User Manual

WUH4A

PTN 4K HDMI Switcher 4x1

PTN **www.PTN-electronics.com**

Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage. The functions described in this version are updated till March 2015. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

All product function is valid till 2015-03-26.

Trademarks

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FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It 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 commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.

- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.

- Refer all servicing to qualified service personnel.

- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.

- Do not put any heavy items on the extension cable in case of extrusion.

- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.

- Install the device in a place with fine ventilation to avoid damage caused by overheat.

- Keep the module away from liquids.

- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.

- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

- Unplug the power cord when left unused for a long period of time.

- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Contents

1. Introduction

1.1 Introduction to WUH4A

WUH4A is a HDMI switcher accommodates 4 HDMI inputs.

Select any of the inputs by front panel button or IR Remote, the corresponding indicator on the front panel will illuminate to show real-time I/O connection status. Compliance with HDMI 1.4& HDCP1.4, WUH4A can transmit non-depressed 4K (at max) signal.

WUH4A boasts comprehensive audio capacities including PCM, Dolby Digital, DTS, and DTS-HD. Besides, it provides an ARC audio output socket to transfer ARC audio to ARC speakers like Yamaha.

Moreover, WUH4A supports convenient online firmware update through USB port.

1.2 Features

- 4 HDMI inputs
- Support Hot-plug
- Compliant with HDMI 1.4, capable to transmit 4K signal
- High bandwidth: 10.2Gbps
- HDCP1.4 compliant, support auto-detecting for input HDCP compliant status
- Support EDID management, including 5 embedded EDID data, 10 (max) user-definable EDID data, and EDID data automatically captured and copied
- Intuitive indicators for power, switch mode, I/O connection status and audio output signal
- Convenient online firmware update

1.3 Package List

- 1 x WUH4A
- 2 x Mounting ears (separate from WUH4A)
- 4 x Screws
- 4 x Plastic cushions
- 1 x IR Receiver
- 1 x RS232 Cable
- 1 x IR Remote
- 1 x Power Adapter (DC 5V 1A)
- 1 x User Manual

Notes：Confirm all the accessories are included, if not, please contact with the dealers.

2. Panel Description

2.1 Front Panel

No.	Name	Description
①	Power	Illuminate red once powered on
②	AUDIO	Bi-colored LED indicator for audio source ● illuminate green when the audio is de-embedded from HDMI signal ● illuminate yellow when the audio is ARC
③	Mode	Bi-colored indicator for present switch mode ● illuminate yellow when in auto-switch mode ● illuminate green in manual switch mode.
④	Input	Indicate the present input source, 4 in total, the indicator of the present input source illuminate green
⑤	SOURCE/ AUTO	● Used as video source selection button, press to switch among the 4 inputs source circularly ● Used as switch mode selection button, press and hold for **3 seconds or more** to switch between auto-switch mode and manual switch mode.
⑥	FIRMWARE	USB port, used for firmware update & powering

Note: Output HDCP compliant status depends on input signal. When the input signal is with HDCP, then output signal is with HDCP and vice versa.

2.2 Rear Panel
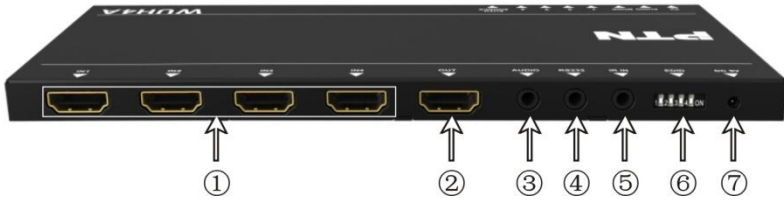
No.	Name	Description
①	IN	● HDMI input ports. 4 in total, connect with HDMI or DVI source device such as DVD/ Blue-ray, supports input signals up to 4k& 1080p 3D ● ARC audio output ports, connect with ARC speakers
②	OUT	HDMI output port, connect to HDMI display
③	AUDIO	Audio output port, connect with speaker to repeat HDMI audio signal or output ARC audio
④	RS232	Serial control port, connect with control device (e.g. a PC) to control WUH4A
⑤	IR IN	Connect with IR receiver to collect infrade signal
⑥	EDID	4-pin EDID DIP switchers to set EDID data, "1" stands for "On", "0" stands for "Off". Dial the switchers to change EDID data refering to the explanations in *4.4 EDID Management*.
⑦	DC 5V	Power port, plug a DC 5V power adapter into this port

Note: Pictures shown in this manual are for reference only, different model and specifications are subject to real product.

