



# User Manual

## TL-4X1-HD2

4K HDMI 2.0 Switcher 4x1



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Version: TL-4X1-HD2\_170427\_V1.0

## 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 through December 14, 2016. Any changes of functions and parameters since then will be informed separately. Please refer to the dealers for the latest details.

## 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.

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# 1. Introduction

## 1.1 Introduction to TL-4X1-HD2

TL-4X1-HD2 is an HDMI2.0 switcher accommodates 4 HDMI inputs. If select any of the inputs by “**SOURCE**” button on the front panel, IR Remote, or sending RS232 command, the corresponding indicator will illuminate to show real-time switching status.

TL-4X1-HD2 can transmit uncompressed 4Kx2K@60Hz 4:4:4 (at max) signal without any losing anything, and supports HDMI2.0, and compliance with HDCP2.2.

Moreover, TL-4X1-HD2 supports convenient online firmware update through USB port.

## 1.2 Features

- 4 HDMI inputs & 1 HDMI output.
- Support HDMI2.0, and the max resolution supports 4Kx2K@60Hz 4:4:4.
- HDCP2.2 compliant, support auto-detecting for input HDCP compliant status.
- Support EDID management, including 6 embedded EDID data can be invoked.
- Support CEC to control source or display device via IR Remote and RS232 commands.
- LED indicators show the switching status.
- Support Hot-plug.
- High bandwidth: 18Gbps.
- Convenient online firmware update.

## 1.3 Package List

- 1 x TL-4X1-HD2
- 2 x Mounting ears & 4 x Screws
- 4 x Plastic cushions
- 1 x IR Receiver (5V, with carrier)
- 1 x RS232 Cable (3-pin to DB9)
- 1 x IR Remote
- 1 x Power Adapter (5VDC 2A)
- 1 x User Manual

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

## Panel Description

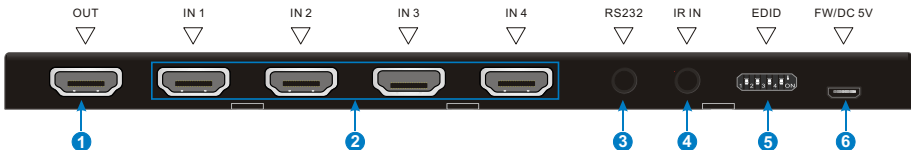
### 1.4 Front Panel



No.	Name	Description
①	SOURCE/ MODE/3s	<ul style="list-style-type: none"> <li>● Video source selection button, press to switch among the 4 inputs source circularly.</li> <li>● Switch mode selection button, press and hold for <b>3 seconds or more</b> to switch between auto-switch mode and manual switch mode.</li> </ul>
②	Power indicator	Illuminate red once powered on.
③	AUTO	Bi-colored indicator for present switching mode. <ul style="list-style-type: none"> <li>● Green when in auto-switching mode.</li> <li>● OFF when in manual mode.</li> </ul>
④	1~4	Total 4 bi-colored LED indicators: <ul style="list-style-type: none"> <li>● The indicator of the present input source illuminates green.</li> <li>● The indicator of the connected input source illuminates orange.</li> </ul>

**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.

## 1.5 Rear Panel



No.	Name	Description
①	OUT	HDMI output port, connect to HDMI display
②	IN1~IN4	Total 4 HDMI input ports, connect with HDMI source devices.
③	RS232	Serial control port, connect with control device (e.g. a PC) to control TL-4X1-HD2.
④	IR IN	Connect with IR receiver to collect IR signal from IR Remote.
⑤	EDID	4-pin DIP switcher to invoke built-in EDID data. Please refer to <a href="#">3.2 Embedded EDID invoking</a> for more details.
⑥	FW/DC 5V	<ul style="list-style-type: none"> <li>● Micro-USB connector, connect with power adaptor for powering the switcher, or used for updating firmware.</li> <li>● Connect to PC with USB cable to update firmware. Please refer to <a href="#">7 Firmware Upgrade</a> for more details.</li> </ul>



