



## **VP1-250X**

### **Single-Slot 3U Open-VPX Rugged SATA/SAS Disk Module**

## **USER'S MANUAL**

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## Disclaimer

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## Introduction

Phoenix International's VP1-250X Serial Attached SCSI (SAS)/Serial ATA (SATA) based VPX blade delivers high capacity, high performance data storage for military, aerospace and industrial applications requiring rugged, secure and durable mass data storage.

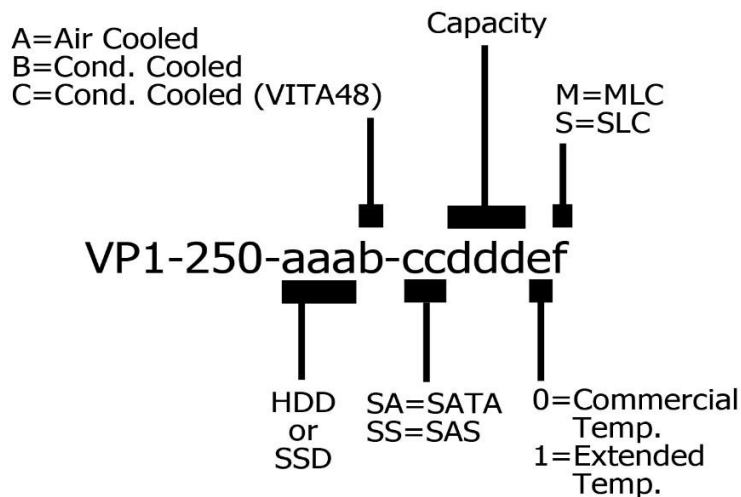
The VP1-250X is a 3U VPX storage module that can support either a rotating or solid-state hard drive. When used with supporting media, the VP1-250X supports the "purge" input signal to destroy the media or the "Zeroize" that performs a DOD approved erasure of the media.

The VP1-250X's outstanding performance and versatility is enabled by Phoenix International's state-of-the-art technology which provides very high transfer and I/O rates, enhanced endurance and maximum data integrity.

## Features

- Supports SAS or SATA Solid State Disk or Hard Disk Devices
- Conduction, REDI Conduction and Air Cooled Configurations
- Front Panel Drive Activity Indicator
- Remote Drive Activity Indicator
- Up to 80,000 Feet Operational Altitude
- Operational Temperature from -40° to 85°C
- Meets Military and IRIG 106-07 Declassification Standards
- Optional AES 256 Encryption
- Support for Purge, Zeroize, Triggered Write Protect, and Other Optional Features

## Part Number Key



## Module and Backplane Profile

The VP1-250X is compatible with the following VITA profile: MOD3-STO-1U-16.5.1-2

## Handling

To prevent damaging the module, be aware of the precautions you need to follow when handling or installing the module. A discharge of static electricity from a finger or other conductor may damage static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-protected workstations.
- Place parts in a static-protected area before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

### Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

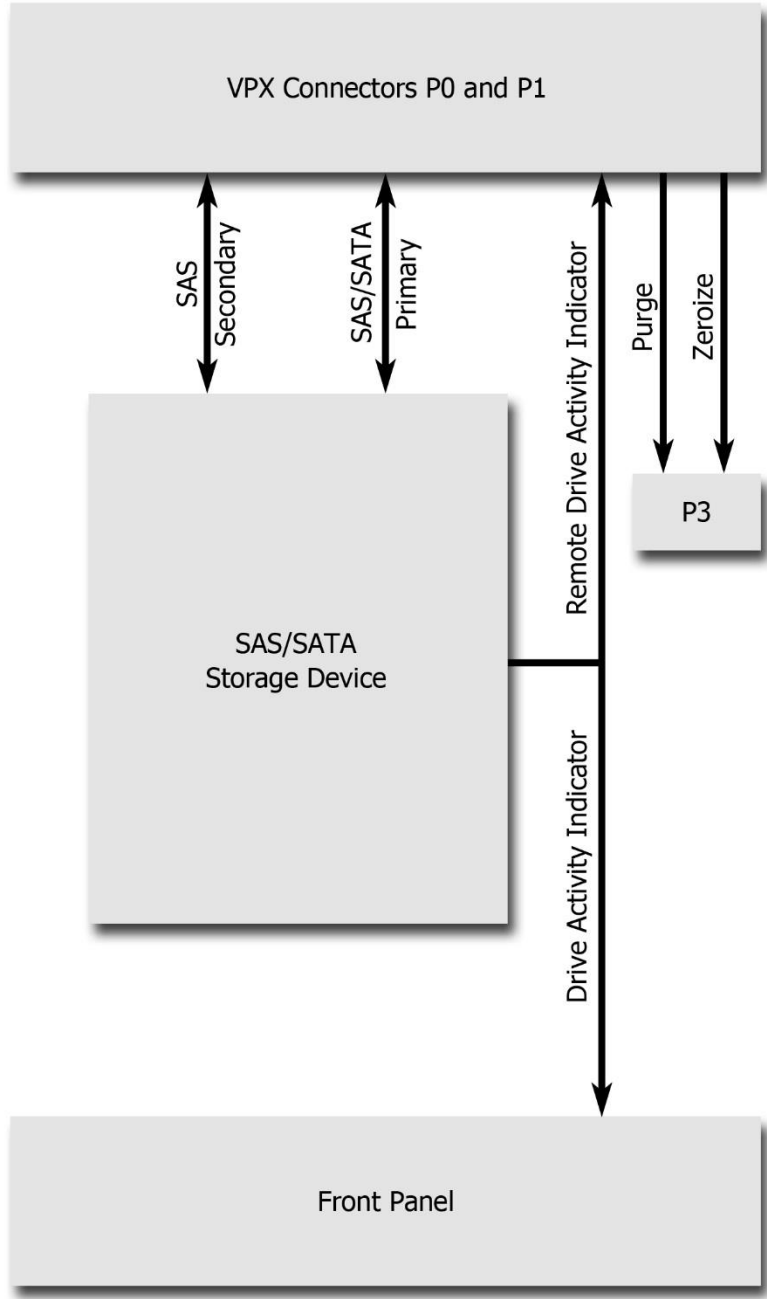
- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 Megaohm ( $\pm 10$  percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

## Installation

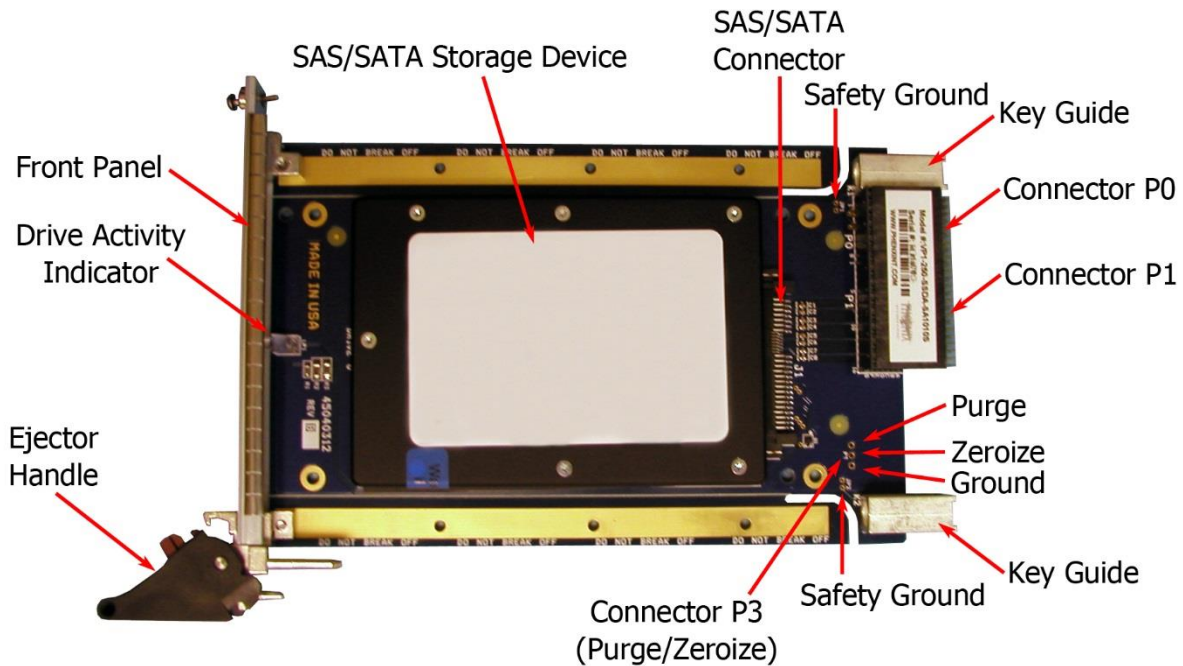
Ensure that all power is removed from the VPX backplane before inserting the module. Prior to inserting the VP1-250X into the card cage, it is necessary to verify the slot the module will be inserted into is compatible with the module. VPX modules are typically keyed to prevent the insertion of a module into the wrong card cage slot. The VP1-250X utilizes two guide modules with keying. In the standard configuration both guide modules are not keyed. Caution must be used to ensure the module is not inserted into a slot that will cause damage to either the module, the backplane, or any other device attached to the system. Guide module keying is available with no key, 0°, 45°, 90°, 270°, and 315°.

