

Specifications



NX500 Controller
VX1048 Switch
VX3048 Switch

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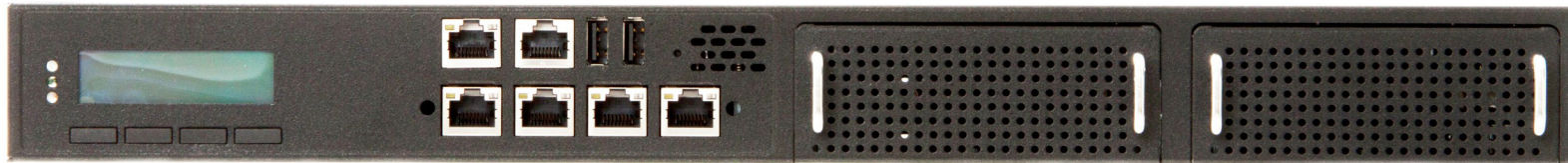
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1: NX500 Controller

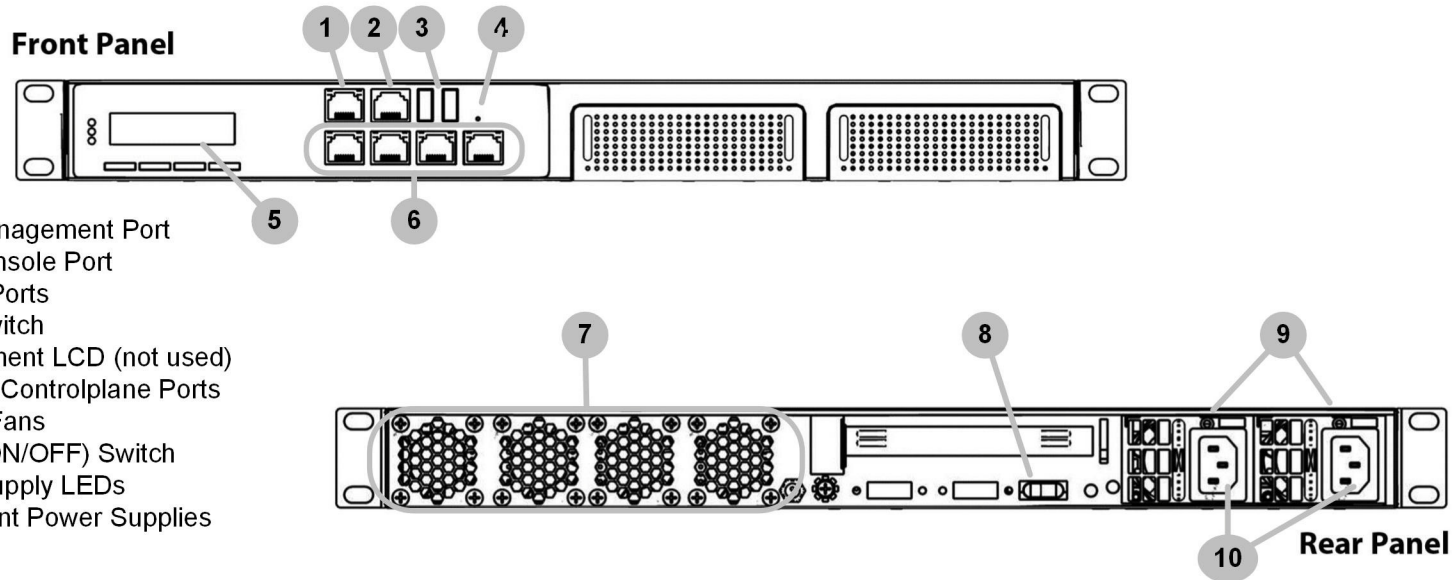


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NX500 Specifications

The NX500 Controller from Vello Systems, Inc. delivers increased performance enabling multiple capabilities to enhance connectivity, responsiveness and security. The NX500 is a low-power-consuming platform with the ability to operate as an enterprise-level appliance. The VellIOS resides on the NX500 and provides simplified network operations through a policy-driven architecture.

