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Protectli Appliance

Protectli Vault V1610
Intel® Pentium® Silver N6005
6x I226-V 2.5G Ports

January 22nd, 2025

Overview

The newest addition to the "V" series Vaults, the V1610, features the Intel® Pentium® Silver N6005 processor with 16GB soldered (fixed) DDR4 memory and 32GB onboard eMMC. It also includes three additional M.2 slots for optional NVMe SSD storage, WiFi, and LTE modules. The V1610 is equipped with six Intel® I226-V RJ-45 Ethernet ports, supporting up to 2.5 Gigabit ethernet connectivity with backwards compatibility.

Protectli Vaults utilize Intel components ensuring persistent compatibility with a wide range of operating systems (OS) and applications. The "V" series Vaults feature a fanless, all-aluminum chassis design, allowing for efficient heat dissipation from the CPU and other components without any moving parts or additional power requirements.

Technical Specifications

Model	V1610
Description	6x 2.5G Network Port Fanless Appliance
Processor	Intel® Pentium® Silver N6005 (64 Bit, 2.0GHz, Turbo 3.3GHz, 4M L3 Cache)
Processor Cores	4
Processor Threads	4
Processor Capabilities	AES-NI
	Intel® Vt-x, Vt-d
Network	6x Intel® I226-V 2.5G Ethernet, RJ-45
Video / Graphics	Intel® UHD Graphics, 1x HDMI 2.0
Audio	Audio over HDMI
Memory	1x 16GB LPDDR4-2933, Soldered
Onboard Storage	1x M.2 2280 NVMe, 1x 32G eMMC on board
Optional Additional Storage	Not Supported
External I/O	1x 12V DC Power Jack, Threaded
	6x RJ-45 Ethernet ports
	1x USB Type-C COM Port
	1x Power LED (Green)
	1x Data Activity LED (Red)
	1x Reset Button (Recessed), ACPI

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	1x Power Button with LED (Blue)
	4x USB 3.2 Gen 1 Type-A ports
	1x HDMI 2.0 port
	1x Nano (4FF) SIM Slot
Internal I/O	1x M.2 3052 B-Key USB 3.2 Gen 1 (LTE)
	1x M.2 2280 M-Key PCIe 3.0 x2 (NVMe)
	1x Front Panel Header (2x5 pin, 2.54mm pitch)
	1x M.2 2230 Key E PCIe 3.0 x1 (WiFi)
	1x PWM CPU Fan Header (4 pin, 1.00mm pitch)
	1x SPI Header (2x3 pin, 2.54mm pitch, +3.3V)
	1x CMOS Reset (3 pin, 2.54mm pitch)
	1x Buzzer
	1x CMOS Battery (CR1220, 3V)
BIOS	AMI® or coreboot
Indicators	1x LED Power Button (Blue), 1x LED Power Indicator (Green), 1x LED Disk Activity Indicator (Red)
Power	1x Power brick with locking collar (12V DC Input)
Power Usage	Max 35W
Chassis	Fanless, Aluminum, Gray
Chassis Dimensions	w/ feet: 5.6 x 4.8 x 2.3in. (142.1 x 121.0 x 57.7mm) w/o feet: 5.6 x 4.8 x 2.1in. (142.1 x 121.0 x 55.1mm)
Mounting Options	Desktop, Optional VESA Bracket, Optional 1RU Rack Mount
Weight	2lb 6.2oz, 1.08kg
Shipping Weight	3lb 10.0oz, 1.64kg
Operating Temperature	+14° - +122° F, -10° - +50° C
Operating Humidity	0 – 95% relative humidity, non-condensing
Approvals	UL (Power Supply), FCC Part 15 Class B, CE, RoHS
Country of Origin	Made in China, Assembled in USA, Canada, or Germany
Optional Connectivity	1x WiFI, 1x LTE

Included Accessories and Components

48W Power Supply Wall Wart with interchangeable US/CA, UK, EU, and AU/NZ plugs

USB Type-A (with Type-C adapter) to USB Type-C Serial Console Cable

Bag of spare chassis screws

Set of thermal pad(s)

Quick Start Guide

External Interfaces

Front Panel Configuration

Item #	Object	Label	Description
1	Reset Button (Recessed)	RESET	An ACPI reset button.

