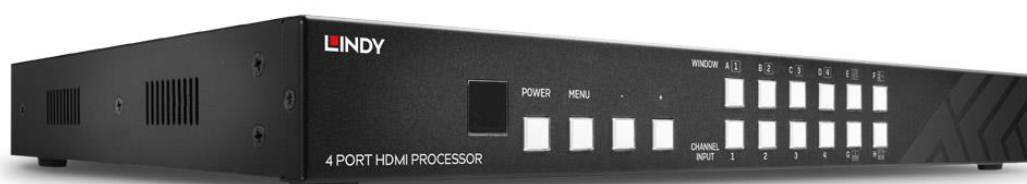




HDMI 4x1 PiP Video Processor

User Manual

English



No. 38130

lindy.com

Safety Instructions**! WARNING !**

Please read the following safety information carefully and always keep this document with the product.

Failure to follow these precautions can result in serious injuries or death from electric shock, fire or damage to the product.

Touching the internal components or a damaged cable may cause electric shock, which may result in death.

To reduce risk of fire, electric shocks or damage:

- Do not open the product. There are no user serviceable parts inside.
- Qualified servicing personnel must only carry out any repairs or maintenance.
- Never use damaged cables.
- Do not expose the product to water or places of moisture.
- This product is intended for indoor use only.
- Do not place the product near direct heat sources. Always place it in a well-ventilated place.
- Do not place heavy items on the product or the cables.
- Please ensure any adapters are firmly secured and locked in place before inserting into a wall socket



Introduction

Thank you for purchasing the Lindy HDMI 4x1 PiP Video Processor. This product has been designed to provide trouble free, reliable operation. It benefits from both a LINDY 2-year warranty and free lifetime technical support. To ensure correct use, please read this manual carefully and retain it for future reference.

The PiP Video Processor allows the signals from four different source devices to be integrated for viewing on a single HDMI display or projector in multi-view, picture in picture and overlay layouts. This flexible feature rich product has been designed to be used in several applications such as public advertisement, digital presentations, broadcasting & control rooms, CCTV surveillance centres, conference and meeting rooms.

Package Contents

- HDMI 4x1 PiP Video Processor
- IR Remote Control (CR-124)
- Multi-country 12VDC 3A Power supply (UK/EU/US/AUS), barrel size 5.5/2.1mm
- Rack Mount Ears (x2)
- Lindy Manual

Features

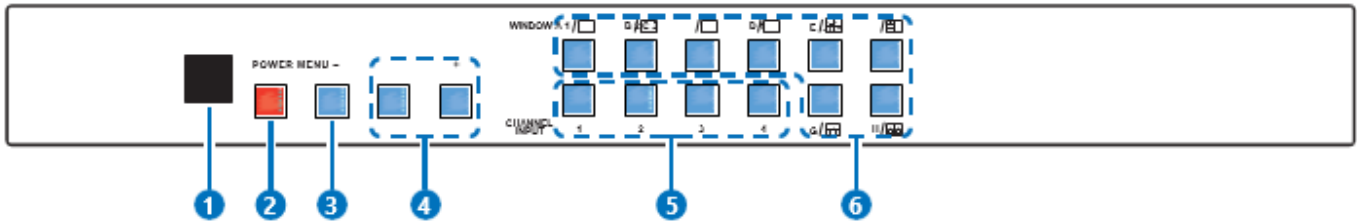
- Allows up to 4 HDMI Inputs to be shown on a single display in 4 modes:
 - Single view: view & cycle through individual inputs.
 - PiP mode (picture in picture).
 - Multi-window mode: view 2-4 inputs simultaneously.
 - Overlay mode: picture on picture with chromakey.
- Seamless switching between HDMI Sources.
- Definable channel size and position adjustment adds flexibility to the display configuration.
- Multiple control methods including an IR remote, RS-232, Telnet and Integrated front panel controls.
- Contrast, brightness, saturation & hue adjustment.
- Memory function allows the user to store up to 4 determined configurations.
- Compatible with Lindy HDMI extenders to reach remote displays.

