RUBYTECH VS-820S

8x SFP Slots with 2 Giga unmanaged Ethernet Switch

USER's MANUAL

Copyright

Legal Disclaimer

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Maximum signal rate derived from IEEE Standard specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. RubyTech Deutschland GmbH does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose. Make sure you follow in line with the environmental conditions to use this product.

Foreword

VS-820S is an unmanaged SFP switch, each SFP port especial designed support high power source for feeding high power consumption SFP module as VDSL2-SFP / G.fast-SFP module, if install them it can be became a unmanaged IP DSLAM, or mixing install VDSL2-SFP / G.fast-SFP module plus Fiber optical module to extend your networking services and applications to farther places. VS-820S also supports isolation function on SFP port for security, which can be easily configured by slide switch on front panel. There are lots of Multi-ple ports SFP switches in the market always power source is not enough to driver VDSL2-SFP / G.fast module or encounter overheat issue. Therefore, RubyTech Deutschland GmbH company put lots of effort for power source and

good heat dissipation as VS-820S's SFP slots are separated to each other, and build in two internal fans to prevent SFP module overheat issue. With high performance and easy installation, VS-820S can be utilized in ISP network solution for FTTdp(Fiber to the distribution point), FTTC (Fiber to the Curb) and FTTB (Fiber to the Building), also for SOHO application.

Attention:

Be sure to read this manual carefully before using this product. Especially Legal Disclaimer, Statement of Conditions and Safety Warnings.

Caution:

The VS-820S is for **indoor** applications only. This product does not have waterproof protection. Do not use in harsh environments (Over temperature range: 0°C ~ 50°C (32°F ~ 122°F)).

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions before using the device.

- **DO NOT** open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- **Use ONLY** the dedicated power supply for your device. Connect the power cord to the right supply voltage (110V AC used for North America and 230V AC used for Europe).
- **DO NOT** use the device if the power supply is damaged as it might cause electrocution. If the power supply is damaged, remove it from the power outlet. DO NOT attempt to repair the power supply. Contact your local vendor to order a new power supply.
- **Place** connecting cables carefully so that no one will step on them or stumble over them. DO NOT allow anything to rest on the power cord and do not locate the product where anyone can work on the power cord.
- **DO NOT** install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- **DO NOT** expose your device to dampness, dust or corrosive liquids.
- **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- **Connect ONLY** suitable accessories to the device. Make sure to connect the cables to the correct ports.
- **DO NOT** obstruct the device ventilation slots, as insufficient airflow may harm your device.

- **DO NOT** place items on the device.
- **DO NOT** use the device for outdoor applications, and make sure all the connections are indoors. There may be a remote risk of electric shock from lightning.
- **Be careful** when unplugging the power, because the transformer may be very hot.
- **Keep** the device and all its parts and accessories out of children's reach.
- **Clean** the device using a soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleansing it.
- This product is **recyclable**. Dispose of it properly.

Table of Contents

Unpacking In formation

1.1 Check List

Carefully unpack the package and check its contents against the check list.

Package Contents:

1 x VS-820S 1 x QR code for user's

Accessory:

1 x AC Power Cord, 2 X Rack mount bracket (optional) ,

8 x SFP cover

Notes:

1. Please inform your dealer immediately for any missing or damaged parts. If possible, retain the carton including the original packing materials. Use them to repack the unit in case there is a need to return for repair.
2. If the product has any issue, please contact your local vendor.
3. Please make sure power source is compliant with required specification.
4. VS-820S is a commercial-grade product. Do not use in industrial-grade applications.
5. Please look for the QR code on the bottom of the product, the user can launch the QR code scanning program to scan and download the user's manual electronic format file. Above QR code icon is for reference.

Installing the Device

2.1 Hardware Installation

This chapter describes how to install the device and establish the network connections. The VS-820S may be installed on any level surface (e.g. a table or shelf, 19 inch rack or wall mounting). However, please take note of the following minimum site requirements before one begin.

