CYP

CPLUS-V3H1H
UHD+ 3x1 HDMI Switcher

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

Operation Manual

DISCLAIMERS

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.
- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
RDV1	2019/06/06	Preliminary release
RDV2	2019/07/04	Adding 6.3 Remote Control

CONTENTS

1. INTRODUCTION

This UHD⁺ 3x1 HDMI Switcher features three HDMI inputs and one HDMI output with manual or automatic source switching. Every input and output supports full bandwidth 4K@60Hz (4:4:4, 8-bit) HDMI 2.0 with HDCP 2.2 signals. Automatic source management allows for hands-free switching based on input signal and hot plug detection with a "Last Memory" switching feature upon signal loss. This switch is an ideal addition to any conference room, lecture hall or home entertainment setup with its portable and easy to install design. Control is via a top panel button and RS-232.

2. APPLICATIONS

- Conference rooms and boardrooms
- Lecture halls, auditoriums and classrooms
- Household entertainment sharing and control

3. PACKAGE CONTENTS

- 1× 3×1 HDMI Switcher
- 1× Micro USB cable
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

- HDMI source equipment such as media players, video game consoles or set-top boxes.
- HDMI receiving equipment such as an HDTV, monitor or audio amplifier.
- The use of Premium High Speed HDMI cables is highly recommended.

5. FEATURES

- HDMI 2.0 and DVI 1.0 compatible
- HDCP 1.x and HDCP 2.2 compliant
- 3 HDMI inputs, 1 HDMI output
- Supports up to 4K UHD (18Gbps, 4K@50/60Hz 4:4:4, 8-bit) video input and output
- Supports Deep Color input and output up to 12-bit
- Supports 10-bit and 12-bit HDR (High Dynamic Range) input/output
- Supports pass-through of many audio formats including 8 channel LPCM, Bitstream, and HD Bitstream
- Supports manual input selection or automatic input selection with hot plug detection and "Last Memory" feature
- Sophisticated EDID management ensures optimal compatibility
- LED indicators provide input selection as well as automatic switch status information
- Small and portable switch box design
- Can be powered via the Micro USB port (1A minimum) or an optional external power supply
- Control via top panel button, RS-232, and IR (requires optional CR-189 IR remote)

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Top Panel
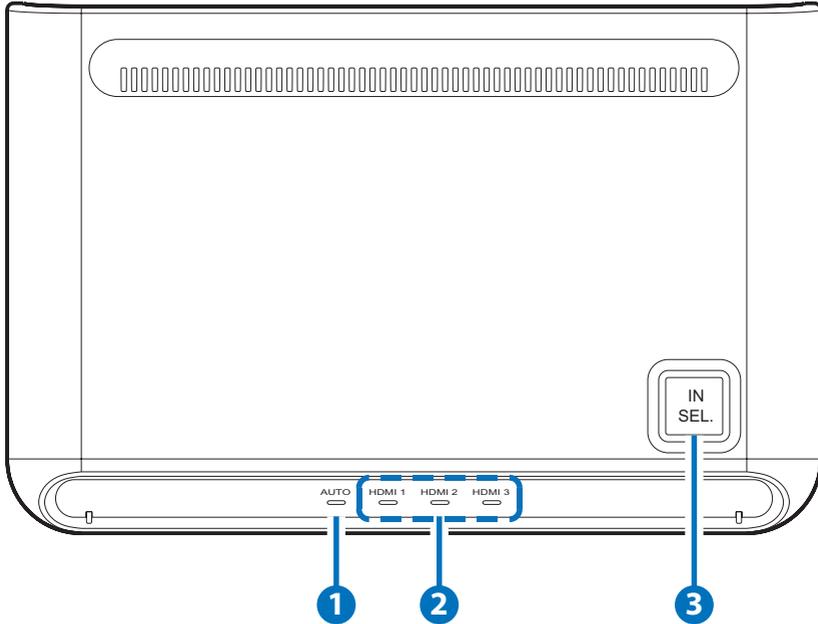
① **AUTO LED:** This LED will illuminate when the auto switch function is active. While active, the input source will be selected based on the most recently connected live source.

② **HDMI 1~3 LEDs:** The LED of the currently selected input will illuminate green. When an input has an active source, but is not currently selected, it will illuminate red. When no source is detected the LED will remain off.