Specification

- Input ports: 4 x HDMI Female
 - Input resolution: 480i – 1080p
 - HDCP 1.4 Complaint
 - Output ports: 1 x HDMI Female
 - Output resolution: 1080p
 - Audio support: LPCM 2CH, 6CH, 8CH, AC3, DTS, Dolby Digital Plus, Dolby TrueHD & DTS-HD
 - Control ports: RJ45 (Telnet) & Serial 9-way male (RS-232)
 - Video bandwidth: 225Mhz/6.75Gbps
 - Power consumption: 15W
 - Housing material: Metal
 - Colour: Black
 - Weight: 2.95kg (6.5lb)
 - Dimensions: 436x247x44mm (17.17x9.72x1.73in)
-

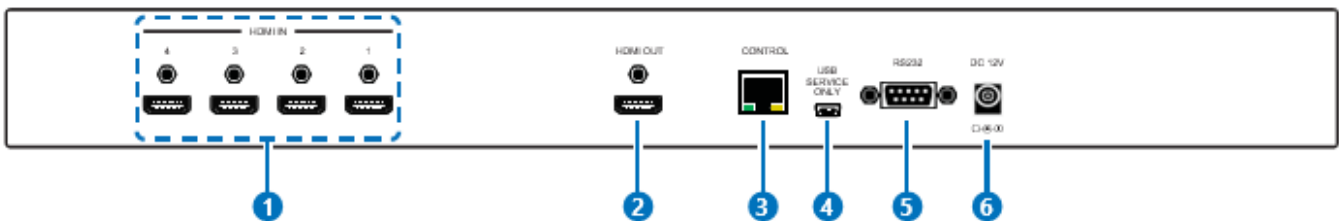
Overview & Operation

Front Panel



1. **IR Window:** Receives IR commands from the included IR remote.
2. **Power button:** Switch on and off the device.
3. **Menu:** Press to launch the OSD menu & make selections in the OSD.
4. **+ / - Buttons:** Use these buttons to move up and down in the OSD.
5. **Channel Input (1 – 4) Selection:** Use the channel input buttons to cycle through available inputs for each channel; use input channel button 1 to control channel 1, input channel button 2 to control channel 2 and so on. For example, if you have selected channel 1, by default this will display input 1, by pressing channel input button 1 the input will switch to input 2, further presses will move the input to 3 and 4 then back to 1.
6. **Window Mode (A – H):**
 - Window A – When selecting this option only the input selected under channel 1 will be displayed.
 - Window B – When selecting this option only the input selected under channel 2 will be displayed.
 - Window C – When selecting this option only the input selected under channel 3 will be displayed.
 - Window D – When selecting this option only the input selected under channel 4 will be displayed.
 - Window E – The inputs selected under channels 1 – 4 will be displayed in a 2 x 2 grid.
 - Window F – The inputs selected under channel 4 will be displayed on the right half of the display, the inputs selected for channels 1-3 will be displayed on the left half of the display.
 - Window G – The input selected under channel 1 will be displayed on the full display. With the inputs selected between channels 2-4 will show across the bottom of the screen in a picture in picture layout.
 - Window H – The inputs selected under channels 1-4 will be displayed in a 4x1 grid.

