

User Manual

TPUH503

Ultra-thin HDBaseT2.0 Transceiver Set



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Version: TPUH503_2015V1.0

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 December 2015. In the constant effort to improve our product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

All product function is valid till 2015-12-19.

Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without the prior written consent.

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.

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1. Introduction

1.1 Brief Introduction

This product is an HDBT2.0 transceiver set which contains a transmitter and a receiver. Compliant with HDMI1.4.0& HDCP2.2, it is capable to transmit high-definition signal up to 4Kx2K@60Hz. The HDBT ports support HDBT2.0, which enable 100m (max) 4K transmission and 150m 1080p transmission as well as bi-directional USB/ IR/ RS232 signal travel via single Cat5e/Cat6 cable. Transmission mode is selectable via front panel switcher.


The set boasts 4 Ethernet ports to work as Ethernet Switch, with any one connecting to LAN, other ports access Ethernet. The unit is controllable via front panel switcher, bi-directional USB, IR & RS232. Furthermore, it also supports ARC function, making it more flexible.

1.2 Features

- Support HDMI 1.4 & HDCP2.2 and is backwards compatible with all previous HDMI standards
- The highest resolution is up to 4Kx2K@60Hz, and support 1080p 3D
- Support HDBT2.0, transmit 4Kx2K signal up to 100m and 1080p signal up to 150m via single CAT5e/CAT6 cable
- Intuitive front panel switcher control: Transmission Mode (100m/150m), ARC (ON/OFF)
- Support CEC and ARC
- Bi-directional IR & RS232 control
- Support bi-directional PoH
- Work as Ethernet Switch
- Status LEDs for power, link& HDCP on front panel

1.3 Package List

- | | |
|--------------------------------|---------------------|
| ✓ 1 x Transmitter | ✓ 1 x Receiver |
| ✓ 1 x Power Adapter (DC12V 2A) | ✓ 4 x Mounting Ears |
| ✓ 8 x Screws | ✓ 8 x Rubber Feet |
| ✓ 1 x User manual | |

 Confirm if the product and the accessories are all included, if not, please contact with the dealers

2. Panel Description

2.1 Transmitter

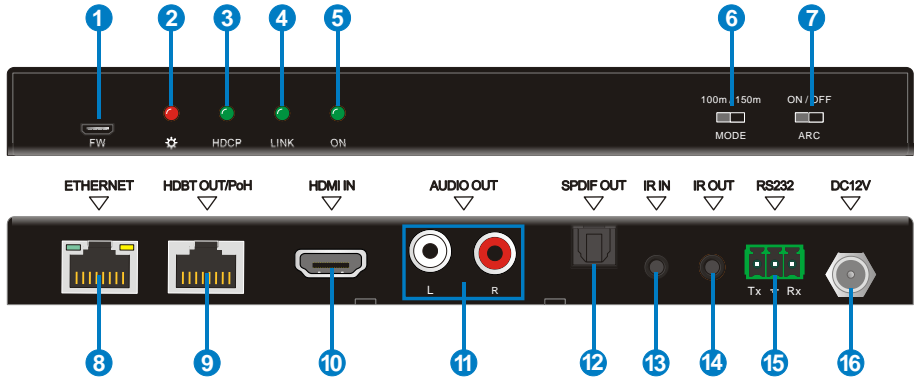


Figure 2-1 Panel Description of Transmitter

No.	Name	Description
①	FW	Micro USB port, used for firmware update. Firmware updated need auxiliary equipment, please contact with our after-sales department for more details.
②	Power	Power indicator: ✓ OFF: No power ✓ RED: DC power present
③	HDCP	HDCP compliance indicator: ✓ OFF: No HDMI traffic(no picture) ✓ GREEN: Traffic with HDCP ✓ Blinking GREEN: Traffic without HDCP
④	LINK	HDBT Link status indicator: ✓ OFF: No Link ✓ GREEN: Link successful ✓ Blinking GREEN: Link problem
⑤	ON	Working status indicator: ✓ OFF: Not operational ✓ Blinking GREEN: Normal operation
⑥	Transmission Mode Switcher	Activate 100m/ 150m transmission mode. ✓ 100m mode: 4Kx2K@60Hz and 1080P signals can be transmitted up to 100m ✓ 150m mode: 1080P signal can be transmitted up to 150m, but do not support 4K signal.