③ **IN SEL. Button:** Press this button to sequentially switch through the available inputs or select auto switch.

   Note: The sequence is: HDMI 1 > HDMI 2 > HDMI 3 > Auto > HDMI 1

6.2 Rear Panel
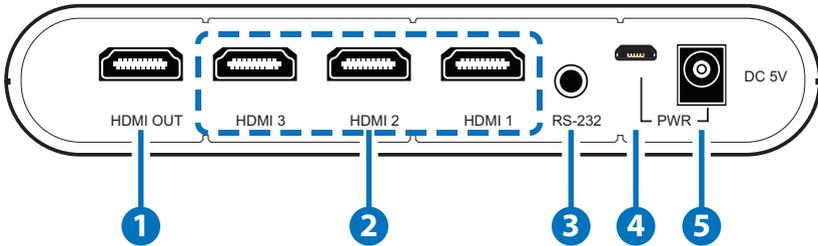
1 HDMI OUT Port: Connect to an HDMI TV, monitor, or amplifier for digital video and audio output.

2 HDMI 1~3 Ports: Connect to HDMI source equipment such as media players, game consoles or set-top boxes.

3 RS-232 Port: Connect directly to your PC/laptop to send RS-232 commands to control the unit.

Note: Requires the use of a 3.5mm to DE-9 adapter.

4 Micro USB PWR Port: Connect the provided micro USB cable to this port and connect the other end to a USB power source for power.

Note: USB power source must provide a minimum of 1 Amp.

5 DC 5V PWR Port: Plug a 5V DC power adapter into this port and connect it to an AC wall outlet for power. (Optional accessory)

6.3 Remote Control (Optional)

1 **AUTO Button:** Press this button to enable the unit's auto switch functionality.

2 **1~3 Buttons:** Press any of these buttons to switch immediately to the corresponding input.

CR-189
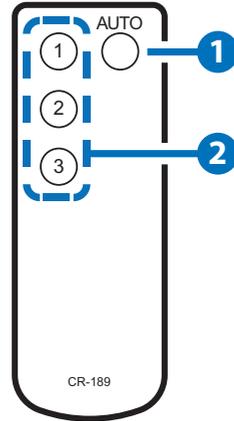
6.4 RS-232 Pinout and Defaults

Serial Port Default Settings	
Baud Rate	19200
Data Bits	8
Parity Bits	None
Stop Bits	1
Flow Control	None

1 TxD
2 RxD
3 GND

3.5mm to DE-9 Adapter Cable
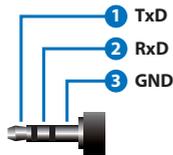
6.5 Serial Commands

COMMAND
Description and Parameters
?↵
Show the full command list.
help↵
Show the full command list.
set factory default↵
Reset the unit to the factory defaults.
get command ver↵
Show the unit's current command version.
get fw ver↵
Show the unit's current firmware version.
get model name↵
Show the unit's model name.
get model type↵
Show the unit's product type.
set out A route N1↵
Route the specified input to the HDMI output.
N1 = 1~3   [HDMI input number]
get out A route↵
Show which input is currently routed to the HDMI output.
set out auto mode N1↵
Set the auto switching/scanning behavior of the unit.
Available values for **N1**:
0   [Off]
1   [Auto switch]

COMMAND
Description and Parameters
get out auto mode↵
Show the current auto switching/scanning mode of the unit.
get in type list↵
List the port type of all inputs on the unit.
get out type list↵
List the port type of all outputs on the unit.
get in port number↵
Show the total number of inputs on the unit.
get out port number↵
Show the total number of outputs on the unit.
set in N1 edid N2↵
Set the EDID to use on the specified input.
N1 = 1~3   [HDMI input number]
Available values for **N2**:
1   [Internal FHD, 2 channel audio]
2   [Internal FHD, multi-channel audio]
3   [Internal UHD, 2 channel audio]
4   [Internal UHD, multi-channel audio]
5   [Internal UHD+, 2 channel audio]
6   [Internal UHD+, multi-channel audio]
7   [User EDID 1]
8   [User EDID 2]
9   [User EDID 3]
10   [Copy output's EDID]
get in N1 edid↵
Show the EDID currently being used on the specified input.
N1 = 1~3   [HDMI input number]

COMMAND
Description and Parameters
get in edid list↵
List all available EDID selections.
set user N1 edid data N2↵
Upload a new EDID (in ASCII hex format) for use as the specified User EDID.
N1 = 1~3   [User EDID number]
N2 = {Comma delimited hex pairs}   [EDID data]
get user N1 edid data↵
Show the current contents of the specified User EDID as HEX data.
N1 = 1~3   [User EDID number]

Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive.

