Apollo 41

User Manual

4x1 Multi-view Seamless Switcher
HDMI 2.0 (18G 4K60 444), Up/Down scaler,
Audio de-embedder,
Volume control

Thank you for purchasing the Apollo 41

The Apollo 41 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.

The Apollo 41 is a 4x1 4K60 18G Seamless Switcher / Multi-viewer with powerful up/down scaler capability. It provides seamless single image switching, as well as several MV layouts for each of the PIP, Dual, Triple and Quad modes. With Auto-switch option and volume control, Apollo 41 can be controlled 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, with HDMI 2.0 output
- Powerful up/down Scaler
- Seamless switching in single display mode
- Fast switching in all Multiview modes
- Auto Switch option (single view mode)
- Audio de-embedding to both L/R analogue and TosLink digital
- Audio volume control (via RS232)
- EDID and HDCP management
- Control - Front panel, RS232, IR

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
- 4x Rubber feet

Connectors and Controls

Front

Name	Description
POWER button	Toggles the power state of the Apollo 41 (ON, Standby)
Power LED	Green – ON (operational) Red – Standby
Input LEDs	Shows the status of which inputs are in use on HDMI OUT Off – input is not selected On – input is selected (Video detected) Flashing – no HDMI input signal detected
Auto LED	In single image mode, auto input selection is enabled when lit (RS232 only)
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, Dual, Triple or Quad Long press – Select the next Multiview layout of current MV mode
WIN button	Select the Multiview window to use- (Red border). Press again to move to the next window
AUDIO button	Select the input for the audio output – see **Front Panel Control** below

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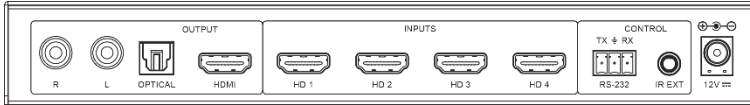
Name	Description
R, L	Line level de-embedded analogue audio output
OPTICAL	Optical TosLink de-embedded digital audio output
HDMI	HDMI output to the display device
HD 1 ~ HD 4	HDMI inputs
RS-232	RS232 control port
IR EXT	3.5mm jack for the included external IR Eye
12V DC	12V PSU input

Using Apollo 41

Making Connections

- Connect the HDMI inputs
- Connect the HDMI display to the HDMI output
- If needed, connect to the RS232 control
- If needed, connect to either the analogue or digital Toslink audio output
- If needed, connect the external IR Eye to the rear of the Apollo 41
- Power up the Apollo 41

Front Panel Control

Please read this section carefully as the function of the front panel buttons is dependent on the status of the Apollo 41 and whether a border is displayed.

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 **Multiview Modes and Layouts** – page 8).
WIN	Select the Multiview Window for HMDI input selections – The active window will have a **Red border,** press until the desired window is selected then use the **INPUT** button to select the required HDMI input for that window.
AUDIO	• Brief press – Select the audio source in Multiview mode, indicated by either a Green or Yellow border. • Long Press (>1 second) – Toggle the audio mute status in Single-view mode: **Green border** – Audio output is unmuted (Active). **Yellow border** – Audio output is Muted.

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

The power LED shows the current power status of the Apollo 41.

LED State	Description
Green	The Apollo 41 is powered and operational
Red	The Apollo 41 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

AUTO LED

The AUTO LED indicates the status of the Auto-Switch mode of the Apollo 41. The Auto mode only operates in Single View mode.

Auto LED State	Description
On	The input auto detect is enabled – any new source will be selected upon detection
Off	The input is not selected to the respective output display

While in single screen mode and the Auto LED is lit, the Apollo 41 will switch to any new HDMI signal connection. When that signal is removed, the Apollo 41 will select the next available input.

IR Control

The Apollo 41 is supplied with an IR remote control that has buttons for the most commonly used functions as well as access to the OSD menu system.

This group controls the output.

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

This group controls the audio output.

