# VT4315-PRO Instructions

Power Management with Control System Interactive Functionality.

- BlueBOLT® enabled for remote control and monitoring

- 12 protected and filtered outlets in 8 controllable outlet banks

- Outlets widely spaced to accommodate bulky "wall warts"

- 4K ready, high-bandwidth coaxial protection

- Gigabit (10/100/1000) Ethernet protection

- 12V trigger

- Indicator lights for Voltage, Power, Protection OK, and BlueBOLT® Connectivity

- Mounting brackets (included) provide flexible mounting options

- Insulation gaskets for mounting brackets provide ground insulation

- 37 inch length fits into most racks 20 RU and above

- 3 Year Lmited Product Warranty & $5,000,000 Connected Equipment Protection Policy

BlueBOLT™ ENABLED
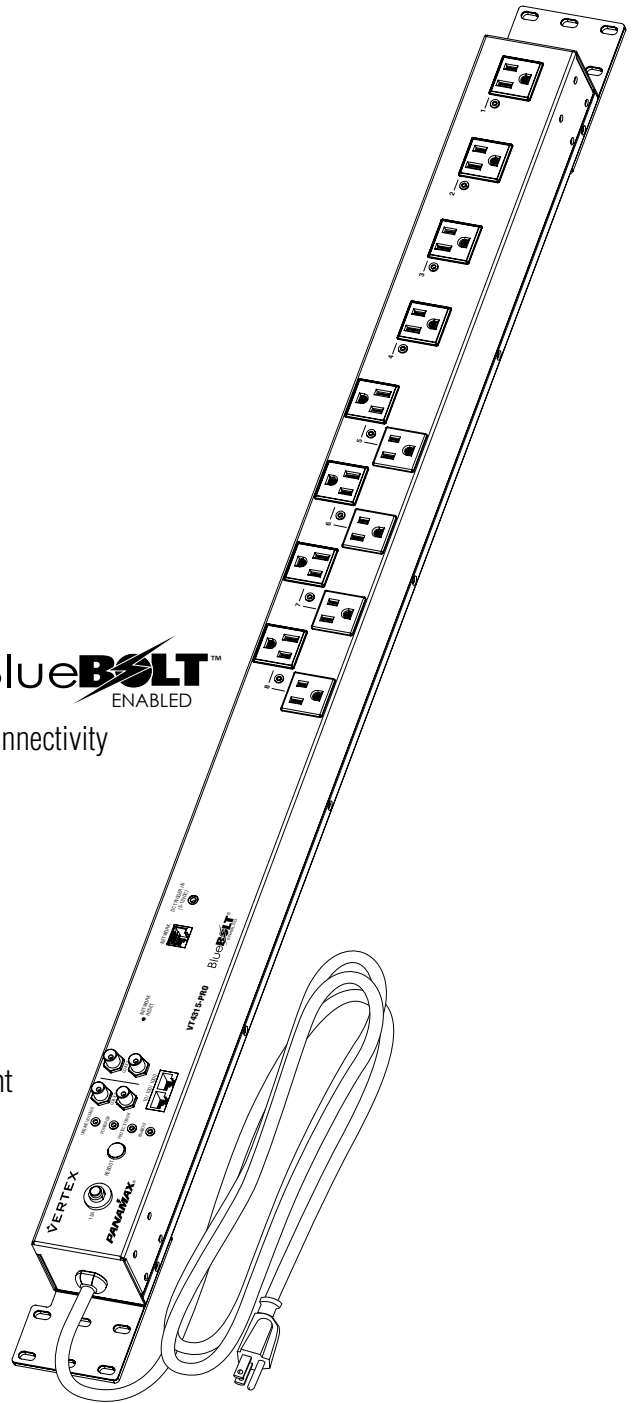
Important: You will need the BlueBOLT's unique MAC address and challenge key (provided on the label attached to the cover of the Quick Start Guide which is included in the VT4315-PRO packaging). Another label is permanently adhered to the back side of the VT4315-PRO.

PANAMAX®

Introduction

Thank you for purchasing a Panamax VT4315-PRO Power Management with control system interactive functionality, and congratulations on your choice. The VT4315-PRO features Panamax's revolutionary AVM (Automatic Voltage Monitoring) circuit, and our exclusive Linear Filtering Technology (LiFT). Together, these technologies comprise precisely what our customers have come to expect from Panamax: uncompromised AC protection and purification. Outlets: outlet banks are separately controlled. They are grouped into four (8) filter-isolated banks. BlueBOLT™ is included, providing secure, hosted IP system control and monitoring for the VT4315-PRO.
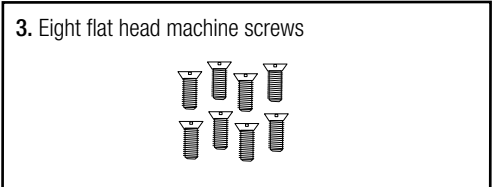
Table of Contents

Before You Begin Inspect Upon Receipt.

Box should contain the following, including the Quick Start Guide:

1. VT4315-PRO
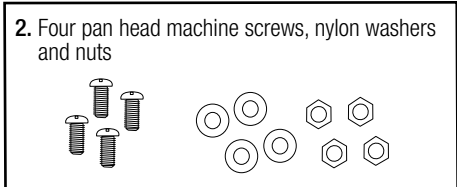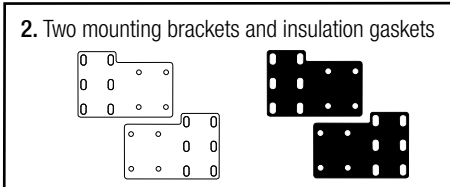
2. Two mounting brackets and insulation gaskets

