Binary 260 Series 4K HDR In-Line Controller

B-260-HDMI-CTRL

BINARY

INSTALLATION MANUAL

FC CE

IMPORTANT SAFETY INSTRUCTIONS

To reduce the risk of fire or electric shock, read and follow all instructions and warnings in this manual. Keep this manual for future reference.

1. Do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the equipment. Do not use this apparatus near water.
2. Do not remove cover. No user serviceable parts inside.
3. Clean only with a dry cloth.
4. Do not block any ventilation openings. Install according to manufacturer's instructions.
5. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
6. Do not override the safety purpose of the polarized or grounding plug. A polarized plug has two blades, one of which is wider than the other. A grounding plug has two matching blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
7. Protect the power cord from being walked on or pinched, particularly at the plug end and where the power cord is attached to the apparatus.
8. Only use attachments and accessories specified by the manufacturer.
9. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power supply cord or plug is damaged, liquid has been spilled on or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, the apparatus does not operate normally, or it has been dropped.
10. To completely disconnect this equipment from power, disconnect the power supply cord from the power outlet.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

FCC WARNINGS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CONTENTS

1. PRODUCT OVERVIEW

B-260-HDMI-CTRL is an HDMI In-line Controller, with resolutions up to 4K@60Hz (chroma sub-sampling 4:4:4 8-bit only) and HDCP 2.2.

The digital or analog audio outputs allow audio to be extracted from the HDMI input and sent to an audio distribution system, such as a whole house audio amplifier. Its rotary EDID switch has 15 EDID presets and can help negotiate the HDMI handshake in certain situations, such as an old HDMI display with DDC channel invalid, or DVI display with audio amplified requirement.

By auto-detecting input signal status, it could automatically trigger CEC commands to turn on or off CEC-enabled TV, pre-loaded RS-232 commands to power on or standby projector, and relay control to turn on or off projection screen.

2. KEY FEATURES

- Supports video resolutions up to 4K@60Hz 4:4:4 8-bit and HDCP 2.2.
- HDMI audio extraction with Digital Coaxial and Analog Stereo.
- Rotary switch for EDID Management with 15 EDID presets.
- Built-in CEC controller from HDMI out.
- Built-in RS-232 controller, to pre-load and store RS-232 command of display device.

3. KEY BENEFITS

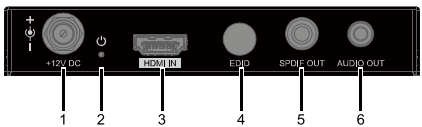
- Automatic CEC/RS-232 commands to power on/standby display device by detecting input signal status.
- Built-in RELAY control to automatically turn on/off projector screen by detecting input signal status.
- Automatic input cable equalization and signal regeneration compensation.

4. PACKAGE CONTENT

- 1 x B-260-HDMI-CTRL
- 1 x DC 12V Power Adapter
- 3 x Phoenix Male Connectors (3.5 mm, 3 Pins)
- 2 x Mounting Brackets (with Screws)
- 2 x Drywall Screws
- 4 x Rubber Feet
- 2 x Power Cord Labels
- 1 x Installation Manual

5. DEVICE LAYOUT

5.1. B-260-HDMI-CTRL Front Panel



1. **DC 12V**

   Connect to the power adapter provided.
2. **POWER LED**

   On/Off: The device is powered on/off.
3. **HDMI IN**

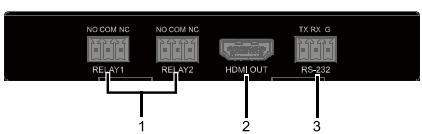
   Connect to an HDMI source.
4. **EDID**

   Switch for EDID Management with 15 EDID presets.
5. **S/PDIF OUT**

   RCA coaxial port for HDMI audio extracted output. Connect to an audio receiver for S/PDIF digital audio output.
6. **AUDIO OUT**

   3.5mm audio jack for HDMI audio extracted output. Connect to an audio receiver for stereo audio output when the source content is stereo PCM.

5.2. B-260-HDMI-CTRL Rear Panel



1. **RELAY1-2**

   Connect to the projector screen for Relay control (turn on or off the screen) when the change of input signal status is detected.
2. **HDMI Out**

   Connect to an HDMI display.

3. **RS-232**

   Pre-load and store RS-232 commands for controlling display device.