IR 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 ratio mode between 16:9 or full screen
A-IN	Select the source for the 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
Menu	Show the menu on the display (OSD)
▲ ▼ ◄ ►	Menu system navigation buttons
OK	Accept a change made in the menu system
Exit	Exit the menu system
Vol-	Reduce the output volume
Vol+	Increase the output volume

OSD Menu System

The OSD menu system provides control of the following settings:

| Left Menu Bar	Main Section	Description
	Single Input Select	Press OK to select Single View Choose the input to display in Single View

	PBP
	  Win1 Select
	  Win2 Select
	  Mode
	  Aspect
		Press OK to select Picture-By-Picture View
		Choose the input to display in window 1
		Choose the input to display in window 2
		Set the layout mode
		Set the window aspect ratio

Multi Win Config	**Triple**
	  Win1 Select
	  Win2 Select
	  Win3 Select
	  Mode
	  Aspect
		Press OK to select Triple View
		Choose the input to display in window 1
		Choose the input to display in window 2
		Choose the input to display in window 3
		Set the layout mode
		Set the window aspect ratio

	Quad
	  Win1 Select
	  Win2 Select
	  Win3 Select
	  Win4 Select
	  Mode
	  Aspect
		Press OK to Quad Mode
		Choose the input to display in window 1
		Choose the input to display in window 2
		Choose the input to display in window 3
		Choose the input to display in window 4
		Set the layout mode
		Set the window aspect ratio

Multi Win Config (continued)	**PIP** Win1 Select Win2 Select PIP Position PIP Size	Press OK to select Picture-in-Picture View Choose the input to display in the main window Choose the input to display in the PIP window Select the position of the PIP window Set the size of the PIP window
Audio Config	Audio Select Volume Mute	Choose Win1 or any of one the HDMI inputs Select the output volume level Mute / Unmute the audio output
Output Config	Resolution VKA ITC	Set the output resolution – default is Auto Set the Video Keep-Alive – default is Black Screen Set the IT Control Mode – default is OFF
System Config	Language EDID Baud Rate Reset FW Version	Default is English Set the EDID for all inputs – default 4K60 444 2ch Set the RS232 baud rate – default 57600 Click OK to reset the Apollo 41 Installed firmware version (not selectable)

Multiview Modes and Layouts

The Apollo 41 has several multiscreen layout options that are accessible from the Front panel MV button, RS232 and IR control. All the below images are shown with the default 16:9 aspect ratio.
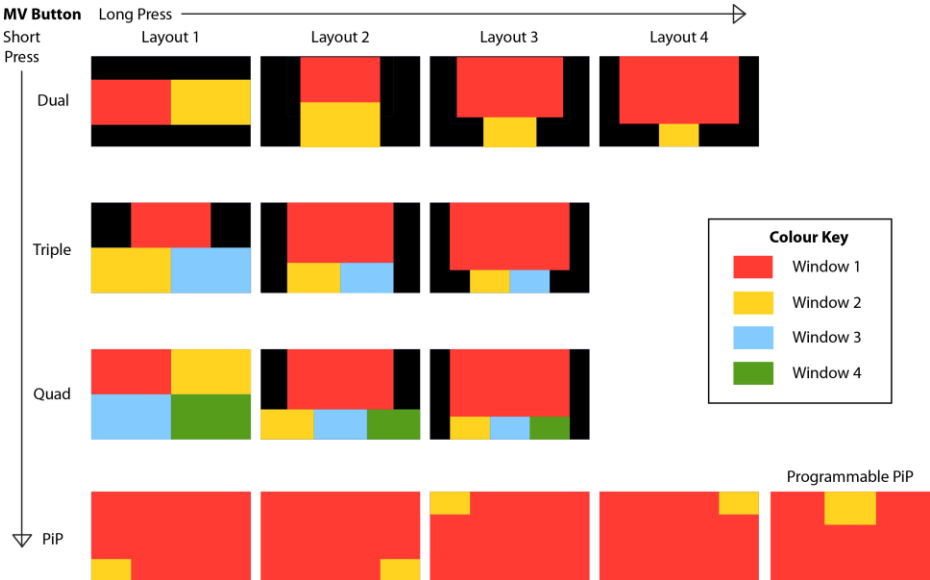
The PIP size can be set to large or small by using the OSD menu or by an RS232 command. The factory default is the large PIP size. The programmable PIP is set using a different RS232 command, see

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 and only the command options given are valid for the relevant 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 41 4x1 HDMI Multiviewer**

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 41 power status.

