

**SPLITMUX® Series**

# **SPLITMUX-C5HDR-4LC**

## **HDMI 4x1 Quad Multi-Viewer With Seamless Switcher Installation and Operation Manual**



## 1. Introduction

The SPLITMUX-C5HDR-4LC (SPLITMUX) is a high performance 4 by 1 Quad Multi-Viewer with seamless switcher. It supports four High-definition input sources displaying on one screen, and has three multi-view effect modes. As a switcher, it can also seamlessly switch the four HD inputs freely. The SPLITMUX can be controlled by the front panel buttons, IR control, or RS232 control. The SPLITMUX provides an S/PDIF link to output the HDMI source audio at the same time.

The SPLITMUX can also extend the video and audio signals over a single CAT5e/6/6a/7 cable up to 250 foot (76m) with Bi-directional IR control (see table on page 8).

## 2. Features

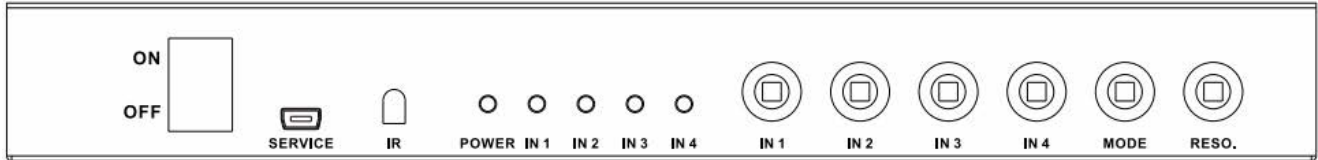
- Compliant with HDMI 1.3a,HDCP 1.2
- Supports multiplexed HDMI 4-input and 1-output
- Supports up to 1080p High Definition resolution
- Supports 4by1 Quad Multi-viewer and seamless switch
- Supports scale-up/scale-down function
- Supports multi-output resolution
- Supports digital audio format LPCM/AC3/DTS
- Supports button, IR and RS232 control
- IR system allowing for control of source at display end
- Allows HDMI Audio/Video and IR signals to be transmitted over a single Cat5e/6/6a/7 cable

## 3. Package Contents

- 1-SPLITMUX-C5HDR-4LC HDMI Quad Multi-Viewer
- 1-CAT5e/6 Remote Unit
- 1-12V/2.5A DC power adaptor
- 1-5V/1A DC power adaptor
- 1-Remote Control
- 2-Wide-band IR Receiver
- 5-Wide-band IR Transmitter
- 1-RS232 Cable (4.6ft 9DB male to 9DB female)
- 2-Wall mount brackets with case-mounting screws
- 1-CD with Operation Manual and RS232 Control Application