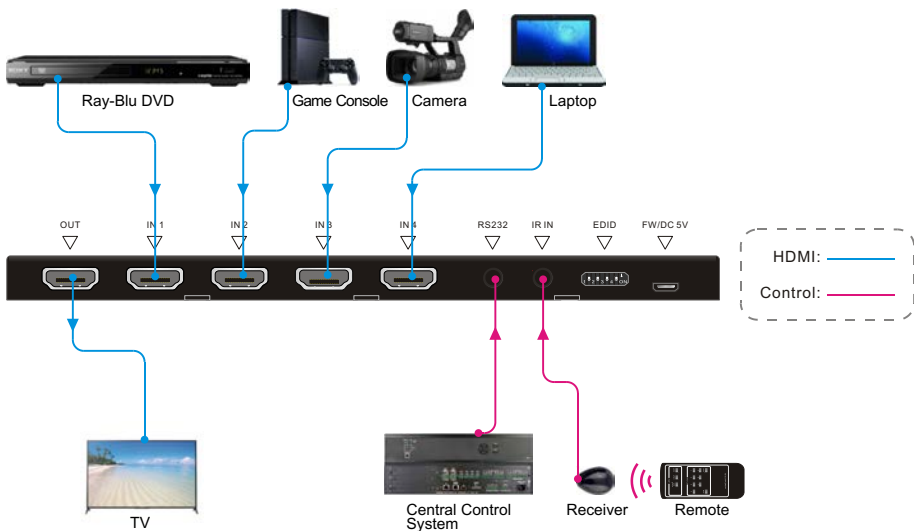
## 2. System Connection

### 2.1 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.

### 2.2 System Diagram

The following diagram illustrates typical input and output connections that can be utilized with TL-4X1-HD2:



### 2.3 Connection Procedures

- Step1.** Connect HDMI source device(s) (e.g. Blue-ray DVD) to the “IN1” ~ “IN4” ports of TL-4X1-HD2 with HDMI cable.
- Step2.** Connect HDMI display (e.g. HDTV) to “OUT” port of TL-4X1-HD2 with HDMI cable.
- Step3.** Connect an IR Receiver to the “IR IN” to control the switcher via IR Remote.

**Step4.** Connect the control device (e.g. PC) to the “RS232” port to control the switcher via RS232 commands.

**Step5.** Plug a DC 5V power adapter to the “FW/DC 5V” port.

**NOTE:** All the ports support hot-plug.

## 2.4 Application

TL-4X1-HD2 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.

## 3. Panel Control

### 3.1 Input source switching

The button “SOURCE/MODE/3s” on the front panel can be used to select input source and switch mode.

#### 3.1.1 Manual switching mode

Press “SOURCE/MODE/3s” button to switch circularly among input 1~4, the corresponding indicator illuminate green synchronously for easy recognition.

#### 3.1.2 Auto-switching mode

Press and hold the button “SOURCE/MODE/3s” for **3 seconds or more** to switch between the manual and auto modes. (Default: Manual switch.). Once enter auto-switching mode, the “AUTO” LED will light up.

The auto-switching mode abides by the following principles:

- **New input**

Once detecting a new input signal, TL-4X1-HD2 would switch to this new signal automatically.

- **Power Rebooting**

TL-4X1-HD2 support power off memory function. If the last selected signal is still available, the switcher will still output the signal. If not, the switcher will detect all the input signals with priority from “IN 1” to “IN 4” ports. When detected the first signal, it will transfer to output.

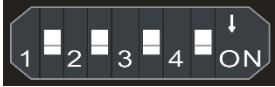
- **Signal removing**

Once removing the current input signal, TL-4X1-HD2 will detect all input signals with priority from the next input port. It will transfer the first available source to the output device.

For example, the selected input signal is “IN 2”, if you disconnect the current input source, TL-4X1-HD2 will detect all input signals according to the following order: “IN 3”, “IN 4”, “IN 1”, and then the first available source will be switched as input.