- 4 rubber feet on the bottom has been pre-installed.

2.2 Pre-installation Requirements

Before you start the actual hardware installation, make sure you can provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected.
Verify the following installation requirements:

- Power requirements: AC 100-240 volts / 50-60 Hz
- The device should be located in a cool dry place, with at least 10cm/4in of space at the front and back for ventilation.
- Place VS-820S away from direct sunlight, heat sources, or areas with a high amount of electromagnetic interference.
- Check if the network cables and connectors needed for installation are available.
- Do not install phone lines strapped together with AC power lines, or telephone office line with voice signal.
- Avoid installing this device with radio amplifying station nearby or transformer station nearby.

2.3 Connecting the Ethernet of RJ-45 Ports

VS-820S has two Ethernet ports which support connection to Ethernet operation. The devices attached to these ports must support auto-negotiation or 10Base-T, 100Base-T or 1000Base-T, and note they don't support half duplex. Use any of the Ethernet ports to connect to devices such as Monitor system, Server, Backbone switch, or IP gateway.

2.4 Connecting the SFP Slot

There are multiple types of SFP module in market, please make sure the SFP module support 1000X/SerDes mode; otherwise, the connection can't set up any more.

2.5 Application Diagram

VS-820S is an ideal solution for FTTC/FTTB, MDU usage and SOHO application. VS-820S can either be used as an upstream internet provider or a downstream internet receiver in your Network system, which makes VS-820S meet user's requirement, and offer you a variety of combination with other networking devices. With 8 SFP slots and suitable SFP transceiver, VS-820S is able to be considered as an IPDSLAM, and would perfectly fit in Fiber / XDSL networking system. VS-820S also enable user to segment their SFP network, and set up multiple isolated network at your premises, such as your home, office, school, etc. (Figure 2.5.1)