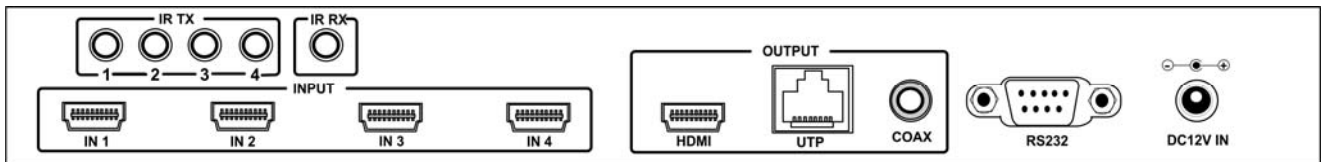
## 4. Functions

### 4.1 Front panel



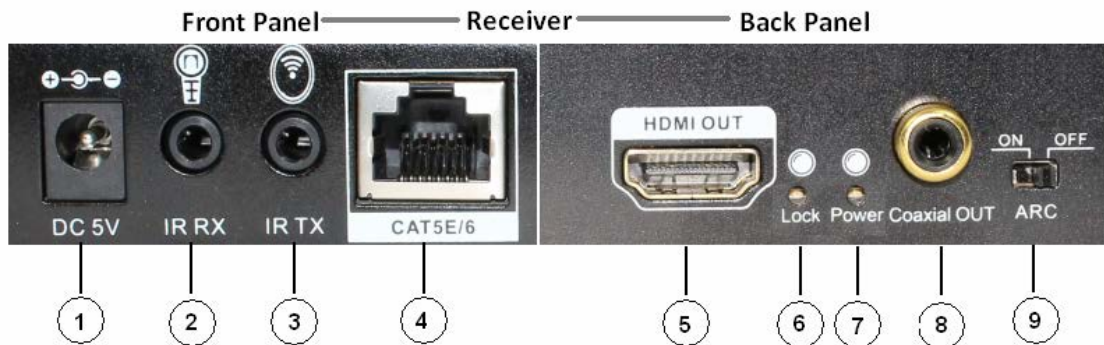
1. **ON/OFF:** Power ON/OFF switch.
2. **SERVICE:** For factory use only.
3. **IR :** Remote control receiver window.
4. **POWER LED:** This red LED illuminates when the device is connected with power supply.
5. **IN1,2,3,4 LED:** These red LEDs illuminate when the output is switched to the corresponding input.
6. **INPUT BUTTON:** Press this button to select the input source.
7. **MODE BUTTON:** Press this button to select the multi-view display mode. See the detail description in Chapter 5.2.
8. **RESO BUTTON:** Press this button to select the HDMI output resolution.

### 4.2 Rear panel



1. **INPUT:** Connect the HDMI source outputs from DVD, PS3, Set-top Box and Note Book.
2. **OUTPUT:** HDMI for connecting the HDTV or monitor with HDMI cable for input source display.  
UTP port for connecting to CATx Receiver by CATx cable for signal extension.  
Coax for connection to an amplifier with coaxial cable.
3. **IR RX:** Connect to the IR Receiver for IR signal reception. Ensure that remote control being used is within the direct line-of-sight of the IR receiver.
4. **IR TX:** Connect the IR Blaster cable included in the package for IR signal transmission. Place the IR blaster in direct line-of-sight of the equipment to be controlled.
5. **RS232:** Connect the RS232 port to the PC or notebook using RS232 Cable (provided).
6. **DC 12V:** Plug the 12V DC power supply into the unit and connect the adaptor to AC wall outlet.

## 4.3 CATx Remote Unit



1. **DC 5V:** Connect from 5V DC power supply into the unit and connect the adaptor to an AC outlet.
2. **IR RX:** Connect to the IR Receiver for IR signal reception. Ensure that remote control being used is within the direct line-of-sight of the IR receiver.
3. **IR TX:** Connect the IR Blaster cable included in the package for IR signal transmission. Place the IR blaster in direct line-of-sight of the equipment to be controlled.
4. **CAT5E/6:** Connect the CAT input of the Remote Unit to the CAT output of the transmitter (SPLITMUX) using CAT5E/6/6a/7 cable.
5. **HDMI OUT:** Connect the HDMI input port of your display such as an HDTV.
6. **LOCK LED:** This LED will illuminate when the HDMI signal from the transmitter is stable.
7. **Power LED:** This LED will illuminate when the device is connected with power supply.
8. **Coaxial OUT:** Connect to the audio amplifier with coaxial cable.
9. **ARC :** Switch the ARC switcher to enable or disable the ARC function.