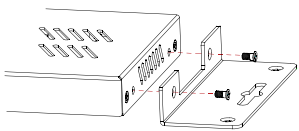
6. INSTALLATION AND WIRING

6.1. Installation

Note: Before installation, please ensure the device is disconnected from the power source.

Steps for mounting the device:

1. Attach the installation bracket to the device's enclosure using the screws provided in the package separately. The bracket is attached to the enclosure as shown.



2. Repeat step 1 for the other side of the device.
3. Attach the brackets to the surface you want to hold the unit against using the screws (provided by others).

6.2. Wiring

Warnings:

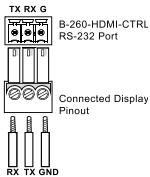
- Before wiring, disconnect the power from all devices.
- During wiring, connect and disconnect the cables gently.

Steps for device wiring:

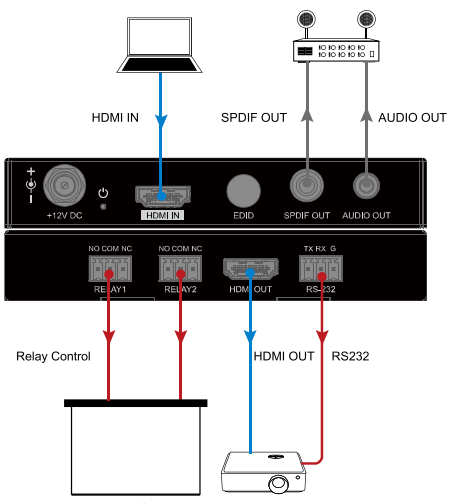
1. Connect an HDMI source (such as PC, Blu-ray, games console, satellite/cable TV, media server etc.) to HDMI IN port of this device.
2. Connect an HDMI display device (Such as projector) to the HDMI OUT port of this device.
3. Connect audio receivers to the S/PDIF OUT port and AUDIO OUT port of this device.
4. Connect projector to the RS-232 port for pass-through the commands to control the projector.
5. Connect projection screen to the RELAY1 and RELAY2 ports to control the projection screen on/off.
6. Connect the power adapter provided. Power on all devices.

6.3. RS-232 Pinout

The following figure shows the RS-232 pinout. Please connect with the phoenix male connector provided.



Application Diagram



7. EDID MANAGEMENT

EDID (Extended Display Identification Data) is a data structure provided by a digital display to describe its capabilities to a video source. This device features multiple EDID presets which can be performed using the EDID rotary switch on rear panel.

By default, the EDID switch is set in position 0. Should any compatibility issues occur, please set EDID using the following table.

Position	Description
0 **(default)**	Copy EDID from HDMI OUT
1	Set 3840x2160@60Hz 2CH as input EDID
2	Set 3840x2160@30Hz 2CH as input EDID
3	Set 1920x1080@60Hz 2CH as input EDID
4	Set 1280x720@60Hz 2CH as input EDID
5	Set 1920x1200@60Hz 2CH as input EDID
6	Set 1680x1050@60Hz 2CH as input EDID
7	Set 1600x1200@60Hz 2CH as input EDID
8	Set 1600x900@60Hz 2CH as input EDID
9	Set 1440x900@60Hz 2CH as input EDID
A	Set 1400x1050@60Hz 2CH as input EDID
B	Set 1360x768@60Hz 2CH as input EDID
C	Set 1280x1024@60Hz 2CH as input EDID
D	Set 1280x960@60Hz 2CH as input EDID
E	Set 1280x768@60Hz 2CH as input EDID
F	Set 1024x768@60Hz 2CH as input EDID

Note:

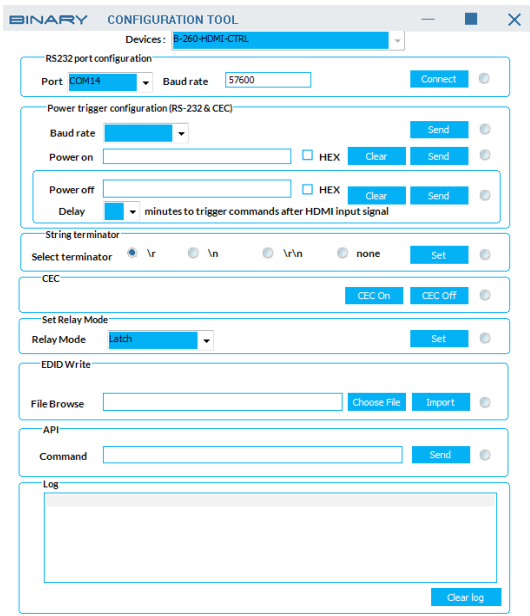
1. If EDID copy fails, 1920x1080@60Hz with stereo audio will be set as input EDID.
2. You must reboot the device for EDID settings to take effect.

