

DATASHEET VP2430

Protectli Appliance

Protectli Vault Pro VP2430 Intel[®] N150 Quad-Core Processor 4x I226-V 2.5GbE Ports

April 4th, 2025



Overview

A new addition to the Vault Pro (VP) series in 2025, the Vault Pro VP2430 is powered by a quad-core Intel® N150 Processor with 32GB onboard eMMC storage and supports up to 64GB of DDR5 SO-DIMM RAM. Keyed M.2 slots are available for PCIe Gen 3x2 NVMe SSD storage, a WiFi card (E key, up to 3052 form factor), and a 5G/LTE module (B Key). The VP2430 is equipped with four Intel® I226-V RJ-45 Ethernet ports, supporting up to 2.5 Gigabit Ethernet connectivity with backwards compatibility to support 1000/100/10Mbps throughput.

Protectli Vaults utilize Intel components to ensure persistent compatibility with a wide range of operating systems (OS) and applications. The VP2430 features 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. Internal heatsinks and thermal pads are supplied to provide optional additional passive cooling for the NVMe, RAM, WiFi, and 4G/5G modem modules.

Model	VP2430					
Description	4 x 2.5GbE Network Port Fanless Appliance					
Processor	Intel® N150 Quad Core Processor (6MB Cache, up to 3.6GHz)					
Microarchitecture	<86_64-v3					
Processor Cores	4					
Processor Threads	4					
Intel® AES-NI	Supported					
Virtualization	Intel® Vt-x, Vt-d					
Network	Ix Intel® I226-V 2.5G Ethernet, RJ-45					
Video / Graphics	Intel® HD Graphics GPU, 24 Execution Units, Max Dynamic Frequency 1GHz, HDMI 2.0, DP 1.2					
	HDMI 2.0, DP 1.2					
Max Resolution	HDMI 2.0, DP 1.2 3840 x 2160 @60hz					
Max Resolution Audio	HDMI 2.0, DP 1.2 3840 x 2160 @60hz Audio over HDMI, Display Port, and USB-C Display Port					
Max Resolution Audio Memory	HDMI 2.0, DP 1.2 3840 x 2160 @60hz Audio over HDMI, Display Port, and USB-C Display Port 1x SO-DIMM DDR5-4800, Max 64GB					
Max Resolution Audio Memory Onboard Storage	HDMI 2.0, DP 1.2 3840 x 2160 @60hz Audio over HDMI, Display Port, and USB-C Display Port 1x SO-DIMM DDR5-4800, Max 64GB 1x M.2 2280 NVMe, 1x 32G eMMC on board					
Max Resolution Audio Memory Onboard Storage Optional Additional Storage	HDMI 2.0, DP 1.2 3840 x 2160 @60hz Audio over HDMI, Display Port, and USB-C Display Port 1x SO-DIMM DDR5-4800, Max 64GB 1x M.2 2280 NVMe, 1x 32G eMMC on board 1x Internal 2.5" SATA 3.0 SSD					
Max Resolution Audio Memory Onboard Storage Optional Additional Storage External I/O	HDMI 2.0, DP 1.2 3840 x 2160 @60hz Audio over HDMI, Display Port, and USB-C Display Port 1x SO-DIMM DDR5-4800, Max 64GB 1x M.2 2280 NVMe, 1x 32G eMMC on board 1x Internal 2.5" SATA 3.0 SSD 4x RJ-45 Ethernet ports					