2	Power Button	⏻	Pressing the Power Button will power the unit on and illuminate with a blue LED. *In OSes configured to handle ACPI signals, pressing the power button initiates a shutdown.* *Pressing and holding the Power Button for 5 seconds will force the unit to power off.*
3	USB Type-A Ports	SS⟵⟶	Four USB 3.2 Gen 1† Type-A ports. (Maximum theoretical throughput of 5000Mbps [~500MBps])
4	HDMI Port	HDMI	Video and audio output via HDMI 2.0.
5	Onboard Nano (4FF) SIM Slot	SIM	Access to an onboard Nano (4FF) SIM slot for providing a SIM card to an optional internal cellular modem.

†USB-IF naming standard for USB transfer rates: "USB 3.2 Gen 1" is the equivalent and current name for "USB 3.2 Gen 1", "USB 3.1 Gen 1", and "USB 3.0". Older kernels and operating systems may not report the most recent naming convention. For a full linguistic deep dive, please see 3.1 and 3.2 Specification Language Usage Guidelines from USB-IF. https://www.usb.org/sites/default/files/usb_3_2_language_product_and_packaging_guidelines_final.pdf, https://www.usb.org/sites/default/files/usb_3_1_language_product_and_packaging_guidelines_final_0.pdf

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Rear Panel Configuration
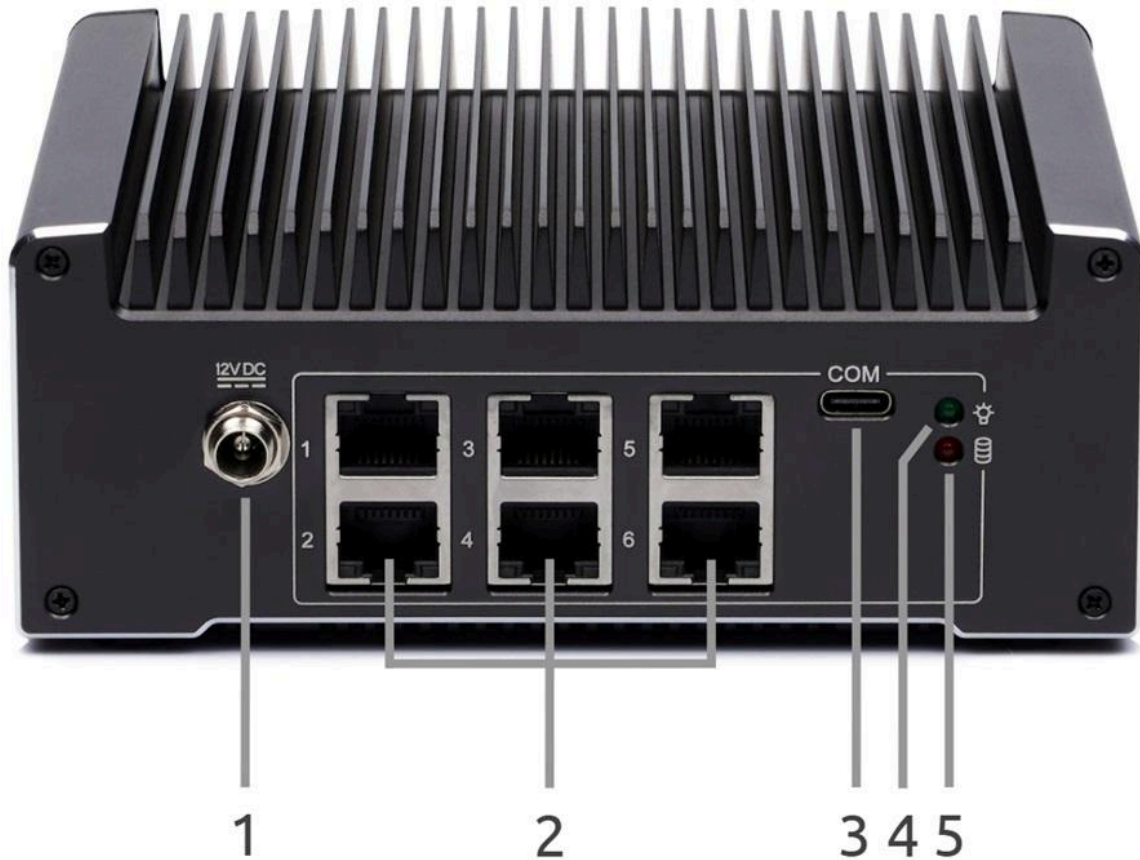
Item #	Object	Label	Description
1	Power Supply Connector	12V DC ---	12V DC locking collar connector for the included 48W external power supply. Positive rail is the tip, negative is sleeve. Barrel dimensions: 5.5mm x 2.5mm
2	Ethernet Ports	1, 2, 3, 4, 5, 6	Six (6) 10/100/1000/2500 Mbps Intel® I226-V ethernet ports. Ports 1, 2, and 3 are behind a PCIe switch (ASM2806). LEDs on the right side of NIC emit solid green when connected at any speed.