3. System Connection

3.1 Usage Precautions

1) System should be installed in a clean environment and has a prop temperature and humidity.

2) All of the power switches, plugs, sockets and power cords should be insulated and safe.

3) All devices should be connected before power on.

3.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with WUH4A:
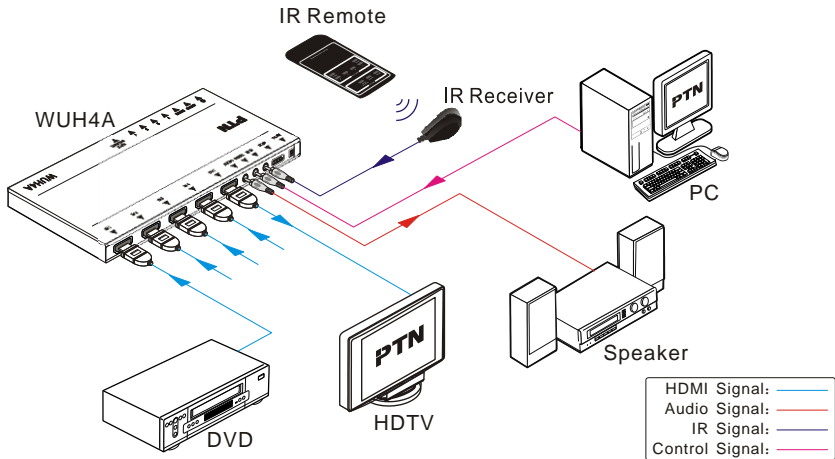
Figure 3- 1 Connection Diagram

3.3 Connection Procedures

Step1. Connect HDMI/ DVI source device(s) (e.g. Blue-ray DVD) to the **HDMI INPUT** ports of WUH4A with HDMI cable.

Step2. Connect HDMI displays to **HDMI OUTPUT** ports of WUH4A with HDMI cable.

Step3. Connect an amplifier to the audio output port.

Step4. Connect an IR Receiver to the IR IN to enable IR control.

Step5. Connect the control device (e.g. a PC) to the RS232 port to enable RS232 control.

Step6. Plug a DC 5V power adapter to the power port of WUH4A.

Note: All the ports support hot-plug.

3.4 ARC Solution

The ARC (Audio Return Channel) enables a display, via a single HDMI cable, to either send or receive audio via HDMI, upstream or downstream, depending on system set-up and user preferences, increasing user flexibility. Connect the devices abiding by the following figure:

WUH4A

Speaker

HDTV

Speaker

ARC Audio：
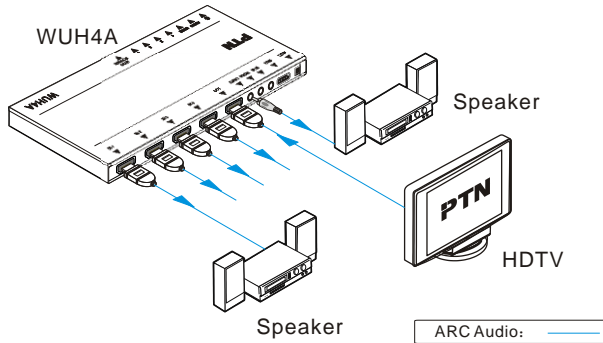
Note: All utilized devices including the HDMI cable should support Audio Return Channel functionality when connected to Audio Return Channel-enabled devices.

3.5 Application

WUH4A has a good application in various occasions, such as computer realm, monitoring, conference room, big screen displaying, television education, command & control center and smart house etc.