2. Four pan head machine screws, nylon washers and nuts

3. Eight flat head machine screws

PANAMAX

Features Descriptions

BlueBOLT®:
Remote Power Management technology provides secure, hosted IP (Internet Protocol) system control. With BlueBOLT, custom electronics installer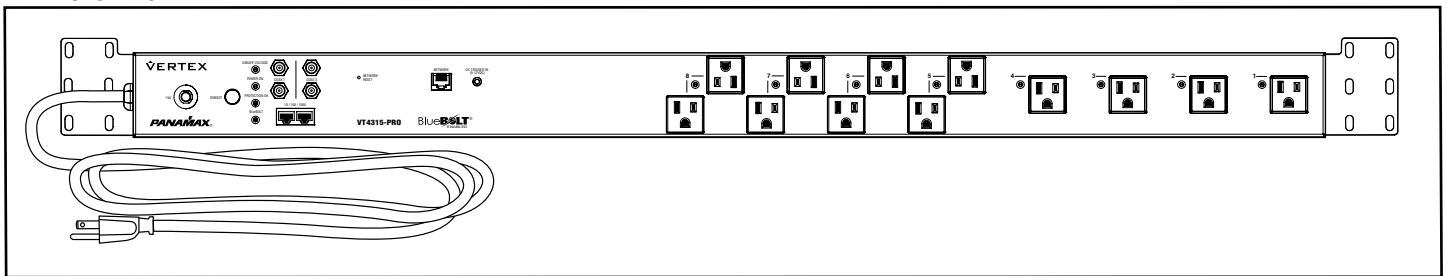s, integrators and end-users can remotely monitor and control power to home theater equipment by accessing power management components from anywhere in the world. From simple system reboots to comprehensive monitoring of power status, BlueBOLT provides the power to control complex A/V systems from their most fundamental level: their power source (VT4315-PRO).

LiFT Technology EMI/RFI Noise Filtration :
Your audio/video components are constantly being bombarded by electromagnetic interference (EMI) and radio frequency interference (RFI) through their AC power source. This contaminated power can affect audio/video equipment and will degrade the overall performance of your entire system. Common symptoms of contaminated power include loss of picture detail, dull colors, pops, hisses, hums and visual artifacts.

Protect-or-Disconnect:
In the event of a catastrophic power surge, such as a direct lightning hit, the Panamax unit will disconnect AC power to connected equipment.

Automatic Over & Under Voltage Protection (AVM):
Panamax's patented power monitoring circuitry constantly monitors the AC line voltage for unsafe voltage conditions such as momentary spikes or prolonged over-voltages and under-voltages (brownouts). These unsafe conditions pose a very dangerous threat to all electronic equipment within the home. If the VT4315-PRO senses an unsafe power condition, it will automatically disconnect your equipment from the power to protect equipment from damage. Once the voltage returns to a safe level, the VT4315-PRO will automatically reconnect the power.

• When subjected to a 6,000V (open circuit voltage) / 3,000A (short circuit current) surge, the VT4315-PRO limits its voltage output to less than 330V peak, UL's lowest rating.

• If the magnitude of the surge is greater than the capacity of the surge protection components, the VT4315-PRO's Protect or Disconnect Circuitry will disconnect your equipment in order to protect it. The VT4315-PRO will need to be repaired or replaced by Panamax if this occurs within the product's 3 year warranty.

Sequential Startup/Shutdown:
Complex audio/video systems may be susceptible to voltage transients generated internally at start-up/shutdown if all of the equipment is powered on or off at the same time. This can cause speaker "thumps", which are not only annoying, but can also damage the speakers and/or trip product circuit breakers. The VT4315-PRO is designed to eliminate these transients by providing a "start-up" delay for the Bank 3 outlets and a "shut-down" delay for the other Outlet Banks. This minimizes inrush current issues by allowing the components plugged into the Switched Outlet Banks to power-up and stabilize before any amplifiers and powered subwoofers are turned on. This sequence is reversed during shut-down. The amplifiers and powered subwoofers turn off, their power supplies drain, and then the equipment plugged into the Switched Outlet Banks are turned off. Additionally, the start-up and shut-down delays can be adjusted for custom applications.

Voltage Sense Trigger:
The VT4315-PRO voltage sense trigger input uses a standard 3.5mm (1/8") mini-mono plug. This feature provides an ON/OFF trigger for the VT4315-PRO using a Direct Current (DC) voltage signal. Many components such as pre-amplifiers and receivers have a DC trigger built in, and will transmit a constant power signal when turned on and in use. The presence of this power signal will turn on the VT4315-PRO's switched outlets. When the source component is turned off, the voltage trigger signal is also turned off, and the VT4315-PRO's shutdown sequence is initiated. An AC Adapter of the appropriate voltage (5-24 VDC) plugged into a switched outlet may also be used if a DC trigger is not built in.

Cable/Satellite/Antenna TV signal protection:
Coaxial protection circuits achieve optimum signal quality from our new coaxial protectors that have the smallest signal loss on the market - less than 0.5 db of attenuation from 0 Hz to 2.2 GHz. Our upgraded coaxial protection has been specifically designed to virtually eliminate signal loss. The clamping level of 75V will meet the demands of both cable and satellite voltage while minimizing exposure to damaging spikes and surges.

Telephone Line Protection:
Digital video recorders and satellite TV receivers require a telephone line connection for TV show scheduling and/or Pay-Per-View services. The VT4315-PRO also provides surge protection for this line. One pair of RJ-11 telephone jacks is provided for this. The circuitry utilizes auto-resetting PTCRs and solid state SIDACtors® for reliability and unsurpassed protection. The clamping level of the VT4315-PRO's telephone protector is 260 volts. This will allow typical ring voltage (90-130VAC) and operating battery voltage (-48DC) to pass through the circuit and still protect the modem in your satellite receiver from damage. Incoming tel line must be plugged into the IN Jack. Patch cord to the equipment must be plugged into OUT.