Technical Specifications



	2x USB 3.2 Gen 2 Type-C w/ Display Port				
	1x USB Type-C COM Port				
	1x HDMI 2.0 port				
	1x Display Port 1.2				
	1x Nano (4FF) SIM Holder				
	8x WiFi/LTE Antenna Mounting Holes				
	1x 12V DC Power Jack				
Internal I/O	1x M.2 2280 M-Key PCIe 3.0 x2 (NVMe)				
	1x SATA Header, 1x SATA Power				
	1x M.2 2230/3030/3052 E-Key PCIe 3.0 x1 (WiFi)				
	1x M.2 3052 B-Key USB 3.2 Gen 1 (4G/5G Modem)				
	1x CPU Fan Header (4 pin) (1.25mm pitch)				
	1x JNTP1 Header (NTP/i2c) (4 pin) (1.25mm pitch)				
	1x GPIO Header (2x3 pin) (2.54mm pitch)				
	1x eSPI Header (2x5 pin, pin 10 clipped) (2.00mm pitch)				
	1x RS-232 COM Header (2x5 pin, pin 10 clipped) (2.00mm pitch)				
	1x Front Panel Header (2x5 pin, pin 10 clipped) (2.54mm pitch)				
	1x CMOS Reset (2 pin)				
	1x BIOS Programming Header (Two separate 1x4 pin) (2.00mm pitch)				
Super I/O Chip	IT8659E				
BIOS	AMI® or coreboot				
Indicators	1x LED Power Button (Blue), 1xLED Power Indicator (Green), 1x LED SSD Activity Indicator (Yellow)				
Power	Input 12V DC, 1x DC Power Jack				
Power Usage	Max 45W				
Chassis	Fanless, Aluminum, Gray				
Chassis Dimensions	144mm x 143mm x 55mm				
Mounting Options	Desktop, VESA Bracket, Optional 1RU Rack Mount				
Weight	2lbs, 10 oz, (1.19kg)				
Shipping Weight	4 lbs 2.6 oz, (1.97kg)				
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 WiFi	1x M.2 2230/3030/3052 E-Key PCIe 3.0 x1 (WiFi)			
Optional LTE Cellular	1x M.2 3052 B-Key PCle 3.0 x1 or USB 3.2 Gen 1 (4G/5G)			
Optional TPM	1x Trusted Platform Module, TPM 2.0			

Included Accessories and Components

60W (12V @5.0A) Power Supply with threaded barrel connector

Power Cable (US/CA, EU, UK, or AUS/NZ)

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

4x M2 component mounting screws (M2 screw size, 4.75mm length, 1.9mm thread diameter)

1x NVMe Heatsink[†]

2x M3 NVMe heatsink mounting screws (M3 screw size, 11.75mm length, 2.86mm thread diameter)

1x Large Heatsink⁺ (optional additional passive cooling)

4x M3 screws for large heatsink or an 2.5" SSD (M3 screw size, 4.8mm length, 2.9mm thread diameter)

7x Thermal Pads[†]

1x SATA Power Cable

1x SATA Data Cable

Quick Start Guide

[†]More heatsink, thermal pad, and screw details are outlined in <u>Heatsink and Screws Information</u> towards the end of the datasheet.

Firmware Support Information

The VP2430 supports American Megatrends, Inc. (AMI) and coreboot firmware. Both firmware options operate exclusively in UEFI mode. They do not support legacy BIOS.

All mentions of the "AMI or coreboot firmware menu" in this document refers to the UEFI setup menu accessed by holding the Delete key at the time of boot. To access the boot options menu, hold the F11 key instead.

Firmware information and downloads for all Protectli Vaults can be found in the Protectli Knowledge Base on our coreboot page and AMI page and are available through our GitHub. We recommend using the Protectli Flashli tool, available through our GitHub, to update Vault firmware.



External Interfaces

Front Panel Configuration



ltem #	Object	Label	Description
1,9	Antenna Ports	((î•	Two antenna ports for adding radio antennas (WiFi, LTE, etc.). The ports are covered by plugs while not in use.
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	Reset Button (Recessed)	Q	A momentary switch exposed via GPIO. This is not an ACPI reset button, but a general purpose button that may be programmed in the guest OS.





4	USB-C COM Port	СОМ	RS-232 serial communications via USB-C. Default port settings:	
5	USB-C Ports	SS<₽	Two USB 3.2 Gen 2 [‡] Type-C connector with Display Port. (Theoretical maximum throughput of 10Gbps [~1.2GBps]) Supports video/audio output when used as Display Port. [#]	
6	DisplayPort Connector	Ð	Video and audio output via DisplayPort. (Display Port 1.2, max resolution of 3840 x 2160 @60Hz) ^{‡‡}	
7	HDMI Connector	HD	Video and audio output via HDMI. (HDMI 2.1, max resolution of 3840 x 2160 @60hz)#	
8	Four USB2 Connectors	•	USB 2.0 Type-A connectors. (Theoretical maximum throughput of 480Mbps [~60MBps])	

*USB-IF naming standard for USB transfer rates: "USB 3.2 Gen 2" is the equivalent and current name for "USB 3.1 Gen 2" offering a theoretical maximum speed of 10 Gigabits (~1.2GB) per second. 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.p df

[#]Audio output via HDMI, Display Port, or USB-C Display Port may not work for some operating systems by default. For example: Ubuntu requires the underlying Linux Kernel to be 6.12 or newer. Windows may require you to update all <u>Intel® Chipset drivers</u>, and may require you to update the <u>Intel® Graphics</u> <u>drivers</u>.

