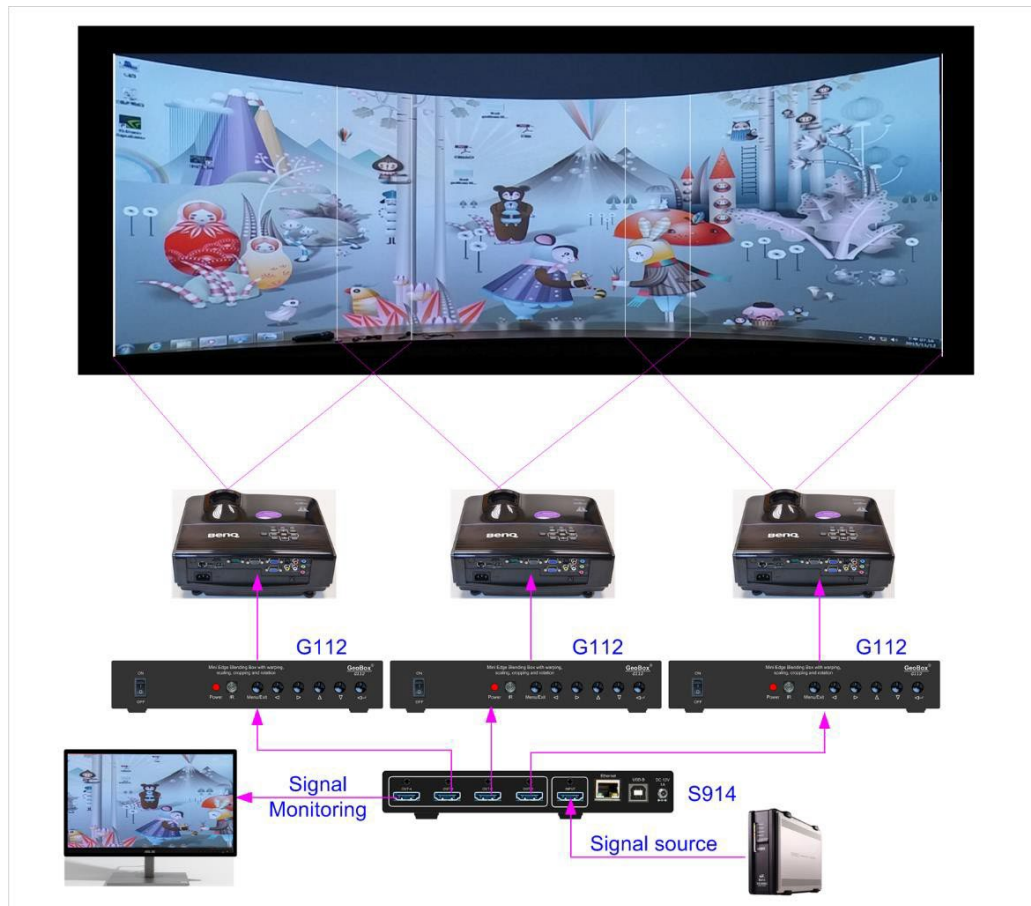
HDR is supported under Copy EDID mode and Mixed EDID modes.

6. Connection and Operation

- 1) Connect the HDMI input source to the input port of the HDMI distribution amplifier.
- 2) Connect the HDMI distribution amplifier output ports to the displays.
- 3) Power up the distribution amplifier, source, and displays. No particular sequence is required.



Edge Blending system by 3x mini edge blender (G112) and 1x S914



7. CEC control

- CEC control is available in S914.
- Users can select any output channel to execute CEC control.
- Only one channel can be selected to execute CEC control at one time.
- Users can select the CEC control channel through GCT PC Tool.

