Apollo 42

User Manual

4x2 Multi-View Seamless Matrix
HDMI 2.0 (18G 4K60 444), Up/Down scaler,
Audio de-embedder

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Thank you for purchasing the Apollo 42

The Apollo 42 is designed with professional AV installers in mind. The many extensive features assist in system integration, validation and maintenance.

Installation precautions

This product has special circuitry to protect it against moderate surges and static discharges. However, to ensure reliable operation and long service life, it is important to take the necessary precautions against any spikes, surges and static discharges.

Place the units away from heat sources and allow adequate ventilation.

As much as possible cables should be routed away from any noisy sources and avoiding long runs in close proximity to AC mains cables.

Packing List

- 1x Main unit
- 1x User Manual
- 1x 12V 2.5A DC PSU (Locking)
- 1x IR Eye
- 1x IR remote control
- 1x pluggable 3-way screw terminal connector
- 2x Mounting Ears
- 4x M3 screws

The Apollo 42 is a 4x2 4K60 18G Seamless Matrix / Multi-viewer with powerful up/down scaler capability. The 2 independent outputs provide seamless single image switching, as well as a range of Multiview layouts in each of the PIP, Dual, Triple and Quad modes. Each output is independently controllable from the front panel, RS232 commands or IR remote control.

Features

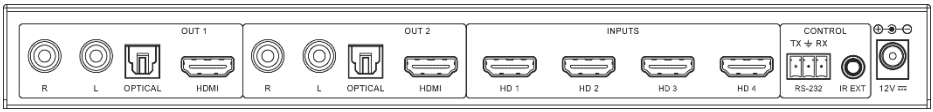
- Full 18G 4K60 4:4:4 input and output resolutions
- 4x HDMI 2.0 inputs, 2x independent HDMI 2.0 outputs
- Powerful up/down Scaler per output
- Seamless switching in single display mode
- Fast switching in all Multiview modes
- Extensive choice of Multiview layout options
- Auto Switch option (Single view mode)
- Audio de-embedding to both analogue L/R and digital TosLink, per output
- EDID and HDCP management
- Control - Front panel, RS232, IR

Connectors and Controls

Front

Name	Description
POWER button	Toggles the power state of the Apollo 42 (ON, Standby)
Power LED	Green – ON (operational) Red – Standby
OUT1 LEDs	Shows the status of which inputs are in use on HDMI OUT 1 Off – input is not selected On – input is selected (Video detected) Flashing – no HDMI input signal detected
OUT2 LEDs	Shows the status of which inputs are in use on HDMI OUT 2 Off – input is not selected On – input is selected (Video detected) Flashing – no HDMI input signal detected
IR	Built-in IR sensor
INPUT button	Select the input for the currently active window – shown by a Red border
MV button	Short press – Select the next Multiview mode: PIP, single, Dual, Triple or Quad Long press – Select the next Multiview layout of current MV mode
MODE button	Short press – Enable window Video selection (Red window border) Long press – Enable Audio selection (Green or Yellow window border) See **Front Panel Control** (page 7) for more details.

Rear



Name	Description
R, L (Out 1)	Line level de-embedded analogue audio 1 output
OPTICAL (Out 1)	Optical TosLink de-embedded digital audio 1 output
HDMI (Out 1)	HDMI output to the display device 1
R, L (Out 2)	Line level de-embedded analogue audio 2 output
OPTICAL (Out 2)	Optical TosLink de-embedded digital audio 2 output
HDMI (Out 2)	HDMI output to the display device 2
HD 1 ~ HD 4	HDMI inputs
RS-232	RS232 control port
IR EXT	3.5mm jack for the included external IR Eye
12V DC	12V PSU input

Using the Apollo 42

Making Connections

- Connect the HDMI inputs
- Connect the HDMI display(s)
- If needed, connect the RS232 control
- If needed, connect to either the analogue or digital audio output(s)
- If needed, connect the external IR Eye to the rear of the Apollo 42

Front Panel Control

Please read this section carefully as the function of the front panel buttons is dependent on the status of the Apollo 42 and whether a colour border is displayed. Note that each output is independently controllable.