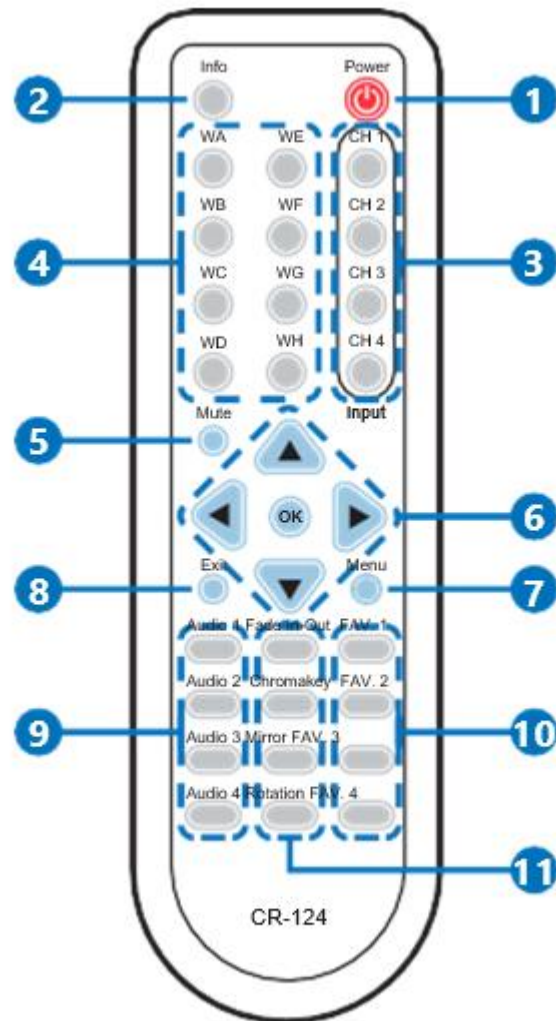
Rear Panel



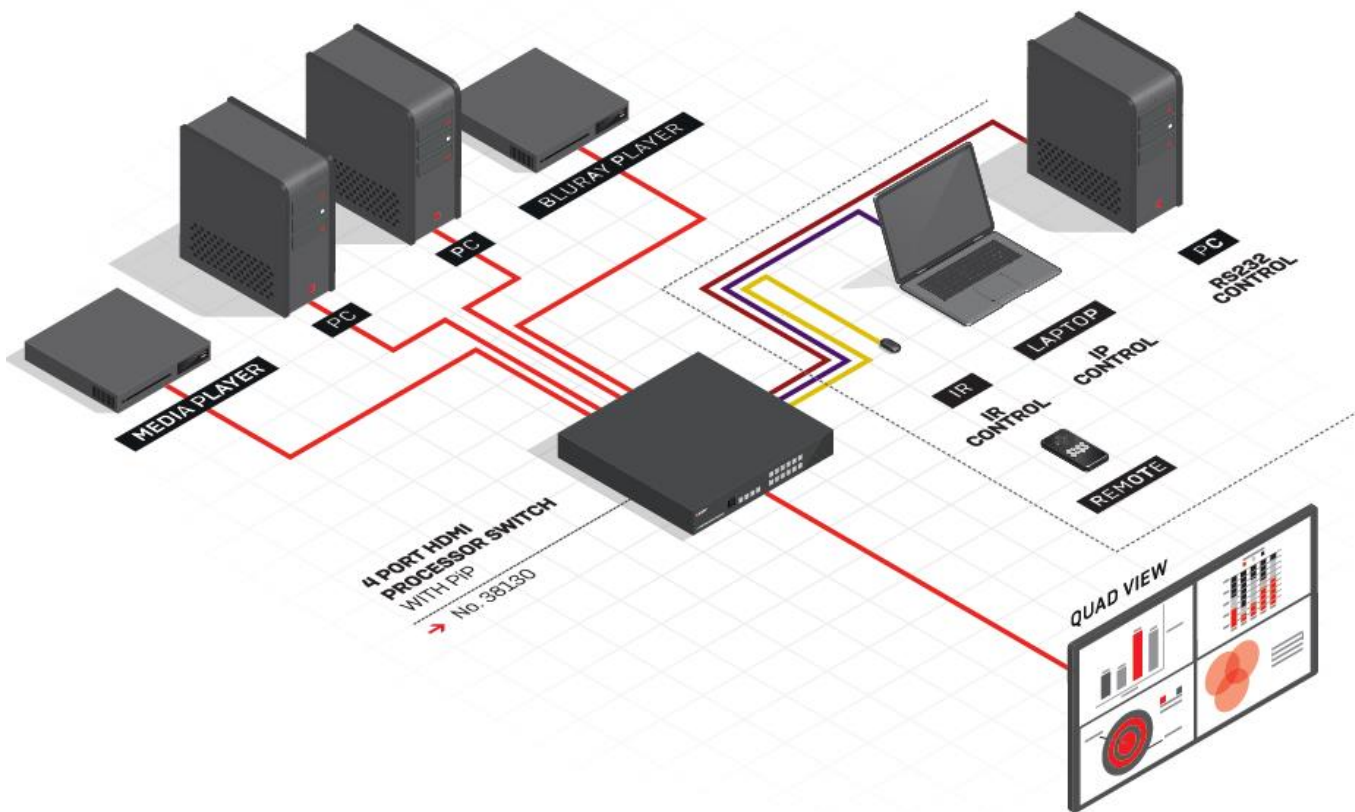
1. **HDMI Inputs 1-4:** Connect HDMI source devices.
2. **HDMI Output:** Connect an HDMI display or projector.
3. **Control:** Connect to an Ethernet network for Telnet control.
4. **USB Service:** Micro-B service port for manufacturer use only.
5. **RS-232:** Connect a PC / Notebook or remote-control processing unit.
6. **DC-12V:** Connect the supplied 12V power supply.

