

S108 Series Unmanaged Industrial Switches



User Manual

Version: 1.2

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Revision History

No.	Description	Date
V1.0	First release	Oct. 21, 2022
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Foreword

Thank you for purchasing Vantron Industrial Switch (“the Switch” or “the Product”). S108 series is a combination of four unmanaged switch models, including S108-B, S108-F, S108-R and S108-FR. This manual is largely based on S108-FR for illustration, and therefore some of the functions mentioned here may not be applicable to your product. This manual intends to provide guidance and assistance necessary on setting up, operating and maintaining the Product. Please read this manual and make sure you understand the structure and functionality of the Product before putting it into use.

Intended Users

This manual is intended for:

- Network administrators
- Technical support engineers
- Other users

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Disclaimer

While all information contained herein has been carefully checked to assure its accuracy in technical details and typography, Vantron does not assume any responsibility resulting from any error or features of this manual, nor from improper uses of this manual or the software.

It is our practice to change part numbers when published ratings or features are changed, or when significant structure changes are made. However, some specifications of the Product may be changed without notice.

Technical Support and Assistance

Should you have any question about the Product that is not covered in this manual, contact your sales representative for solution. Please include the following information in your question:

- Product name and PO number;
- Complete description of the problem;
- Error message you received, if any.

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Address: 48434 Milmont Drive, Fremont, CA 94538

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Email: sales@vantrontech.com

Regulatory Information



The Product is designed to comply with:

- CE
- Part 15 of the FCC Rules
- UL

Please refer to **Appendix** for Regulatory Compliance Statement.

Symbology

This manual uses the following signs to prompt users to pay special attention to relevant information.







	Caution for latent damage to system or human injury
	Attention to important information or regulations

General Safety Instructions

The Product is supposed be installed by knowledgeable, skilled persons familiar with local and/or international electrical codes and regulations. For your safety and prevention of damage to the Product and other equipment connected to it, please read and observe carefully the following safety instructions prior to installation and operation. Keep this manual well for future reference.

- Do not disassemble or otherwise modify the Product. Such action may cause heat generation, ignition, electronic shock, or other damages including human injury, and may void your warranty.
- Keep the Product away from heat source, such as heater, heat dissipater, or engine casing.
- Do not insert foreign materials into any opening of the Product as it may cause the Product to malfunction or burn out.
- To ensure proper functioning and prevent overheating of the Product, do not cover or block the ventilation holes of the Product.
- Follow the installation instructions with the installation tools provided or recommended.
- The use or placement of the operation tools shall comply with the code of practice of such tools to avoid short circuit of the Product.
- Cut off the power before inspection of the Product to avoid human injury or product damage.

Precautions for Power Cables and Accessories

-  Use proper power source only. The Product supports 5V-36V power supply. Make sure the supply voltage falls within the specified range.
-  Place the cables properly at places without extrusion hazards.
-  Use only approved antenna(s). Non-approved antenna(s) may produce spurious or excessive RF transmitting power which may violate FCC limits.
-  Cleaning instructions:
 - Power off the Product before cleaning
 - Do not use spray detergent
 - Clean with a damp cloth
 - Do not try to clean exposed electronic components unless with a dust collector
-  Power off and contact Vantron technical support engineer in case of the following faults:
 - The Product is damaged
 - The temperature is excessively high
 - Fault is still not solved after troubleshooting according to this manual
-  Do not use in combustible and explosive environment:
 - Keep away from combustible and explosive environment
 - Keep away from all energized circuits
 - Unauthorized removal of the enclosure from the Product is not allowed
 - Do not change components unless the power cable is unplugged
 - In some cases, the Product may still have residual voltage even if the power cable is unplugged. Therefore, it is a must to remove and fully discharge the Product before replacement of the components.

CHAPTER 1 INTRODUCTION









1.1 Product Overview

As part of Vantron’s overall solution for industrial automation, Vantron S108 series is a collection of four unmanaged industrial switches that feature 8 Gigabit Ethernet ports to demonstrate excellent data transfer performance.