Additionally, the maximum display resolution may be locked at 800x600 on some operating systems until the proper driver updates are performed. Again, Ubuntu would require Linux Kernel 6.12 or newer. Windows may require the aforementioned Intel® Chipset drivers Intel® Graphics drivers.



Rear Panel Configuration



ltem #	Object	Label	Description	
1, 7	Antenna Ports	(((•	Two antenna ports for adding radio antennas (WiFi, LTE, etc.). The ports are covered by plugs while not in use.	
2	Power Indicator LED	-ਊ-	This LED will stay solid green when the device is powered on.	
3	Data Activity LED		LED emits yellow when data activity is detected over the NVMe interface.	
4	Ethernet Ports	1 , 2 , 3 , 4	Four (4) 10/100/1000/2500 Mbps Intel® I226-V ethernet ports. LEDs on the left side of NIC emit solid green when connected at 2500/1000Mbps, and are turned off at 100/10Mbps.	
5	SIM Slot	SIM	Nano (4FF) SIM slot for providing a SIM card to an optional internal cellular modem.	
6	Power Supply Connector	DC 12V	12V DC threaded barrel connector for the 60W external power supply. Positive rail is the tip, negative is sleeve.	





Side Panel Features



ltem #	Object	Description
1	Antenna Ports	Two antenna ports on the left and right side of the unit (totalling for an additional four). Used for mounting radio antennas (e.g. WiFi, 4G/5G Modem). The ports are covered by plugs while not in use.



Internal Interfaces and Components

Motherboard Layout and Pin Configuration





Item #	Object	Label	Description	
1	M.2 NVMe SSD Connector	M2_NVME _X2	M.2 2280 M-Key connector for a M.2 NVMe SSD that uses PCIe Gen 3.0 x2 protocol. It is designed for an NVMe storage device, but is otherwise a functional two-lane PCIe port.	
2	M.2 4G/5G Modem Connector	KEY_B_5G	M.2 3052 B-Key connector that uses USB 3.2 Gen 1 protocol via M.2 3052 B-Key. Certain behaviors can be affected by the SW1 Switch (Item #17) to assist with compatibility with certain modems. Designed for Protectli cellular modems, but is not limited in its capabilities.	
3	M.2 WiFi Card Connector	KEY_E_WIF I	Connector uses PCIe 3.0 x1 protocol over an M.2 E-Key socket. Designed for WiFI modules, but is not limited in its capabilities. The standoff mount can be moved to support either a 2230/3030 or 3052 sized M.2 WiFi card.	
4	Buzzer	BUZZ1	PC speaker. Produces "beep" sounds that may be utilized by system firmware or certain operating systems.	
5	TPM	JTPM1	Trusted Platform Module he hardware device. (2x6, 2.0mr	ader for a TPM2.0 m pitch)
			Pin 1: VDD	Pin 2: TPM_CS#
			Pin 3: SPI_MISO	Pin 4: SPI_MOSI
			Pin 5: NC1	Pin 6: SPI_CLK
			Pin 7: GND	Pin 8: SPI_REST
			Pin 9: NC2	X
			Pin 11: NC3	Pin 12: TPM_PIRQ#
			When using a physical TPM c verify that dTPM is selected a AMI Firmware menu. This is f Configuration > TPM Device On coreboot firmware, the p automatically detected and e	onnected to this header, as the TPM Selection in the found at Advanced > PTT Selection. hysical dTPM will be enabled.
6	SATA Power Connector	JSATA1	SATA III power connector for 2.0mm pitch, JST PH style co	additional storage. (1x4, nnector)



Item #	Object	Label	Description	
7	SATA Data Connector	SATA1	SATA III data connector. Recommended for additional storage, such as a 2.5" SATA SSD. (Standard 7-PIN SATA III Plug)	
8	eSPI Header (Enhanced Serial Peripheral Interface)	ESPI1	Header used for low-power, high-speed communication between embedded controllers and other system components. Commonly used for BIOS chip flashing. (2x5, pin 10 clipped, 2.00mm pitch)	
9	Serial COM Header	COM2	Header used for serial consol communication (~±12V logic 2.00mm pitch)	le output using RS-232 serial levels). (2x5, pin 10 clipped,
			Pin 1: Data Carrier Detect - Handshaking Signal	Pin 2: Serial In (RX/Receive Data)
			Pin 3: Serial Out (TX/Transmit Data)	Pin 4: Data Terminal Ready - Control Signal
			Pin 5: Ground	Pin 6: Data Set Ready - Handshaking Signal
			Pin 7: Request to Send - Flow Control	Pin 8: Clear to Send - Flow Control
			Pin 9: Ring Indicator	Х
			If utilizing AMI firmware, mak Redirection is Enabled in the be found at Advanced > Seria COM0 Console Redirection (t need to be disabled. If utilizing coreboot as your f firmware menu, go to Dashar Port Configuration, and make may need to disable COM0 (t	ke sure that COM1 Console AMI firmware menu. This can al Port Console Redirection. the USB-C COM port) may irmware, access the coreboot ro System Features > Serial e sure COM1 is enabled. You the USB-C COM port).