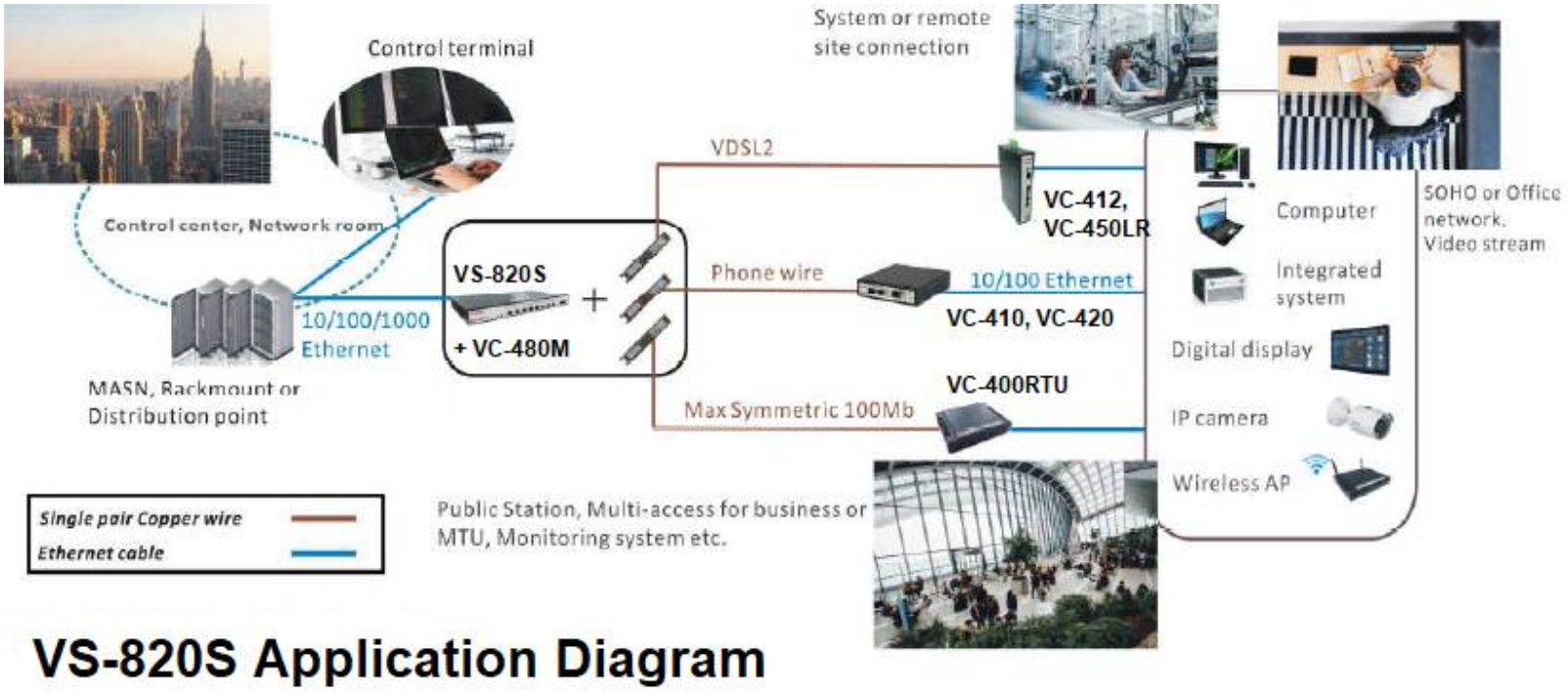

Figure 2.5.1 Application Diagram

Hardware Description

This section describes the important parts of VS-820S. It features the front panel and rear panel.

3.1 Front Panel:

The front panel shown as interface with 8 x SFP Slots, 2 x RJ-45 Connector, Slide switch for Isolation function and
LED indicators.

3.1.1 Front panel indicator:

There are 16 LED indicators on front panel, the following Table shows the description.

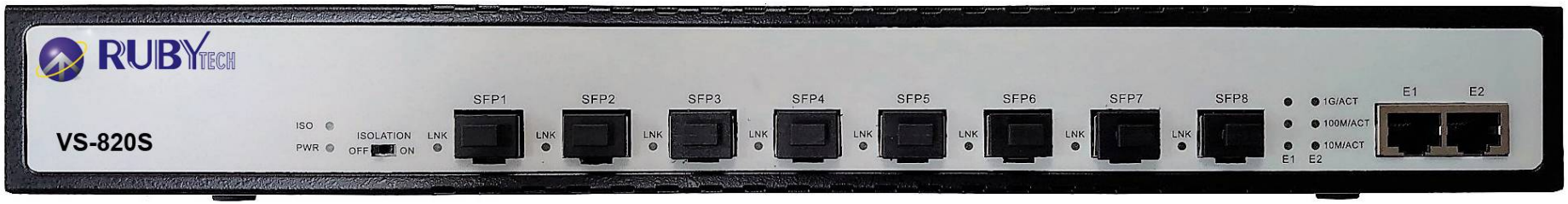

Figure 3.1 Front Panel

Tip: With only a glance of the front panel's LED indicators, the converter status will be fully aware.

Table 3-1 Description of the front interface

Port Name	Interface Type	Description
E1 / E2	RJ-45 connector	For connecting to a Backbone or IP gateway networking device.
SFP	SFP slot	For small form-factor pluggable transceiver.
Isolation	Slide switch	For enabling / disabling SFP port Isolation function.

Reminder:

Please use SFP transceiver which is compatible to 1000Base-X SFP slot, otherwise, the connection cannot set up.

3.1.2 Slide switch

For setting SFP port isolation mode. To activate isolation function, slide the switch to ON.

3.1.3 Rear Panel

The rear panel provides AC Power Jack and two built-in internal fans.