LAN Protection:
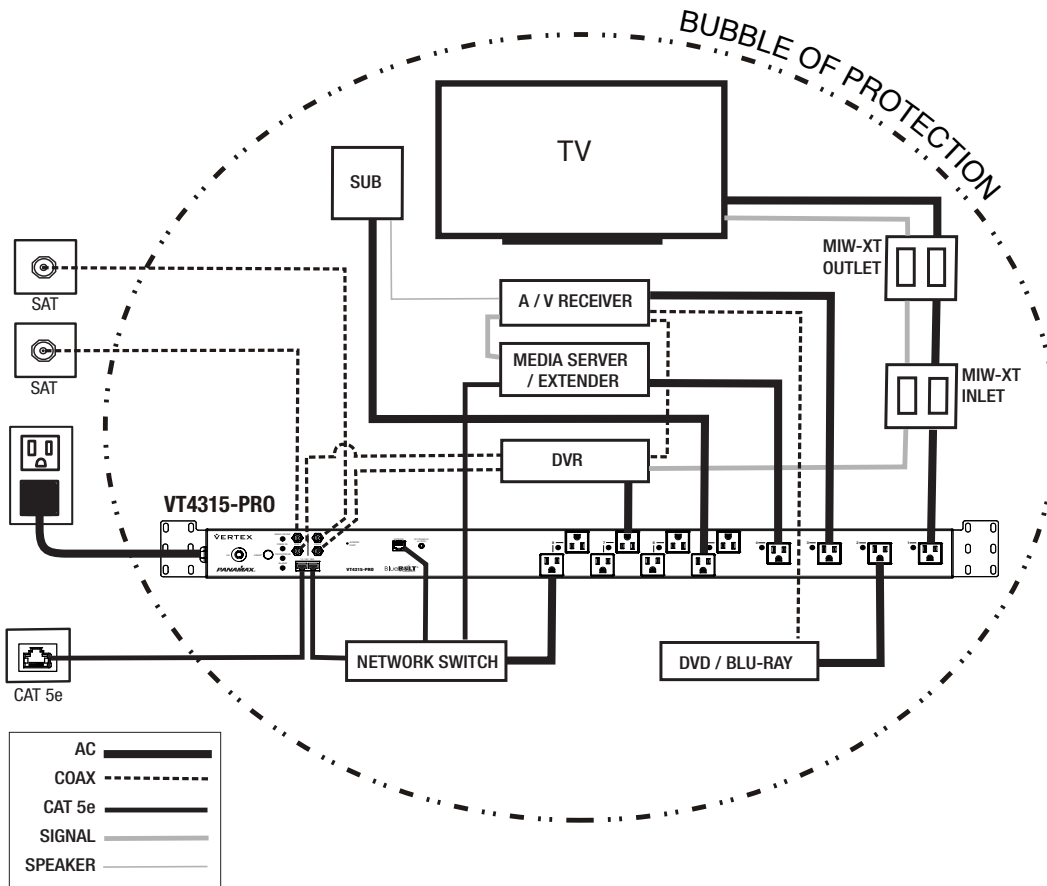Protection circuits for 10/100/1000 baseT Ethernet lines. 8 wire protection, 60V clamping.

® Littlefuse, Inc.

Important Safety Instructions

1. Read these instructions.   **2.** Keep these instructions.

3. Heed all warnings. **4.** Follow all instructions.

5. WARNING: Do not use this apparatus near water. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

6. Clean only with dry cloth.

7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatuses that produce heat.

8. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades, with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

9. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

10. Only use attachments/accessories specified by the manufacturer.

11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

12. Where the power cord is used as the main disconnect device, the disconnect device shall remain readily accessible.

13. This device must be connected to a main socket outlet with a protective earthing connection.

The Bubble of Protection

Sample setup to indicate the basic configuration for a "Bubble of Protection".

Product Features Descriptions

DETAILED VIEW

DC Trigger Input

Network Connector

Network Reset Button:

LAN Cat 5e:

Coaxial Protection

LED Indicators

Reboot Button

Circuit Breaker

Mounting Brackets and Insulation Gaskets
Provide Electrical Insulation from the Rack

AC Outlet Banks 1-4
Single Outlet Banks
Spacing Between Outlets to Accommodate Wall Warts/Transformers

Outlet Bank Status Indicators:
One for each outlet bank, if illuminated power outlet is on.

AC Outlet Banks 5-8   12 AC Outlets Total
Two outlets Each

LAN Cat 5e (10/100/1000BASE-T compatible):
RJ-45 (8P8C) Ethernet protection pass-through. Note: The incoming ethernet cable use must be connected to the VT4315-PRO in order to qualify the system for Panamax's connected equipment policy.

DC Trigger Input:
Connect to a remote trigger device that uses a DC output to trigger a start-up/shutdown sequence. 3.5mm mono jack, ± (5-24 VDC max) tip-ring.

Network Connector:
Connect an Ethernet cable between the NETWORK port and an Internet router or modem with an established Internet connection for remote control and monitoring.

Network Reset Button:
Press using a safety pin, ball point pen or other small object to reset connection to BlueBOLT cloud. Press for 10 seconds to restore factory default settings.

Coaxial Protection:
Provides two pairs of protection for coaxial (cable/satellite) signal lines. Universal voltage (±75V clamping), 4K ready, <0.5 dB @ 0 Hz – 3.0 GHz. Note: The VT4315-PRO's coaxial connectors are 4K/high bandwidth ready with minimal insertion loss. The incoming coaxial cables must be connected to the VT4315-PRO in order to qualify

Reboot Button:
Pressing this button will reboot all outlets on the VT4315-PRO. Press button for 10 seconds to turn all outlets on or off.

Circuit Breaker:
Automatically trips when the load exceeds 15 amps. Push to reset.

LED Indicators:
UNSAFE VOLTAGE: Indicates status of the VT4315-PRO's AVM (Automatic Voltage Monitoring) feature. If the line voltage is less than 95 Vac or greater than 134 Vac, the outlets will shut off and the indicator will flash red. Power will automatically be restored when voltage returns to a safe level.

POWER ON: Indicates outlet ON/OFF status. Note: Check status indicators for individual outlet banks to determine if power is on or off for each bank. Flashes during active turn-on and turn-off sequence.

PROTECTION OK: Indicates status of the VT4315-PRO's Protect-or-Disconnect surge protection feature. If under normal operating conditions and the PROTECTION OK LED is off, contact Panamax technical support.

BlueBOLT: Indicates status of BlueBOLT connection.

OFF: Not connected to an active local area network (LAN) or no assigned IP address.

BLINKING GREEN: Attempting to assign IP address.
GREEN: Connected to an active LAN, but cannot contact the Blue-BOLT server/cloud.