4. System Control

4.1 Front Panel Control

SOURCE/AUTO button on the front panel can be used to change input source and switch mode.

➢ Switch input source: Press the button to switch circularly among input 1~4, the corresponding indicator illuminate green synchronously for easy recognition.

➢ Change switch mode: Input signal supports auto-switch and manual switch. Press and hold **SOURCE/AUTO** button for **3 seconds or more** to switch between the two modes. (Default: Manual switch.)

In auto-switch mode, source selection abides by the following principles:

● **New input principle**

Once detecting a new input signal, WUH4A switch to this new signal automatically.

● **Power rebooting principle**

Once rebooted, WUH4A will automatically select input 1 as input source even though there is no connection in input 1.
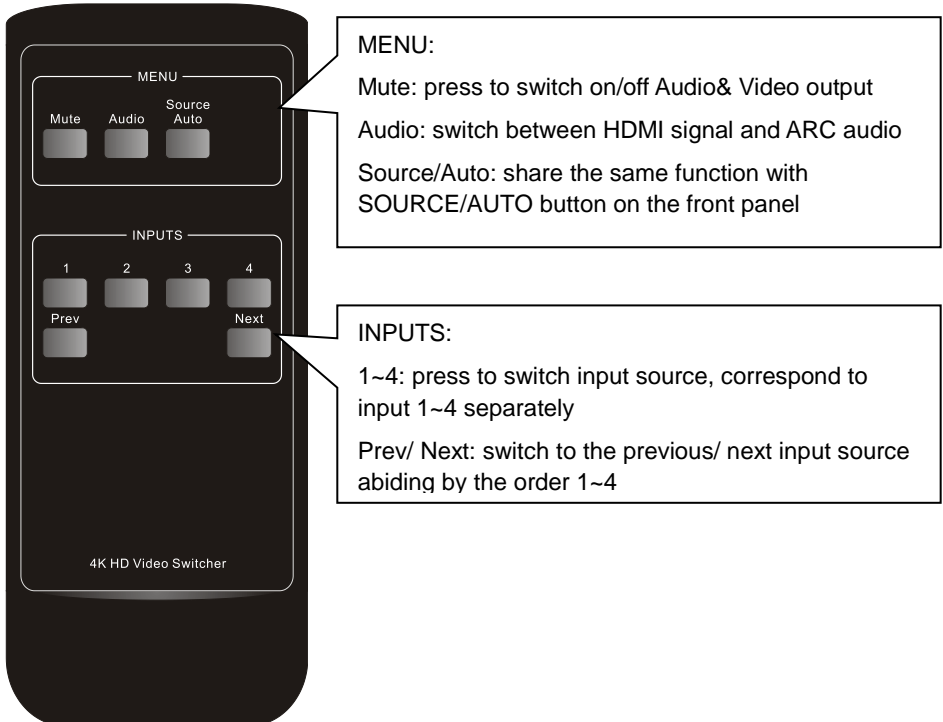
● **Signal removing principle**

Once removed the current display signal, WUH4A will detect all input signals with

priority from INPUT 1 to INPUT 4. It will transfer the first available source to the output device.

In manual-switch mode, once rebooting, WUH4A will output the source signal before rebooting.

4.2 IR Control

Connect an IR receiver to the IR IN port, users can control the device via the included IR remote. Here is a brief introduction to the IR remote:

MENU:

Mute: press to switch on/off Audio& Video output

Audio: switch between HDMI signal and ARC audio

Source/Auto: share the same function with SOURCE/AUTO button on the front panel

INPUTS:

1~4: press to switch input source, correspond to input 1~4 separately

Prev/ Next: switch to the previous/ next input source abiding by the order 1~4

4.3 RS232 Control

WUH4A provides with 1 3.5mm RS232 port for serial port control. Connect WUH4A to the control device (e.g. a PC) with RS232 cable and set the parameters in the right manner, the control device is capable to control WUH4A via designed software.

4.3.1 Installation/uninstallation of RS232 Control Software

Installation: Copy the control software file to the computer connected with WUH4A.