Remote Control

1. **Power:** Press to power the unit on or place it in stand-by mode.
 2. **Info:** Press to show the unit's firmware version.
 3. **Ch 1 – 4:** Press to sequentially switch through the available inputs for each associated window channel (1 – 4).
 4. **WA-WH:** Press these buttons to select the desired window arrangement for output. WA – WD are for full screen, single window, video output. WE – WH are for multi-window predetermined channel layouts.
 5. **Mute:** Press to mute the audio from the HDMI output.
 6. **◀▶▶▼ & OK:** Press the arrows to navigate the OSD menu, and press OK to confirm selections.
 7. **Menu:** Press to enter the OSD menu.
 8. **Exit:** Press to back out from menu items, or to exit the OSD menus.
 9. **Audio 1 – 4:** Press to select the active audio source from HDMI Input 1 – 4.
 10. **FAV. 1 – 4:** Press to activate one of the 4 additional pre-determined channel layouts
 11. **Fade-in-out*:** Press to toggle the fade-in-out function on / off.
- Chroma key*:** Press to toggle the Chroma key function on / off.
- Note:** Channel 1 is always the background and channel 2 is always the keyed foreground image.
- Mirror*:** Press to display the current mirrored channel (left / right).
- Rotation*:** Press to rotate the image 90° left, 90° right or 180°.
- Note:** Functions with asterisks (*) only work on windows A – D. The unit will automatically switch to window A if they are activated while displaying windows E – H.



Connection Diagram



Video Output Modes

Window A – The input selected for channel 1 will be displayed.

Window B – The input selected for channel 2 will be displayed.

Window C – The input selected for channel 3 will be displayed.

Window D – The input selected for channel 4 will be displayed.



The example shows **Window A** selected, so the input selected for channel 1 is displayed.

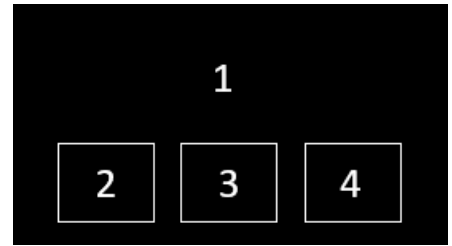
Window E – The input selected under channels 1 – 4 will be displayed in a 2x2 grid.



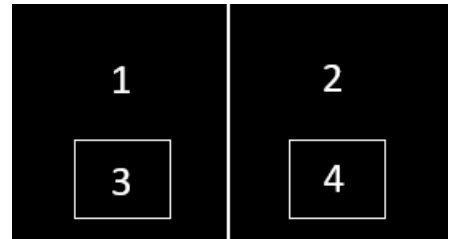
Window F – The input selected under channel 4 will be displayed on the right half of the screen, the inputs selected for channels 1 – 3 will be displayed on the left half of the screen as shown.



Window G – The input selected under channel 1 will be displayed full screen, with the inputs selected under channels 2 – 4 will show (Picture in Picture) across the bottom of the screen.



Window H – The inputs selected under channel 1 – 4 will be displayed in a 4x1 grid.

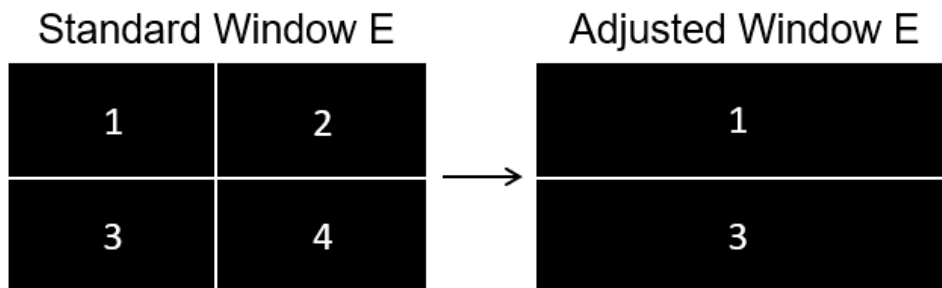


Multi-window adjustment

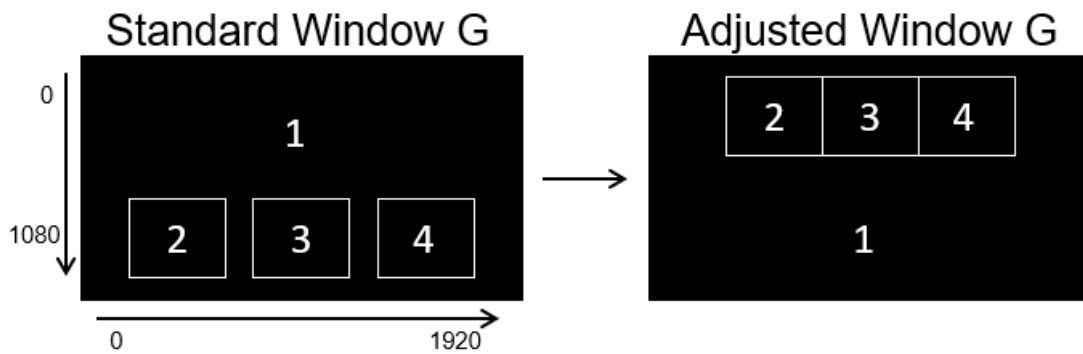
In each of the multi-window options (E-H) above it is possible to adjust the size and position of each window, and even to switch the windows off. To begin, select the window option which is closest to your dsired layout and then enter the menu using the remote control. Now select 'Window Setup' and you will be presented with the choice to adjust each channel 1-4 and the option to store or recall favourite configurations.