BLINKING BLUE: Attempting to contact BlueBOLT.
BLUE: Connected to an active LAN and is connected to the BlueBOLT server/cloud.

8 Ft. Power Cord with NEMA 15A Straight Plug

Note: You will need the VT4315-PRO's unique **MAC ADDRESS** and **CHALLENGE KEY** (duplicate labels provided in packaging on cover of Quick Start Guide as well as on the underside of the unit itself) in order to register the BlueBOLT™ device

SYSTEM SETUP #1
Network Equipment Powered by VT4315-PRO
(devices in same room)

Step 1. Connect the power supply for the modem/router into the VT4315-PRO.

Step 2. Connect the coaxial line or telephone DSL line from the wall, to VT4315-PRO signal line pass-through protection circuits.

Step 3. Route coaxial cable line or telephone DSL line from the VT4315-PRO back to modem/router's input.

Step 4. Connect Ethernet cable from router/modem to BlueBOLT input on VT4315-PRO.

Step 5. Plug in VT4315-PRO.
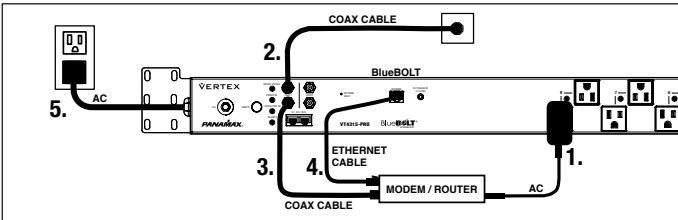
BlueBOLT Online Registration

Note: Make sure to complete system setup #1 or # 2 before registering.

Step 1. Log into **http://www.mybluebolt.com** for online registration.

Your BlueBOLT® enabled VT4315-PRO Power Management Component is completely plug-and-play and does not require any software installation or network configuration (including configuring of network ports).
The online BlueBOLT® control interface is operated through your web browser.

Step 2. Using any Internet connected computer go to www.mybluebolt.com in your standard Internet browser. Please make sure your browser is up to date with the latest software for best BlueBOLT interface performance.

Step 3. Follow the on screen instructions to create an account and/or take control of your BlueBOLT enabled product.

Once you input the **MAC ADDRESS** and included **CHALLENGE KEY**, if BlueBOLT™ cannot detect your device (please allow up to 60 seconds), please follow the on-screen troubleshooting guide. Also confirm an Internet connection by accessing a general website – example www.panamax.com.

SYSTEM SETUP #2
Network Equipment NOT-Powered by VT4315-PRO
(devices in separate rooms)

Step 1. Connect network Ethernet cable from PoE/network adapter or wall plate to the Ethernet pass-through protection port on VT4315-PRO.

Step 2. Connect second Ethernet cable from pass-through protection port to Ethernet/ BlueBOLT input..

Step 3. Power on VT4315-PRO. (Note: adding a device to your home/office network may require a power cycle of the router/modem to establish connection.
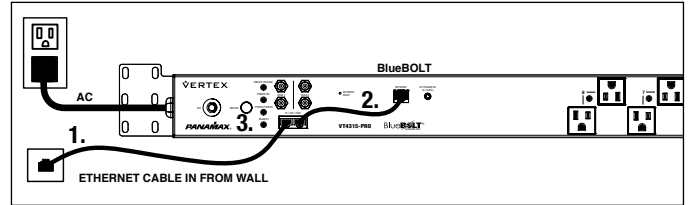
Troubleshooting

Q. Is your Power Management Component receiving power?
A. Check the power cable and confirm the unit's breaker has not been tripped.

Q. Is your Internet connection functioning?
Q. Can you access a general web page?
Q. Is your VT4315-PRO connected to your internet router or modem?
A. Check the Ethernet cable and confirm that the unit is connected to an active Internet connection, and make sure those connected devices are receiving power.

If you have answered "Yes" to all of these questions and are still unable to connect your VT4315-PRO component, please contact Panamax customer service at 1-800-472-5555.

ADVANCED OPERATION

VT4315-PRO provides a built-in HTTP (web page server at default port 80) which can be accessed via a typical "web page browser" allowing the user to configure the network settings.

- DHCP or static IP address assignment
- IP address
- Subnet mask
- Gateway Address
- DNS server Address 1

On start-up, VT4315-PRO will use two IP addresses on its Ethernet connection:

1. A random link-local address can be discovered by link-local utilities such as the Bonjour zero-configuration networking utility by Apple.
2. A local network address, either statically assigned, or from DHCP. If the address was assigned by DHCP it can be discovered by inspection of your router's connected devices table.

In addition to providing external access and control via Panamax/Furman's hosted BlueBOLT platform, VT4315-PRO may also be interfaced to control and automation systems on the local area network. Command, information and event messages are provided in standard XML format over UDP port 57010.

Go to page 7 for details on the messaging protocol.

POWER CYCLE AND OUTLET SEQUENCING

The outlet banks of the VT4315-PRO are configured to turn on and off in a programmed sequence where each outlet bank has a set of programmed delay times.

The delay times are pre-programmed but may be changed on the BlueBOLT web site or by issuing the <set> command to the Ethernet port (see the Advanced Operation section for details). The default configuration is:

Outlet Bank	Power Cycle Delay	Turn On Delay	Turn Off Delay	Trigger Enable
1	30 seconds	0 seconds	10 seconds	Enabled
2	30 seconds	0 seconds	10 seconds	Enabled
3	30 seconds	10 seconds	0 seconds	Enabled

Power Cycle Delay: When a Power Cycle is initiated, the outlet bank will immediately turn off and then turn back on after the **Power Cycle Delay** time

Turn On Delay: When a Turn On Sequence is initiated, the outlet bank will turn ON after the **Turn On Delay** time.

Turn Off Delay: When a Turn Off Sequence is initiated, the outlet bank will turn OFF after the **Turn Off Delay** time.

Trigger Enable: When enabled, the outlet bank will switch ON or OFF during a sequence initiated by the DC trigger or a <sequence> command received on the Ethernet port. During a turn on sequence following power-up or recovery from a fault condition, the outlets will return to their pre-fault power state regardless of the DC trigger status.