Physical Characteristics



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Highlights

- Intel Xeon E3-1225 3.10GHz processor
- 4xGbE (RJ45) OpenFlow control ports
- 1RU form factor
- Low power consumption

Specifications

Product Name	Vello NX500	
Product Number	NX500	
Product Brand	Vello NX	
Form Factor	Standard 19" 1RU rack mount	
Physical	Dimensions	431 x 44 x 550mm
	Weight	12kg (26.4 lbs)
Processor	Intel® Xeon e3-1225 @ 3.10GHz	
BIOS	AMI BIOS 64Mbit SPI Flash ROM	
OS Support	VellOS	
System Memory	8GB, with ECC (up to 16GB supported)	
Storage	60GB 2.5" SATA SSD (MLC)	
Networking	Controlplane (Ethernet) ports	4 x 1GbE RJ45
	Bypass	2 pairs G3
	Management port	1 x 1GbE RJ45

I/O Interface	Console port	1 x 1GbE RJ45
	Reset	<ul style="list-style-type: none"> • 1 x button • Software reset (default)
Cooling	Console	1 x RJ45
	USB	2 x USB 2.0
	Processor	CPU heatsink w/fan duct
Environmental	System	4x cooling fans with smart fan control
	Ambient temperature (operating)	0°~ 40°C (32° ~ 104°F)
	Ambient temperature (storage)	-20° ~ 70°C (-4° ~ 158°F)
Power	Humidity	5% - 95% (non-condensing)
	AC Type:	1U ATX redundant (275W each)
	AC Input	100-240V @ 50-60Hz
Approvals and Compliance	DC Type	1U 250W redundant
	DC Input	40-72V, 10-15A
		<ul style="list-style-type: none"> • CE (EN55022 & EN55024) • FCC • UL • CUL • CB

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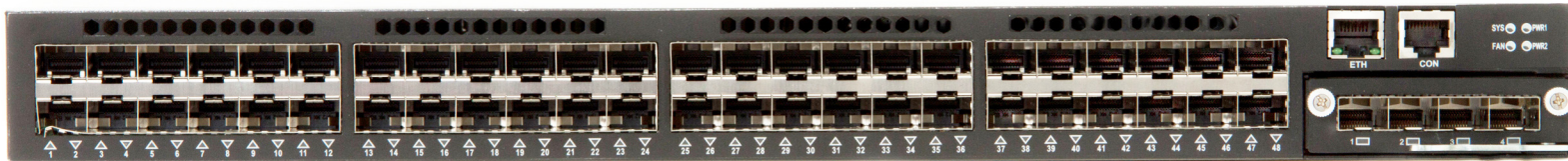
Field Replaceable Units

Vello is pleased to offer the following spare/replacement parts and accessories for the NX500 Controller:

Part Number	Management port
PWR-NX5-AC-1	AC power supply for Vello NX500 Controller
PWR-NX5-DC-1	DC power supply for Vello NX500 Controller
FAN-NX5-1	Fan for Vello NX500 Controller
ACS-KIT-NX5-1	Accessory kit, assorted parts for Vello NX500 Controller

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2: VX1048 Switch



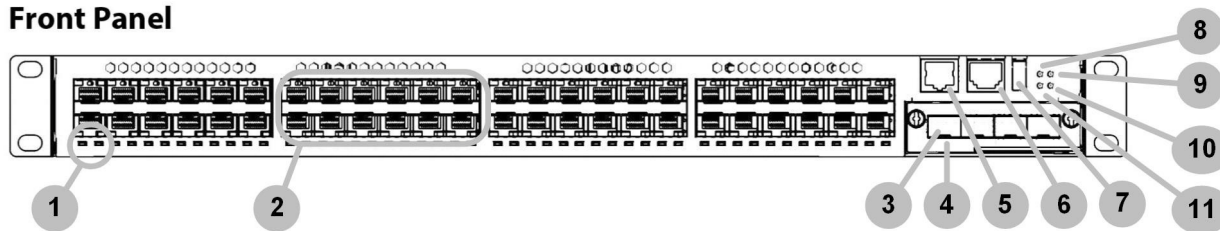
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VX1048 Specifications

Designed for high-availability datacenter environments, the Vello VX1048 Ethernet Forwarding Engine is a high-performance, OpenFlow-enabled 1RU 48-port 1GbE SFP switch with four 10GbE SFP+ uplinks that delivers non-blocking line-rate performance. The VX1048 meets the most demanding enterprise and cloud datacenter network scaling requirements while enabling network simplification by eliminating the need for various switches in different parts of the network.