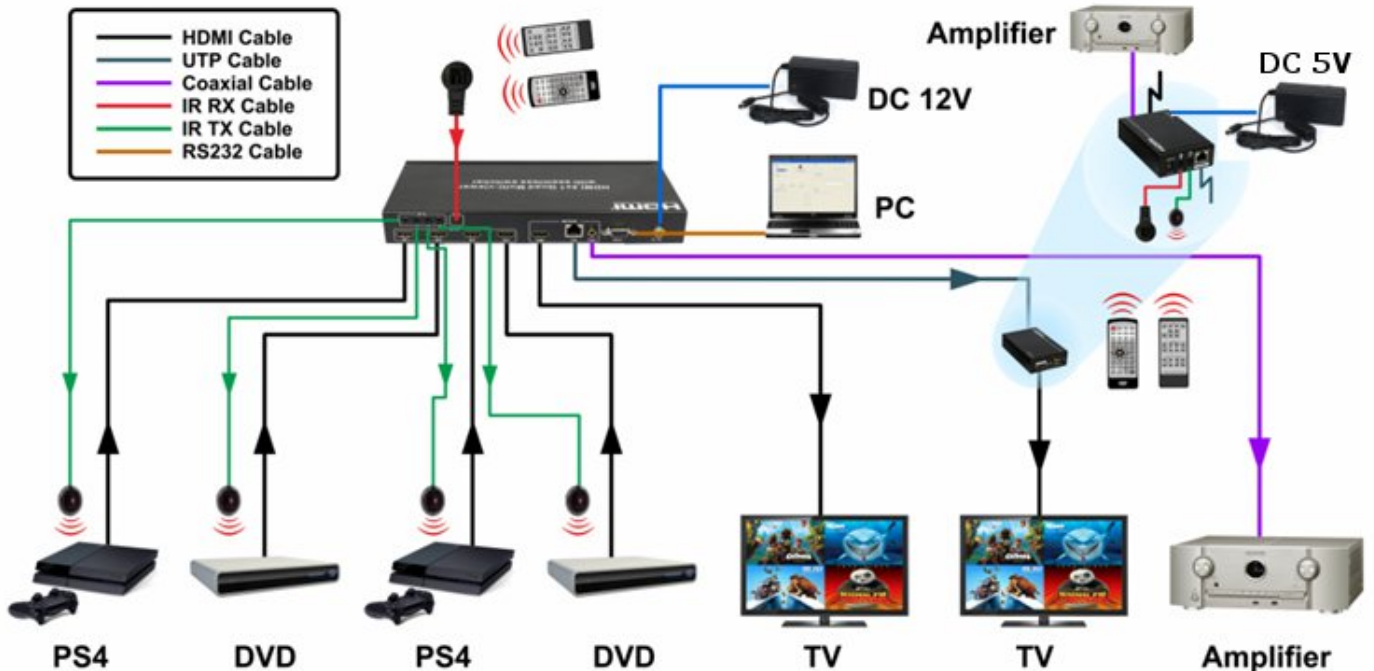
**ARC function :** In order to use ARC, your HDTV must support this function.

When you enable the ARC function (switch in “ON” position), the coaxial of the receiver will output the audio signal of the current HDTV display. If you switch the input at the display to view the signal from a source connected to a different input on the display (different than the signal from your Remote Unit), the audio from that source will play back through the amplifier connected to the Coaxial of the Remote Unit.

When disabled (switch in “OFF” position), the coaxial will only output the HDMI source (DVD, set-top-box, etc) audio signal from the SPLITMUX.

## 5. Connect and Operate

1. Connect the signal sources such as Blu-Ray Player, Play Station 3, audio/video receiver, satellite receivers and computers equipped with HDMI output interfaces with a high-speed HDMI cable to the SPLITMUX inputs.
2. Connect the HDMI output of the SPLITMUX to a high-definition display device such as HD-LCD, HD-DLP or HD projector with an HDMI input connection. Use a high-speed HDMI cable that is recommended for the distance required.
3. The SPLITMUX is powered by an external power supply (included). Connect power first to the signal source(s), then to the SPLITMUX and then to the display device.
4. If the CATx receiver is used, connect a CATx cable (see resolution chart on Specifications page) between the “UTP” port on the SPLITMUX and the Remote Unit. Then an additional display device can be connected to the Remote Unit using an HDMI cable. To control the input source via remote control from the extended display device, see “IR RECEIVER” in section 5.1.
5. If an amplifier is used, connect a coax cable with RCA connector to the “COAX” port on the SPLITMUX, and connect the other end to a stereo amplifier or self-powered speakers.

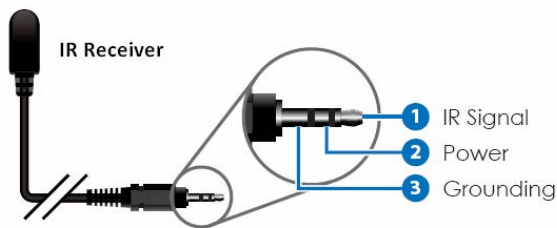
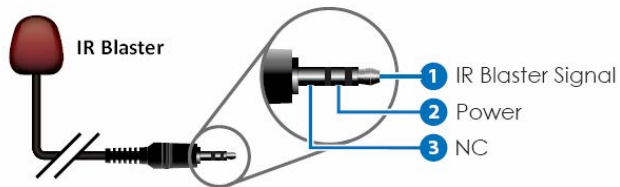


## 5.1 Wideband IR (30KHz---60KHz)

IR RECEIVER



IR BLASTER



### IR BLASTER (TX)

**To control the source:** Plug IR Blaster into a numbered “IR TX” port of the transmitter unit (SPLITMUX); place IR blaster in front of the IR eye of the associated input source. Repeat for each connected source.

### IR RECEIVER (RX)

**To locally control the source from the SPLITMUX:** Plug IR Receiver into the “IR RX” port of the SPLITMUX; place IR receiver at or near display.