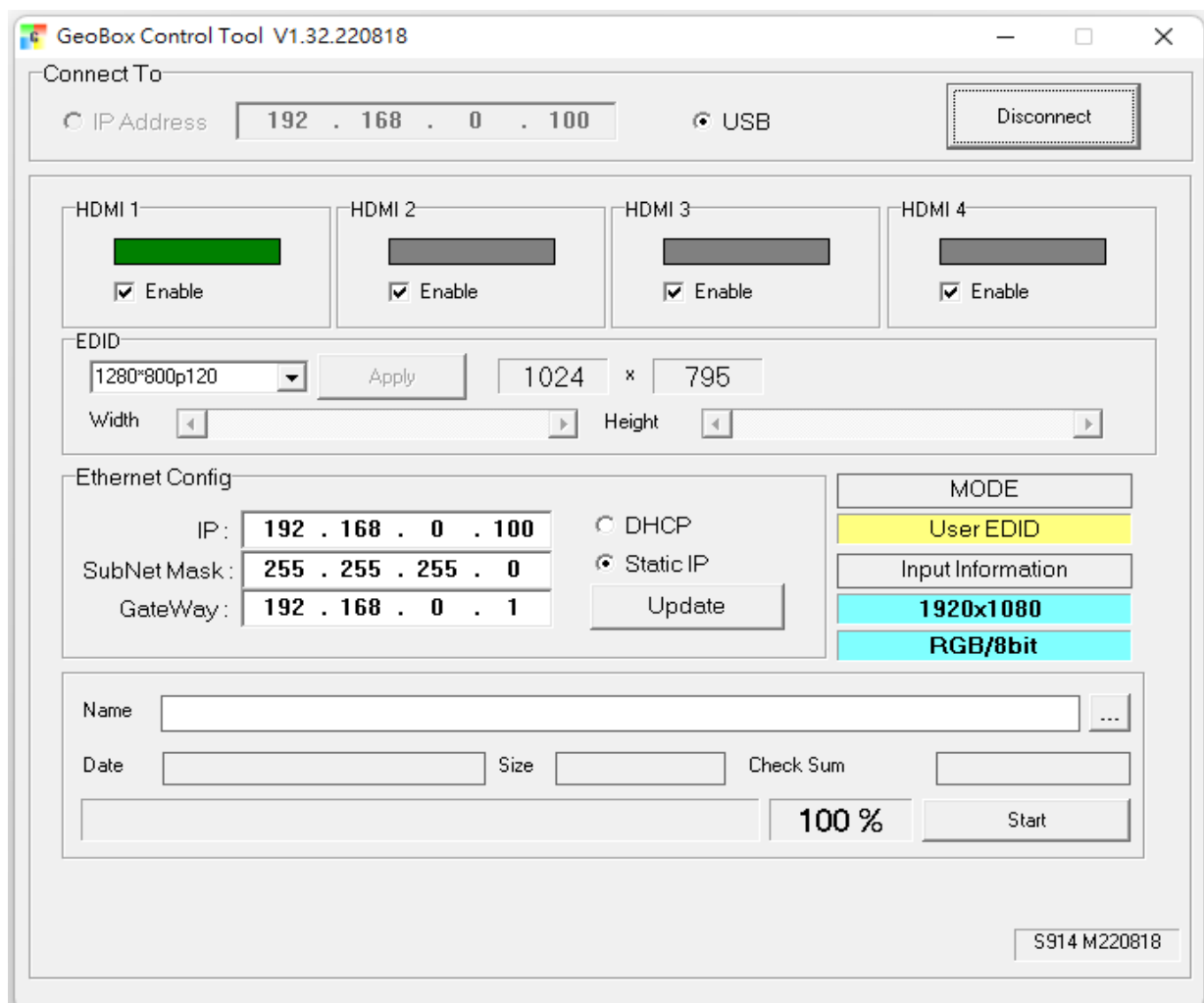
8. System information

Users can connect S914 with Ethernet though Cat 5/6 cable directly or through Switch/Hub or Wi-Fi router. The default IP address is 192.168.0.100.

When the system connects with PC through USB or Ethernet, after opening GCT PC Tool, the user can check the system status under GCT PC Tool:

- Each output port signal connection is ON/OFF status.
- If the input is connected, it will show input resolution, signal type, and 8/10/12 bits.
- EDID setting Mode and resolution.
- Ethernet configuration status.