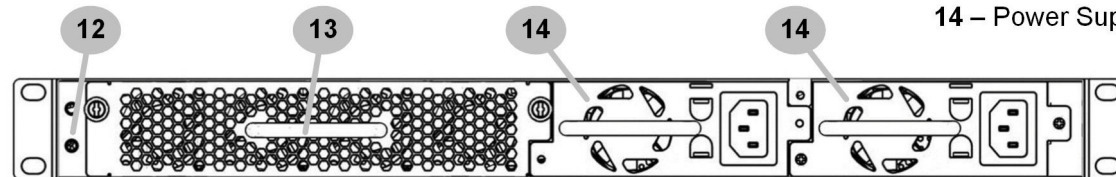
Physical Characteristics

Front Panel



- 1 – Port LEDs
- 2 – 10/100/1000Base-T Ports
- 3 – SFP+ Network Uplink Ports
- 4 – SFP+ Port Status LEDs
- 5 – RJ45 Management Port
- 6 – RJ45 Console Port
- 7 – USB Port
- 8 – System Status LED
- 9 – Power Supply 1 LED
- 10 – Power Supply 2 LED

- 11 – Fan LED
- 12 – Grounding Screw
- 13 – Fan Module
- 14 – Power Supply



Rear Panel

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Highlights

- OpenFlow-enabled
- 176Gbps line rate throughput
- 132Mbps packet forwarding rate
- 1.7 to 2.6µs latency (RFC2544)

Specifications

Product Name	Vello VX 1048	
Product Number	VX1048	
Product Brand	Vello VX	
Key Features	<ul style="list-style-type: none"> • OpenFlow-enabled • 176Gbps line rate throughput • 132Mbps packet forwarding rate • 1.7 to 2.6µs latency (RFC2544) • 8 priority queues per port 	
Form Factor	Standard 19" rack mount	
Physical	Dimensions	440 x 44 x 330mm
	Weight	6.4kg (14.1 lbs)
OS Support	VellOS	
System Memory	<ul style="list-style-type: none"> • 256MB system RAM • 32MB flash RAM 	
Networking	Ethernet ports	<ul style="list-style-type: none"> • 48 x 1GbE SFP • 4 x 10GbE SFP+
	Management port	1 x 1GbE RJ45

I/O Interface	Console	1 x RJ45 serial
	USB	1 x USB type A storage
Cooling	System	3+1 hot-swappable
Environmental	Ambient temperature (operating)	0° ~ 45°C (32° ~ 113°F)
	Ambient temperature (storage)	-40° ~ 70°C (-40° ~ 158°F)
	Humidity	5% - 95% (non-condensing)
Power	AC Type:	2 x load sharing hot-swappable
	AC Input	90-264V @ 50-60Hz
	DC Type	2 x load sharing hot-swappable
	DC Input	36-72V, 10-15A
Approvals and Compliance	<ul style="list-style-type: none"> • CE (EN55022 & EN55024) • FCC • VCCI • UL • CUL • CB 	
LEDs	<ul style="list-style-type: none"> • Speed & link/activity (per SFP) • Speed & link/activity (per SPF+) • Fan status 	

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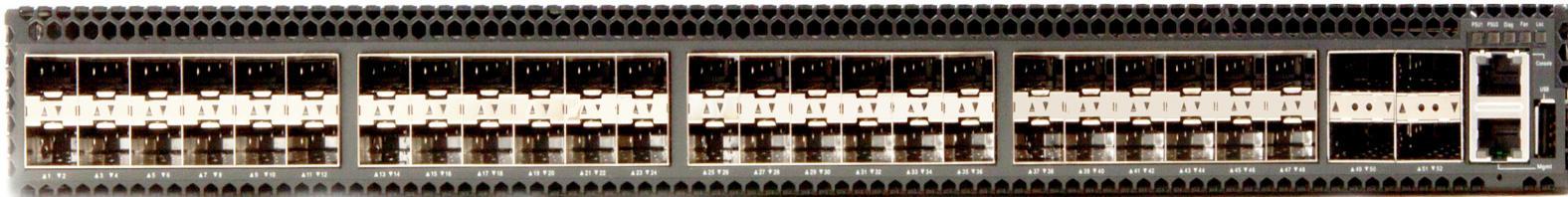
Field Replaceable Units

Vello is pleased to offer the following spare/replacement parts and accessories for the VX1048 switch:

Part Number	Management port
PWR-VX1-AC-1	AC power supply for Vello VX1048 switch
PWR-VX1-DC-1	DC power supply for Vello VX1048 switch
FAN-VX1-1	Fan tray for Vello VX1048 switch
ACS-KIT-VX1-1	Accessory kit, assorted parts for Vello VX1048 switch