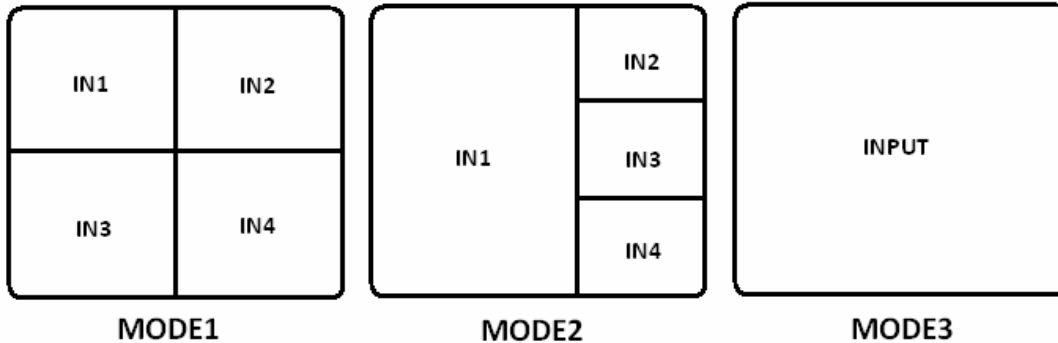
**To remotely control the source from the extended Display:** Plug IR Receiver into IR RX port of Remote Unit; place IR receiver at or near the display.

### IR Control of Connected Remote Display

Locally control the remote display using the display IR remote control through the IR receiver plugged-into the SPLITMUX and an IR Blaster plugged-into the Remote Unit.

## 5.2 Detailed Description of Display Modes

The SPLITMUX has 3 display modes.

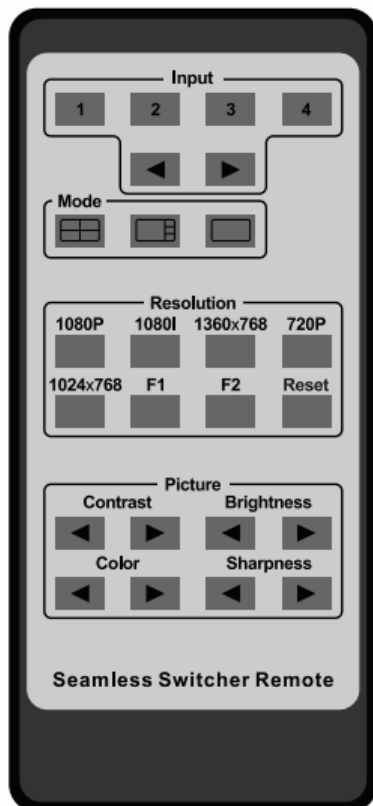


**MODE1:** The SPLITMUX divides the four HD inputs into images of the same size and displays them on one screen. Press the input button on the front panel or IR remote and the HDMI output audio for the corresponding source will be heard.

**MODE2:** The SPLITMUX divides the four HD inputs into one bigger and three smaller picture displays on one screen. Press the input button on the front panel or IR remote to select which source will be the larger picture and which audio will be heard.

**MODE3:** The SPLITMUX will separately display the four HD inputs, and now it is a seamless switcher.

## 6. Remote Control



1. **Input select button:** press these buttons to select the corresponding input source. The front panel LED will indicate the selected input source status.

2. **Mode select button:** press these buttons to select the corresponding mode, see the detailed description (chapter 5.2).

3. **Resolution button:** press these buttons to select the HDMI output resolution:

1080p, 1080i, 720p, 1024x768, 1360x768.

The F1, F2 buttons are not used.

Press the Reset button and the SPLITMUX will reset to a factory state.

4. **Picture button:** press these buttons to adjust the display picture contrast, brightness, color and sharpness.