Figure 3.1.3 Rear Panel

3.2 LED Indicators

The VS-820S has 16 LED indicators. The following Table shows the description. (Table 3-2)

Table 3-2 LED Indicators Description and Operation

LEDs	Color	Status	Description
PWR	Green	ON	Power ON
		OFF	Power OFF
E1/E2(Ethernet) LNK/ACT (10M/100M/1G)	Green	ON (Steady)	10/100/1G Ethernet Link established
		Blinking	The device is sending or receiving data.
		OFF	No Connection
ISO(Isolation)	Green	ON	SFP slots Isolation mode
		OFF	SFP slots Un-Isolation mode
SFP1-SFP8	Green	ON	Link established
		OFF	No connection

Remark: 1. Except for Fiber SFP transceiver, SFP LED indicator will light up right away when the SFP transceiver is inserted into SFP slot.

Cable Requirements

A.1 Ethernet Cable

A CAT 5~7 UTP (unshielded twisted pair) cable is typically used to connect the Ethernet device to the Modem. A: 10/100TX cable often consists of four pairs of wires, two of which are used for transmission. The connector at the end of the 10/100TX cable is referred to as a RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3 and 6 for data transmission purposes. (Table A-1 10/100TX)

B: 1000TX cable often consists of four pairs of wires, all of which are used for transmission. The connector at the end of the 1000TX cable is referred to as a RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3, 4, 5 and 6 for data transmission purposes. (Table A-1 1000TX)

Table A-1 RJ-45 Ethernet Connector Pin Assignments

PIN #	10/100TX		1000TX	
	Signal	Media Dependant interface	Signal	Media Dependant interface-cross
1	TX+	Transmit Data+	BI_DA+	Bi-directional pair A+
2	TX-	Transmit Data-	BI_DA-	Bi-directional pair A-
3	RX+	Receive Data+	BI_DB+	Bi-directional pair B+
4	NC	Unused	BI_DC+	Bi-directional pair C+
5	NC	Unused-	BI_DC-	Bi-directional pair C-
6	RX-	Receive Data-	BI_DB-	Bi-directional pair B-
7	NC	Unused	BI_DD+	Bi-directional pair D+
8	NC	Unused	BI_DD-	Bi-directional pair D-