7. CONNECTION DIAGRAM

Game Console

Blu-ray Player

PC/Laptop

**HDMI
Input**

Power

**HDMI
Output**

4K TV

or

Monitor

or

Projector
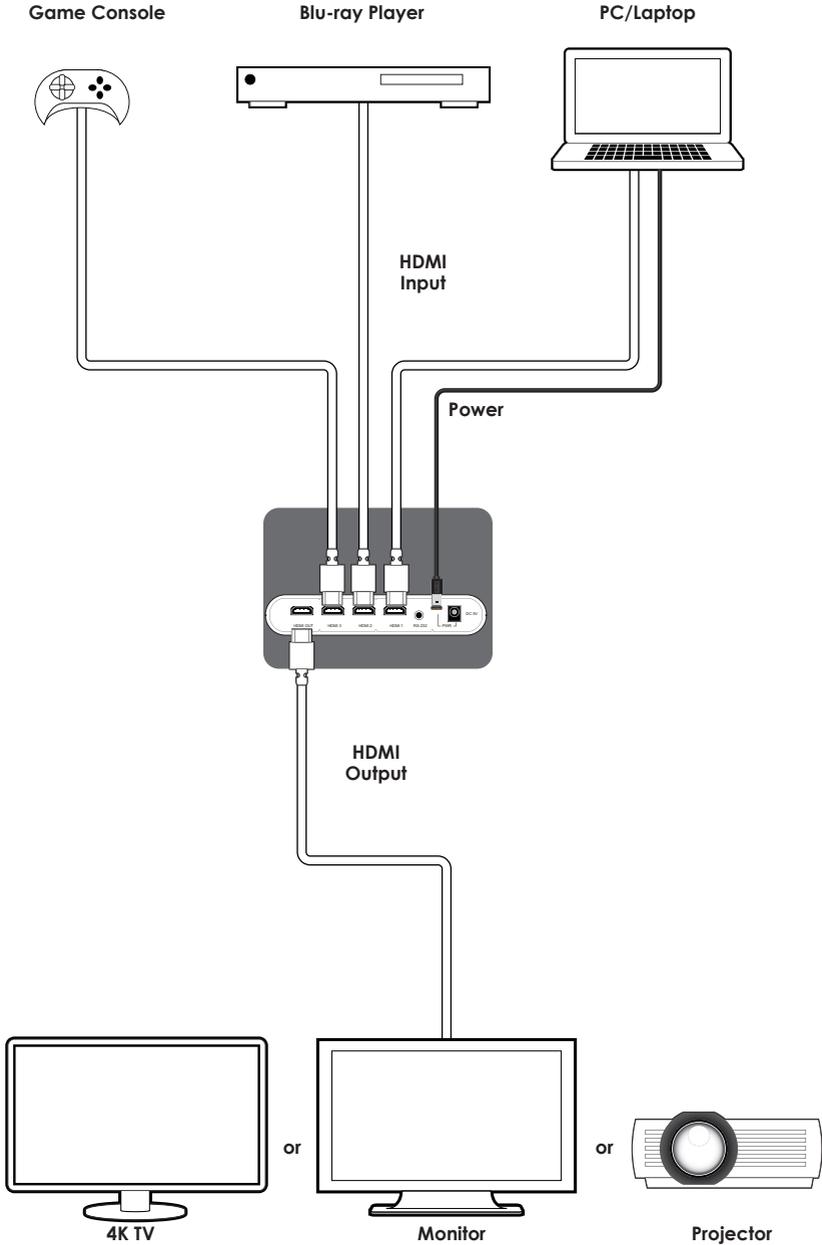
8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	18Gbps
Input Ports	3×HDMI (Type-A)
Output Ports	1×HDMI (Type-A)
Control Ports	1×RS-232 (3.5mm)
Service/Power Port	1×USB 2.0 (Micro B)
IR Frequency	38kHz
Baud Rate	19200
Power Supply (Optional)	5V/1A DC
	(US/EU standards, CE/FCC/UL certified)
ESD Protection (HBM)	±8kV (Air Discharge)
	±4kV (Contact Discharge)
Dimensions (W×H×D)	157mm×30mm×102mm [Case Only]
	157mm×30mm×102mm [All Inclusive]
Weight	190g
Chassis Material	Plastic (ABS)
Chassis Color	Black
Operating Temperature	0˚C – 40˚C/32˚F – 104˚F
Storage Temperature	-20˚C – 60˚C/-4˚F – 140˚F
Relative Humidity	20 – 90% RH (Non-condensing)
Power Consumption	3.2W