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3: VX3048 Switch



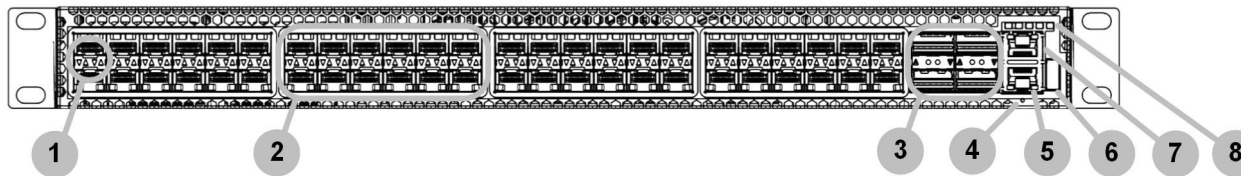
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VX3048 Specifications

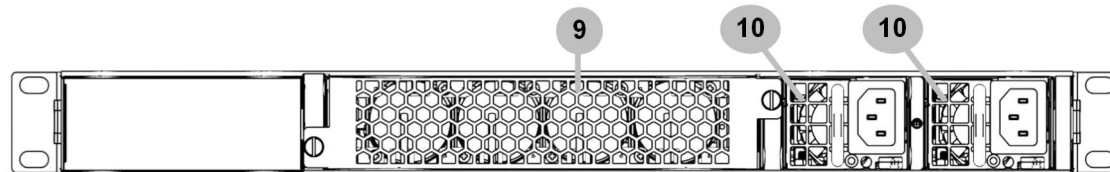
Designed for high-availability datacenter environments, the Vello VX3048 Ethernet Forwarding Engine is a high-performance, OpenFlow-enabled 1RU 48-port 10GbE SFP+ switch with four 40GbE QSFP+ uplinks that delivers non-blocking line-rate performance. The VX3048 meets the most demanding enterprise and cloud datacenter network scaling requirements while enabling network simplification by eliminating the need for various switches in different parts of the network.

Physical Characteristics

Front Panel



- 1 – Port LEDs
- 2 – 10G SFP+ Slots
- 3 – 40G QSFP+ Slots
- 4 – Reset Button
- 5 – RJ45 Management Port
- 6 – USB Port
- 7 – RJ45 Console Port
- 8 – System LEDs



Rear Panel

- 9 – Fan Tray Module
- 10 – Power Supply Modules

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Highlights

- High-density 1RU 10GbE switch powered by the VellIOS® network operating system
- 48 x 10GbE SFP+ ports, and 4 x 40GbE QSFP+ ports
- 1.28Tbps non-blocking line rate performance

Specifications

Product Name	Vello VX 3048	
Product Number	VX3048	
Product Brand	Vello VX	
Key Features	<ul style="list-style-type: none"> • OpenFlow-enabled • 1.28Tbps line rate throughput • 960Mbps packet forwarding rate • 860ns to 2.6µs latency (RFC2544) • 8 priority queues per port 	
Form Factor	Standard 19" rack mount	
Physical	Dimensions	440 x 44 x 470mm
	Weight	7.3kg (16.1 lbs)
OS Support	VellIOS	
System Memory	<ul style="list-style-type: none"> • 256MB system RAM • 32MB flash RAM 	
Networking	Ethernet ports	<ul style="list-style-type: none"> • 48 x 10GbE SFP+ • 4 x 40GbE QSFP+
	Management port	1 x 1GbE RJ45

I/O Interface	Console port	1 x RJ45 serial
	USB	1 x USB type A storage
	Reset	<ul style="list-style-type: none"> • 1 x button • Software reset (default)
Cooling	Console	1 x RJ45 serial
	USB	1 x USB type A storage
Environmental	System	3+1 hot-swappable
	Ambient temperature (operating)	0°~ 40°C (32° ~ 104°F)
	Ambient temperature (storage)	-40° ~ 70°C (-40° ~ 158°F)
	Humidity	5% - 95% (non-condensing)
Power	AC Type:	2 x load sharing hot-swappable
	AC Input	90-264V @ 50-60Hz, 3A
	DC Type	2 x load sharing hot-swappable
	DC Input	38-72V, 3-10

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Approvals and Compliance

- CE (EN55022 & EN55024)
- FCC
- VCCI
- UL
- CUL
- TUV
- GS

LEDs

- Speed & link/activity (per SFP+)
- Speed & link/activity (per QSFP)
- Fan status

Field Replaceable Units

Vello is pleased to offer the following spare/replacement parts and accessories for the VX3048 switch:

Part Number	Management port
PWR-VX3-AC-1	AC power supply for Vello VX3048 switch
PWR-VX3-DC-1	DC power supply for Vello VX3048 switch
FAN-VX3-1	Fan tray for Vello VX3048 switch
ACS-KIT-VX3-1	Accessory kit, assorted parts for Vello VX3048 switch

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4: Safety & Regulatory Info



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General Safety Precautions

Follow all of these precautions to avoid equipment damage and personal injury caused by improper use.



