# CPRO-3D42S
## 4 by 2 HDMI Switcher with HEAC

## Operation Manual

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Version 1.1 August 2011

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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.

## REVISION HISTORY

| VERSION NO. | DATE DD/MM/YY | SUMMARY OF CHANGE |
|---|---|---|
| VS1 | 09/02/12 | First Release |
| VR2 | 06/03/12 | CEC function on output 1 only |

# CONTENTS

# 1. INTRODUCTION

This is a high performance HDMI™ Switcher with four HDMI inputs & two outputs HDMI™ Switcher, the output ports support Audio Return Channel (ARC) from a compaitble ARC TV and HDMI Ethernet Channel (HEC) following the HDMI v1.4 specification.

The HDMI Switcher provides an S/PDIF link from the HDMI signal and output through the ARC port to an AVR amplifier to get audio from the sink.

The HEC feature adds a network connection to the HDMI link 100 Mbps Ethernet connection. Using an HDMI with HEAC cable allows for the convenient integration of internet capable HEAC Televisions into the end user's home network system.

# 2. APPLICATIONS

- Simultaneously display a HDMI source on 2 TVs/displays
- Connect internet capable devices through HEC to network routers/modems
- Connect network attached media streaming devices to compatible HEAC TV
- Showroom displays
- Educational demonsrations
- Commercial usage

# 3. PACKAGE CONTENTS

- 4 × 2 HDMI Switcher with HEAC
- 5 V/2.6 A DC power supply adaptor
- Operation Manual

# 4. SYSTEM REQUIREMENTS

- Source equipment with HDMI output connector(s)
- Displays TV with HDMI HEAC input connector(s)

## 5. FEATURES

- Supports multiplexed HDMI 4-input and 2-output

- Two output ports supporting Ethernet Channel (HEC) and Audio Return Channel (ARC) following the HDMI v1.4 specification

- HDMI v1.4 supports:
  - Audio Return Channel (ARC)
  - 3D
  - HDMI Ethernet Channel (HEC), enabling high-speed, bi-directional networking at up to 100 Mb/sec

- Deep Color support 36/30/24-bit

- EDID optiions include Standard, TV or Lock EDID feature

- Supports CEC bypass on HDMI OUT 1

- Audio support:
  - HDMI 1.4 compatible audio interface
  - S/PDIF pass through

# 6. OPERATION CONTROLS AND FUNCTIONS

## 6.1 Front Panel
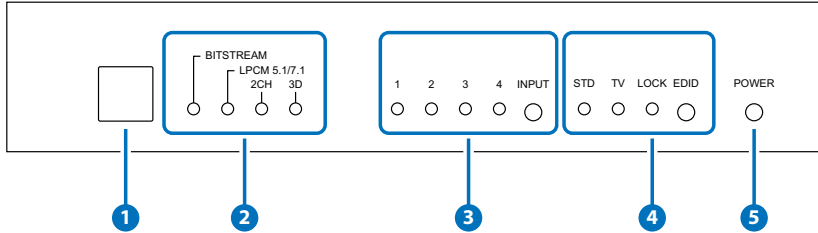


**① IR Remote Control Sensor**

**② Audio/3D Content Indicator**

The system will automatically detect incoming audio/video signal type and the green LEDs will illuminate accordingly.

**③ Input Selection**

Press input button to select input source, the Blue LED will illuminate accordingly. If none of the LEDs are illuminated then no input has been selected, this is to allow the device to access the ARC feature alone.

**④ EDID Selection**

The EDID control button selects between using the EDID from the display attached to Output 1/TV or using the onboard EDID/STD (the Green LED will illuminate accordingly). When the EDID button is pressed for longer then 3 seconds, the RED LED will

|  | 8 | 10 | 12 |
|---|---|---|---|
| **RGB** | ✓ | ✓ | ✓ |
| **Y444** | ✓ | ✗ | ✗ |
| **Y422** | ✓ | | |
| **XvYCC** | ✓ | ✗ | ✗ |

illuminate to indicate that the EDID is already locked to STD or TV EDID as you selected accordingly. When EDID is set on STD audio will support PCM 2CH, video modes supported are listed in the table above.