Button	Function
POWER	• Press and hold to put the Apollo unit into standby mode when the power LED is Green. (LED then goes Red) • Press briefly to bring the Apollo unit out of standby mode when the power LED is Red. (LED then goes Green)
INPUT	No Red border visible – Apollo 41 will switch to full screen mode and show the last used input. Subsequent press selects the next input. Red border visible – Select the next input to the highlighted window.
MV	• Brief press – Switch to the next Multiview mode: PIP, Dual, Triple or Quad. • Long press (>1 second) – Switch to the next Multiview layout for the current Multiview mode (see Error! Reference source not found.).
MODE	• Brief press (in Single mode) – Green / Yellow border around the selected window is activated. Press to toggle between Green (Active audio) or Yellow (Mute) border. • Brief press (in MV mode) – **Red** border around the selected window is activated. Press repeatedly until the desired window is selected, then use the **INPUT** button to select the desired HDMI input for that window. • Long press (>1 second) press (in MV mode) – Green / Yellow border around the selected window is activated (indicating Audio source and Mute state). With audio border on, subsequent selections can be made as follows: ○ Further Brief press – Select the next window for audio source. ○ Further Long press – Toggle between **Green** (Active audio) or **Yellow** (Mute) border.

Note: Red border – Indicates the highlighted window video source can be changed (HDMI 1~4)
Green border – Audio output is Active – Audio source can be changed, or muted.
Yellow border – Audio output is Muted – Audio source can be changed, or unmuted.

Power LED Modes

LED State	Description
Green	The Apollo 42 unit is powered and operational
Red	The Apollo 42 unit is in standby mode

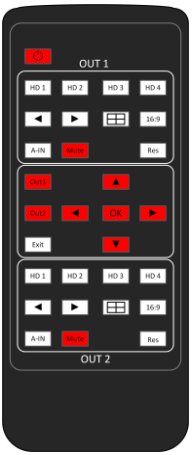
Input LED Modes

The 4 input LEDs indicate the status of each of the 4 HDMI inputs:

Input LED State	Description
On	The input is selected to the output display
Off	The input is not selected to the output display
Flashing	The selected input cannot detect an HDMI signal

IR Control

The Apollo 42 is supplied with an IR remote control that provides the most commonly used functions as well as access to the OSD menu system.



The OUT 1 group controls output 1.

This group is for the on-screen (OSD) menu mode.

The OUT 2 group controls output 2.

IR Control Button Descriptions

IR Button	Description
⏻	Toggle power mode between on and standby
HD 1 ~ HD 4	Direct selection of inputs HD1 ~ HD4 to single view mode
◄	Select the previous input in single view mode only
►	Select the next input in single view mode only
⊞	Select the next multiview mode
16:9	Toggle the aspect mode between windowed or full screen
A-IN	Select the source for audio output from the popup menu
Mute	Toggle the audio mute status
Res	Change the output resolution, press repeatedly until the desired resolution is set
Out1	Display the OSD menu on Output 1
Out2	Display the OSD menu on Output 2
▲ ▼ ◄ ►	Menu system navigation buttons
OK	Accept a change made in the menu system
Exit	Exit the menu system