| 3	Type-C Serial Console Port	COM	RS-232 serial communications via FTDI FT232RQ UART, exposed through USB 2.0 Type C connector. Default port settings: • 115200 baud • No parity • 8 databits • 1 stopbit
4	Power Indicator LED	💡	LED emits solid green when the device is powered on.
5	Data Activity LED	🗄	LED emits red when data activity is detected over the NVMe interface.

Side Panel Features

Item #	Object	Label	Description
1	Antenna Ports	((•))	Six antenna ports, three on the left and three on the right of the unit, for mounting radio antennas (e.g. WiFi, LTE). The ports are covered by plugs while not in use.
2	Kensington Security Slot	🔒	A standard anti-theft locking slot, Kensington Security Lock compatible.

Internal Interfaces

Motherboard Layout and Pin Configuration
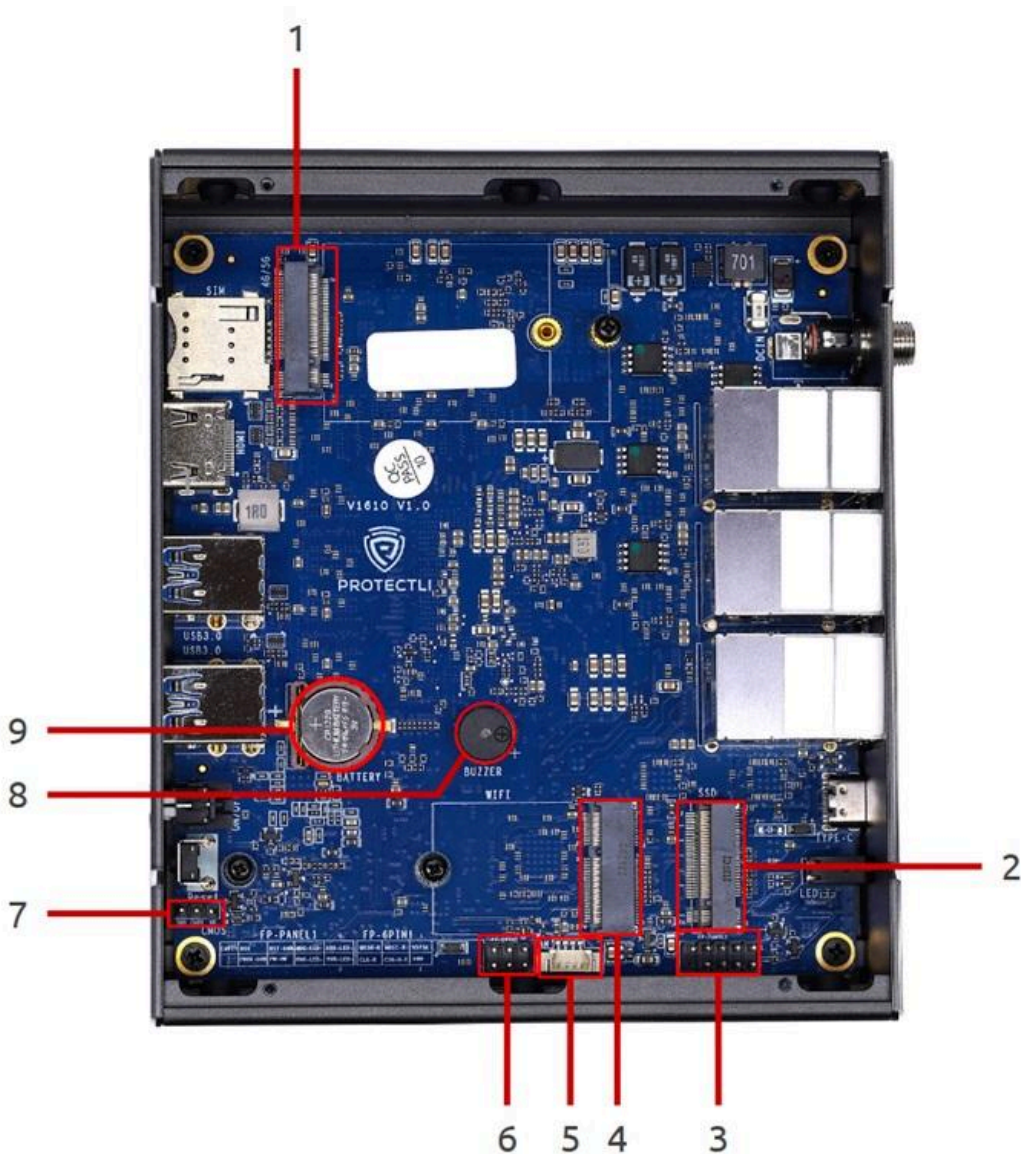
Item #	Object	Label	Description
1	LTE Expansion Connector	4G/5G	M.2 3052 B-Key connector for a LTE module uses USB 3.2 Gen 1 protocol. It is designed for Protectli LTE modules, but is not limited in its capabilities.