**⑤ Power Button**

Press this button to switch on the device or press it again to set it to standby mode.

## 6.2 Rear Panel
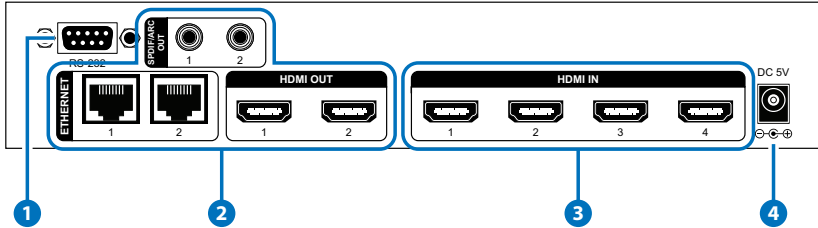


**1 RS-232**

This slot is to connect with a PC or control system with D-sub 9pin cable for RS-232 control. For detail RS-232 commands please refer to Section 6.4.

**2 HDMI OUT 1~2/ARC 1~2/ETHERNET 1~2**

HDMI/HEAC equipped TVs or displays will pass the Ethernet and Audio signals via HDMI v1.4 cable back to the HDMI Output port, the splitter will separate the Ethernet and audio, and will output audio from the ARC and bi-directional data streams through the Ethernet ports. If the display has a built-in tuner or an attached DVD player, audio content can be sent "upstream" from the TV back to the audio system to be output in multi-channel audio.

The HDMI Switcher can use the HDMI Ethernet Channel (HEC) to consolidate video, audio and data streams into a single HDMI cable connection to an Ethernet Hub/modem in order to access the internet and also incorporates a dedicated data channel into the HDMI link, enabling high-speed, bi-directional networking at up to 100Mb to control and search from the sink (please see Section 6 for connection diagram). The HDMI output number is corresponding to ARC and Ethernet output number.

*Note 1: Be sure to connect devices with a suitable HDMI cable designed to support the Ethernet Channel functionality, either the standard HDMI cable with Ethernet or High Speed HDMI cable with Ethernet.*

*Note 2: When the HDMI output has both Audio and ARC at the same time the ARC will be the prioritized.*

**③ HDMI INPUT 1~4**

Connect to HDMI or DVI sources equipment such as DVD player or set-top-box for input video and audio sending.

*Note A: This system was tested with 24 AWG cables. If using cables of another specification, the performance of this system may vary.*

*Note B: Cable distance tested with a Sony PS3 and 40" Samsung LED UA40B700 12-bit LCD TV.*

*Note C: Figures provided in this manual are for reference only, actual figures may vary depending on the source equipment and display being used along with the type of cables and their specifications.*

**④ Power**

Plug the DC 5V power supply into the unit and connect the adaptor to an AC wall outlet.
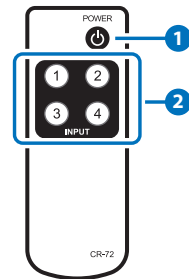
## 6.3 Remote Control

**① Power button**

Press to switch On the device, press it again to set the device in standby mode.

**② INPUT 1~4**

Press the desire input button to select the input source.

POWER
1
2
1 2
3 4
INPUT
CR-72

## 6.4 RS232 Protocol and Command

| CPRO-3D42S | |
|---|---|
| PIN | Definition |
| 1 | NC |
| 2 | Tx |
| 3 | Rx |
| 4 | NC |
| 5 | GND |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |

▶
◀

| Remote Control Console | |
|---|---|
| PIN | Definition |
| 1 | NC |
| 2 | Rx |
| 3 | Tx |
| 4 | NC |
| 5 | GND |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |

Baud Rate: 9600 bps
Data bit: 8-bits
Parity: None
Stop bit: 1-bit
Flow Control: None

| Command | Action |
|---|---|
| **POWER 00** | Power Off (standby) |
| **POWER 01** | Power On |
| **PORT 11** | Output Select Input 1 |
| **PORT 12** | Output Select Input 2 |
| **PORT 13** | Output Select Input 3 |
| **PORT 14** | Output Select Input 4 |
| **PORT 00** | No Input Selection (for ARC) |

# 7. CONNECTION DIAGRAM



Blu-ray Player          DVD Player

Blu-ray Player          DVD Player

Note: In this example, HDMI In 1 is selected.