Vantron S108 series offers a Plug and Play solution that reduces users’ educational inputs and its compact size helps to save the user space. This series supports 12V~48V wide input voltage and -20°C ~ +70°C industrial-grade extended temperature range, and implements a fanless heat sink for device heat dissipation. Customers have the option of DIN-rail mounting or rack mounting depending on their installation environment.

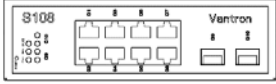

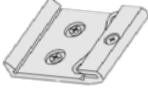

Switches are usually used in harsh environments that require stable operation and involve data interaction between a range of devices. Vantron S108 series is particularly designed for rail transit, smart city, intelligent mining, etc.

1.2 Features

S108 Series	
	Plug and play
	Low power consumption
	Adaptive full/half duplex Ethernet jacks
	Long service time
	Stringent test proof
	Efficient fanless heat dissipation
	Wide input voltage & temperature range
	Compact size, easy to deploy

1.3 Unpacking

The Product has been carefully packed with special attention to quality. However, should you find anything damaged or missing, please contact your sales representative in due time.

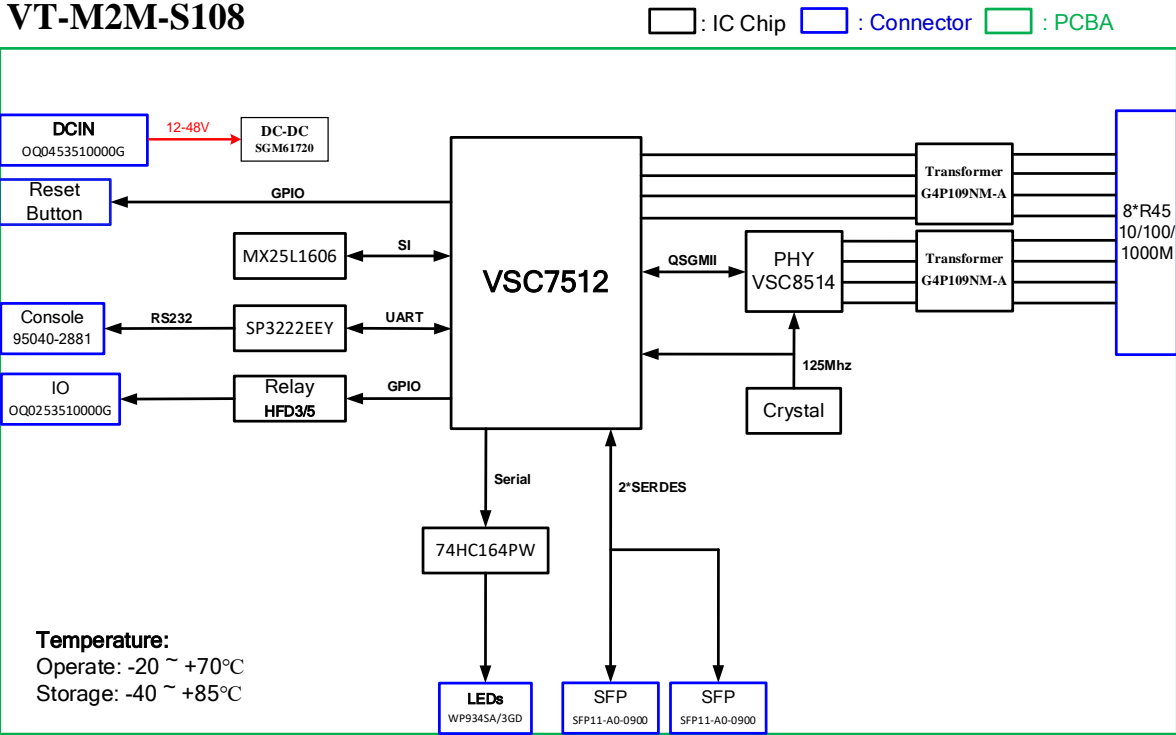
Standard accessories		Optional accessories	
	1 x S108 switch		1 x 12V DC Power adapter & power cord
	1 x DIN rail mounting bracket (attached)		1 x DC power connector

i *Actual accessories might vary slightly from the list above as the customer order might differ from the standard configuration options.*