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		Note: After setting switch position, the mode will not take effect until units are restarted. Please set both ends identical.
⑦	ARC Switcher	✓ ON: Enable ARC function ✓ OFF: Disable ARC function
⑧	ETHERNET	Ethernet port, work as Ethernet Switch together with three Ethernet ports on rear panel of Receiver. Connect any one with a router, the other 3 ports are able to access LAN.
⑨	HDBT OUT/PoH	Connect to the HDBT IN/PoH port on rear panel of the Receiver via CAT5e/ CAT6a cable, compliant with HDBT2.0 and support bi-directional PoH.
⑩	HDMI IN	Connect with HDMI source
⑪	AUDIO OUT	Analog audio output port, connect with an AV amplifier to play analog audio which its format is PCM.
⑫	SPDIF OUT	Digital audio output port, connect with an AV amplifier to play digital audio.
⑬	IR IN	Connect with 5V IR receiver to collect infrared signal, work with far-end IR OUT port
⑭	IR OUT	Connect with IR Emitter to send infrared signal, work with far-end IR IN port
⑮	RS232	Serial port, connects with control device or device to be controlled, supports bi-directional RS232 control
⑯	DC 12V	Connect with a DC12V 2A power adapter.



Pictures for reference only, subject to our existing products.

2.2 Receiver

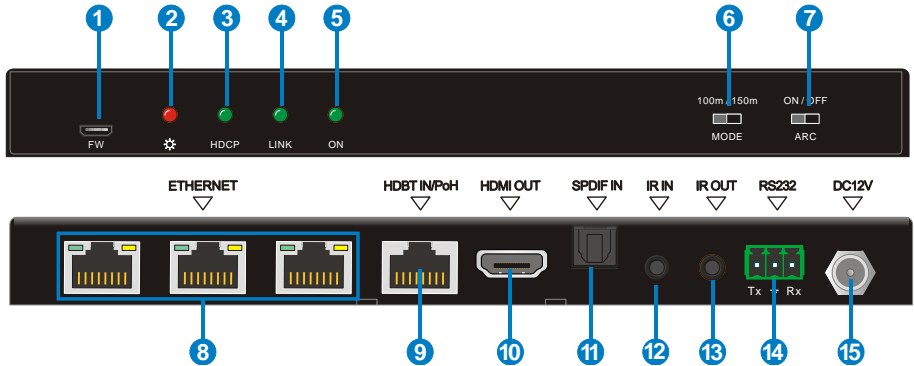


Figure 2-2 Panel Description of Receiver

No.	Name	Description
①	FW	Micro USB port, used for firmware update. Firmware updated need auxiliary equipment, please contact with our after-sales department for more details.
②	Power	Power indicator: ✓ OFF: No power ✓ RED: DC power present
③	HDCP	HDCP compliance indicator: ✓ OFF: No HDMI traffic(no picture) ✓ GREEN: Traffic with HDCP ✓ Blinking GREEN: Traffic without HDCP
④	LINK	HDBT Link status indicator: ✓ OFF: No Link ✓ GREEN: Link successful ✓ Blinking GREEN: Link problem
⑤	ON	Working status indicator: ✓ OFF: Not operational ✓ Blinking GREEN: Normal operation
⑥	Transmission Mode Switcher	Activate 100m/ 150m transmission mode. ✓ 100m mode: 4Kx2K@60Hz and 1080P signals can be transmitted up to 100m ✓ 150m mode: 1080P signal can be transmitted up to 150m, but do not support 4K signal. Note: After setting switch position, the mode will not take effect

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		until units are restarted. Please set both ends identical.
⑦	ARC Switcher	✓ ON: Enable ARC function ✓ OFF: Disable ARC function
⑧	ETHERNET	Three Ethernet ports, work as Ethernet Switch together with the ETHERNET port on rear panel of Transmitter. Connect any one with a router, the other 3 ports are able to access LAN.
⑨	HDBT IN/ PoH	Connect to the HDBT OUT/PoH port on the Transmitter via CAT5e/ CAT6a cable, compliant with HDBT2.0 and support bi-directional PoH
⑩	HDMI OUT	Connect with HDMI display
⑪	SPDIF IN	Digital audio input ports, work with SPDIF OUT on Transmitter. Note: This port only can be used under ARC OFF mode.
⑫	IR IN	Connect with 5V IR receiver to collect infrared signal, work with far-end IR OUT port
⑬	IR OUT	Connect with IR Emitter to send infrared signal, work with far-end IR IN port
⑭	RS232	Serial port, connects with control device or device to be controlled, supports bi-directional RS232 control
⑮	DC 12V	Connect with a DC12V 2A power adapter.



Pictures for reference only, subject to our existing products.

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 safety.
- 3) All devices should be connected before power on.