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Item #	Object	Label	Description
2	M.2 NVMe SSD Connector	SSD	M.2 2280 M-Key connector for a M.2 NVMe SSD that uses PCIe 3.0 x2 protocol on AMI firmware, and PCIe 3.0 x1 on coreboot firmware. It is designed for an NVMe storage device, but is otherwise a functional two/one-lane PCIe port (depending on firmware selection).
3	Front Panel Header	FP-PANEL1	Front panel header (2x5, 2.54mm pitch) for adding external device controls and indicators featured through the front panel, such as power button, reset button, activity LEDs, etc. Pin numbering oriented to the motherboard image:

	9	7	5	3	1
	EMPTY	RSR	RST-GND	HDD-LED-	HDD-LED+
	KEY	PWON-GND	PW-ON	PWR-LED-	PWR-LED+
	10	8	6	4	2

Item #	Object	Label	Description
4	WiFi Expansion Connector	WIFI	M.2 2230 Key E connector for a WiFi module uses PCIe 3.0 x1 protocol. It is designed for Protectli WiFi modules, but is not limited in its capabilities.
5	CPU Fan Header	FAN	Four-pin (1x4, 1.25mm pitch) Molex PicoBlade-compatible header for an optional fan.
6	SPI Header	FP_6PIN1	SPI header (2x3, 2.54mm pitch, +3.3V) for BIOS programming. Pin numbering oriented to the motherboard image:

	5	3	1
	MISO-R	MOSI-R	V3P3A
	CLK-R	CSO-N-R	GND
	6	4	2

Item #	Object	Label	Description
7	NVRAM Reset Jumper	RESET	CMOS reset pins (1x3, 2.54mm pitch). Shorting the jumper pins GND and CMOS while the CMOS battery is connected will reset the BIOS NVRAM. Pin numbering oriented to the motherboard image:

	3	2	1
	GND	CMOS	NC

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Item #	Object	Label	Description
8	Buzzer	BUZZER	A compact PC speaker designed for alerts. Alert types are dependent on the operating system.
9	CMOS Battery	BATTERY	Small lithium battery that provides backup power to the CMOS chip. Holds a CR1220 3V battery.

Dimension View

Document History

2025-01-22
- Added note to NVMe explaining protocol is PCIe Gen 3 x2 AMI, and PCIe Gen 3x1 on coreboot
- Added note regarding PCIe Switch for NICs
- Change pitch of CPU Fan Header to 1.25mm to accurately reflect the pitch

2024-12-13
- Updated Technical Specification table to show all available data rows

2024-11-08
- Added 1x Buzzer to Internal I/O section of Technical Specifications chart

2024-11-06
- Initial document

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