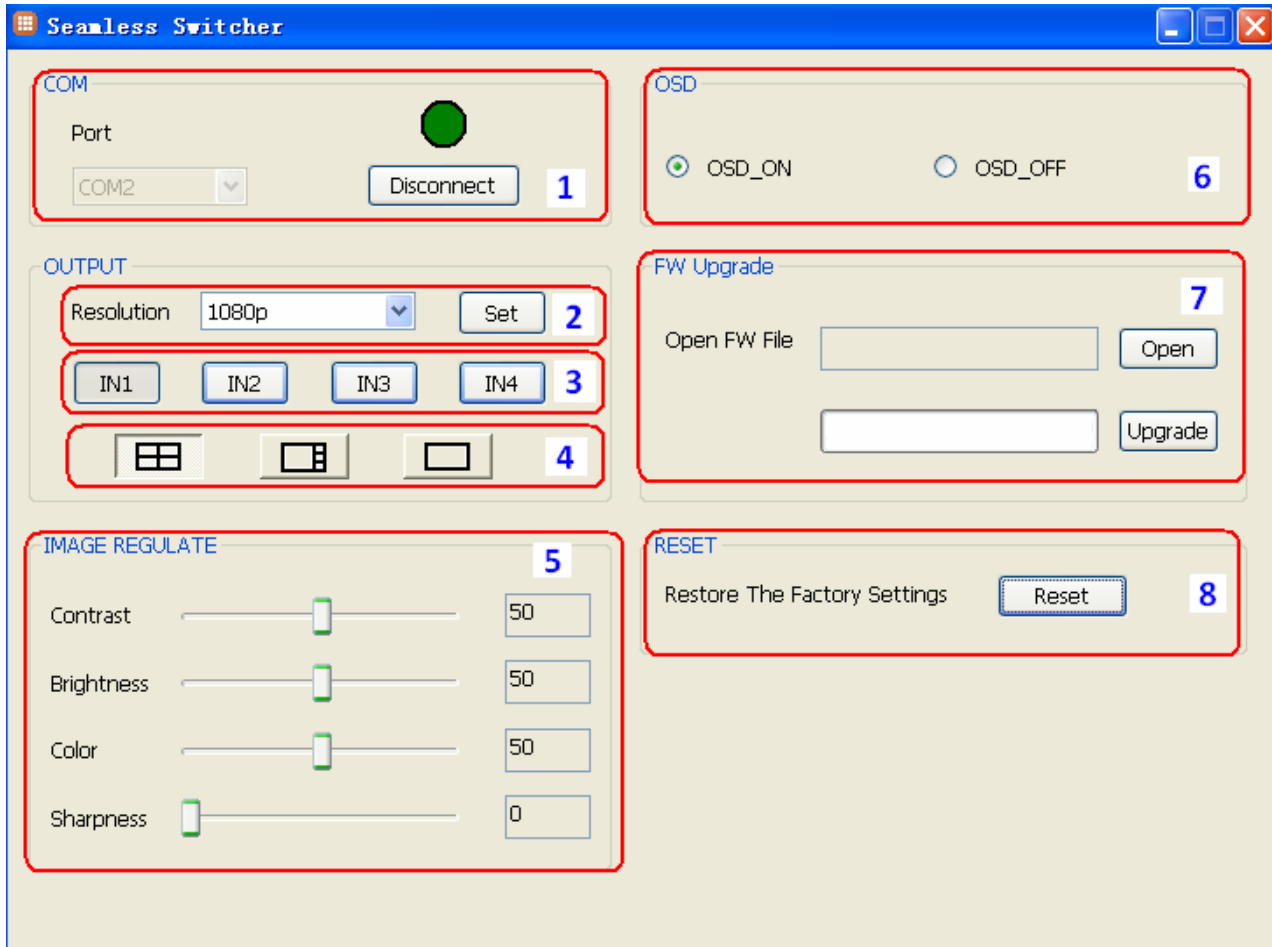
## 7. PC Controller User Guide

### Installation

The PC controller is an application included on your CD. Just use a cable to connect the PC via RS232 port and copy the “Quad multi-viewer.exe” from the CD to your PC to complete the installation.

### Preparation

1. Connect PC and SPLITMUX using the supplied RS232 cable
2. Power-up SPLITMUX
3. Double-click “Quad multi-viewer.exe” to run the application.



### Operation

1. Select PC connection COM port. Click to connect or disconnect PC and SPLITMUX.
2. Select the HDMI output resolution.
3. Select the Input source.
4. Select the Output mode. See the detailed description (chapter 5.2).
5. Adjust the HDMI output picture quality.
6. Display or hide the OSD menu.
7. FW Upgrade: (no new firmware available as of this printing)
  - Click to “Open” to open Firmware. Locate new firmware on your PC and select it.
  - Click the Upgrade button. The new firmware will auto download to the SPLITMUX.
  - The SPLITMUX will restart when the upgrade is complete.
8. Press the “Reset” button to reset the SPLITMUX to a factory state.