3.2 System Diagram

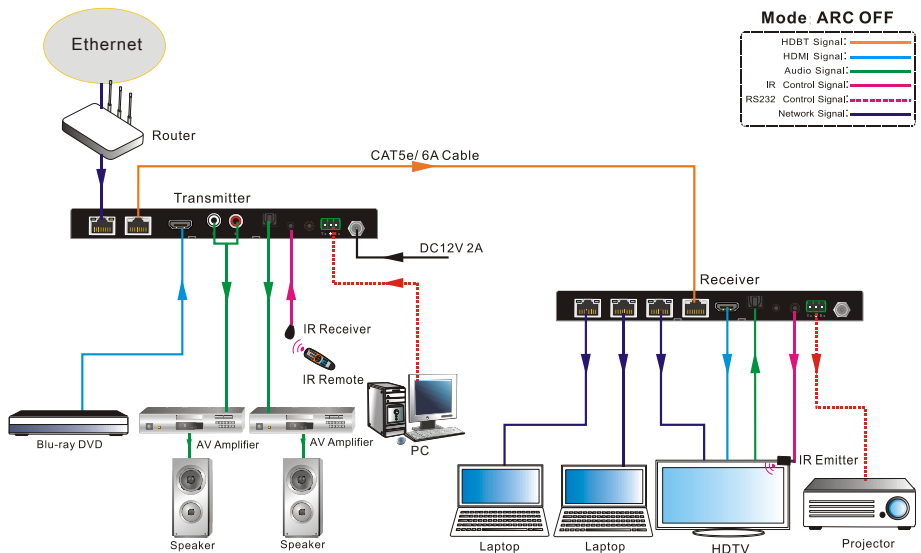


Figure 3-1 System Diagram

3.3 Connection Procedure

- Step1.** Connect HDMI source (such as Blue-ray DVD) to **HDMI IN** port of the transmitter with an HDMI cable.
- Step2.** Connect **HDBT OUT/PoH** port of the transmitter to **HDBT IN/PoH** port of the receiver through a straight-thru CAT5e/CAT6a cable.
- Step3.** Connect a HDMI displayer (such as HDTV) to **HDMI OUT** and **SPDIF IN** port of the receiver with HDMI cable and digital audio cable.
- Step4.** Connect an AV amplifier to **AUDIO OUT** or **SPDIF OUT** of Transmitter.
- Step5.** Connect speakers to AV amplifier.
- Step6.** When using the bi-directional IR control, do the following:

- a) Connect the IR emitter at either end to the **IR OUT** port on either the transmitter or the receiver.
- b) When using a powered IR receiver, connect via a 3.5 mm stereo plug to the **IR IN** on either the receiver or the transmitter.

Step7. When using the bi-directional RS232 control, do the following:

- a) Connect PC to the **RS232** port at either the transmitter or the receiver.
- b) Connect a third-party device (such as projector) need to be controlled to the **RS232** port at the other end.
- c) Send RS232 commands to control the third-party device. For more details about RS232 commands, please refer to the user manual for the third-party device.

Step8. Connect an Ethernet Router to any one of the 4 Ethernet ports to access Ethernet.

In this case, PCs connected to the other 3 Ethernet ports should set to static IP.

Step9. Connect with power adaptor to **DC 12V** port of either Transmitter or Receiver, the other end will be energized synchronously with PoH solution.



- 1) System Diagram shown in this manual are for reference only, more specific schemes depend on real devices.
- 2) Connect HDBT ports via straight-thru CAT5e/6 cable with TIA/EIAT568B standard terminations at both ends.
- 3) RS232 communication protocol: Baud Rate: 9600; data bit: 8; stop bit: 1; parity: none. This product receives RS232 control from devices with various baud rate (2400, 4800, 9600, 19200, 38400, 57600, 115200).
- 4) HDBT ports can work with our company's HDBT devices that has same power supply solution.
- 5) Make sure the switchers on front panel are in the necessary status.
- 6) Reboot the device if the switcher status has changed.

3.4 PoH Solution

This product boasts HDBT port which support PoH. Besides carrying uncompressed 1080p or 4K video signals, high-resolution lossless audio, Ethernet, and two-way IR or RS-232 control signals over a single Cat 5e/Cat 6 cable, it transfers DC power over a single network cable to a distance up to 150 meters (m) bi-directionally.