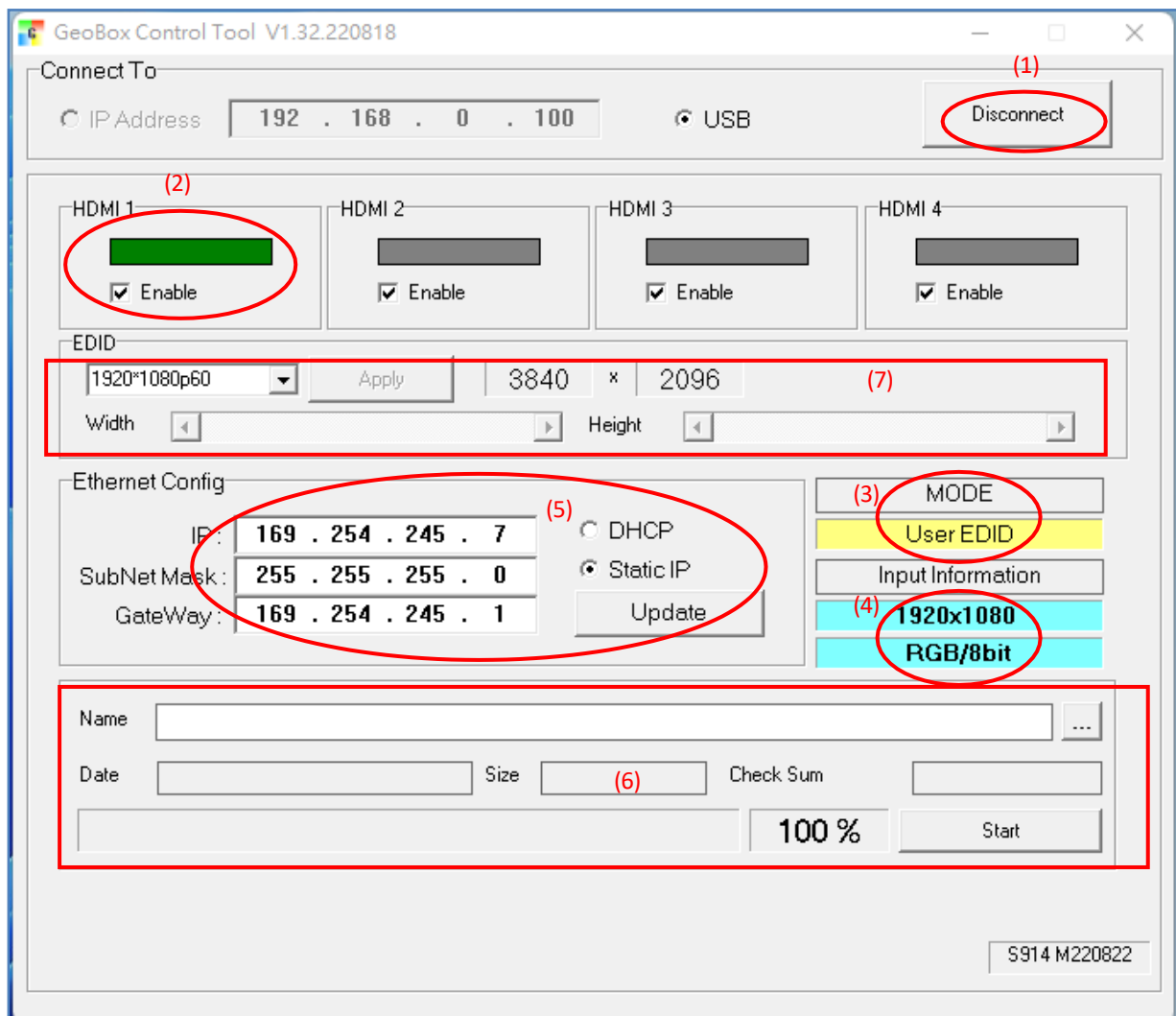
Note: For any new connection, Microsoft Windows 10/11 may remember the preferable timing in the display. Even user changes the EDID setting; the PC may still output the previous output timing.