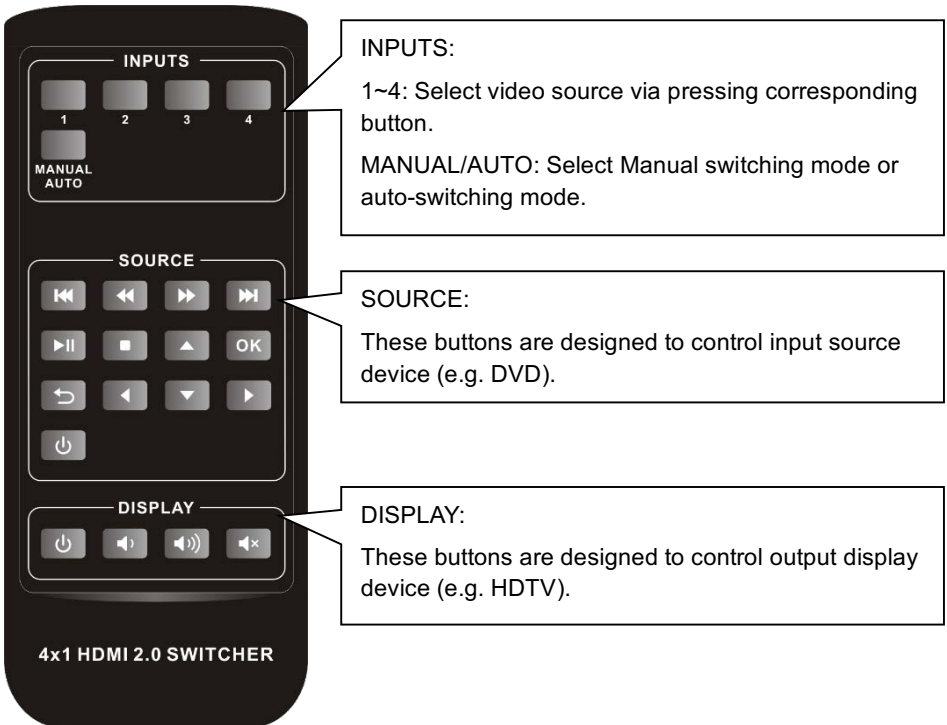
### 3.2 Embedded EDID invoking

The rear panel boasts a 4-pin DIP switcher to invoke embedded EDID. The embedded EDID data and their corresponding DIP switcher status are shown in the below list.

	ID	Status	EDID
	00	0000	Pass though (default)
	01	0001	1080p 3D 2CH
	02	0010	1080p 3D Multichannel
	03	0011	1080P 2D 2CH
DIP Switcher The location "ON" is "1".	04	0100	1080P 2D Multichannel
	05	0101	3840x2160 2D(30Hz)
	06	0110	3840x2160 2D(60Hz)

## 4. IR Control

Connect an IR receiver to the **IR IN** port, TL-4X1-HD2 can be controlled via the included IR Remote. As CEC function, it is able to use the IR Remote to control the source or display device. Here is a brief introduction about the IR Remote:



**NOTE:** The source and display devices should support CEC when the IR Remote is used for controlling them.

## 5. RS232 Control

TL-4X1-HD2 provides with RS232 port for serial port control. Connect TL-4X1-HD2 to the control device (e.g. PC) with RS232 cable and set the parameters in the right manner, the control device is capable to control TL-4X1-HD2 via designed software.

### 5.1 Installation/uninstallation of RS232 Control Software

**Installation:** Copy the control software file to the computer connected with TL-4X1-HD2.

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

### 5.2 Basic Settings

Firstly, connect TL-4X1-HD2 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:



The interface of the control software is showed as below:

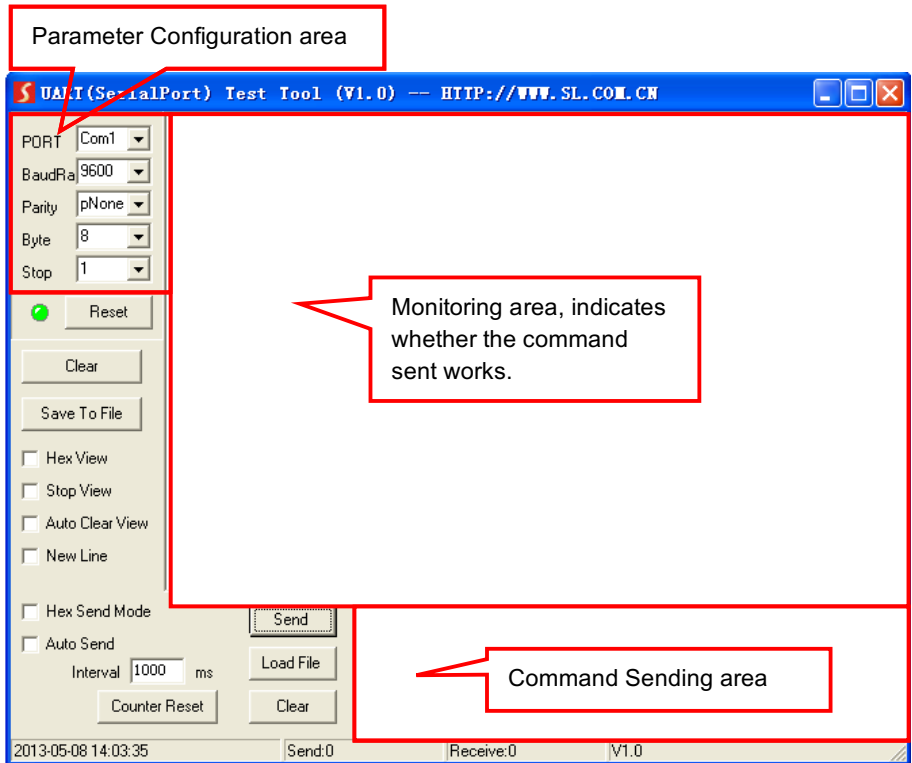
Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, only then will you be able to send command in Command Sending Area.