1.4 Specifications

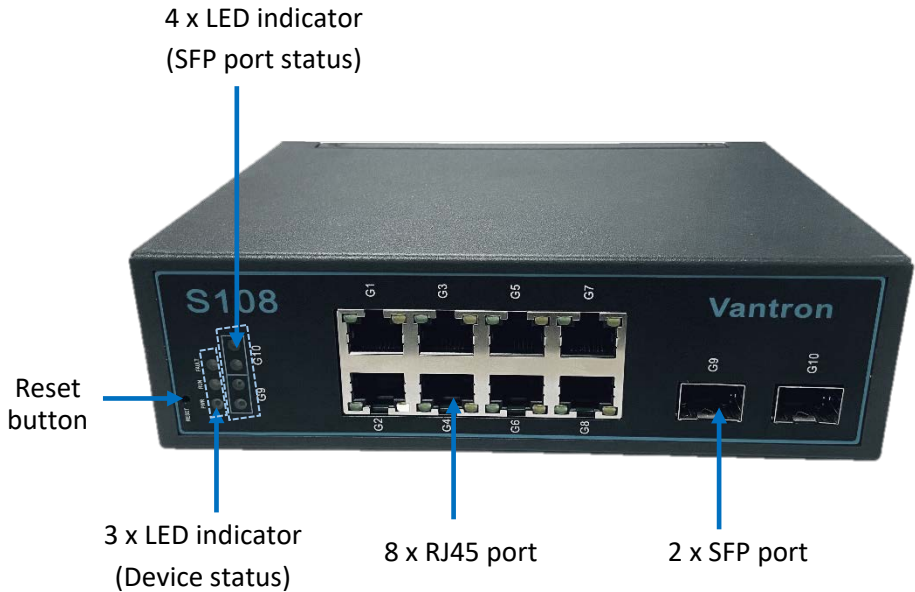
Model Name		S108-B	S108-F	S108-R	S108-FR
Ethernet	Interface	8 x RJ45, 10/100/1000 Base-T (X)			
		NA	2 x SFP, 1000M	NA	2 x SFP, 1000M
	LED Indicator	2 x LED indicator on each RJ45 port (Green: Link/Activity; Yellow: ON—1000M, OFF—10/100M) 2 x LED indicator for each SFP port (NA for S108-B/S108-R)			
	Standard	IEEE802.3, IEEE802.3u, IEEE802.3x, IEEE802.3z			
Data Transfer	Forwarding mode	Store-and-forward			
	MAC address table	4K			
	Switching capability	16Gbps			
	Packet forwarding rate	11.9Mpps			
	Packet buffer	2.5Mb			
System Control	Alarm relay	NA		1 x 2-pin x 5.0mm (Current load: 1A @24VDC)	
	LED indicator	1 x Power indicator 1 x Status indicator 1 x Error indicator			
Mechanical	Dimensions	170mm x 122mm x 50mm			
	Installation	DIN-rail mounting			
	MTBF	≥30,000 H			
	IP rating	IP40			
Power	Input	12V~48V DC, 1 x 4-pin x 5.0mm terminal block (Dual redundant power supply, Over-current protection, Reverse polarity protection)			
	Consumption	<3W (Idle); < 7.5W (Full load)			
Environment Condition	Temperature	Operating: -20°C ~ +70°C; Storage: -40°C ~ +85°C			
	Humidity	Operating: RH 0-90% (Non-condensing)			
	EMC level	> EMC Level 3			
	Certification	CE, FCC, UL			
Test Standard	Industrial Standard	EMI FCC CFR47 Part 15, EN55032/CISPR22, Class A EMS IEC61000-4-2 (ESD): ±6kV (contact), ±8kV (air) IEC61000-4-3 (RS): 10V/m (80MHz ~ 2GHz) IEC61000-4-4 (EFT): Power port: ±2kV, Data port: ±1kV IEC61000-4-5 (Surge): Power port: ±1kV/DM, ±2kV/CM, Data port: ±1kV/DM, ±2kV/CM IEC61000-4-6 (CS): 10V (150kHz ~ 80MHz) (Mechanical) IEC60068-2-6 (Vibration) IEC60068-2-27 (Shock) IEC60068-2-32 (Free fall)			