9. WebPage and PC Tool

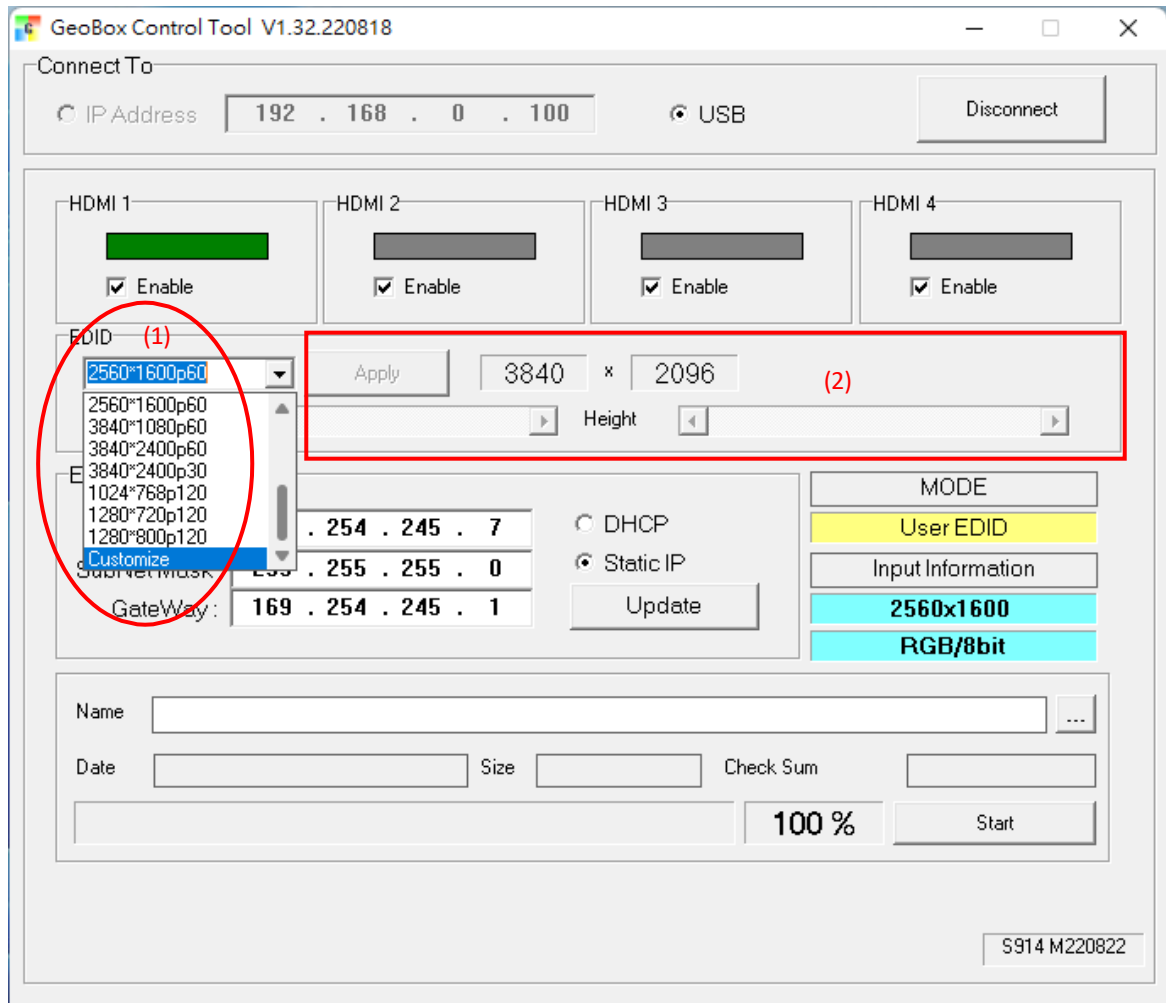
- Users can change User Settings or control S914 via USB or Ethernet connection through Webpage or GCT PC Tool.
- USB or Ethernet can operate GCT through a PC
- Once the user connects the PC with S914, the user can see the operation window below.

9.1 GeoBox Control Tool (GCT)



- (1) Connect/Disconnect GCT connection.
- (2) Enable/Disable output connection
- (3) EDID setting Mode status
- (4) Input resolution and signal type status
- (5) Ethernet setting
- (6) Firmware Update
- (7) EDID resolution selection and customized setting

- Below is a preset timing list for the user to select EDID resolution.
 - 1024*768/60, 1024*768/120, 1280*720/60, 1280*720/120, 1280*800/60, 1280*800/120, 1920*1080/60, 1920*1200/60, 1920*2160/60, 2560*1440/60, 2560*1600/60, 3840*1080/60, 3840*2160/30, 3840*2160/60, 3840*2400/30, 3840*2400/60
- Users can set customized EDID resolution through the below window. Under Drop Down list, the user can see the [Customize] menu (1). Click [Customize]; the user will activate Customize EDID menu (2).



9.2 WebPage

- Users can connect S914 with Ethernet though Cat 5/6 cable directly or through Switch/Hub or Wi-Fi router. The default IP address is 192.168.0.100.
- After connecting with S914, the user will see the below operation window. Except for no firmware update window, all the other operation windows are the same as GCT. The functions and the settings are also the same.