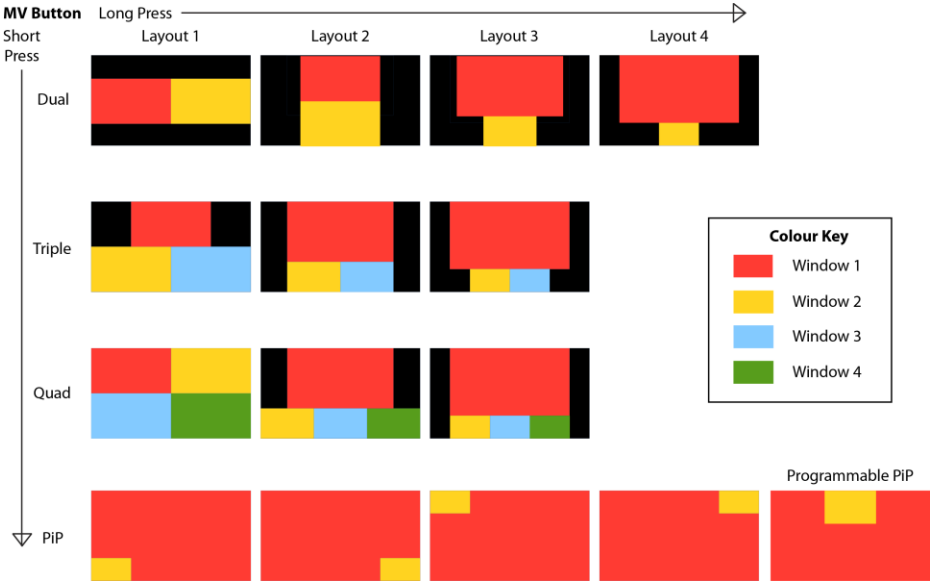
OSD Menu System

The OSD menu system provides control of the following settings for each output independently. The System Options are globally set regardless of which output the OSD is displayed on.

Left Menu Bar	Main Section	Description
Multi Win Config	**Single**	Press OK to select Single View
	Input Select	Choose the input to display in Single View
	PBP	Press OK to select Picture-By-Picture View
	Win1 Select	Choose the input to display in window 1
	Win2 Select	Choose the input to display in window 2
	Mode	Set the layout mode
	Aspect	Set the window aspect ratio
	Triple	Press OK to select Triple View
	Win1 Select	Choose the input to display in window 1
	Win2 Select	Choose the input to display in window 2
	Win3 Select	Choose the input to display in window 3
	Mode	Set the layout mode
	Aspect	Set the window aspect ratio
	Quad	Press OK to select Triple Quad Mode
	Win1 Select	Choose the input to display in window 1
	Win2 Select	Choose the input to display in window 2
	Win3 Select	Choose the input to display in window 3
	Win4 Select	Choose the input to display in window 4
	Mode	Set the layout mode
	Aspect	Set the window aspect ratio
	PIP	Press OK to select Picture-in-Picture View
	Win1 Select	Choose the input to display in the main window
	Win2 Select	Choose the input to display in the PIP window
	PIP Position	Select the position of the PIP window
	PIP Size	Set the size of the PIP window
Audio Config	Audio Select	Choose Win1 or any of one the HDMI inputs
	Volume	Has no function on the Apollo 42
	Mute	Mute / Unmute the audio output
Output Config	Resolution	Set the output resolution – default is Auto
	VKA	Set the Video Keep-Alive – default is Black Screen
	ITC	Set the IT Control Mode – default is OFF
System Config	Language	Default is English
	EDID	Set the EDID for all inputs – default 4K60 444 2ch
	Baud Rate	Set the RS232 baud rate – default 57600
	Reset	Click OK to reset the Apollo 42
	FW Version	Installed firmware version (not selectable)

Multiview Modes and Layouts

The Apollo 42 has several multiscreen layout options that are accessible from the front panel MV buttons, RS232 and IR control. All the below images are shown with the default 16:9 aspect ratio. Each output can independently have different Multiview layouts.



The PIP size can be set to large or small by using the OSD menu or by an RS232 command. The factory default is the large PIP size. The programmable PIP is set using a different RS232 command, see **Setting the Programmable PIP Window** for details.

RS232 Control

All commands are sent with the following settings and must always end with an exclamation point (!):

Baud Rate:	57600
Parity:	None
Data Bits:	8
Stop Bits:	1

All commands must use the case as given for that command. The command options given are only valid for the respective command.

Get the Apollo Unit Type

This command can help a control system to determine which Apollo device type it is communicating with.

Command	Purpose
r type!	Return the Apollo type: **Apollo 42 4x2 HDMI Multi-viewer**

Help (Commands List)

The output from this command is quite large as it lists all the RS232 commands supported.