## 8. Specifications

<b>Video Bandwidth</b>	2.25Gbps
<b>Input Ports</b>	4 x HDMI (Female type), 1x RS232;
<b>Output Ports</b>	1 x HDMI (Female type), 1xRCA, 1xRJ45
<b>Audio output</b>	PCM2, 5.1, 7.1CH, Dolby 5.1, DTS5.1
<b>Input Resolution</b>	480i60Hz, 480p60Hz, 576i50Hz, 576p50Hz, 720p50/60Hz, 1080i50/60Hz, 1080p24/30/50/60Hz, 800x600@60, 1024x768@60, 1280x720@60, 1920x1080@60;
<b>Output Resolution</b>	1080p, 1080i, 720p, 1024x768, 1360x768
<b>ESD Protection</b>	Human Body model: ±8 kV (air-gap discharge) ±4 kV (contact discharge)
<b>Power Supply</b>	
<b>-SPLITMUX</b>	12 Vdc/2.5A (US/EU standards, CE/FCC/UL certified)
<b>-Remote Unit</b>	5 Vdc/1.0A (US/EU standards, CE/FCC/UL certified)
<b>Dimensions WxDxH (in):</b>	9.84x4.65x1.26 (250x118x32 mm)
<b>Weight</b>	750 g
<b>Chassis Material</b>	Powder-coated Steel
<b>Operating Temperature</b>	0 °C~40 °C/ 32 °F~104 °F
<b>Storage Temperature</b>	-20 °C ~ 60 °C/-4 °F ~140 °F
<b>Relative Humidity</b>	20~90 % RH (non-condensing)
<b>Power Consumption</b>	10 W

Distances & Resolutions for CAT5/5e/6/6a/7 Cables		
Cable	Distance	Max Std Resolution
CAT5 Stranded STP	100 ft	1080i/60Hz
		720p/60Hz
CAT5 Solid STP	50 ft	1080p/60Hz
	100 ft	1080i/60Hz
CAT5e Solid UTP/STP	175 ft	1080i/60Hz
		720p/60Hz
CAT5e Stranded UTP/STP	90 ft	1080p/60Hz
CAT6 Stranded UTP	90 ft	1080p/60Hz
CAT6 Solid UTP	125 ft	1080p/60Hz
	250 ft	1080i/60Hz
		720p/60Hz
CAT6a/7 Solid STP	250 ft	1080p/60Hz

## 9. RS-232 Commands

### Setup Parameters:

Baudrate: 115200

Data width: 8bit

Parity: none

Stop: 1bit

### Port switch command package length is 13byte:

[0xa5+0x5b+0x02+0x03+**input port(1~4)**+0x00+0x01+0x00+0x00+0x00+0x00+0x00+**checksum**]

All you need to change is just "input port", "output port", "checksum"

Checksum=0x100 - (0xa5+0x5b+0x02+0x03+**input port(1~4)**+0x00+0x01+0x00+0x00+0x00+0x00+0x00)

For example: Set output form input 2 command:

A5 5B 02 03 02 00 01 00 00 00 00 00 F8

### Port switch query package length is 13byte:

This is a query command which mean you must send query package and then receive an answer.

For example: Query output

Send package: A5 5B 02 01 01 00 00 00 00 00 00 00 FC

Receive package: A5 5B 02 01 01 00**01** 00 00 00 00 00 FB

The blue **01** mean the input port number, it should be 1~4.

### Resolution configurepackage length is 13byte:

[0xa5+0x5b+0x08+0x06+**resolution(0~4)**+0x00+0x00+0x00+0x00+0x00+0x00+0x00+**checksum**]

All you need to change is just "iresolution", checksum"

Checksum=0x100 - (0xa5+0x5b+0x02+0x03+**resolution(0~4)**+0x00+0x00+0x00+0x00+0x00+0x00+0x00)

**resolution(0~4)**分别为 1080P, 720P, 1080I, 1024X768, 1360X768

For example: Set output resolution 720P command:

A5 5B 08 06 01 00 00 00 00 00 00 00 F1

### Resolution query package length is 13byte:

This is a query command which mean you must send query package and then receive an answer.

For example: Query **Resolution**

Send package: A5 5B 09 06 00 00 00 00 00 00 00 00 F1

Receive package: A5 5B 09 06 **01** 00 00 00 00 00 00 00 F0

The blue **01** mean the resolution is 720P, it should be 0~4.