Uninstallation: Delete all the control software files in corresponding file path.

4.3.2 Basic Settings

Firstly, connect WUH4A with an input device and an output device. Then, connect it with a computer which is installed with RS232 control software. Double-click the software icon to run this software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:

CommWatch.exe

The interface of the control software is showed as below:
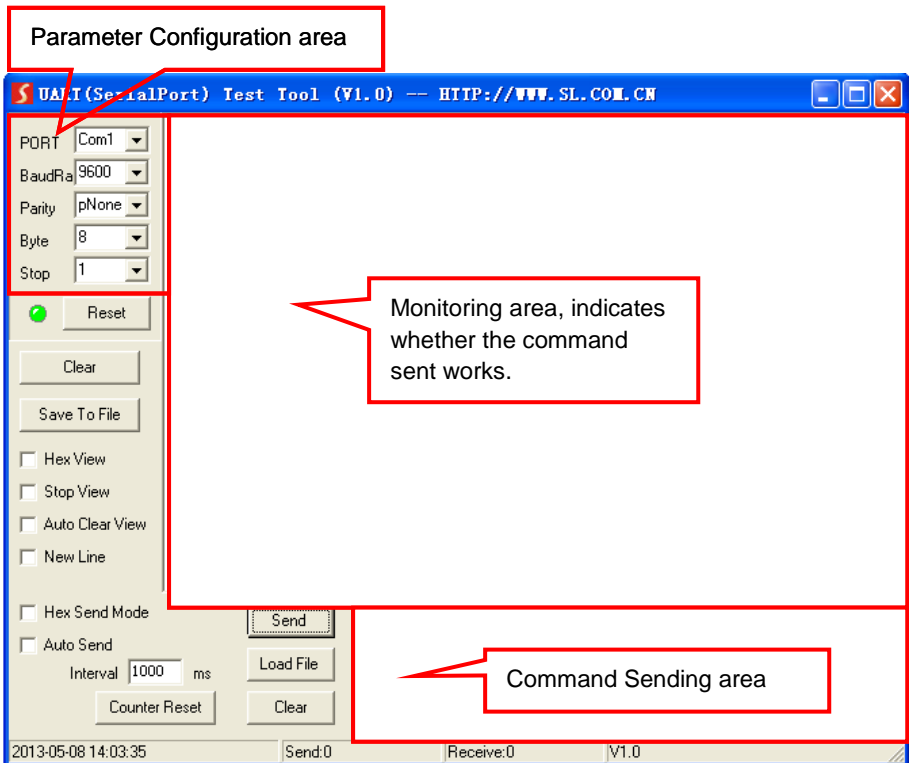
Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, only then will you be able to send command in Command Sending Area.

4.3.3 RS232 Communication Commands

Baud rate: 9600;   Data bit: 8;   Stop bit: 1;   Parity bit: none.

Command	Function	Feedback Example
[x]B1.	Switch audio and video signal of input x synchronously, x=1~4	AV: x -> 1
0B0.	Switch off output	Mute On
0B2.	Switch on output	Mute Off
600%	Inquire operation status, including I/O connection, switch mode, and ARC mode	AV: x -> 1 Manual/ Auto Switch Switch Device System/ Switch Device System
601%	Activate auto switch mode to detect all input signals with priority from INPUT 1 to INPUT 4 and transfer the first available signal to the output device.	Auto Switch
602%	Activate manual switch	Manual Switch
EDIDUpgrade [x].	Upgrade EDID data via serial port, x stands for the serial number of the DIP switcher status x=1~5, correspond to embedded EDID 1~5 separately x=6~15, correspond to the 10 custom EDID	EDID Upgrade OK!
ARC[x]&	Switch on/off ARC audio output x=1, switch on ARC audio output x=0, switch off ARC audio output	Audio Return System (x=1) Switch Device System (x=0)

Note:

1. In above commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.

2. Type in the complete commands including ending symbol ".".

3. Load the desired EDID file to the RS232 control software after sending command **EDIDUpgrade[x].** , it will show "EDIDUpgrade OK!" after the upgrade is completed.