A turn-on sequence is initiated upon power-up, recovery from a fault condition, the DC trigger input going from 0V to 5-24VDC or by the <sequence> command received on the Ethernet port.

When the VT4315-PRO is powered-up, recovering from an over-voltage shutoff or recovering from an under-voltage shutoff, the outlet banks will return to their pre-fault ON/OFF state after the programmed *Turn On Delay* time.

When the DC trigger input goes from 0V to 5-24VDC or the <sequence> command is received on the Ethernet port, the outlet banks that are trigger-enabled turn on after the programmed *Turn On Delay* time.

A turn-off sequence is initiated by the DC trigger input going from 5-24VDC to 0V or by the <sequence> command received on the Ethernet port.

VT4315-PRO Specifications

AC POWER	
Operating Voltage	120VAC / 60Hz
Current Capacity	15 A
UL 1449 Voltage Protection Rating	400V L-N, 400V L-G, 500V N-G
UL 1449 Nominal Discharge Current	3,000A
Initial Clamping Level	200V
Energy Dissipation	1,575 Joules (8/20µs)
Overvoltage shutoff	134 Vac ± 2 Vac
Undervoltage shutoff	95 Vac ± 2 Vac
EMI / RFI Noise Filtration	-13.8dB @ 10kHz
	-41.0dB @ 100kHz-
	-43.9dB @ 1MHz

Specifications subject to change due to product upgrades and improvements.

LAN PROTECTION	
Connectors	RJ-45 Cat 5e
Wires protected	8-wires
Compatibility	Gigabit, 10/100/1000BASE-T
Clamping Level	60V

UNIVERSAL COAX PROTECTION	
Connectors	Female "F", Gold-plated
Insertion loss	<0.5dB (0Hz-2.2GHz)
	<3dB (2.2GHz-3GHz)
Frequency Range	0Hz – 3GHz
Clamping Level	75V

DC Trigger Input	
Voltage and Polarity	5 – 24VDC, bidirectional
Jacks	3.5mm (1/8") mono mini-plug

Identify Connected Equipment

Use this diagram to write in what pieces of equipment are plugged into each outlet for an easy reference.

OUTLET

1. _____

2. _____

3. _____

4. _____

5A. _____

6A. _____

7A. _____

8A. _____

LAN _____

COAX 2_____

COAX 1_____

5B. _____

6B. _____

7B. _____

8B. _____
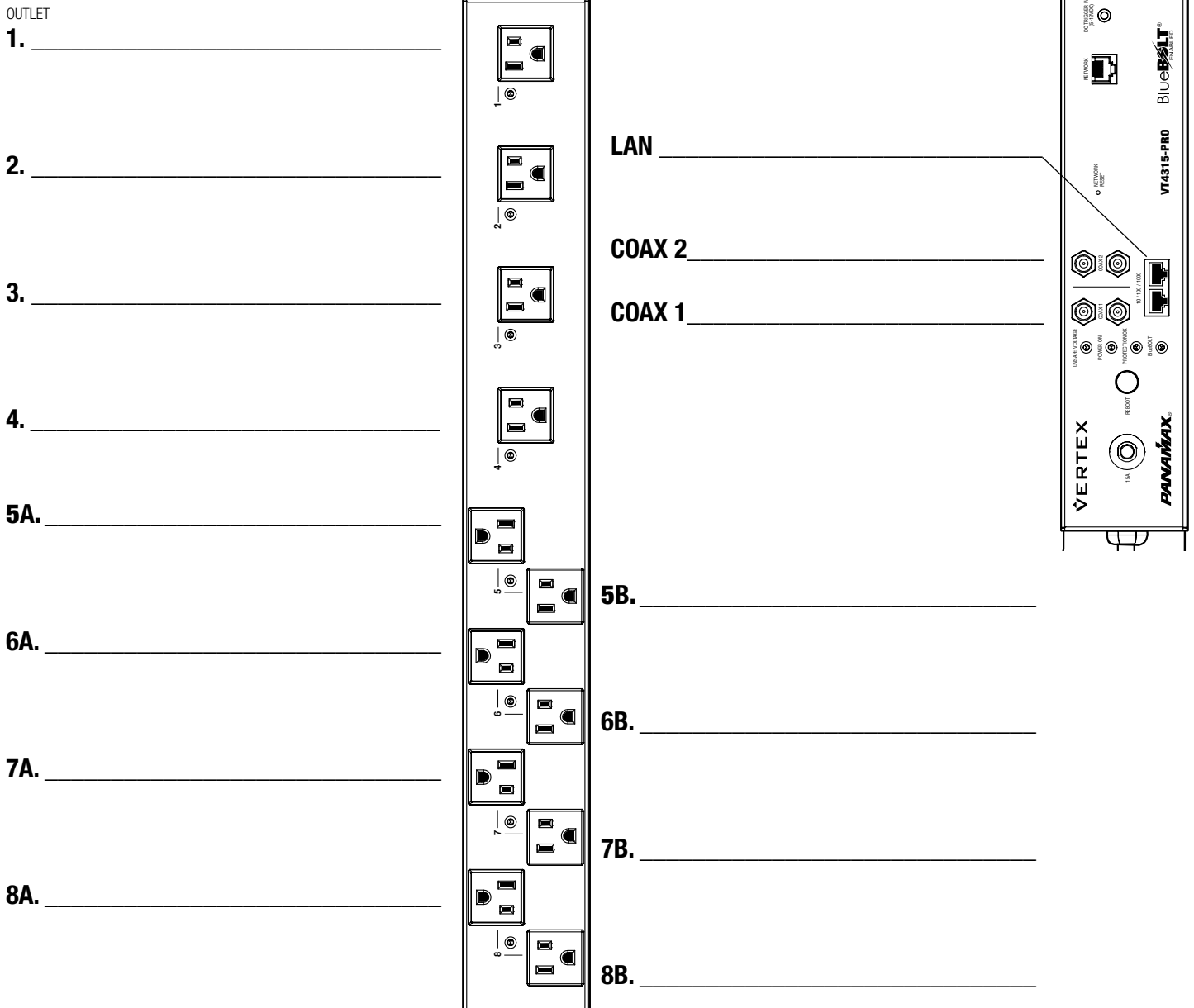
Additional Notes:

Name / Location of Installation

_____

_____

_____

_____

MAC ADDRESS __ __-__ __-__ __-__ __-__ __-__ __

CHALLENGE KEY __ __ __ __-__ __ __ __-__ __ __ __

Phone Number(s)

_____

_____

Advanced Operation:

The VT4315-PRO can be interfaced to control and automation systems on the local area network. All messages are encapsulated in standard XML format, and are sent and received over UDP port 57010. The XML version declaration, <?xml version="1.0" ?>, is at the start of each message. Each message must have a single root element. Messages that do not conform to the standard will be ignored. A convenient way to test messages is the UNIX tool "netcat".