Speakers

AV Amplifier

Audio Loop Out

ARC

Speakers

CPRO-3D42S

HDMI OUT

RS-232

Internet Modem

Hub/ Router

ARC

HEC

TV/Monitor with ARC & HEC

PC

Notebook

TV/Monitor without ARC

HEC

Blu-ray Player with HEC
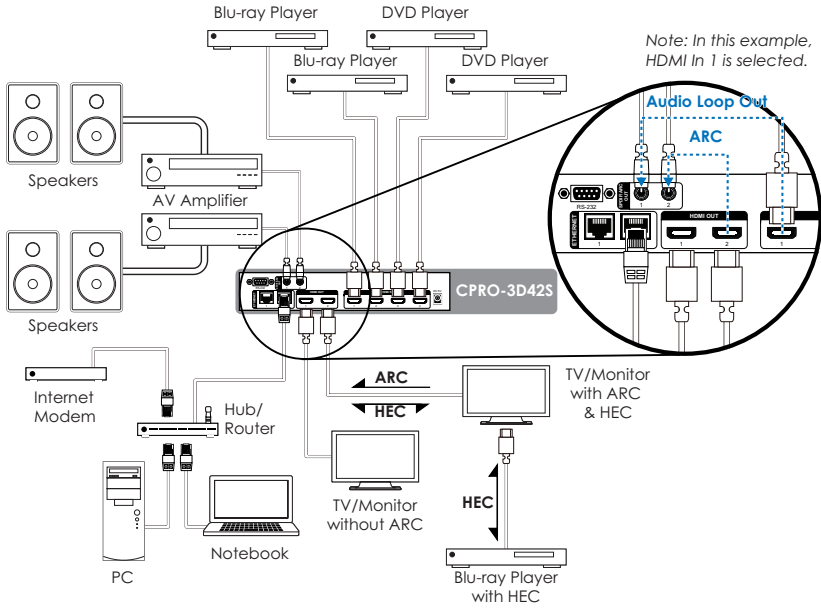
# 8. SPECIFICATIONS

| | |
|---|---|
| **Video Bandwidth** | 225MHz/6.75Gbps |
| **Input Ports** | 4 × HDMI (Female type) |
| **Output Ports** | 2 × HDMI (Female type) |
| | 2 × Ethernet |
| | 2 × ARC |
| **Output Resolution** | 480i ~1080p50/60, 1080p24, VGA~UXGA |
| **HDMI Cable In** | 1080p/8-bits or 12-bits (15m) |
| **HDMI Cable Out** | 1080p/8-bits or 12-bits (15m) |
| **ESD Protection** | Human Body model: ±8kV (air-gap discharge) |
| | ±4kV (contact discharge) |
| **Power Supply** | 5V/2.6A DC (US/EU standards, CE/FCC/UL certified) |
| **Dimensions** | 240mm (W) × 113mm (D) × 49mm (H) |
| **Weight** | 810g |
| **Chassis Material** | Metal |
| **Silkscreen 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** | 4.2W |

# 9. ACRONYMS

| ACRONYM | COMPLETE TERM |
|---------|---------------|
| ARC | Audio Return Channel |
| CEC | Consumer Electronics Control |
| EDID | Extended Display Identification Data |
| HEAC | HDMI Ethernet & Audio Return Channel |
| HEC | HDMI Ethernet Channel |
| HDCP | High-bandwidth Digital content protection |
| HDMI | High-Definition Multimedia Interface |