8.2 Video Specifications

Supported Resolutions (Hz)	Input HDMI	Output HDMI
720×400p@70/85	✓	✓
640×480p@60/72/75/85	✓	✓
720×480i@60	✓	✓
720×480p@60	✓	✓
720×576i@50	✓	✓
720×576p@50	✓	✓
800×600p@56/60/72/75/85	✓	✓
848×480p@60	✓	✓
1024×768p@60/70/75/85	✓	✓
1152×864p@75	✓	✓
1280×720p@50/60	✓	✓
1280×768p@60/75/85	✓	✓
1280×800p@60/75/85	✓	✓
1280×960p@60/85	✓	✓
1280×1024p@60/75/85	✓	✓
1360×768p@60	✓	✓
1366×768p@60	✓	✓
1400×1050p@60	✓	✓
1440×900p@60/75	✓	✓
1600×900p@60RB	✓	✓
1600×1200p@60	✓	✓
1680×1050p@60	✓	✓
1920×1080i@50/60	✓	✓
1920×1080p@24/25/30	✓	✓
1920×1080p@50/60	✓	✓

Supported Resolutions (Hz)	Input HDMI	Output HDMI
1920×1200p@60RB	✓	✓
2560×1440p@60RB	✓	✓
2560×1600p@60RB	✓	✓
2048×1080p@24/25/30	✓	✓
2048×1080p@50/60	✓	✓
3840×2160p@24/25/30	✓	✓
3840×2160p@50/60 (4:2:0)	✓	✓
3840×2160p@24, HDR10	✓	✓
3840×2160p@50/60 (4:2:0), HDR10	✓	✓
3840×2160p@50/60	✓	✓
4096×2160p@24/25/30	✓	✓
4096×2160p@50/60 (4:2:0)	✓	✓
4096×2160p@24, HDR10	✓	✓
4096×2160p@50/60 (4:2:0), HDR10	✓	✓
4096×2160p@50/60	✓	✓

8.3 Audio Specifications

8.3.1 Digital Audio

HDMI Input/Output	
LPCM	
Max Channels	8 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	Standard & High-Definition

8.4 Cable Specifications

	1080p		4K30	4K60
Cable Length	**8-bit**	**12-bit**	**(4:4:4) 8-bit**	**(4:4:4) 8-bit**
High Speed HDMI Cable				
HDMI Input	15m	10m	5m	3m
HDMI Output	15m	10m	5m	3m

Bandwidth Category Examples:

- **1080p (FHD Video)**
  - Up to 1080p@60Hz, 12-bit color
  - Data rates lower than 5.3Gbps or below 225MHz TMDS clock
- **4K30 (UHD Video)**
  - 4K@24/25/30Hz & 4K@50/60Hz (4:2:0), 8-bit color
  - Data rates higher than 5.3Gbps or above 225MHz TMDS clock but below 10.2Gbps
- **4K60 (UHD+ Video)**
  - 4K@50/60Hz (4:4:4, 8-bit)
  - 4K@50/60Hz (4:2:0, 10-bit HDR)
  - Data rates higher than 10.2Gbps

9. ACRONYMS

ACRONYM	COMPLETE TERM
ASCII	American Standard Code for Information Interchange
AV	Audio/Video
CEC	Consumer Electronics Control
CLI	Command-Line Interface
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
HDTV	High-Definition Television
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
UHD	Ultra-High-Definition (10.2Gbps)
UHD+	Ultra-High-Definition Plus (18Gbps)
UHDTV	Ultra-High-Definition Television
USB	Universal Serial Bus
VGA	Video Graphics Array
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduced Blanking)
XGA	Extended Graphics Array