The root element for all our messages is named device. The device element must have two attributes, class and id. The class attribute specifies the type of device (model) and must be "vt4315". The id attribute is the unique device ID (its Ethernet MAC address), expressed with lower case letters, and no formatting. An example message would thus look like:

```
<?xml version="1.0" ?><device class="vt4315" id="1065a3050000">…</device>
```

This would be considered the "envelope" for all messages, where the "…" is to be considered the "contents" of the message.

Since all messages include the "envelope", message details will only document the "contents".

Message Types
There are three types of messages: command messages, response messages and event messages.

1. Command Messages
Command messages are sent to the VT4315-PRO to have it perform a task. The task can be to perform a physical action such as switching an outlet bank and is referred to as an action. When the task is to transmit data such as device status it is referred to as a query. Whether the task is an action or query, the message is classified as a command, and is contained within the <command> element.

Example Action Command Message - switch outlet bank 2 to OFF:

```
<?xml version="1.0" ?>
<device class="vt4315" id="1065a3050000">
<command><outlet id="2">0</outlet></command>
</device>
```

By default, the VT4315-PRO does not respond to action command messages.

Example Query Command Message – send information

```
<?xml version="1.0" ?>
<device class="vt4315" id="1065a3050000">
<command><sendinfo/></command>
</device>
```

2. Response Messages
In response to a query command, the VT4315-PRO will send a reply message. The contents part of the message will be a set of elements enclosed in either the <info>, <status> or <settings> element, depending on the query.

Example Response Message- response to "sendinfo" query command:

```
<?xml version="1.0" ?>
<device class="vt4315" id="1065a3050000">
<info time="1234567890">
<sernum>PAVT4315PRO0X142160000000</sernum>
<fwver>1.0.0.12520</fwver>
<bootcodever>1.0</bootcodever>
<ipaddr>3194548209</ipaddr>
<coprocfwver>1.0.0.12520</coprocfwver>
<coproclot>1300795003</coproclot>
<coprocdiex>5</coprocdiex>
<coprocdiey>42</coprocdiey>
<coproctest>65272</coproctest>
</info>
</device>
```

Advanced Operation

Response messages can be used to verify command message delivery. If a verifiable response message is desired from the VT4315-PRO, the optional "xid" attribute is included in the <command> element. All command messages with the "xid" attribute expressed will return a response message with the same "xid" attribute value enclosed in an <ack> element. This "xid" value can then be used to match responses to their corollary commands.

Example 1:

Action Command Message with xid –

```
<?xml version="1.0" ?><device class="vt4315" id="1065a3050000">
<command xid="123"><outlet id="1">0</outlet></command></device>
```

Response Message with ack –

```
<?xml version="1.0" ?><device class="vt4315" id="1065a3050000"><ack xid="123"></device>
```

Example 2:

Query Command Message with xid –

```
<?xml version="1.0" ?><device class="vt4315" id="1065a3050000">
<command xid="456"><sendinfo/></command></device>
```

Response Message with ack –

```
<?xml version="1.0" ?><device class="vt4315" id="1065a3050000">
<info>…</info><ack xid="456"></device>
```

3. Event Messages

Event messages are sent when a change of device status or settings occurs. The <event> element is used to contain the details of the event. Note that events are not sent in reply to a query command.

Example Event Message - outlet bank 3 switched to ON:

```
<?xml version="1.0" ?>
<device class="vt4315" id="1065a3050000">
<event time="1403729752" evtid="123" subsid="1">
<outlet id="3">1</outlet>
</event>
</device>
```

Common Attributes

Some message elements will include a timestamp attribute "time". The timestamp is in standard UNIX time, up to 10 decimal digit characters and represents the number of seconds that have passed since January 1st 1970 GMT.

Some message elements involve a group of outlets. Outlet group values are given as hexadecimal digits, representing which outlets participate in the group. A group value is encoded in a 8-bit binary bitmap, using the hexadecimal digits. To process the data it must be converted from hexadecimal to binary, where each bit represents an outlet participating in the group. Bit 0 represents outlet #1. The following table should help clarify.

Outlet number	Outlet group hex code	Binary
1	1	00000001
2	2	00000010
3	4	00000100
4	8	00001000
5	10	00010000
6	20	00100000
7	40	01000000
8	80	10000000
1 through 8 (i.e., all eight outlets)	ff	11111111
1, 3, 6 and 7 (i.e., four outlets)	65	01100101

Settings-related messages (i.e., <sendsettings> query, <set> action, and <set> event) contain the same content fragment format:

```
<dlys>
<dly id="1" sf="8" so="1" cy="10"/>
<dly id="2" sf="7" so="2" cy="10"/>
<dly id="3" sf="6" so="3" cy="5"/>
<dly id="4" sf="5" so="4" cy="10"/>
<dly id="5" sf="4" so="5" cy="10"/>
<dly id="6" sf="3" so="6" cy="10"/>
<dly id="7" sf="2" so="7" cy="15"/>
<dly id="8" sf="1" so="8" cy="10"/>
</dlys>
<grps>
<sq>ff</sq>
<cy>f3</cy>
</grps>
```

Details -

Element	Description
dlys	required delays container.
dly	outlet bank delays - attributes represent: "id" = outlet number, "sf" = power sequence off delay, "so" = power sequence on delay, "cy" = power cycle delay. All delays values are in seconds, 255 seconds maximum.
grps	required groups container.
sq	opt-in/opt-out of sequence group: hexadecimal value represents which outlet banks participate in power sequence group. See above for details.
cy	opt-in/opt-out of power cycle group: hexadecimal value represents which outlet banks participate in power cycle group. See above for details.