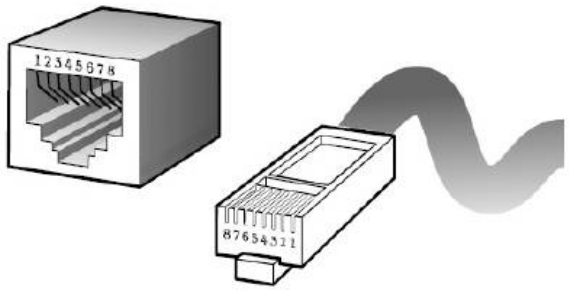

Figure A-1 Standard RJ-45 receptacle/connector

Figure A-2 Pin Assignments and Wiring for an RJ-45 Straight-Through Cable

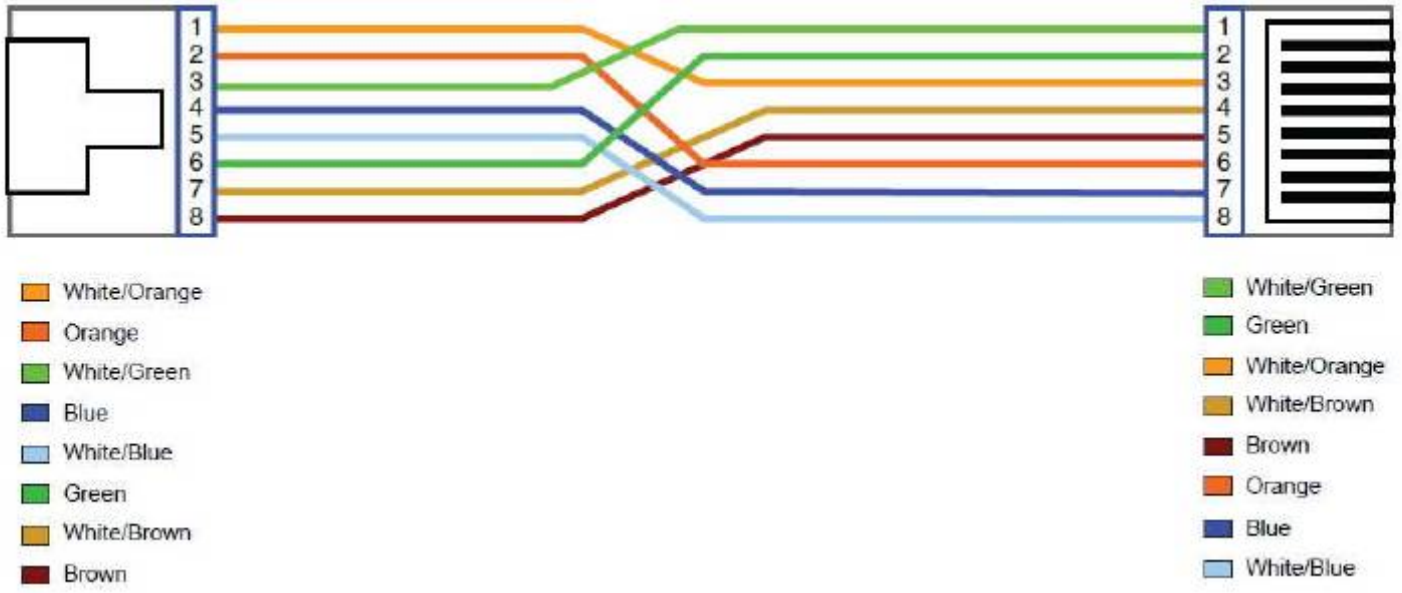

Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

Product Specification

Key Features and Benefits:

- Supports 2 x 10/100/1000BASE-T & auto–MDIX for RJ-45 port
- Supports 8 x 1.25G SFP Slots
- Cost effective bridge function for FTTdp/FTTC application
- Compatible to VDSL2 SFP module
- Support per SFP slot power source up to 3W
- Special design for VDSL2/G.fast-SFP module heat dissipation
- Supports isolation mode by Slide switch
- Compact in size, easy installation
- Plug & Play
- Flexible application & installation
- Support MTU 1632 bytes
- Supports 19” Rack mount bracket

Specification:

Item	Description
Protocol and Standards :	IEEE 802.3u / IEEE802.3ab / IEEE802.3z
Cabling requirements:	Ethernet: 10/100/1000Base-T Cat.5 or above UTP Cable Fiber Optic: 1000Base-X Flexible (Depending on Fiber Transceiver)
Modes :	SFP ports Isolation function
Interface :	2 x RJ-45 10/100/1000Mbps auto-negotiation Ethernet port、8 x 1000X/SerDes SFP slot、1 x slide switch
LED Indication :	SYSTEM : PWR ISOLATION MODE : ISO Giga PORT : 1G/ ACT,100M/ACT,10M/ACT SFP PORT : LNK
Certification :	CE, FCC, RoHS Compliant
Temperature :	0°C ~ 50°C (32°F ~ 122°F) (Operating) -20°C ~ 70°C (-4°F ~ 158°F) (Storage)
Optional accessories :	Rack mount bracket
Humidity :	10 - 90% (non-condensing)
Weight :	1.645 kg
Dimensions :	156mm x 356mm x 44mm (6.14" x 14" x 1.73")
Power Consumption :	4W(Empty load)
Power Supply	Input : AC 100~240 volts/50~60Hz

Troubleshooting

Diagnosing Switch's Indicators

The Bridge can be easily monitored through its comprehensive panel indicators. These indicators assist in identifying problems the Media Converter may encounter. This section describes common problems you may encounter and possible solutions:

1. Symptom: POWER indicator does not light up (green) after power on. **Cause:** Defective power source or power supply.

Solution: Check the power source by using another power cord that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the unit sent back to a qualified distributor.