To adjust the layout, begin by highlighting a channel to select it, then press 'OK'. You can adjust the vertical and horizontal size and position of the window using the 'Size' and 'Position' menu options. You can also turn the channel on or off using the image output menu. Adjustments can be made in single pixel, ten pixel and one hundren pixel implements giving you absolute control of the window. If you make an error you can quickly return othte default value for the window by selecting window reset.

As an example using a 1080p display starting with window E selected, by adjuting the size of channels 1 and 3 to 1920 pixels wide by 540 pixels high and turning off the output channels of 2 and 4 you would achieve the layout below.



When adjusting the position of a channel, the horizontal position is from left to right of the display, starting from the left edge of the channel. The vertical position is from top to bottom of the display, starting at the top edge of the channel. The following example shows the default layout for each channel in window G and an adjusted version made by changing the values of each channel.



		Standard	Adjusted
Channel 1	Horizontal	0000	0000
	Vertical	0000	0000
Channel 2	Horizontal	0105	0210
	Vertical	0700	0120
Channel 3	Horizontal	0710	0710
	Vertical	0700	0120
Channel 4	Horizontal	1315	1210
	Vertical	0700	0120

Chromakey

This special function is designed for picture on picture overlapping. It works using channel 1 as the background and channel 2 as the top layer. The top layers background colour is usually a single colour which can be easily removed using the OSD menu. The RGB settings for channel 2 video can be adjusted to determine where the layer will be transparent making channel 1 visible. When input 1 or 2 has no source connection, a warning message will appear on the OSD.

RS-232, Telnet & OSD Control

RS-232 Protocols

Baud rate: 115200bps
 Data bits: 8
 Parity: None
 Flow control: None
 Stop bits: 1

HDMI PiP Switch	
PIN	Assignment
1	NC
2	Tx
3	Rx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Remote Control	
PIN	Assignment
1	NC
2	Rx
3	Tx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

RS-232 & Telnet Commands

Use TCP / IP (Port 23) for Telnet communication.

All commands are case-sensitive and will not be executed unless followed with a carriage return.

Command	Action
POW000	OFF
POW001	ON
WND001	Change to Window A
WND002	Change to Window B
WND003	Change to Window C
WND004	Change to Window D
WND005	Change to Window E
WND006	Change to Window F
WND007	Change to Window G
WND008	Change to Window H
CH1001	Change Channel 1 to Source 1
CH1002	Change Channel 1 to Source 2
CH1003	Change Channel 1 to Source 3
CH1004	Change Channel 1 to Source 4
CH2001	Change Channel 2 to Source 1
CH2002	Change Channel 2 to Source 2
CH2003	Change Channel 2 to Source 3
CH2004	Change Channel 2 to Source 4
CH3001	Change Channel 3 to Source 1
CH3002	Change Channel 3 to Source 2
CH3003	Change Channel 3 to Source 3
CH3004	Change Channel 3 to Source 4
CH4001	Change Channel 4 to Source 1
CH4002	Change Channel 4 to Source 2
CH4003	Change Channel 4 to Source 3
CH4004	Change Channel 4 to Source 4
MUT000	Mute Off
MUT001	Mute On
FAD000	Fade In-Out Off

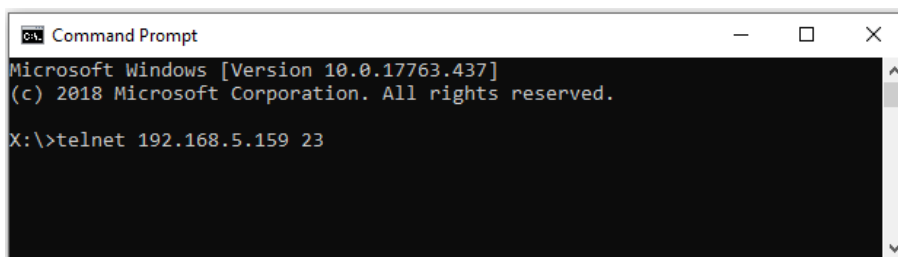
Command	Action
FAD001	Fade In-Out On
AUD001	Change Output Audio to Source 1
AUD002	Change Output Audio to Source 2
AUD003	Change Output Audio to Source 3
AUD004	Change Output Audio to Source 4
CHR000	Chromakey Function Off
CHR001	Chromakey Function On
MIR000	Mirror Function Off
MIR001	Mirror Function On
ROT000	Rotation Function Off
ROT001	Rotation Function R
ROT002	Rotation Function L
ROT003	Rotation Function Up-Side Down
SFA001	Store window format to FAV 1
SFA002	Store window format to FAV 2
SFA003	Store window format to FAV 3
SFA004	Store window format to FAV 4
RFA001	Recall window from FAV 1
RFA002	Recall window from FAV 2
RFA003	Recall window from FAV 3
RFA004	Recall window from FAV 4
IO1000	Channel 1 Image Off
IO1001	Channel 1 Image On
IO2000	Channel 2 Image Off
IO2001	Channel 2 Image On
IO3000	Channel 3 Image Off
IO3001	Channel 3 Image On
IO4000	Channel 4 Image Off
IO4001	Channel 4 Image On