Advanced Operation

Query Commands

Send Information Query
The Send Information query is used to retrieve general information about the device. Response information elements are enclosed in the <info> element.

Query –

```
<sendinfo/>
```

Sample Response –

```
<info time="1234567890">
<sernum>PAVT4315PRO0X142160000000</sernum>
<fwver>1.0.0.12520</fwver>
<bootcodever>1.0</bootcodever>
<ipaddr>3194548209</ipaddr>
<coprocfwver>1.0.0.12520</coprocfwver>
<coproclot>1300795003</coproclot>
<coprocdiex>5</coprocdiex>
<coprocdiey>42</coprocdiey>
<coproctest>65272</coproctest>
</info>
```

Details -

Element	Description
sernum	serial number of the product.
fwver	version of firmware running on the master processor.
bootcodever	version of boot loader firmware running on the master processor.
ipaddr	Internet Protocol address in use, decimal value.
coprocfwver	version of firmware running on the co-processor.

All other elements are for Core Brands use only.

Send Status Query
The Send Status query is used to retrieve the device status. Response status elements are enclosed in the <status> element.

Query –

```
<sendstatus/>
```

Sample Response –

```
<status time="1234567890">
<voltage>119.14</voltage>
<voltpeak time="0">0.00</voltpeak>
<amperage>0.00</amperage>
<wattage>0.00</wattage>
<pwrva>0.15</pwrva>
<pwrfact>0.00</pwrfact>
<pwrcond>0</pwrcond>
<seq>0</seq>
<cycprog>0</cycprog>
<coprocop>1</coprocop>
<coproccrcerrs>0</coproccrcerrs>
<crcerrs>2</crcerrs>
<triggersense>0</triggersense>
<trigger>0</trigger>
<outlet id="1">1</outlet>
<outlet id="2">1</outlet>
<outlet id="3">1</outlet>
<outlet id="4">1</outlet>
<outlet id="5">1</outlet>
<outlet id="6">1</outlet>
<outlet id="7">1</outlet>
<outlet id="8">1</outlet>
<tfilestate len="0" chk="4294967295" mtime="4294967295" busy="0" lock="0" url="" />
</status>
```

Details -

Element	Description
voltage	measured RMS line voltage, 1 Vac precision.
voltpeak	measured peak voltage, 1 Vac precision. "time" attribute represents time of occurrence.
amperage	measured total load current, 0.1 Ampere precision.
wattage	measured total power consumption, 1 Watt precision.
pwrva	measured volt-ampere consumption, 1 VA precision.
pwrfact	measured load power factor, 0.01 precision.
pwrcond	power condition: 0 = normal; 1 = fault recovery; 2 = under voltage; 3 = over voltage.
seq	power sequence state: 0 = no sequence; 1 = sequencing ON; 2 = sequencing OFF.
cycprog	group power cycle operation state: 0 = no cycle in progress; 1 = cycle in progress.
triggersense	DC trigger input sense: 0 = no signal cable connected; 1 = signal cable connected.
trigger	DC trigger input state: 0 = voltage not sensed; 1 = voltage sensed.
outlet	outlet bank state: 0 = outlet OFF; 1 = outlet ON. "id" attribute's decimal value represents outlet number.

All other elements are for Core Brands use only.

Send Settings Query

The Send Settings query is used to retrieve the device configuration settings. Response settings elements are enclosed in the <settings> element.

Query –

```
<sendsettings/>
```

Advanced Operation

Sample Response –

```
<settings time="1234567890">
… (see Common Attributes section) …
</settings>
```

Details -

Element	Description
settings	device configuration settings. See Common Attributes section for details.

Action Commands

Switch Outlet Bank Action
The Switch Outlet Bank action is used to turn ON or turn OFF an outlet bank.

Sample Action –

```
<outlet id="2">0</outlet>
```

Details -

Element	Description
outlet	switch outlet bank: 0 = outlet OFF; 1 = outlet ON. The "id" attribute indicates which outlet, decimal number 1-8.

Switch Outlet Group Action
The Switch Outlet Group action is used to turn ON or turn OFF an outlet group.

Sample Action –

```
<outlets grp="c3">1</outlets>
```

Details -

Element	Description
outlets	switch outlet group: 0 = outlets OFF; 1 = outlets ON. The "grp" attribute indicates which outlets participate in the group, using hexadecimal digits. See Common Attributes section for details.

Cycle Outlet Bank Action
The Cycle Outlet Group action is used to power cycle an outlet group. Each outlet bank's power cycle delay is defined in the device configuration settings. See Common Attributes section for details.

Sample Action –

```
<cycleoutlet id="2"/>
```

Details -

Element	Description
cycleoutlet	power cycle outlet bank. The "id" attribute indicates which outlet, decimal number 1-8.

Cycle Outlet Group Action

The Cycle Outlet Group action is used to power cycle an outlet group. Each outlet bank's power cycle delay is defined in the device configuration settings. See Common Attributes section for details.

Sample Action –

```
<cycleoutlets grp="c3"/>
```

Details -

Element	Description
cycleoutlets	power cycle a group of outlets. The "grp" attribute indicates which outlets participate in the group, using hexadecimal digits. See Common Attributes section for details.

Sequence Action

The Sequence action is used to initiate a power sequence of an outlet group. The power sequence outlet group and each outlet bank's sequence on and sequence off delays are defined in the device configuration settings. See Common Attributes section for details.

Sample Action –

```
<sequence>0</sequence>
```

Details -

Element	Description
sequence	power sequence outlet group: 0 = power OFF sequence; 1 = power ON sequence.

Reboot Action

The Reboot action is used to initiate a reboot of the master processor, equivalent of pressing the Network Reset button.