GeoBox S914

Input Information

MODE : User EDID 19200x1080 RGB/8bit

TX 1

Enable

TX 2

Enable

TX 3

Enable

TX 4

Enable

EDID

3840*2160p60 Apply

Width 3840 Height 1080

IP Settings

Type : Static IP ▾

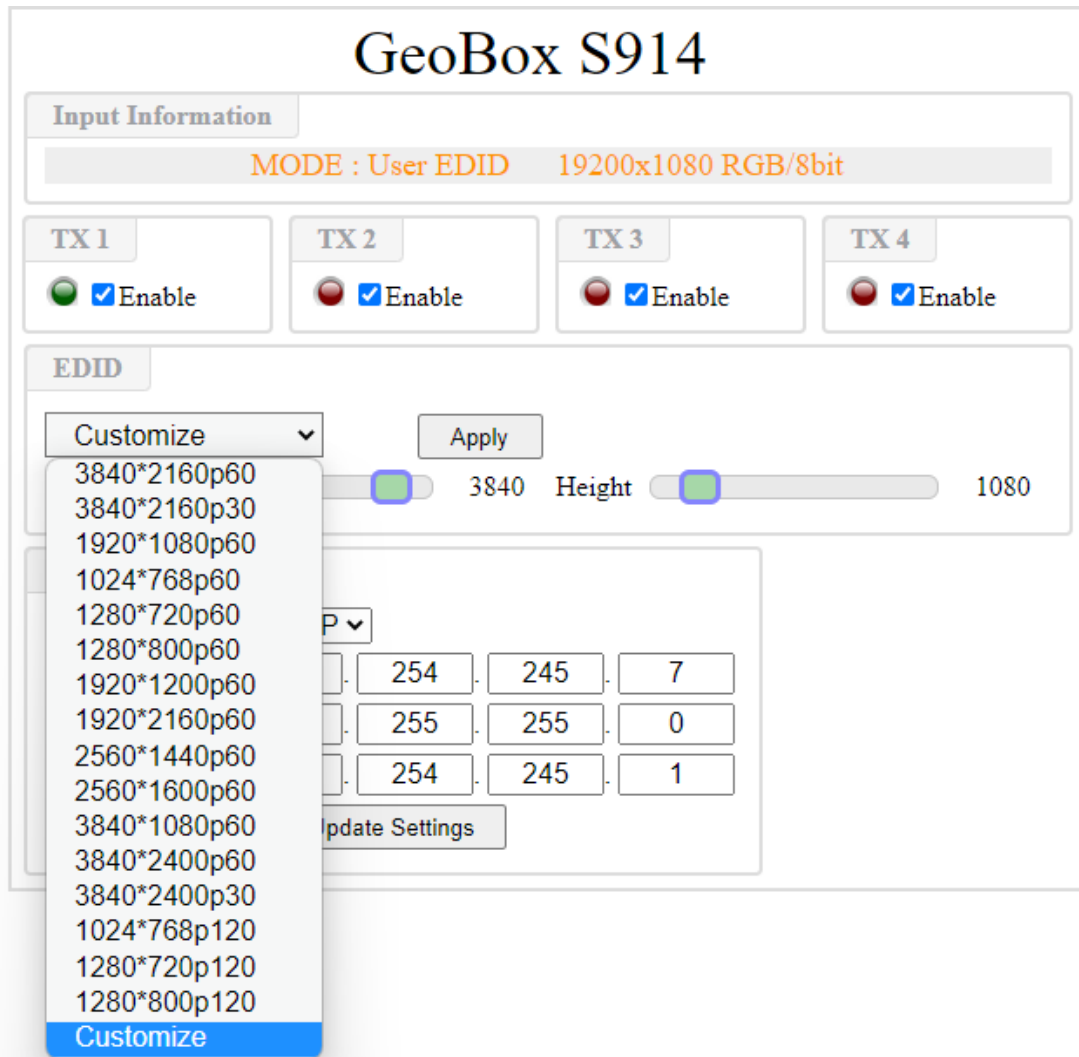
IP Address : 169 . 254 . 245 . 7

Subnet Mask : 255 . 255 . 255 . 0

Gateway : 169 . 254 . 245 . 1

Update Settings

- Below is the drop-down list for the preset EDID resolution. Under this drop-down list, the user can see the [Customize] menu for different resolution settings.



Disclaimer/Copyright Statement

Copyright 2023, VIGILLINK LLC. All Right Reserved

This information contained in this document is protected by copyright. All rights are reserved by VIGILLINK LLC. VIGILLINK LLC. reserves the right to modify this document without any obligation to notify any person or entity of such revision. Copying, duplicating, selling, or otherwise distributing any part of this document without signing a non-disclosure agreement with an authorized representative of VIGILLINK LLC. is prohibited. VIGILLINK LLC. makes no warranty for the use of its products and bears no responsibility for any error of omission that may appear in this document.

Product names mentioned herein are used for identification purposes only and may be trademarks of their respective companies.