Command	Purpose
help!	List all available RS232 commands

Power Control

These commands control the Apollo 42 power status.

Command	Purpose
power 0!	Standby mode – Put the Apollo 42 into standby mode
power 1!	Active mode – Bring the Apollo 42 out of standby mode
r power!	Return the power status of the Apollo unit

Input Selection

This command is dependent on the current video mode and the command is different for single view or Multiview modes.

Command	Purpose
s output z in source x!	Select the input **x** (1~4) to view in single window mode for output **z** (1,2)
r output z in source!	Return the single-view input being displayed for output **z** (1,2)
s output z window y in x!	Select the input **x** (1~4) for window **y** (Multiview mode) for output **z** (1,2)
r output z window y in!	Return the input displayed in window **y** (Multiview mode)for output **z** (1,2)

Auto Switch

In Single screen mode, the Auto Switch feature will automatically select a new active HDMI source. When currently selected source is lost, the next active input will be selected.

Command	Purpose
s output z auto switch 0!	Turn OFF the Auto switch feature of output **z** (1, 2)
s output z auto switch 1!	Turn ON the Auto switch feature of output **z** (1, 2)
r output z auto switch!	Return the current status of the Auto switch feature of output **z** (1, 2)

View Mode Selection

This command sets the desired Multiview mode.

Command	Purpose
s output z multiview v!	Select the view mode, **v** (1~5) for output **z** (1, 2) For **v**: 1 = Single, 2 = PBP, 3 = Triple, 4 = Quad, 5 = PIP
r output z multiview!	Return the current view mode for output **z** (1, 2). The return response will be one of the following: single screen PIP PBP Triple screen Quad screen Note: PBP (Picture-By-Picture) is the Dual screen mode.

View Mode Options

The Multiview modes have the following additional options:

Multiview Mode	Control Options
PIP	Position and Size
Dual (PBP), Triple and Quad	Aspect and Mode

To use the commands in the following sections, the Apollo 42 output must first be set to the correct Multiview view mode.

PIP Control Commands

These commands control the size and position of the PIP window:

Command	Purpose
s output z PIP position p!	Set the PIP window position **p** (1~5) of output **z** (1,2) 1 = Top Left, 2 = Bottom Left, 3 = Top Right, 4 = Bottom Right, 5 = User PIP
s output z PIP size s!	Set the size of the PIP window **s** (1,2) of output **z** (1,2) For **s**: 1 = small, 2 = large
r output z PIP position!	Return the current position of the PIP window of output **z** (1,2)
r output z PIP size!	Return the current size of the PIP window of output **z** (1,2)

Setting the Programmable PIP Window

The position and size of the programmable (User) PIP window is set by the following command. All the values in this command represent the percentage of the display width and height.

Command	Description
s output z PIP Hstart Vstart Hsize Vsize!	**Hstart** is the position of the top edge of the PIP window **Vstart** is the position of the left edge of the PIP window **Hsize** is the width of the PIP window **Vsize** is the height of the PIP window

For this command the following three rules must all be valid:

Hstart + Hsize ≤ 101 Vstart + Vsize ≤ 101 All values range from 1 to 100

To see the User PIP window send the command: **s PIP position 5!**

Dual (PBP) Mode Control Commands

These commands control the appearance of the dual screen (PBP) mode:

Command	Purpose
s output z PBP aspect 1!	Set the aspect of the dual view to full-screen for output **z** (1,2)
s output z PBP aspect 2!	Set the aspect of the dual view to 16:9 for output **z** (1,2)
s output z PBP mode 1!	Set the size of the dual view windows to equal sizes for output **z** (1,2)
s output z PBP mode 2!	Set the size of the dual view windows to 16:9 size for output **z** (1,2)
r output z PBP aspect!	Return the current dual view aspect setting of output **z** (1,2)
r output z PBP mode!	Return the current dual view mode setting of output **z** (1,2)

Triple Mode Control Commands

These commands control the appearance of the triple screen mode:

Command	Purpose
s output z triple aspect 1!	Set the aspect of the triple view to full-screen of output **z** (1,2)
s output z triple aspect 2!	Set the aspect of the triple view to 16:9 of output **z** (1,2)
s output z triple mode 1!	Set the size of the triple view windows to equal sizes of output **z** (1,2)
s output z triple mode 2!	Set the size of the triple view windows to 16:9 size of output **z** (1,2)
r output z triple aspect!	Return the current triple view aspect setting of output **z** (1,2)
r output z triple mode!	Return the current triple view mode setting of output **z** (1,2)

Quad Mode Control Commands

These commands control the appearance of the quad screen mode:

Command	Purpose
s output z quad aspect 1!	Set the aspect of the quad view to Full-screen of output **z** (1,2)
s output z quad aspect 2!	Set the aspect of the quad view to 16:9 of output **z** (1,2)
s output z quad mode 1!	Set the size of the quad view windows to equal sizes of output **z** (1,2)
s output z quad mode 2!	Set the size of the quad view windows to 16:9 size of output **z** (1,2)
r output z quad aspect!	Return the current quad view aspect setting of output **z** (1,2)
r output z quad mode!	Return the current quad view mode setting of output **z** (1,2)

Audio Control

The Apollo 42 can output audio from any input, but the following must be noted:

1. The Apollo 42 can have each output channel set to different HDMI audio.
2. The commands apply to the HDMI, Optical and Analogue audio outputs together.

Command	Purpose
s output z audio x!	Select the audio from HDMI input x for output **z** (1,2)
r output z audio!	Return the current HDMI input being used for audio output for output **z** (1,2)
s output z audio mute 0!	Unmute the audio output for output **z** (1,2)
s output z audio mute 1!	Mute the audio output for output **z** (1,2)
r output z audio mute!	Return the audio output mute state for output **z** (1,2)

Setting the Input EDID

The input EDID command applies the EDID setting to all inputs in the same command.

Command	Purpose
s input EDID e!	Set the global input EDID setting, where **e** = 1~19 – see below
s input x EDID e!	Set the EDID for input x (1~4), where **e** = 1~19 – see below
r input EDID!	Return the current global EDID setting
r input x EDID!	Return the current EDID setting of input x

The first command sets all the inputs to the same EDID setting, whereas the second command sets the EDID for each input individually. The last command sent always has the priority.

The two read commands only return the setting of their respective set commands. Therefore, it is best to use the **r input x EDID!** command for each input in turn to get the true EDID settings.

The value of **e** in this command is one of the values from the following table. The responses always begin with **input EDID:** and is followed by the text given in the second column. For example: **r input EDID!** gives the following response after sending the **s input EDID 8!** command: `input EDID:1080P,Dolby/DTS 5.1`.

EDID e Value	EDID Setting and Response
1	4K2K60_444,Stereo Audio 2.0
2	4K2K60_444,Dolby/DTS 5.1
3	4K2K60_444,HD Audio 7.1
4	4K2K30_444,Stereo Audio 2.0
5	4K2K30_444,Dolby/DTS 5.1
6	4K2K30_444,HD Audio 7.1
7	1080P,Stereo Audio 2.0
8	1080P,Dolby/DTS 5.1
9	1080P,HD Audio 7.1
10	1920x1200,Stereo Audio 2.0
11	1680x1050,Stereo Audio 2.0
12	1600x1200,Stereo Audio 2.0

EDID e Value	EDID Setting and Response
13	1440x900,Stereo Audio 2.0
14	1360x768,Stereo Audio 2.0
15	1280x1024,Stereo Audio 2.0
16	1024x768,Stereo Audio 2.0
17	720p,Stereo Audio 2.0
18	AUTO
19	USER1

The USER EDID memory is programmable with the following command:

s edid user1 <EDID_DATA>!

Where **<EDID_DATA>** is 256 ASCII hexadecimal values of valid EDID data. Each value must be separated by a space. This data can be read back from the Apollo unit by sending this command:

r edid user1!