4.4 EDID Management

WUH4A provides with convenient EDID management to create effective communication between the display and sources.

In factory default status (Status: 0000), WUH4A pass through the signals directly, input& output device process the signal automatically. You can change the EDID data by adjusting the 4-pin EDID DIP switcher.

Invoke EDID data:

Here is an introduction to the EDID data to be utilized:

➢ Embedded EDID data: 5 sets in total, the chart below illustrates the 5 Embedded EDID data:

No.	Switcher Status (From right to left)	EDID information
1	0001	1080P 3D 2CH
2	0010	1080P 3D Muiltichannel
3	0011	1080P 2D 2CH
4	0100	1080P 2D Muiltichannel
5	0101	3840x2160 2D (30Hz)

➢ Custom EDID data: max at 10 sets, custom EDID data (.bin) and program the data into the device by sending command **EDIDUpgrade[x].**.

To get the corresponding switcher status of a serial number for EDID data, convert the decimal number to binary one first. The chart below shows switcher status for 6~15 (serial numbers for custom EDID data):

No.	Switcher Status	No.	Switcher Status
6	0110	11	1011
7	0111	12	1100
8	1000	13	1101
9	1001	14	1110
10	1010	15	1111

➢ EDID Copy: automatically capture the EDID data of the display and copy to input devices

Upgrade EDID data:

EDID data supports upgrade via serial port. Follow these steps to upgrade EDID:
Send command to upgrade the saved EDID data one by one.

Step1. Copy the upgrade file (.bin) to PC.

Step2. Send command EDIDUpgrade[x]. via the RS232 control software.

> x is the serial number of EDID data

> x=1~5, correspond to the 5 embedded EDID data listed on the above chart separately;

> x=6~15, correspond to the 10 custom EDID separately;

Step3. Click **Load File** and select the desired upgrade file (.bin). Press **Send** to start upgrade.

It will return "EDID Upgrade OK!" when the upgrade finishes. Reboot the unit, users can adjust the dip switchers on rear panel to invoke the upgraded EDID.

5. Firmware Upgrade

WUH4A boasts a USB port for online firmware upgrade on the front panel. Follow these steps to upgrade firmware:
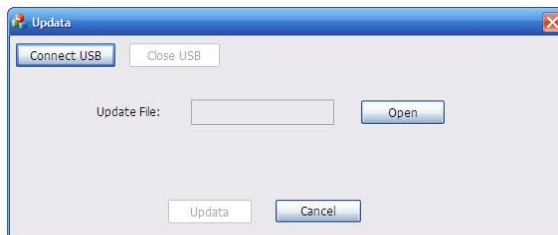
Step1. Copy the upgrade software and the latest upgrade file (.bin) to PC.

Step2. Connect the USB ports of WUH4A and the PC via USB cable.

Step3. Double-click the update software icon (see as below).

Updata_v1.4.1.exe

> It will enter the upgrade interface shown as below:

Step4. Click **Connect USB**.

Step5. Click **Open** to load the upgrade file, then click **Updata** to start firmware upgrading.

Note: 1. The USB port can also be used to energize the device.

> 2. The COM number connected with PC is available only when from 1 to 9.

6. Specification

Product Model	WUH4A		
HDMI Standard	HDMI 1.4, support HDMI Deep Color, full 3D & 4Kx2K@30Hz		
HDCP	HDCP 1.4 compatible		
Video Signal	Support VESA and SMPTE Video 480p/1024x768/720p//1280x800/1080p/3840x2160@30Hz		
ARC	HDMI support ARC function		
Bandwidth	10.2Gbps		
IR Control	IR IN, DC 5V,connect to the IR receiver and receive the IR signal of IR remote		
Input	HDMI x 4	3.5mm(IR IN) x 1	
Output	HDMI x 1	3.5mm(audio) x 1	
Other Connector	RS232(3.5mm) x 1	DIP(EDID for 4P) x 1	Power Connector x 1
HDMI Connector	Type A		
3.5mm Connector	IR IN x1 / audio x 1 /RS232 x 1		
Chassis Dimension	W194xH11.4xD80(mm), ultra thin		
Raw Materials	Aluminum chassis		
Weight	About 160g		
Power Supply	DC 5V 1A		
Consumption	4.2W		
Temperature	－10 ～ ＋40℃		
Reference Humidity	10%-90%		