Sample Action –

```
<reboot/>
```

Details -

Element	Description
reboot	reboot master processor.

Set Settings Action

The Set Settings action is used to change one or more of the device configuration settings. All settings within the <set>…</set> are affected. It is not necessary to include all of the setting elements when using this command.

Sample Action – change only the delays for outlet bank 1

```
<set>
<dlys>
<dly id="1" sf="8" so="1" cy="10"/>
</dlys>
</set>
```

Details -

Element	Description
set	set device configuration settings. See Common Attributes section for details.

Advanced Operation

Subscribe Action

The Subscribe action is used to subscribe to device events.

Sample Action –

```
<eventmgr>
<subscribe uri="ctrlsys://127.0.0.1:12345"/>
</eventmgr>
```

Details -

Element	Description
eventmgr	required container.
subscribe	subscribe to device events. "uri" attribute is formatted as "ctrlsys://IPADDR:PORT", where IPADDR:PORT is the Internet Protocol address and UDP port number where event messages should be sent. It may be a different IP address than the control system which sent the request.

NOTE: Only one IP address / port event subscription is allowed.

Unsubscribe Action

The Subscribe action is used to unsubscribe to device events.

Sample Action –

```
<eventmgr>
<unsubscribe uri="ctrlsys://127.0.0.1:12345"/>
</eventmgr>
```

Details -

Element	Description
eventmgr	required container.
unsubscribe	unsubscribe to device events. "uri" attribute is formatted as "ctrlsys://IPADDR:PORT", where IPADDR:PORT is the Internet Protocol address and UDP port number where event messages have been sent. It may be a different IP address than the control system which sent the request.

Events

By default, the VT4315-PRO will not send any event messages. To receive event messages a Subscribe Action must be sent after each device reset, reboot or power up. See Subscribe Action section for details.

Event messages will be repeated by the device until an acknowledgement message is sent back to the VT4315-PRO, or after a timeout period of approximately 20 minutes. The acknowledgement message must contain the same "evtid" and "subsid" attribute values as the event message.

Sample Acknowledgement Message –

```
<eventmgr>
<ack evtid="123" subsid="1">
</eventmgr>
```

Details -

Element	Description
eventmgr	required container.
ack	acknowledgement of device event. "evtid" attribute represents device event number, "subsid" attribute represents subscriber number. Both attributes must contain the same values as the event message.

Outlet Bank State Event

The Outlet Bank State event is posted when an outlet bank changes from ON to OFF, or vice versa.

Sample Event –

```
<outlet id="1">1</outlet>
```

Details -

Element	Description
outlet	outlet bank state: 0 = outlet now OFF; 1 = outlet now ON. The "id" attribute indicates which outlet changed state, decimal value 1-8.

Sequence Event

The Sequence event is posted when a power on or power off sequence is initiated or completed.

Sample Event –

```
<seq>2</seq>
```

Details -

Element	Description
seq	power sequence state: 0 = sequence completed; 1 = sequence ON initiated; 2 = sequence OFF initiated

Power Condition Event

The Power Condition event is posted when device enters or recovers from over-voltage or under-voltage shutdown mode.

Sample Event –

```
<powercond>3</powercond>
```

Details -

Element	Description
powercond	power condition: 0 = now normal; 1 = now fault recovery; 2 = now under voltage; 3 = now over voltage.

DC Trigger Jack Sensed Event

The DC Trigger Jack Sensed event is posted when a signal cable connecter is inserted into or removed from the device's DC trigger input jack.

Sample Event –

```
<triggersense>0</triggersense>
```

Details -

Element	Description
triggersense	DC trigger input sense: 0 = signal cable now disconnected; 1 = signal cable now connected.

DC Trigger Voltage Event

The DC Trigger Voltage event is posted when the device's DC trigger input voltage changes.

Sample Event –

```
<trigger>1</trigger>
```

Details -

Element	Description
trigger	DC trigger voltage: 0 = voltage now sensed OFF; 1 = voltage now sensed ON.

Advanced Operation

Settings Event

The Settings event is posted when the device's configuration settings change. Information for all settings is transmitted, not just for the individual settings that changed.

Sample Event –

```
<set>
… (see Common Attributes section) …
</set>
```

Details -

Element	Description
set	device configuration settings. See Common Attributes section for details.

Scheduled Action Fired Event

A Scheduled Action Fired event is posted when the device performs a scheduled operation.

Sample Event –

```
<schedmgr>
<fire>
<day>127</day>
<min>775</min>
<command><outlet id="7">0</outlet></command>
</fire>
</schedmgr>
```

Details -

Element	Description
schedmgr	container identifies event as a scheduled action.
fire	container identifies scheduled action as fired.
day	the scheduled days of the week to fire the command. See table below for encoding details.
min	the scheduled minute of the day (since midnight) to fire the command.
command	container identifies the action command. See Action Commands section for details.

The <day> element represents the "daysofweek" value for the days of the week the action command is scheduled to fire. This element is a bit tricky in that the scheduled days are encoded in a 7-bit binary bitmap that is provided in decimal format. To process the data it must be converted from decimal to binary where each bit represents a day of the week the action command is scheduled. Bit 0 represents Thursday.

Scheduled day(s) of the week	days of week	Binary
Thursday	1	0000001
Friday	2	0000010
Saturday	4	0000100
Sunday	8	0001000
Monday	16	0010000
Tuesday	32	0100000
Wednesday	64	1000000
Monday – Friday	115	1110011
Saturday-Sunday	12	0001100

FCC Notice

Contacting Tech Support

This equipment 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 residential installation. 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. 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) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

(4) Consult the dealer or an experienced radio/TV technician for help. Any special accessories needed for compliance must be specified in the instruction.

CAUTION: A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used. Use only shielded cables to connect RS-232 devices to this equipment.

CAUTION: Any changes or modifications not expressly approved by the guarantee of this device could void the user's authority to operate the equipment.

If you require technical support or equipment service, please contact Panamax Tech Support at 800-472-5555. You may also email info@Panamax.com.

All equipment being returned for repair must have a Return Authorization (RA) number. To get an RA number, please call Panamax Tech Support.

Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.

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