2. Symptom: Link indicator does not light up (green) after making a connection.

Cause: Network interface (ex. a network adapter card on the attached device), network cable, or SFP transceiver defective.

Solution:

- Verify if both of the VS-820S (all devices) and attached device are powered on.
- Be sure the Ethernet cable and fiber optics are plugged into both the switch and corresponding

device.

- Verify that the proper cable type is used and its length does not exceed specified limits.
- Check the cable connections for possible defects.
- Replace the defective cable if necessary.
- Please make sure SFP transceiver support 1.25G Serdes mode

3. Symptom: RJ-45 port link LED light up without transmission.**Cause:** RJ-45 port link on half duplex mode or LED jitter happen

Solution: Please make sure opposite side device setting on full duplex mode, since VS-820S doesn't support helf duplex mode. If LED jitter it mean both internal chipset without compatible.

Power and Cooling Problems

If the POWER indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply. However, if the unit power is off after running for a while, check for loose power connections, power losses or surges at the power outlet. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, please contact your local dealer.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g. the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

The default of transmission mode for RJ-45 ports is 10/100/1000 Mbps Ethernet, SFP port is 1.25Gbps (1000Base-X). Therefore, if the Link signal is disrupted (e.g. by unplugging the network cable and plugging it back in again, or by resetting the power), the port will try to re-establish connection with the attached device via auto-negotiation.

Physical Configuration

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the new changes, one step at a time. Ensure that cable distances and other physical aspects of the installation do not exceed recommendations.

System Integrity

As a last resort verify the switch integrity with a power-on reset. Turn the power to the switch off and then on several times. If the problem still persists and you have completed all the preceding diagnoses, then contact your dealer.

Compliance and Safety Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC class A rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generate, 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the

proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Important Safety Instructions

- **Caution:** The direct plug-in wall transformer serves as the main product for disconnecting. The socket outlet shall be installed near the product and be readily accessible.
- **Do not** use this equipment near water, for example in a wet basement.
- **Avoid** using a telephone during an electrical storm. There may be a remote risk of electrical shock from lightning.
- **Do not** use the telephone to report a gas leak in the vicinity of the leaking area.
- If you experience trouble with this unit, please contact customer service of your dealer immediately.
- **DO NOT DISASSEMBLE THIS EQUIPMENT**. It does not contain any user serviceable components.

FCC Warning

This equipment has been tested to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.

CE Mark Warning

This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

RoHS Mark Warning

RoHS stands for Restriction of Hazardous Substances, and impacts the entire electronics industry and many electrical products as well. The original RoHS, also known as Directive 2002/95/EC, originated in the European Union in 2002 and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market since July 1, 2006 must pass RoHS compliance. Directive 2011/65/EU was published in 2011 by the EU, which is known as RoHS-Recast

or RoHS 2. RoHS 2 includes a **CE-marking directive**, with RoHS compliance now being required for CE marking of products. RoHS 2 also added Categories 8 and 9, and has additional compliance recordkeeping requirements. Directive 2015/863 was published in 2015 by the EU, which is known as RoHS 3. RoHS 3 adds four additional restricted substances (phthalates) to the list of six.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Warranty

The original owner that the product delivered in this package will be free from defects in material and workmanship for one year parts after purchase.
There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose, or any warranty arising out of any proposal, specification, or sample. We shall not be liable for incidental or consequential damages. We neither assume nor authorize any person to assume for it any other liability.

WARNING:

1. DO NOT TEAR OFF OR REMOVE THE WARRANTY STICKER AS SHOWN, OR THE WARRANTY IS VOID.

2. WARRANTY VOID IF USE COMMERCIAL-GRADE POWER SUPPLY IS USED AT HARSH ENVIRONMENTS.