1.5 Block Diagram

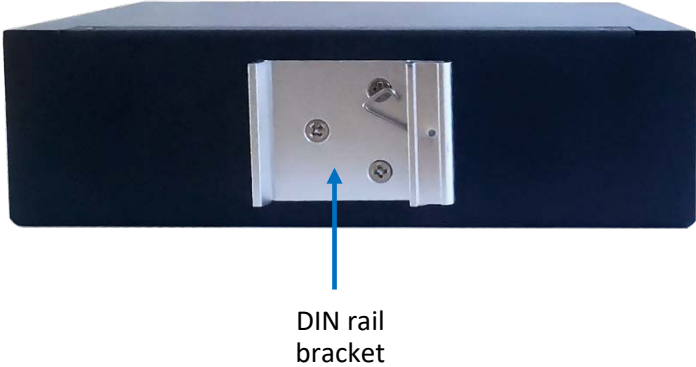


1.6 Product Layout

1.6.1 Front View



1.6.2 Back View

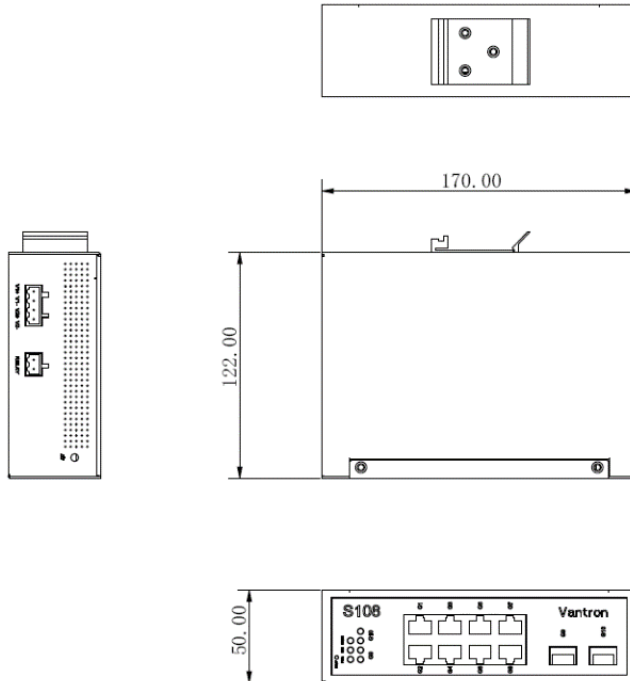


1.6.3 Left side view



1.7 Mechanical Dimensions

- 170mm x 122mm x 50mm



1.8 Power Supply and Consumption

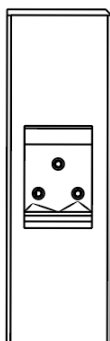
S108 series industrial switches work with 12V-48V DC power input supplied by a DC connector that supports dual redundant power supply, and is reinforced by over-current protection, reverse polarity protection. The power consumption of the device is less than 3W when idled and less than 7.5W with full load.