Considerations for airflow provided to the module are important. Ensure that proper airflow is provided to air-cooled modules. Conduction cooled modules should only be used in a properly configured conduction cooled card cage. Operation of a conduction cooled VPX module in an air cooled environment can result in overheating of the storage device.

# Functional Block Diagram



## Module Layout



## Option Configuration

Purge/Zeroize, PCB location P3:

The Purge and Zeroize connections are provided to allow for triggering optional features of an attached drive (dependent on drive capabilities). These connections, which are routed to the VPX P1 connector, are not limited to these functions. They can be utilized to take advantage of other drive dependent options such as write protect, or used for custom sensor or warning circuits.

Safety Ground, Jumpers JP1 & JP2:

By installing jumpers at locations JP1 and JP2 the ground plane of the VPX module will be connected to the VPX key guides. This allows for the option of connecting the VPX module ground plane directly to the VPX chassis ground plane.

## Connector Pin Definitions

VPX Connector P0:

P0	A	B	C	D	E	F	G
1	NC	NC	NC	NC	+12V	+12V	+12V
2	NC	NC	NC	NC	+12V	+12V	+12V
3	+5V	+5V	+5V	NC	+5V	+5V	+5V
4	NC	NC	GND	NC	GND	NC	NC
5	NC	NC	GND	NC	GND	NC	NC
6	NC	NC	GND	NC	GND	NC	NC
7	NC	NC	GND	NC	NC	GND	NC
8	GND	NC	NC	GND	NC	NC	GND

VPX Connector P1:

P1	A	B	C	D	E	F	G
1	NC	NC	GND	NC	NC	GND	NC
2	GND	NC	NC	GND	GND	NC	GND
3	NC	NC	GND	NC	NC	GND	NC
4	GND	NC	NC	GND	GND	NC	GND
5	NC	NC	GND	NC	NC	GND	NC
6	GND	NC	NC	GND	GND	NC	GND
7	NC	NC	GND	NC	NC	GND	NC
8	GND	NC	NC	GND	GND	NC	GND
9	RXP0_P	RXP0_N	GND	TXP0_P	TXP0_N	GND	DRIVE_LED
10	GND	NC	NC	GND	GND	NC	GND
11	NC	NC	GND	NC	NC	GND	PURGE
12	GND	NC	NC	GND	GND	NC	GND
13	RXS0_P	RXS0_N	GND	TXS0_P	TXS0_N	GND	ZEROIZE
14	GND	NC	NC	GND	GND	NC	GND
15	NC	NC	GND	NC	NC	GND	NC
16	GND	NC	NC	GND	GND	NC	GND