The Apollo unit will respond in the following format, where the values given below will be replaced with the actual hexadecimal values:

```
User 1 EDID data:

00 FF FF FF FF FF FF 00 4F 25 15 10 70 E0 9A 00
01 19 01 03 80 00 00 78 0E EE 95 A3 54 4C 99 26
0F 50 54 FF FF 80 D1 00 B3 00 A9 40 81 00 81 C0
81 80 8B C0 95 00 02 3A 80 18 71 38 2D 40 58 2C
45 00 00 00 00 00 00 1E 00 00 00 FC 00 53 59 45
5F 48 44 4D 49 5F 31 35 21 35 00 00 00 FD 00 17
78 0F 66 11 00 0A 20 20 20 20 20 20 00 00 00 FA
00 D1 C0 A9 C0 90 40 81 40 01 01 01 01 0A 01 CF
02 03 30 70 5F 10 20 22 1F 21 05 14 04 03 13 02
0E 0F 11 06 07 12 15 16 1D 1E 27 29 2A 2B 2C 2D
2F 30 31 01 23 09 07 01 67 03 0C 00 11 00 80 22
1A 36 80 A0 70 38 1F 40 30 20 35 00 00 00 00 00
00 1A 46 37 80 70 72 38 22 40 70 C8 35 00 00 00
00 00 00 1C D1 3D 80 80 72 B0 26 40 78 C8 36 00
00 00 00 00 00 1C 28 3C 80 A0 70 B0 23 40 30 20
36 00 00 00 00 00 00 1A 00 00 00 00 00 00 00 AF
```

Output Resolution

The factory default output resolution is set to auto. This command changes the output resolution to the desired setting.

Command	Purpose
s output z res r!	Set the output resolution for output **z** (1,2)
r output z res!	Return the current EDID setting for output **z** (1,2)

The response message always begins with the text `out resolution:` and is the followed by the text given in the second column of the following table. The value for **r** in the set command should be one of the following values:

Resolution r Value	Resolution Setting and Response
1	4096x2160p60
2	4096x2160p50
3	3840x2160p60
4	3840x2160p50
5	3840x2160p30
6	3840x2160p25
7	1920x1200p60RB
8	1920x1080p60
9	1920x1080p50
10	1360x768p60
11	1280x800p60
12	1280x720p60
13	1280x720p50
14	1024x768p60
15	Auto

Auto resolution mode sets the best resolution for the display on that output.

VKA (Video Keep-Alive)

When there are no input signals available, the Apollo 42 will output either a black or a blue image to keep displays and projectors active until a valid input signal is present.

Command	Purpose
s output z vka 1!	Set the VKA mode to a Black screen for output **z** (1,2)
s output z vka 2!	Set the VKA mode to a Blue screen for output **z** (1,2)
r output z res!	Return the current VKA setting for output **z** (1,2)

IT Content Setting

The IT Content (ITC) setting tells the display to use its own video quality processing algorithms, instead of the Intel graphics driver when movies are played in fullscreen mode to ensure the best video quality. The user can enable or disable ITC. The following commands control the setting of the ITC mode:

Command	Purpose
s output z itc 1!	Set the output timing to video mode for output **z** (1,2)
s output z itc 2!	Set the output timing to PC mode for output **z** (1,2)
r output itc!	Return the current ITC setting

HDCP Control

These commands control the output HDCP mode:

Command	Purpose
s output z hdcp 1!	Set the output HDCP to HDCP 1.4 for output **z** (1,2)
s output z hdcp 2!	Set the output HDCP to HDCP 2.2 for output **z** (1,2)
s output z hdcp 3!	Set the output HDCP to Cascade Mode for output **z** (1,2)
s output z hdcp 4!	Set the output HDCP to follow the input for output **z** (1,2)
r output z hdcp!	Return the current HDCP setting for output **z** (1,2)

System Commands

The commands in the following table provide system information and control:

Command	Purpose
r fw version!	Return the currently installed firmware version
reboot!	Reboot the Apollo 42
reset!	Reset the Apollo 42 to factory defaults