CAUTION: FAILURE TO COMPLY WITH ALL OF THE CAUTIONS IN THIS SECTION COULD CAUSE EQUIPMENT DAMAGE AND/OR PERSONAL INJURY.

- Always disconnect the power source before cleaning Vello devices.
- Do not use wet rags to wipe Vello devices.
- Never clean Vello devices with liquid.
- Do not place Vello devices near water or in a wet/humid environment.
- Prevent water or moisture from entering Vello devices.
- Do not place Vello devices on an unstable case or table.
- Maintain adequate space for free air circulation around Vello equipment.
- The room(s) where Vello equipment is located must have adequate ventilation equipment in place.
- Ensure that all Vello equipment is stored and operated within its stated environmental limits for temperature, humidity, and dust.
- All mounting equipment (such as racks, trays, or benches) must be structurally sound and able to support the Vello equipment.
- Ensure that all power supplied to Vello devices meets stated voltage, frequency, and amperage requirements.
- Ensure that the rack, equipment, and power cables are properly grounded in accordance with best practices and all applicable electrical codes.
- Never open an enclosure when the Vello devices is operating or when it is connected to power.
- Always wear anti-static gloves when replacing Vello NX500 Controller or VX1048/VX3048 switch parts to prevent static discharge that could damage the equipment.
- Use caution when lifting Vello devices, to avoid injury.
- The AC power supply system is a TN system that must be connected to a single-phase, 3-wire, grounded AC outlet.
- Keep Vello devices away from strong-power radio transmitting stations, radar transmitting stations, and high-frequency high-current devices.
- Use electromagnetic shielding when necessary, such as shielded interface cables.
- Run all cables indoors to prevent lightning damage.
- Vello VX1048 switches are Class 1 laser devices. Never stare into the optical interfaces directly, to prevent possibly permanent retina injury.

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Compliance and Safety Statements

This section contains mandatory regulatory and safety information.

Electromagnetic Compatibility

The Vello NX500 Controller, VX1048 switch, and VX3048 switch meet the following electromagnetic compatibility requirements:

FCC Class A

This equipment has been tested and found 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 generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

You may use unshielded twisted-pair (UTP) for RJ-45 connections - Category 3 or better for 10 Mbps connections, Category 5 or better for 100 Mbps connections, Category 5, 5e, or 6 for 1000 Mbps connections. For fiber optic connections, you may use 50/125 or 62.5/125 micron multi-mode fiber or 9/125 micron single-mode fiber.

CE Mark

CE Mark Declaration of Conformance for EMI and Safety (EEC)

This information technology equipment complies with the requirements of the Council Directive 2004/108/EC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 2006/95/EC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC.

- **RFI Emission:** Limit according to EN 55022:2010, Class A
- **Immunity:** Product family standard according to EN 55024:2010

Fiber Optic Port Safety Compliance Warning

When using a fiber optic port, never look at the transmit laser while it is powered on. Also, never look directly at the fiber TX port and fiber cable ends when they are powered on.

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Equipment Modifications

Unauthorized modifications to the Vello Systems equipment may require additional compliance verification testing to ensure the modified product continues to comply with applicable regulations. Any person or organization performing unauthorized modifications to this product assumes the responsibility and liability for insuring the modified product conforms to the applicable regulations and legal requirements.

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Limited Warranty

The Vello NX500 Controller, VX1048 switch, and VX3048 switch (the “Product”) are covered under a one-year product warranty from the date of purchase, subject to the following Warranty Information. This protects the Buyer from any defects or problems the product may have that are solely the fault of VELLO SYSTEMS, INC. Incorrect installation or misuse will void this warranty. Upon the return of a defective Product, VELLO SYSTEMS, INC. will, at its option, either repair or replace the Product.