Telnet Control

Before attempting to use telnet control, please ensure that both the Video Processor (via the 'CONTROL' port) and the control console are connected to the same active network.

Open a Command Prompt on your computer, type 'telnet', then a space followed by the IP address of the Video Processor, then another space then 23 and finally press enter.

Note: The IP address of the Video Processor can be found under Ethernet Setup on the devices OSD menu. 23 is the TCP / IP port for Tenet.



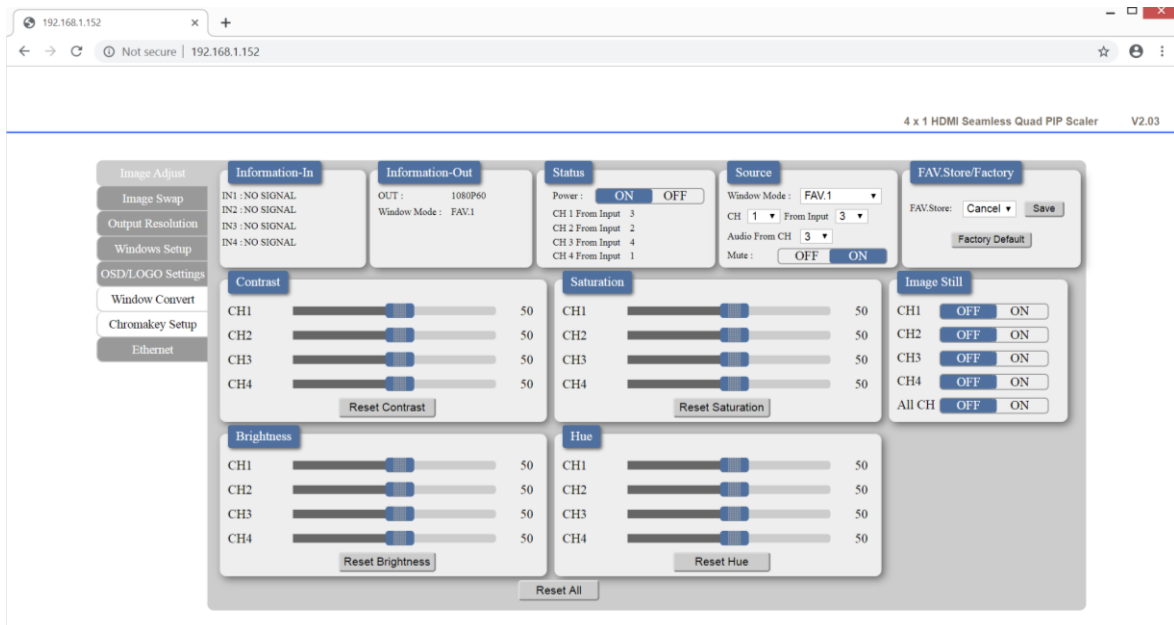
The above command prompt entry will open the Telnet interface for the Video Processor. Type ‘?’ to list all the available command, please refer to the RS-232 & Telnet commands section of this manual on page # for a description of each command.

Type ‘IPCONFIG’ to show the complete IP configuration of the Video Processor. To reset the IP, type ‘IPMODE’ to switch between static IP / DHCP.

Note: All the commands will not be executed unless followed by a carriage return. Commands are case-sensitive. If the IP is changed then the IP address required for telnet access will also need to be changed accordingly. A power cycle is also required for every IP change.

Web GUI Control

On a PC / Laptop that is connected to the same active network as the Video Processor, open a web browser and type the device’s IP address on the web address entry bar. The browser will display the device’s image. Adjust output resolution etc as shown below. Using this interface, you can control the Video Processor in the same way as with the OSD, RS-232 and Telnet controls.