6.1 Supported Input Video Formats

Video Format	Resolution
HDMI	480I
	480P
	576I
	576P
	720P
	1080I
	1080P
	4Kx2K
DVI	640*480@60 hz
	640*480@72 hz
	640*480@75 hz
	800*600@60 hz
	800*600@72 hz
	800*600@75 hz
	1024*768@60Hz
	1024*768@70Hz
	1024*768@75Hz
	1280*1024@60Hz
	1280*1024@75Hz
	1600*1200@60Hz
	1920*1080@60Hz
	1920*1200@60Hz

Note: WUH4A supports 4k&1080p 3D HDMI signal, please adopt quality HDMI cables compliant with HDMI1.4 for reliable transmission when connecting.

7. Panel Drawing

194.00 mm

11.43 mm

12.53 mm

80.00 mm

51.43 mm

AUDIO MODE 1 2 3 4 AUTO SOURCE

WUH4A

FIRMWARE
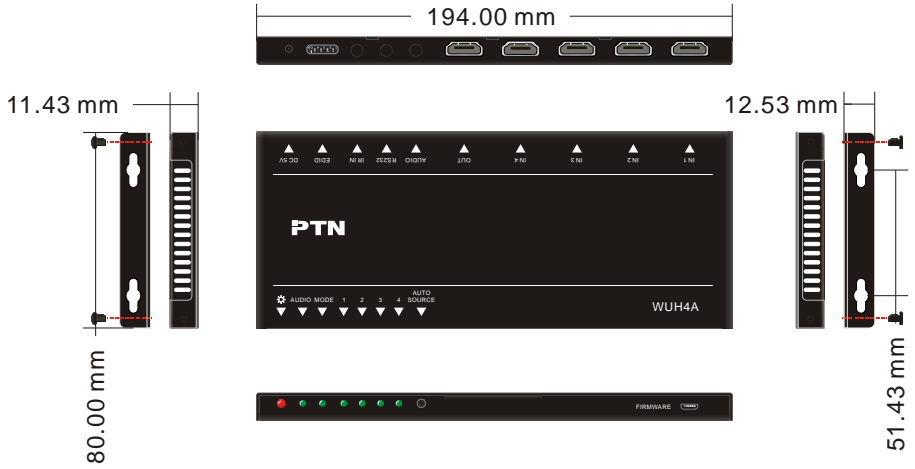
8. Troubleshooting & Maintenance

Problems	Causes	Solutions
Color losing or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
No HDMI signal output in WUH4A while local HDMI input is in normal working state		
Splash screen in output devices	Poor quality of the connecting cable	Change for another cable of good quality.
Cannot control WUH4A by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	WUH4A is broken	Send it to authorized dealer for repairing.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

9. After-sales Service

If there appear some problems when running WUH4A, please check and deal with the problems referring to this user manual. Any transport costs are borne by the users during the warranty.

1) **Product Limited Warranty:** PTN warrants that its products will be free from defects in materials and workmanship for **three years,** which starts from the first day you buy this product (The purchase invoice shall prevail).
Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.
2) **What the warranty does not cover (servicing available for a fee):**
   - Warranty expiration.
   - Factory applied serial number has been altered or removed from the product.
   - Damage, deterioration or malfunction caused by:
     - Normal wear and tear
     - Use of supplies or parts not meeting our specifications
     - No certificate or invoice as the proof of warranty.
     - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
     - Damage caused by force majeure.
     - Servicing not authorized by PTN
     - Any other causes which does not relate to a product defect
   - Delivery, installation or labor charges for installation or setup of the product
3) **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.
   - Product version and name.
   - Detailed failure situations.
   - The formation of the cases.

Remarks: For any questions or problems, please try to get help from your local distributor, or email PTN at: support@PTN-electronics.com.

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