CHAPTER 2 GETTING STARTED

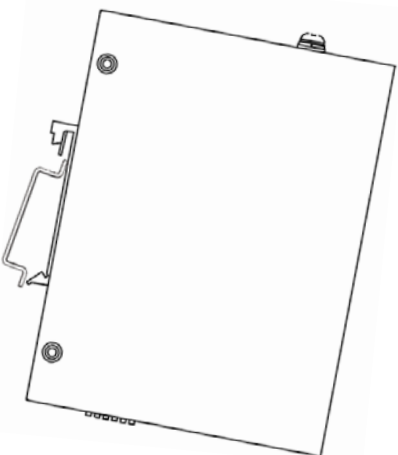
2.1 Device Setup

Before using the switch, please follow the steps below to finish the device installation.

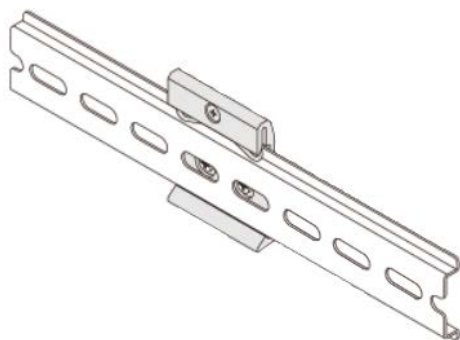
1. Hold the switch uprightly;



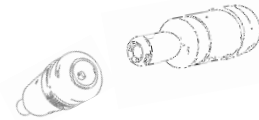
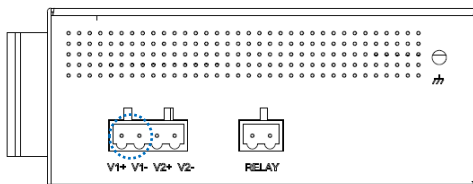
2. Place the switch on the DIN rail at an angle with the clip at the top of the DIN rail bracket fit into one side of the DIN rail;



3. Push the switch down to compress the spring of the bracket;
4. Release the switch when there is enough space for the downside of the DIN rail bracket to fit the other side of the DIN rail;



5. Gently swing the switch to make sure the switch is fastened on the DIN rail;
6. Insert one end of an Ethernet cable into any RJ45 port of the switch and the other end into a switch or server to connect the switch to the network;
7. Use another Ethernet cable to connect a client device to another RJ45 port of the switch when necessary;
8. Insert the terminal end of the DC power connector into the power terminal of the switch and the other end into the power cord;



If you are using the power connector supplied by Vantron
Red wire: +
Black wire: -

9. Plug the power adapter into a power outlet that meets the supply voltage requirement (12V to 48V DC) to turn on the device.

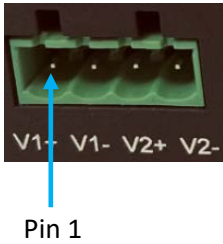
2.2 Starting the Device

S108 series unmanaged industrial switches offer a plug-and-play solution, and users need only to connect the switch to a power source to start using the device. There is no requirement for additional configurations.

2.3 I/Os

2.3.1 Power connector

The switch implements a 4-pin 5.0mm power connector that supports dual redundant power supply with over-current protection and reverse polarity protection to ensure reliable operation of the device in a long term.

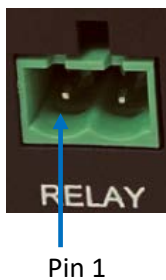


Pinout description:

Pin	Signal	Description
1	V1+	Primary power supply positive
2	V1-	Primary power supply negative
3	V2+	Backup power positive
4	V2-	Backup power negative

2.3.2 Relay

S108-R and S108-FR implement a relay connector that is designed to connect an alarm to alert the user when there is a fault with any of the interface. The connector supports a load capacity of 1A @24V DC.



Pinout description:

Pin	Signal	Description
1	Relay_in	Relay input
2	Relay_out	Relay output

2.3.3 Grounding screw hole

With the grounding screw hole, users can ground the switch using an M3 screw and a grounding wire.

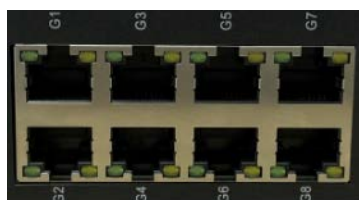


2.3.4 Reset button

The switch implements a pinhole reset button which enables the device to reboot upon a short press.