Baud rate: 9600;

Data bit: 8;

Stop bit: 1;

Parity bit: none.



### 5.3 RS232 Commands

#### 5.3.1 Switching Commands

Function	Command	Feedback Example
Switch to HDMI input 1.	HDMI1%	[CMD]: switch to HDMI1.
Switch to HDMI input 2.	HDMI2%	[CMD]: switch to HDMI2.
Switch to HDMI input 3.	HDMI3%	[CMD]: switch to HDMI3.
Switch to HDMI input 4.	HDMI4%	[CMD]: switch to HDMI4.
Enable auto-switching mode.	AUTO%	[CMD]: switch to AUTO Mode.
Enable manual switching mode.	MANUAL%	[CMD]: switch to MANUAL Mode.

**NOTE:** The source and display devices should support CEC.

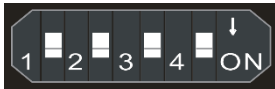
### 5.3.2 EDID Customizing

Function	Command	Feedback Example
Query the current EDID	EDIDInfo%	
Customize EDID.	EDIDSxx%	
Remove all customized EDID.	EDIDR%	

Besides the 6 embedded EDID, there are 9 EDID can be customized as need.

Firstly, send the command "EDIDSxx%" (XX=ID=07~15), and then click "Load File" on the RS232 control software to load the customized EDID file (.bin).

After customizing EDID data, you can invoke the new EDID via DIP switcher, and the EDID ID and their corresponding DIP switcher status are shown in the below list.

 DIP Switcher The location "ON" is "1".	ID	Switcher Status	ID	Switcher Status	ID	Switcher Status
	07	0111	08	1000	09	1001
	10	1010	11	1011	12	1100
	13	1101	14	1110	15	1111

### 5.3.3 Source Device Control

Function	Command	Feedback Example
Turn on the input source device, e.g. Blue-ray DVD.	SRCon%	[CMD]: blue ray power on.
Turn off the input source device, e.g. Blue-ray DVD.	SRCOff%	[CMD]: blue ray power off.
Play	SRCPlay%	[CMD]: blue ray play.
Pause	SRCPause%	[CMD]: blue ray pause.
Stop	SRCStop%	[CMD]: blue ray stop.
Fast Forward x1	SRCForward%	[CMD]: blue ray forward.
Fast Rewind	SRCBackward%	[CMD]: blue ray backward.
Next Section	SRCSkipForward%	[CMD]: blue ray skid forward.
Previous Section	SRCSkipBackward%	[CMD]: blue ray skid backward.



Open the MENU	SRCMenu%	[CMD]: blue ray menu.
Back	SRCKBack%	[CMD]: blue ray back.
Confirm (OK)	SRCKOk%	[CMD]: blue ray OK.
Exit	SRCKExit%	[CMD]: blue ray Exit.
Up direction	SRCKUp%	[CMD]: blue ray up.
Down direction	SRCKDown%	[CMD]: blue ray down.
Left direction	SRCKLeft%	[CMD]: blue ray left.
Right direction	SRCKRight%	[CMD]: blue ray right.
Next	SRCKNext%	[CMD]: blue ray next.
Enter	SRCKEnter%	[CMD]: blue ray Enter.