Connect the DC adaptor to either the transmitter or the receiver, the other end is able to be energized synchronously (see in the following figure):

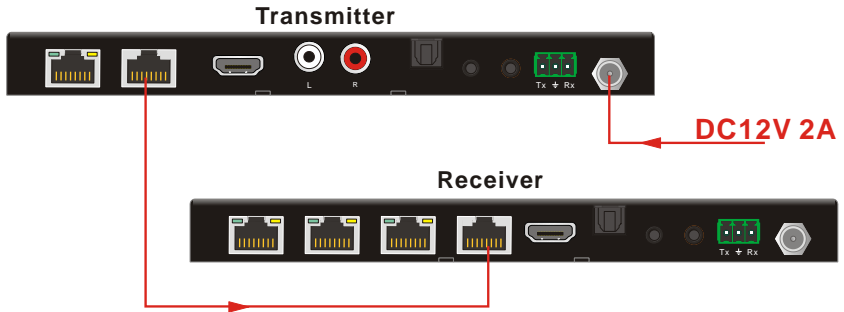


Figure 3-2 PoH Solution Diagram

3.5 ARC Solution

This product boast ARC (Audio Return Channel) function, which enables a display via a single audio/ HDMI cable, to send (upstream) audio to amplifiers/ speakers, increasing user flexibility. Connect the devices abiding by the following figure:

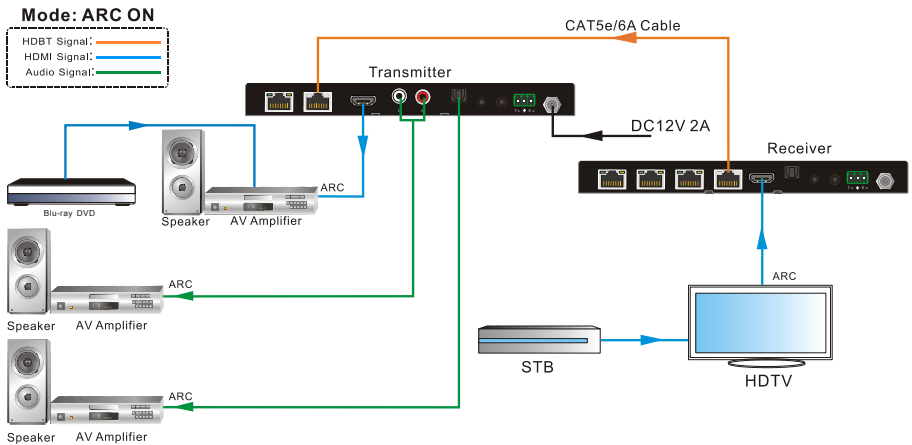


Figure 3-3 ARC Solution Diagram



- 1) When using ARC feature, please connect the amplifier via HDMI cable.
- 2) All utilized devices including the HDMI cable should support ARC.
- 3) Make sure the ARC switcher is switched to ON when using ARC function.

3.6 Application

Compliant with HDBT2.0, this product has a good application in occasions where high-definition AV distribution, long-distance transmission, Ethernet Switch are needed, such as computer realm, monitoring, big screen displaying, meeting room, education and bank & securities institution etc.

4. Specification


Model Spec	Transmitter	Receiver
Audio& Video		
Input	1 x HDMI (19 pin Type-A male)	1 x HDBT (RJ45 female) 1 x Digital audio (SPDIF)
Output	1 x HDBT (RJ45 female) 1 x Analog audio (RCA) 1 x Digital audio (SPDIF)	1 x HDMI (19 pin Type-A male)
Signal Standard	HDMI1.4& HDCP2.2	HDMI1.4& HDCP2.2
Transmission Mode	HDBaseT	
Audio Format	HDMI Embedded audio: PCM/Dolby Digital/DTS/DTS-HD Analog Audio: PCM Digital Audio: PCM/Dobly Digital/DTS/DTS-HD	
Control		
Input	1 x IR IN (3.5mm mini jack)	1 x IR IN (3.5mm mini jack)
Output	1 x IR OUT (3.5mm mini jack)	1 x IR OUT (3.5mm mini jack)
Other	1 x Ethernet (RJ45 female) 1 x RS232 (3-pin pluggable terminal block)	3 x Ethernet (RJ45 female) 1 x RS232 (3-pin pluggable terminal block)
General		
Transmission Distance	1080p \leq 150m; 4Kx2K \leq 100m	
Temperature	0~ 50 $^{\circ}$ C	
Reference Humidity	10% ~ 90%	
Power Supply	Input:100V~240V AC Output: DC 12V 2A	
Power Consumption	6w	8w

Dimension (W*H*D) (mm)	196*19*100	196*19*100
Weight (g)	294	335

 All nominal levels are at ±10%.