2.3.5 Ethernet jacks

The switch offers eight RJ45 Ethernet jacks, supporting 10M/100M/1000M Base-T data rate.



S108-F and S108-FR additionally implement two SFP ports, including SFP1 (marked as G9 on the enclosure) that supports 100M/1G data rate and SFP2 (G10) that supports 100M/1G/2.5G auto adaptive data rate.



Each Ethernet jack has two LED indicators to indicate the link/activity status of the network. Description of the status indicator is detailed in the following section.

2.4 Definition of LED Indicators

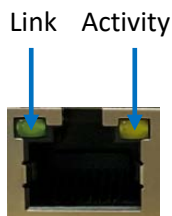
Definition of the three LED indicators that indicate the status of the switch is shown below.



LED Indicator	Description
PWR	Lights up when power is on
RUN	Blinks slowly when the system functions properly
FAULT	Lights up in the event of device malfunction, hardware error, etc.

2.4.1 Link/activity indicator of RJ45 jacks

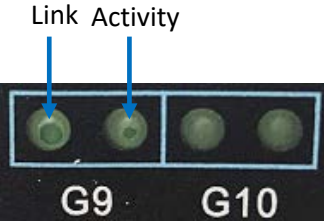
Each RJ45 jack (G1-G8) is provided with two LED indicators to indicate the link/activity status of the network.



Definition of the each set of indicators is as follows:

LED Indicator	Description
Link	Off: 10/100M data rate
	Solid green: 1000M data rate
Activity	Off: link down
	Solid green: link up
	Blinking: data transferring

For S108-F and S108-FR, the two sets of LED indicators for the two SFP ports (G9-G10) are next to the device status LED indicators with separate screen printings.



Definition of the each set of indicators is as follows:

LED Indicator	Description
Link	Off: link down
	Solid green: link up
Activity	Off: link down
	Solid amber: link up
	Blinking: data transferring

CHAPTER 3 DEVICE CONNECTION

3.1 Usage of S108 Series Unmanaged Industrial Switches

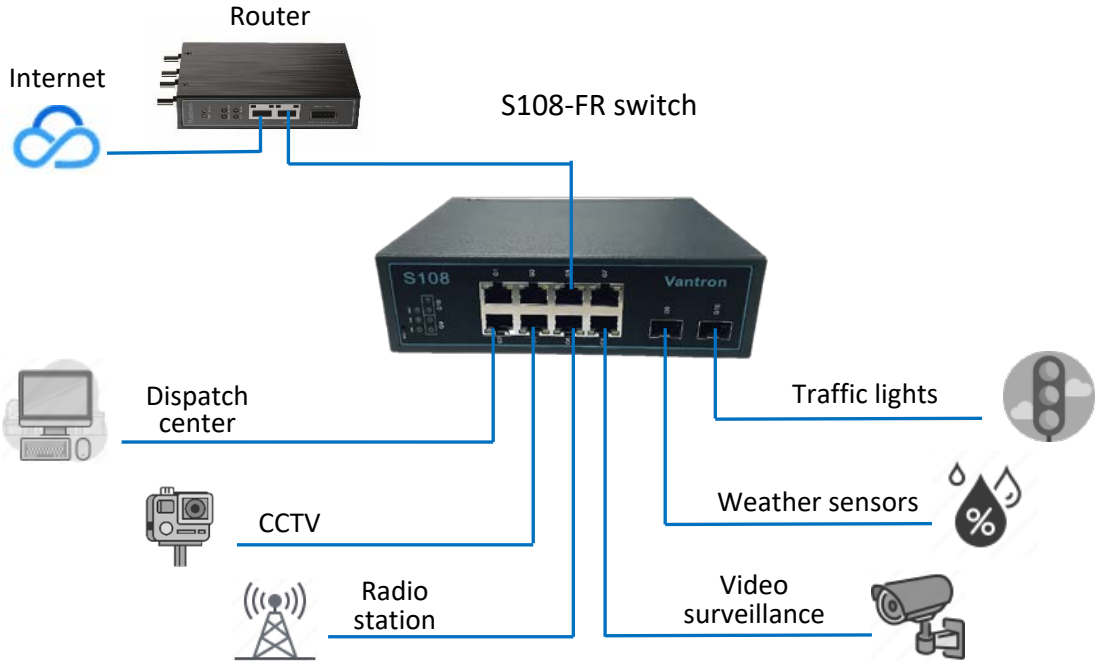
S108 series unmanaged industrial switches are plug-and-play devices that requires no complex setup. Such switches are typically used in smaller networks or to connect certain workgroups to a higher-level network without remote configuration, management, or monitoring options.