Click on the ‘Ethernet Tab’ to reset the IP configuration. The system will ask for a reboot of the device every time any of the settings are changed. The IP address needed to access the Web GUI control will also need to be changed accordingly on the web address entry bar.

On-Screen Display Menu (OSD)

Main Menu	1st Layer	2nd Layer	3rd Layer
Image Adjust	Brightness Adjust	CH 1	0-100 (50)
		CH 2	0-100 (50)
		CH 3	0-100 (50)
		CH 4	0-100 (50)
		Value Reset	
		Menu Exit	
	Contrast Adjust	CH 1	0-100 (50)
		CH 2	0-100 (50)
		CH 3	0-100 (50)
		CH 4	0-100 (50)
		Value Reset	
		Menu Exit	
	Hue Adjust	CH 1	0-100 (50)
		CH 2	0-100 (50)
		CH 3	0-100 (50)
		CH 4	0-100 (50)
		Value Reset	
		Menu Exit	
	Saturation	CH 1	0-100 (50)
		CH 2	0-100 (50)
		CH 3	0-100 (50)
		CH 4	0-100 (50)
		Value Reset	
		Menu Exit	
Picture Reset			
Menu Exit			
Window Setup	Channel 1 Select	Size	CH 1 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
		Height Hundred	
		Position	CH 1 Wxxx Hxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
	Vertical Ten		
	Vertical Hundred		
	Image Output On/Off		
Window Reset			
Menu Exit			

Main Menu	1st Layer	2nd Layer	3rd Layer
Window Setup Continued	Channe 2 Select	Size	CH 2 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
		Height Hundred	
		Position	CH 2 Wxxx Hxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
	Vertical Ten		
	Image Output On/Off		
		Window reset	
		Menu Exit	
	Channel 3 Select	Size	CH 3 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
			Height Unit
			Height Ten
		Height Hundred	
		Position	CH 3 Wxxx Hxxx
			Horizontal Unit
			Horizontal Ten
			Horizontal Hundred
			Vertical Unit
	Vertical Ten		
	Image Output On/Off		
		Window reset	
		Menu Exit	
	Channel 4 Select	Size	CH 4 Wxxx Hxxx
			Width Unit
			Width Ten
			Width Hundred
Height Unit			
Height Ten			
Height Hundred			
Position		CH 4 Wxxx Hxxx	
		Horizontal Unit	
		Horizontal Ten	
		Horizontal Hundred	
		Vertical Unit	
	Vertical Ten		
Image Output On/Off			
	Window reset		
	Menu Exit		

Main Menu	1st Layer	2nd Layer	3rd Layer
Window Setup continued	FAV. Store	MFAV 1 Store On/Off/OK	
		MFAV 2 Store On/Off/OK	
		MFAV 3 Store On/Off/OK	
		MFAV 4 Store On/Off/OK	
	FAV. Recall	FAV 1 Recall On/Off/OK	
		FAV 2 Recall On/Off/OK	
		FAV 3 Recall On/Off/OK	
FAV 4 Recall On/Off/OK			
Menu Exit			
Window Convert	Channel 1 Convert	Mirror On/Off	
		Fade In-Out On/Off	
		Rotation R90/L90/Up-side down 180/Of	
		Window Reset	
		Menu Exit	
	Channel 2 Convert	Mirror On/Off	
		Fade In-Out On/Off	
		Rotation R90/L90/Up-side down 180/Of	
		Window Reset	
		Menu Exit	
	Channel 3 Convert	Mirror On/Off	
		Fade In-Out On/Off	
		Rotation R90/L90/Up-side down 180/Of	
		Window Reset	
		Menu Exit	
	Channel 4 Convert	Mirror On/Off	
Fade In-Out On/Off			
Rotation R90/L90/Up-side down 180/Of			
Window Reset			
Menu Exit			
ChromaKey Setup	Minimum for R 000 - 255		
	Maximum for R 000 - 255		
	Minimum for G 000 - 255		
	Maximum for G 000 - 255		
	Minimum for B 000 - 255		
	Maximum for B 000 - 255		
	Switch On/Off		
	Menu Exit		
Ethernet Setup	IP Mode		
	Static Set		
	Byte 1 High		
	Byte 2		
	Byte 3		
	Byte 4		
	Re-Link		
	Static / DHCP IP	Linnked / Not Linked	
	IP	IP / Mask / Gate	
	Mask	XXX-XXX-XXX-XXX	
	Gate	XXX-XXX-XXX-XXX	
	Mac	XXX-XXX-XXX-XXX	
Sys Reset	Yes / No		
Information	Firmware Version		

CE/FCC Statement

CE Certification

LINDY declares that this equipment complies with relevant European CE requirements.