4.1 Supported Resolution

4Kx2K	4096x2160@30Hz, 3840x2160 (30Hz/24Hz/25Hz/50Hz/60Hz)
16:9	1080P 3D, 1920x1080@60Hz, 1600x900@60Hz, 1366x768@60Hz, 1280x720@60Hz, 1024x576@60Hz
16:10	1920x1200@60Hz, 1680x1050@60Hz, 1440x900@60Hz, 1360x768@60Hz, 1280x800@60Hz
4:3	1600x1200@60Hz, 1400x1050@60Hz, 1280x1204@60Hz, 1024x768@60Hz, 800x600@60Hz, 640x480@60Hz

 This product supports 4k&1080p 3D HDMI signal, please adopt high-quality HDMI cables compliant with HDMI1.4 for optimum range and performance.

5. Panel Drawing



Figure 5-1 Panel Drawing of Transmitter

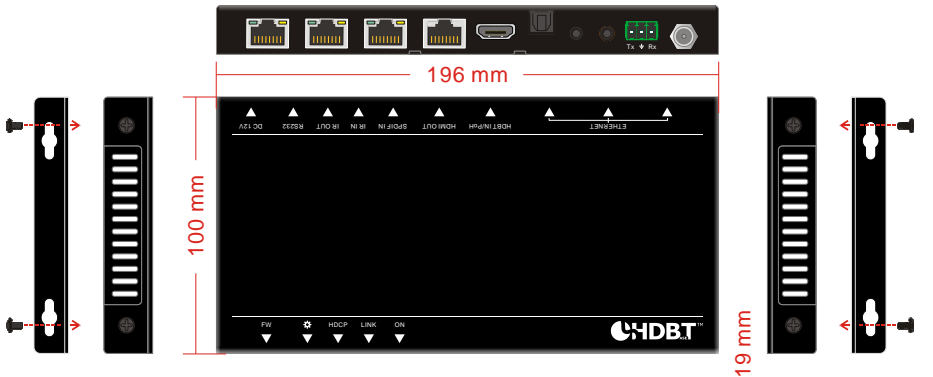


Figure 5-2 Panel Drawing of Receiver

6. Troubleshooting & Maintenance

Problems	Causes	Solutions
No reaction to any operation, power indicator is off	Haven't been powered on.	Insert power adapter to either end.
	The poor quality of network cable.	Should the replacement CAT5e/CAT6a cable of high quality.
Abnormal indication of the status LEDs	Wrong specification of the power adapter.	Change for DC 12V 2A power adapter.
Color lose or poor picture quality	Signal loss caused by long transmission distance beyond effective value.	Switch the transmission mode switcher to 150m, make sure the connecting cable is within 150m and of good quality.
	Bad quality of the HDMI cable.	Ensure the HDMI cables used at source, transmitter, receiver and display are properly connected and are of good quality.
	HDMI cables are too long to transmit 4K HDMI signal successfully. The longest HDMI cable is 8m for 4K input signal, and 20m for 4K output signal.	Shorten the length of HDMI cables.
No video output	Communication cables has no connection or bad connection.	Recheck all cables and ports.
	The display that you use is incompatible with this device.	It is recommended that you use mainstream display.
No digital audio output	Input source and output device are connected to the wrong ports.	Check again and make sure input source and output device are connected correctly.
	Audio Output device don't support the audio format.	Change for other output devices that support the audio formats listed in <i>Specifications</i> .

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No analog audio output	Audio OUT port (RCA connector) only support PCM format.	Change for other audio input device that support PCM format.
Cannot use ARC function	ARC switcher is dialed to OFF	Dial the switcher to ON.
	Devices or cables utilized don't support ARC	Change for devices/ cables that support ARC
Cannot work as an Ethernet Switch. PCs cannot connect to the internet.	The DHCP switch of Router is turned on, but the IP address of PCs are static.	Recheck all PCs and set these Pcs to use dynamic IP mode.
	The DHCP switch of Router is turned off, but the IP address of PCs are dynamic.	Recheck all PCs and set these Pcs to use static IP mode and make sure the difference of IP addresses to avoid IP address conflict.
	Network or server failure.	Please contact to your Internet Service Provider.
Cannot use the device	the device is broken	Send it to authorized dealer for repairing.

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

7. After-sales Service

If there appear some problems when running the device, please check and deal with the problems reference to this user manual.

1) Product Limited Warranty: We warrants that its products will be free from defects in materials and workmanship for **three years**, which starts from the first day the product leaves warehouse (check the SN mark on the product).
Proof of purchase in the form of a bill of sale or receipted invoice must be presented to obtain warranty service.

2) What the warranty does not cover:

- 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.
 - ◇ 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.