The switches are suitable for any business network that wants to simplify the installation of wireless access points and IP-based surveillance cameras.

Switches are usually used in harsh environments that require stable operation and involve data interaction between a range of devices. Vantron S108 series is particularly designed for rail transit, smart city, intelligent mining, etc.

3.2 Typical Connection

The following is a simple connection topology of S108-FR in the application of traffic surveillance.



CHAPTER 4 DISPOSAL AND WARRANTY

4.1 Disposal

When the device comes to end of life, you are suggested to properly dispose of the device for the sake of the environment and safety.

Before you dispose of the device, please back up your data and erase it from the device.

It is recommended that the device is disassembled prior to disposal in conformity with local regulations. Please ensure that the abandoned batteries are disposed of according to local regulations on waste disposal. Do not throw batteries into fire or put in common waste canister as they are explosive. Products or product packages labeled with the sign of “explosive” should not be disposed of like household waste but delivered to specialized electrical & electronic waste recycling/disposal center.

Proper disposal of this sort of waste helps avoid harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

4.2 Warranty

Product warranty

VANTRON warrants to its CUSTOMER that the Product manufactured by VANTRON, or its subcontractors will conform strictly to the mutually agreed specifications and be free from defects in workmanship and materials (except that which is furnished by the CUSTOMER) upon shipment from VANTRON. VANTRON's obligation under this warranty is limited to replacing or repairing, at its option, of the Product which shall, within **24 months** after shipment, effective from invoice date, be returned to VANTRON's factory with transportation fee paid by the CUSTOMER and which shall, after examination, be disclosed to VANTRON's reasonable satisfaction to be thus defective. VANTRON shall bear the transportation fee for the shipment of the Product to the CUSTOMER.

Out-of-Warranty Repair

VANTRON will furnish the repair services for the Product which are out-of-warranty at VANTRON's then-prevailing rates for such services. At customer's request, VANTRON will provide components to the CUSTOMER for non-warranty repair. VANTRON will provide this service as long as the components are available in the market; and the CUSTOMER is requested to place a purchase order up front. Parts repaired will have an extended warranty of 3 months.

Returned Products

Any Product found to be defective and covered under warranty pursuant to Clause above, shall be returned to VANTRON only upon the CUSTOMER's receipt of and with reference to a VANTRON supplied Returned Materials Authorization (RMA) number. VANTRON shall supply an RMA, when required within three (3) working days of request by the CUSTOMER. VANTRON shall submit a new invoice to the CUSTOMER upon shipping of the returned products to the CUSTOMER. Prior to the return of any products by the CUSTOMER due to rejection or warranty defect, the CUSTOMER shall afford VANTRON the opportunity to inspect such products at the CUSTOMER's location and no Product so inspected shall be returned to VANTRON unless the cause for the rejection or defect is determined to be the responsibility of VANTRON. VANTRON shall in turn provide the CUSTOMER turnaround shipment on defective Product within **fourteen (14) working days** upon its receipt at VANTRON. If such turnaround cannot be provided by VANTRON due to causes beyond the control of VANTRON, VANTRON shall document such instances and notify the CUSTOMER immediately.

Appendix Regulatory Compliance Statement

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this equipment.