### 5.3.4 Display Device Control

Function	Command	Feedback Example
Turn on the display device, e.g. HDTV.	TVOn%	[CMD]: TV Power on.
Turn off the display device, e.g. HDTV.	TVOff%	[CMD]: TV Power off.
Select input source.	TVINSel%	[CMD]: TV input select.
Volume up.	TVVOL+%	[CMD]: TV VOL +.
Volume down.	TVVOL-%	[CMD]: TV VOL -.
Mute.	TVMUTE%	[CMD]: TV VOL Mute.

### 5.3.5 Baud Rate Setting

Function	Command	Feedback Example
Set the baud rate as 9600.	UART9600%	[CMD]: Baud 9600.
Set the baud rate as 19200.	UART19200%	[CMD]: Baud 19200.
Set the baud rate as 38400.	UART38400%	[CMD]: Baud 38400.
Set the baud rate as 57600.	UART57600%	[CMD]: Baud 57600.
Set the baud rate as 115200.	UART115200%	[CMD]: Baud 115200.

## 6. Firmware Upgrade

TL-4X1-HD2 boasts a USB port for online firmware upgrade on the rear panel. Follow these steps to upgrade firmware:

- Step1.** Connect control PC to the USB port of TL-4X1-HD2 with USB cable.
- Step2.** Open “My Computer”, and then find the new disk named BOOTDISK.
- Step3.** Copy the latest upgrade file (.bin) to this disk.
- Step4.** The switcher will restart automatically, and then the software update will complete after the USB port is connected successfully.

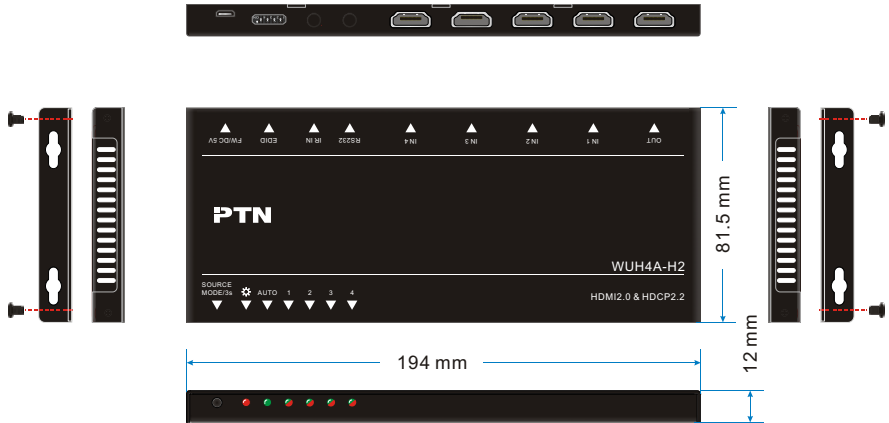
**NOTE:** The USB port can also be used to energize the device.

## 7. Specification

Input Signal	4 HDMI
Input Connector	Female Type-A HDMI
Output Signal	1 HDMI
Output Connector	Female Type-A HDMI
Control Signal	1 IR IN; 1 RS232
Control Connector	2 3.5mm mini jacks
Video Signal	HDMI2.0& HDCP2.2
Audio Signal	Dolby Digital, DTS, DTS-HD
<b>General</b>	
EDID Management	Embedded EDID data and manual EDID management.
Resolution Range	640x480@60Hz ~ 4Kx2K@60Hz 4:4:4.
HDMI Cable Length	≤3m
Power Supply	5VDC, 2A
Power Consumption	5W (Max)
Dimension (W*H*D)	194.0mm × 12.0mm × 81.5mm
Weight	200g
Temperature	-10°C~ 55°C
Reference Humidity	10% ~ 90%

**NOTE:** Please adopt qualified HDMI cables compliant with HDMI2.0 for reliable transmission when connecting.

## 8. Panel Drawing



## 9. 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 TL-4X1-HD2 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 TL-4X1-HD2 by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	TL-4X1-HD2 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.

## 10. After-sales Service

If there appear some problems when running the product, 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:** TechLogix 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 TechLogix
    - 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 TechLogix at: [support@tlnetworx.com](mailto:support@tlnetworx.com).