Specifications

General

HDMI Resolutions	Inputs and outputs support all HDMI resolutions up to 4K60 4:4:4
HDMI Standard	Up to HDMI 2.0b
HDCP Compliance	HDCP 2.2 and HDCP 1.4
HDMI Audio Standards	LPCM, AC3, Dolby Digital, DD+ and DTS, DTS-HD
HBR audio	Not supported
HDMI Audio channels	2.0, 5.1 or 7.1 channels
TosLink Audio Formats	Dolby Digital, DTS 5.1, PCM2.0
L + R Analogue Audio	0.7 Vrms, 20Hz to 20kHz
Display Modes	Single = 1, Dual = 2, Triple = 3, Quad = 4, PIP = 5
Input Ports	4x HDMI Inputs
Output Ports	2x HDMI outputs 4x RCA Line Level audio out (L+R) 2x TosLink optical audio out
Control Ports	1x RS232 (3-way pluggable terminal block) 1x IR Ext (3.5 stereo jack) Front Panel buttons Front Panel IR

Environmental

Operating Temperature	0 – 40 °C
Operating Humidity	10 – 90% RH (non-condensing)

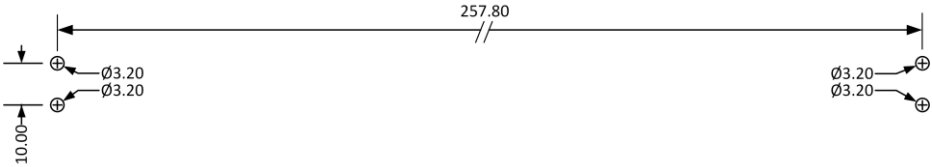
Physical

Dimensions (WxHxD)	270 x 130 x 30 mm
Weight	780g
Power Supply	Input: 100 ~ 240V AC @ 50/60 Hz Output: 12V DC / 2.5A
Power Consumption	14W max.

Factory Default Settings

Input EDID	4K60 4:4:4 2CH
Output View Mode	Single Screen
Output Resolution	Auto
Output HDCP	1.4
Multiview Aspect Ratio	16:9
Dual View Mode	Side-by-Side
Triple View Mode	1 over 2
Quad View Mode	Four Quadrants
PIP Position	Bottom Left
RS232	57600 bps, 8 bits, no parity, 1 stop bit

Base Panel Mounting Hole Dimensions



Notes:

1. Not shown at full size.
2. All dimensions are in millimetres.
3. Use M3 machine screws.
4. **Do not** penetrate more than 5MM into the product.

Safety Instructions

To ensure reliable operation of this product as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

1. **ONLY USE** the power supply provided. If an alternate supply is required, check the voltage, polarity and that it has sufficient power to supply the device it is connected to.
2. **DO NOT** operate this product outside the specified temperature and humidity range given in the above specifications.
3. Ensure there is adequate ventilation as this product generates heat while operating.
4. Repair of this product should only be carried out by qualified professionals as this product contains sensitive devices that may be damaged by any mistreatment.
5. Only use this product indoors and in a dry environment. **DO NOT** allow any liquids or harmful chemicals to come into contact with this product.

After Sales Service

1. Should you experience any problems while using this product, firstly refer to the Troubleshooting section in this manual and/or your local dealer before contacting SY Technical Support.
2. When calling SY Technical Support, please provide the following information:
   - Full Product Name and Model Number
   - Product Serial Number
   - Details of the fault and any conditions under which the fault occurs.
3. This product has a two year standard warranty beginning from the date of purchase as stated on the sales invoice. For full details please refer to our Terms and Conditions.
4. The SY Product warranty is automatically void under any of the following conditions:
   - The product is already outside of its warranty period
   - Damage to the product due to incorrect usage or storage
   - Damage caused by unauthorised repairs
   - Damage caused by mistreatment of the product
5. Please direct any questions or problems you may have to your local dealer before contacting SY Electronics.

NOTES