Connector P3:

Pin	Description
1	Purge
2	Zeroize
3	Ground

SAS/SATA Connector J1:

SAS/SATA Signal		SAS/SATA Power	
Pin	A	Pin	A
<b>S1</b>	GND	<b>P1</b>	NC
<b>S2</b>	RP+	<b>P2</b>	NC
<b>S3</b>	RP-	<b>P3</b>	NC
<b>S4</b>	GND	<b>P4</b>	GND
<b>S5</b>	TP-	<b>P5</b>	GND
<b>S6</b>	TP+	<b>P6</b>	GND
<b>S7</b>	GND	<b>P7</b>	+5V
<b>S8</b>	GND	<b>P8</b>	+5V
<b>S9</b>	RS+	<b>P9</b>	+5V
<b>S10</b>	RS-	<b>P10</b>	GND
<b>S11</b>	GND	<b>P11</b>	DRV_LED
<b>S12</b>	TS-	<b>P12</b>	GND
<b>S13</b>	TS+	<b>P13</b>	+12V
<b>S14</b>	GND	<b>P14</b>	+12V
		<b>P15</b>	+12V



## Specifications

### Physical:

Form Factor:

3U VPX bus 6.30" (160mm), 3.94" (100.0mm)

Module Interface:

SATA or SAS

Flammability:

UL94V-0 – PCB made in the USA by a UL recognized manufacturer

### Environmental:

Air Cooled Temperature:

0° to 55° C (Air flow requirement as measured to be greater than 200 LFM)

Conduction Cooled Temperature:

-40 to 85° C (Module MUST operate in a fully installed Conduction Cooled rack)

Conduction-cooled with REDI (Vita 48) covers Temperature:

-40° to 85° C (Module MUST operate in a fully installed Conduction Cooled, REDI cover rack)

Vibration:

1g<sup>2</sup>/Hz, 15Hz-2KHz random; 10g Peak, 15Hz-2KHz sine

Shock:

20Gs each axis, 40g Peak, Sawtooth @ 11mSec

Storage Temperature:

-55° to 105° C

Relative Humidity:

5 to 95 percent, noncondensing

MTBF:

24,800,000 Hours @ 25° C (without drive).

\* Must use a Solid State drive capable of temperature range and shock and vibration.

### Compliance Specifications:

The VP1-250X SATA/SAS Drive Module is designed to meet CE Emissions specification EN 55022, CE Immunity specification EN 50082-2 and FCC 47 CFR, Part 15, Class A when tested in a shielded enclosure. Meets VITA 46.0, 48.2 and 65: VPX System Specifications and Practices.

## Warranty and Support

### Warranty Statement

Phoenix International VPX products come with a “return-to-factory” warranty which covers defects in materials and workmanship for a period of three years from the date of product shipment to the customer, provided the product is unmodified and has been subject to normal and proper use. Warranty on non-Phoenix International manufactured devices incorporated into Phoenix VPX products is restricted to that provided by their manufacturer only.

### If You Have a Problem

If you are having a problem with a Phoenix International product, you should call our main number, (714) 283-4800, and ask for Customer Service. Please be prepared to supply as much detail as you can concerning the nature of the problem and the conditions in which the problem appeared.

### Obtaining an RMA

In order to return the product for repair, the following steps are necessary:

1. Obtain a Return Materials Authorization number (RMA#) from Phoenix International Customer Service.
2. Ship the product prepaid to the designated repair point.
3. Provide with the product a written description of the claimed defect.

### Shipping the Product

Any product returned to Phoenix International should be in its original shipping carton if possible. Otherwise the product should be carefully packaged in a conductive packing material and placed in a cushioned corrugated carton suitable for shipping. Please mark the shipping label with the RMA number and return it to:

Phoenix International  
812 W. Southern Avenue  
Orange, CA., 92865  
Attn: Customer Service Department  
RMA #: \_\_\_\_\_