CE Konformitätserklärung

LINDY erklärt, dass dieses Equipment den europäischen CE-Anforderungen entspricht

UKCA Certification

LINDY declares that this equipment complies with relevant UKCA requirements.

FCC Certification

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.

You are cautioned that changes or modification not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

The enclosed power supply has passed Safety test requirements, conforming to the US American versions of the international Standard IEC 60950-1 or 60065 or 62368-1.

LINDY Herstellergarantie – Hinweis für Kunden in Deutschland

LINDY gewährt für dieses Produkt über die gesetzliche Regelung in Deutschland hinaus eine zweijährige Herstellergarantie ab Kaufdatum. Die detaillierten Bedingungen dieser Garantie finden Sie auf der LINDY Website aufgelistet bei den AGBs.

Hersteller / Manufacturer (EU):

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Email: info@lindy.com , T: +49 (0)621 470050

Manufacturer (UK):

LINDY Electronics Ltd
Sadler Forster Way
Stockton-on-Tees, TS17 9JY
England
sales@lindy.co.uk, T: +44 (0)1642 754000

Recycling Information



WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electronic Products

Europe, United Kingdom

In 2006 the European Union introduced regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process.

Each individual EU member state has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose of any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.

Battery Remark:

Do not put empty batteries in your domestic waste bin as they will not be recycled. Empty batteries can be returned for recycling at our trade counter or at your local household recycling centre.

The raw materials enclosed in batteries such as Zinc, Iron and Nickel can be reused to a very large proportion. The recycling of batteries and disused/obsolete electronic equipment is one of the most efficient environment protection actions you can easily take.

Germany / Deutschland

Rücknahme Elektroschrott und Batterie-Entsorgung

Die Europäische Union hat mit der WEEE Richtlinie Regelungen für die Verschrottung und das Recycling von Elektro- und Elektronikprodukten geschaffen. Diese wurden im Elektro- und Elektronikgerätegesetz – ElektroG in deutsches Recht umgesetzt. Das Entsorgen von Elektro- und Elektronikgeräten über die Hausmülltonne ist verboten! Diese Geräte müssen den Sammel- und Rückgabesystemen zugeführt werden! Dort werden sie kostenlos entgegen genommen. Die Kosten für den weiteren Recyclingprozess übernehmen die Gerätehersteller.

LINDY bietet deutschen Endverbrauchern ein kostenloses Rücknahmesystem an, beachten Sie bitte, dass Batterien und Akkus den Produkten vor der Rückgabe an das Rücknahmesystem entnommen werden müssen und über die Sammel- und Rückgabesysteme für Batterien separat entsorgt werden müssen. Ausführliche Informationen zu diesen Themen finden Sie stets aktuell auf der LINDY Webseite im Fußbereich.

France

En 2006, l'union Européenne a introduit la nouvelle réglementation (DEEE) pour le recyclage de tout équipement électrique et électronique.

Chaque Etat membre de l' Union Européenne a mis en application la nouvelle réglementation DEEE de manières légèrement différentes. Veuillez suivre le décret d'application correspondant à l'élimination des déchets électriques ou électroniques de votre pays.

Remarque sur les piles et batteries

En tant que consommateur final, vous êtes tenus de restituer toutes les piles et batteries usagées. Il est clairement interdit de les jeter avec les ordures ménagères ! Les piles et batteries contenant des substances nocives sont marquées par le symbole ci-dessus. Vous pouvez déposer gratuitement vos piles ou batteries usagées dans les centres de collecte de votre commune, dans nos succursales ou dans tous les points de vente de piles ou batteries. Vous respecterez ainsi la loi et contribuerez à la protection de l'environnement !

Italy

Nel 2006 l'unione europea ha introdotto regolamentazioni (WEEE) per la raccolta e il riciclo di apparecchi elettrici ed elettronici. Non è più consentito semplicemente gettare queste apparecchiature, devono essere riciclate. Ogni stato membro dell' EU ha tramutato le direttive WEEE in leggi statali in varie misure. Fare riferimento alle leggi del proprio Stato quando si dispone di un apparecchio elettrico o elettronico.

Per ulteriori dettagli fare riferimento alla direttiva WEEE sul riciclaggio del proprio Stato.



UK
CA



Tested to comply with
FCC Standards
For Home and Office Use!

No. 38130

2nd Edition, January 2021

lindy.com