Command	Purpose
power 0!	Standby mode – Put the Apollo unit into standby mode
power 1!	Active mode – Bring the Apollo unit 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 in source x!	Select the input **x** to view in Single screen mode
r in source!	Return the single-view input being displayed
s window y in x!	Select the HDMI input **x** (1~4) for window y (Multiview mode)
r window y in!	Return the HDMI input displayed in window **y** (Multiview mode)

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 auto switch 0!	Turn OFF the Auto switch feature
s auto switch 1!	Turn ON the Auto switch feature
r auto switch!	Return the current status of the Auto switch feature

View Mode Selection

This command sets the desired Multiview mode.

Command	Purpose
s multiview v!	Select the view mode, **v** (1~5) For v is: 1 = Single, 2 = Dual (PBP), 3 = Triple, 4 = Quad, 5 = PIP
r multiview!	Return the current view mode. 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

Each of 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 41 output must be first set to the correct Multiview mode.

PIP Control Commands

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

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

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

Audio Control

The Apollo 41 can output audio from any input. The commands apply to the HDMI, Optical and Analogue outputs at the same time.

Command	Purpose
s output audio x!	Select the audio from HDMI input x (1~4).
r output audio!	Return the current HDMI input being used for audio output.
s output audio mute 0!	Un-mute the audio output
s output audio mute 1!	Mute the audio output
r output audio mute!	Return the audio output mute state
s output audio vol m!	Set the Apollo 41 output volume, where m is a value from 0 to 100
s output audio vol+!	Increase the Apollo 41 output volume
s output audio vol-!	Decrease the Apollo 41 output volume
r output audio vol!	Return the current Apollo 41 output volume setting

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 the above commands 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!** would give 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
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	Copy from HDMI out
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 1A 00 00 00 00 00 00 00 00 AF
```

VKA (Video Keep-Alive)

When there are no input signals available, the Apollo 41 will output either a black or a blue image to keep displays and projectors active until an input signal is present.

Command	Purpose
s output vka 1!	Set the VKA mode to a Black screen
s output vka 2!	Set the VKA mode to a Blue screen
r output res!	Return the current EDID setting

Output Resolution

The factory default output resolution is set to auto. Auto resolution mode sets the best resolution for the display.

This command will change the output resolution to the desired setting.

Command	Purpose
s output res r!	Select the output resolution **r** (1-15).
r output res!	Return the current EDID setting.

The response message always begins with `out resolution:` and is followed by the text in the second column in 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

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 full-screen 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 itc 1!	Set the output timing to video mode
s output itc 2!	Set the output timing to PC mode
r output itc!	Return the current EDID setting

HDCP Control

These commands control the output HDCP mode:

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

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 41
reset!	Reset the Apollo 41 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	1x HDMI 2x RCA Line Level audio out (L+R) 1x 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)	220 x 100 x 30 mm
Weight	620g
Power Supply	Input: 100 ~ 240V AC @ 50/60 Hz Output: 12V DC / 2.5A
Power Consumption	10W 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/Position
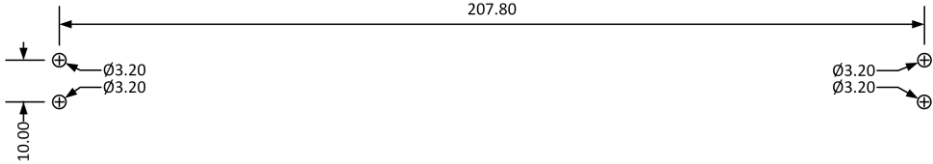
Notes: 1. Not shown at full size.
2. All dimensions are in millimetres.
3. Use M3 machine screws.
4. DO NOT penetrate more than 5mm into the product.

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 years 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.