Warranty Information

1. VELLO SYSTEMS, INC. warrants to the Buyer that the Product will be free from defects in material and workmanship and will perform in full accordance with applicable specifications when shipped. The limit of liability under this warranty is, at VELLO SYSTEMS, INC.’S option, to repair or replace any product or part thereof that shall, within ONE YEAR of purchase as determined by examination by VELLO SYSTEMS, INC., prove defective in material or workmanship.
2. Warranty returns must first be authorized in writing by VELLO SYSTEMS, INC. Prior to any return of Products by Buyer to VELLO SYSTEMS, INC., Buyer shall first (A) provide to VELLO SYSTEMS, INC. the serial number, Product code, model number, or part number (as applicable), number of original Purchase Order, and detailed reason for Product return, and (B) request a return material authorization (“RMA”) from VELLO SYSTEMS, INC. Upon receipt of the information listed in (A) of the preceding sentence from Buyer and determination by VELLO SYSTEMS, INC., at VELLO SYSTEMS, INC.’s sole discretion, that the conditions of this paragraph are fulfilled, VELLO SYSTEMS, INC. will issue an RMA. VELLO SYSTEMS, INC. shall not be obligated to accept returns unless VELLO SYSTEMS, INC. has issued an RMA.
3. Disassembly of any VELLO SYSTEMS, INC. Product by anyone other than an authorized representative of VELLO SYSTEMS, INC. voids this warranty in its entirety, with the sole exception of components replaced in accordance with the directions contained in this User Guide.
4. VELLO SYSTEMS, INC. reserves the right to make changes in any of its products without incurring any obligation to make the same changes on previously delivered products.
5. As a condition of the warranties provided for herein, the Buyer will prepay the shipping charges for any Product returned to VELLO SYSTEMS, INC. for repair and VELLO SYSTEMS, INC. will pay the return shipping with the exception of Product returned from outside the United States, in which case the Buyer will pay all shipping charges.
6. The Buyer will pay the cost of inspecting and testing any Product returned under the warranty or otherwise that is found to meet the applicable specifications or that is not defective or not covered by this warranty.

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7. Products sold by VELLO SYSTEMS, INC. shall not be considered defective or non-conforming to the Buyer's order if they satisfactorily fulfill the performance requirements that were published in the product specification literature, or in accordance with samples provided by VELLO SYSTEMS, INC. This warranty shall not apply to any Products or parts thereof that have been subject to accident, fire, lightning, negligence, alteration, abuse, misuse, improper installation and/or testing, unauthorized repair attempts, or other hazard. VELLO SYSTEMS, INC. makes no warranty whatsoever in respect to accessories or parts not supplied by it.
8. VELLO SYSTEMS, INC. does not warrant the accuracy or completeness of the information, text, graphics, links, or other items transmitted by the Product.
9. Limitations of Warranty, Damages and Liability: EXCEPT AS EXPRESSLY SET FORTH HEREIN, THERE ARE NO WARRANTIES, CONDITIONS, GUARANTEES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTIES, CONDITIONS, GUARANTEES OR REPRESENTATIONS, WHETHER EXPRESSED OR IMPLIED, IN LAW OR IN FACT, ORAL OR IN WRITING. VELLO SYSTEMS, INC'S AGGREGATE LIABILITY IN DAMAGES OR OTHERWISE SHALL NOT EXCEED THE PAYMENT, IF ANY, RECEIVED BY VELLO SYSTEMS, INC. FOR THE UNIT OF PRODUCT OR SERVICE FURNISHED OR TO BE FURNISHED, AS THE CASE MAY BE, THAT IS THE SUBJECT OF CLAIM OR DISPUTE. IN NO EVENT SHALL VELLO SYSTEMS, INC. BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, HOWSOEVER CAUSED.
10. All matters regarding this warranty shall be interpreted in accordance with the laws of the State of California, and any controversy that cannot be settled directly shall be settled by arbitration in California in accordance with the rules then prevailing of the American Arbitration Association, and judgment upon the award rendered may be entered in any court having jurisdiction thereof.
11. If one or more provisions provided herein are held to be invalid or unenforceable under applicable law, then such provision shall be ineffective and excluded to the extent of such invalidity or unenforceability without affecting in any way the remaining provisions herein.
12. VELLO SYSTEMS, INC. reserves the right to bill for labor spent on a Product where no defect is found.
13. All Products that are out of warranty are subject to a repair fee and additional freight charges.
14. Defective Products in warranty will be repaired at no additional charge and will be returned with freight paid by VELLO SYSTEMS, INC.

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