8. RS-232 CONTROL TOOL

The Binary Configuration Tool is a RS-232 control tool running on PC to pre-load the RS-232 commands for this device to control the connected display or projector. You can also change relay modes from latch (default) to momentary on the Relay 1&2 ports.

Running the Configuration Tool

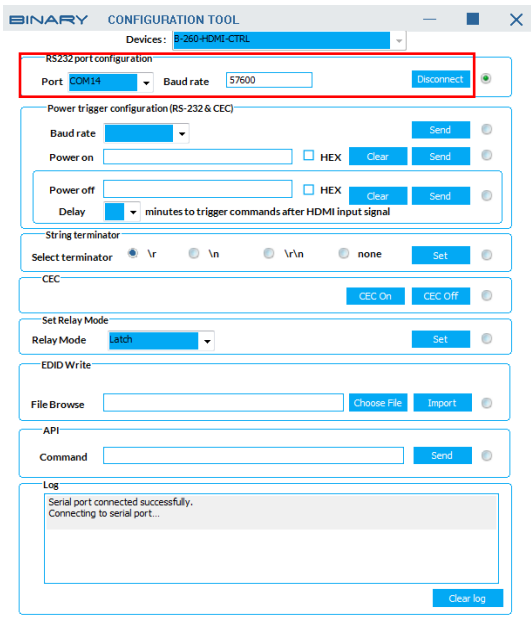
Connect a PC to the device via a USB to RS-232 cable, running the Configuration Tool. The following window will appear.



Configuring B-260-HDMI-CTRL

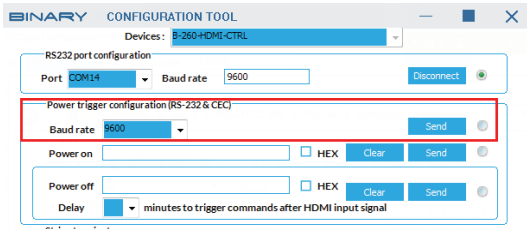
To establish serial communication with the tool, select the port number in the drop down menu that the USB to RS-232 is connected to on the computer. Normally this will default when starting the tool after the serial COM connection has been made.

Input the baud rate and click “Connect”. The default baud rate for the B-260-HDMI-CTRL is 57600. If the tool is connected to the device successfully, a green light will appear next to the Connect button which will now read “Disconnect”.

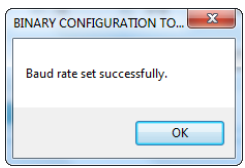


Configuring RS-232 Serial Commands

In the Power trigger configuration (RS-232&CEC) section, input the baud rate of the display device by selecting the correct setting from the drop down menu and click "Send". To get baud rate of the display device, please refer to its user manual.



If the setting was successful, the green light next to the "Send" button will illuminate and a pop up window will notify you of the successful setting.



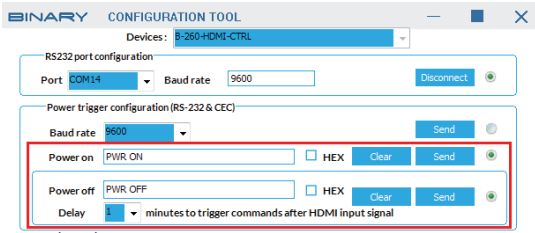
Note: After the baud rate of the display device is set successfully in the tool, the default baud rate setting of B-260-HDMI-CTRL will be changed to the new setting as well.

1. Configuring Power On and Power Off Commands

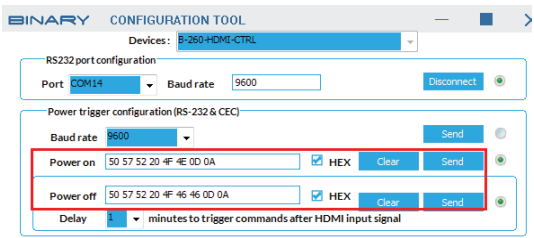
Input the Power On and Power Off commands for the display device in the following field. The serial commands for displays and projectors are provided by the display manufacturer and can be found in the instructional documentation.