**MODE configurepackage length is 13byte:**

There is only three modes



A5 5B 08 05 00 00 00 00 00 00 00 00 F3



A5 5B 08 05 01 00 00 00 00 00 00 00 F2



A5 5B 08 05 02 00 00 00 00 00 00 00 F1

**MODE query package length is 13byte:**

This is a query command which mean you must send query package and then receive an answer.

For example: Query **MODE**

Send package: A5 5B 09 05 00 00 00 00 00 00 00 00 F2

Receive package: A5 5B 09 05**01** 00 00 00 00 00 00 00 F1



The blue **01** mean the **MODE** , it should be 0~2.

**PQ regulatepackage length is 13byte:**

[0xa5+0x5b+0x08+**TYPE(1~4)**+**DATA**+0x00+0x00+0x00+0x00+0x00+0x00+0x00+**checksum**]

All you need to change is just “TYPE”, ”DATA”, ”checksum”

Checksum=0x100 – (0xa5+0x5b+0x08+**TYPE(1~4)**+**DATA**+0x00+0x00+0x00+0x00+0x00+0x00+0x00)

**TYPE (1~4)** 分别为 Contrast, Brightness, Color, Sharpness

Contrast, Brightness and Color**DATA** from 0 to 99 ; Sharpness**DATA** from 0 to 8

For example: Set Contrast 72 command:

A5 5B 08 01 48 00 00 00 00 00 00 00 AF

**PQ query package length is 13byte:**

This is a query command which mean you must send query package and then receive an answer.

For example: Query Contrast

Send package: A5 5B 09**01** 00 00 00 00 00 00 00 00 F6

Receive package: A5 5B 09 01**32** 00 00 00 00 00 00 00 C4

The red**01** mean **query** the Contrast, it should be 1~4(Contrast, Brightness, Color, Sharpness)

The blue**32** mean the Contrast is 50 , it should be 0~99.

**Rreset sys configure package length is 13byte:**

Send package: A5 5B 08 0A 00 00 00 00 00 00 00 00 EE

Receive package: A5 5B 08 0A 00 00 00 00 00 00 00 00 EE

**OSD enable configure package length is 13byte:**

ON :A5 5B 08 09 01 00 00 00 00 00 00 00 EE

OFF :A5 5B 08 09 00 00 00 00 00 00 00 00 EF

**OSD enablequery package length is 13byte:**

This is a query command which mean you must send query package and then receive an answer.

For example: Query OSD enable

Send package: A5 5B 0A 09 00 00 00 00 00 00 00 ED

Receive package: A5 5B 0A 0901 00 00 00 00 00 00 00 EC

The blue01 mean the OSD is enable , it should be 0~1. (if00 ,it mean disable)

#### IR command:

#### NEC code

**#define SYSTEM\_CODE 0x08**

#define IRCODE\_1080P 0x55

#define IRCODE\_720P 0x17

#define IRCODE\_1080I 0x57

#define IRCODE\_1024X768 0x4C

#define IRCODE\_1360X768 0x4E

#define IRCODE\_F1 0x0D

#define IRCODE\_F2 0x56

#define IRCODE\_Reset 0x16

#define IRCODE\_OneCh 0x08

#define IRCODE\_MainSub 0x48

#define IRCODE\_FourCh 0x4b

#define IRCODE\_INPUT1 0x4D

#define IRCODE\_INPUT2 0x41

#define IRCODE\_INPUT3 0x49

#define IRCODE\_INPUT4 0x0B

#define IRCODE\_INPUT\_LEFT 0x54

#define IRCODE\_INPUT\_RIGHT 0x47

#define IRCODE\_Contrast\_L 0x4F

#define IRCODE\_Contrast\_R 0x44

#define IRCODE\_Brightness\_L 0x50

#define IRCODE\_Brightness\_R 0x0E

#define IRCODE\_Color\_L 0x13

#define IRCODE\_Color\_R 0x12

#define IRCODE\_Sharpness\_L 0x15

#define IRCODE\_Sharpness\_R 0x53

## TROUBLE SHOOTING

**Complaint:** All the images are squished in Mode B.

**Possible Fix-** Changing the resolution of your input so it becomes a different aspect ratio (i.e.-1920x1200 to 1600x1200) may help the appearance of the squished image some. Also, a lower resolution (1280x1024) may look better once it is shrunk down to the smaller window size.

## WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at <http://www.networktechinc.com> for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.