The default setting of display power off delay time is 2 minutes. When there is no video signal present for 2 minutes, the system will send Power off command to the display or projector to power it off. To change the delay time, choose the desired time from the delay drop down menu.

Click the "Send" button that next to Power On and Power Off field to upload the commands. If upload is successful a green light next to the "Send" button will illuminate and a pop up window will confirm a successful upload.



If the command for display on/off is only available in Hex format, check the Hex button and input the Hex command in the Power On and Power Off field.



2. Configuring String Terminator

If commands in string format require a terminator, choose the appropriate terminator from the following section and then click the "Set" button. If upload is successful a green light next to the "Set" button will illuminate and a pop up window will confirm a successful upload. The command in hex format doesn't require for a terminator.

Explanation of the terminator:

\r: Carriage Return<CR>

\n: Line Feed <LF>

\r\n: Carriage Return + Line Feed <CR><LF>

none: No terminator required.

3. Configuring CEC On/Off

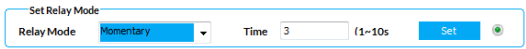
To power on the connected CEC-enabled display, click “CEC On” button.

To power off the connected CEC-enabled display, click “CEC Off” button.

If the CEC On/Off command is sent successfully, a green light next to the “CEC off” button will illuminate.

4. Configuring Relay Modes

The default setting of relay mode is Latch. To change the relay mode to momentary, choose the momentary from the Relay Mode drop down menu, then set the time (1~10 seconds) in the Time field.



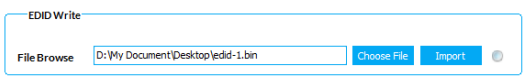
Click the “Set” button, if upload is successful a green light next to the “Set” button will illuminate.

To change to Latch mode, choose the Latch from the Relay Mode drop down menu, then click the “Set” button to make the change.

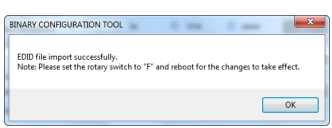
5. EDID Write

In EDID Write section, you can import an external EDID file to the B-260-HDMI-CTRL.

Click the “Choose File” button to browse for the local EDID file in computer.



Click the “Import” button, if EDID import is successful, a pop up window will confirm a successful import.



Note: After the new EDID file is imported to this device, please set the EDID switch to position “F” and reboot this device, then the input EDID of this device will be set to the new EDID instead of 1024x768@60Hz 2CH.

6. API

Enter one API command in the "Command" field (e.g. enter "set uartbaudrate 9600"), and then click "Send" to send the command to this device. If sending is successful, a green light next to the "Send" button will illuminate. (For more information about API command, please refer to the API Command list documentation.)

9. SPECIFICATIONS

Technical	
Input	1 x HDMI IN
Output	1 x HDMI OUT
Input/Output Signal Type	HDMI up to 4K@60Hz (4:4:4 8-bit), HDCP 2.2
Input/Output Resolution Supported	**VESA:** 800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8],1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1200[8] **SMPTE:** 720x480P[8], 720x576P[6], 1280x720P[6,8], 1920x1080I[6,8], 1920x1080P[2,3,5,6,8], 3840x2160P[2,3,5,6,8], 4096x2160P[2,3,5,6,8] 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = 60 Hz
Input Video Level	0.5-1.2 V p-p
Input DDC Signal	5V p-p
Maximum Pixel Clock	600MHz
Video Impedance	100 Ω
Maximum Data Rate	18Gbps

General	
Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±15kV (Air-gap discharge)
Power Supply	DC 12V 2A
Power Consumption (Max)	2 W
Device Dimension (W x H x D)	120mm x 20mm x 80.1mm / 4.72" x 0.79" x 3.15"
Product Weight	0.23kg/0.51lb

10. WARRANTY

2-Year Limited Warranty

This Binary product has a 2-Year limited warranty. This warranty includes parts and labor repairs on all components found to be defective in material or workmanship under normal conditions of use. This warranty shall not apply to products that have been abused, modified or disassembled. Products to be repaired under this warranty must be returned to SnapAV or a designated service center with prior notification and an assigned return authorization number (RA).

11. SUPPORT

Need Help? Contact Tech Support!

If you need further clarification, please call tech support at **800.838.5052**, or email **support@snapav.com**. For other information, instructional videos, support documentation, or ideas, visit our website and view your item's product page at **www.snapav.com**.

BINARY®

Rev: 191209-101625