ltem #	Object	Label	Description	
10) Front Panel F Header	ont Panel FP1 eader	Internal header for adding ex indicators featured through t power button, reset button, chart below has been colore (2x5, pin 10 clipped, 2.54mm	ternal device controls and the front panel, such as activity LEDs, etc. The pinout d to match the baseboard. pitch)
			Pin 1: M.2 SSD_LED+ [+3.3V]	Pin 2: PWR_LED+ [+3.3V]
			Pin 3: M.2 SSD_LED-	Pin 4: PWR_LED-
			Pin 5: Reset_SW +	Pin 6: Power_SW +
			Pin 7: Reset_SW -	Pin 8: Power_SW -
			Pin 9: No connection	x
11	11 GPIO Header	O Header GPIO1	Header used for GPIO connec pitch)	ctions. (2x3 pin, 2.54mm
			Pin 1: +5V	Pin 2: Ground
			Pin 3: GPIO 56	Pin 4: GPIO 57
			Pin 5: GPIO 60	Pin 6: GPIO 61
			On the AMI firmware menu, r IT8659 Super IO Configuratic modify the voltage modes fo select between "Output Low Output Low will register at ~ will register at ~5.10V.	navigate to Advanced > on > GPIO Configuration to r each GPIO pin. You can ", "Output High", and "Input". 0.0014V while Output High
			On coreboot, there are no se to manipulate GPIO behavior register at ~5.10V.	ttings in the firmware menu . The four GPIO pins will
12	NVRAM Reset Jumper	JCMOS	Shorting this jumper while th will reset the BIOS NVRAM. T settings to defaults and can a issues. This will not reset the it has been enabled/set.	e CMOS battery is connected his will revert firmware assist with certain hardware coreboot admin password if



ltem #	Object	Label	Description	
13	Power Restore Jumper	JPWR1	Jumper setting determines system state after power loss Based on the orientation in the image above, the default location for the jumper is on the right and middle pins and the Vault will automatically attempt to power back on after power loss on both AMI and coreboot.	
			On the AMI firmware menu, you can change the behavior of the system state after power loss by navigating to Advanced > System Power Management. When "Restore On AC Power Loss" is set to "Power On", the Vault will always attempt to power back on after power loss regardless of the jumper's position on the JPWR1 header. If set to "Power Off", the default jumper location will override the firmware, and will still attempt to power back on. If you wish for the Vault to not automatically power back on, you will need to move the jumper to the left and middle pins while "Restore On AC Power Loss" is set to "Power Off". On the coreboot firmware menu, you can change the power state after power loss by navigating to Dasharo System Features > Power Management Options. You can change the "Power state after power loss" between "Powered Off", "Powered On", or "state at the moment of failure". The JPWR1 jumper will take priority, meaning the default jumper location will always attempt to allow the Vault to power back on after power loss.	
14	CMOS Battery Header	CE1	3V CR2032 (the battery is underneath the motherboard) connected via 2-pin connector (1.25mm pitch).	
15	Memory Slot	DIMM1	DDR5 SODIMM slot, supports up to a single 64GB SODIMM @4800MHz	
16	BIOS Programming Header	J1, J2	Two separate headers used for BIOS programming. Based on the orientation in the image above, J1 is the top header and J2 is the bottom. (1x4, 2.00mm pitch each) J1:	
			Pin 1: VDD Pin 2: Pin 3: CLK Pin 4: SI HOLD#	
			J2:	
			Pin 1: CS# Pin 2: SO Pin 3: WP# Pin 4: GND	



ltem #	Object	Label	Description	
17	Switch for M.2 Modem Slot Behavior	SW1	There are two switches labeled 1 and 2. The modem slot's (item #2) behavior is affected by these switches. By default, the switches are set to "Off." Protectli modems will work as expected in the default configuration. The switches' behavior is printed on the motherboard:	
			1 off = PCIE (0V), 1 on = USB (1.8V) [Switch 1 affects Pin 20 Voltage]	
			2 off = Standard (0V), 2 on = Reverse (3.3V) [Switch 2 affects Pin 22 Voltage]	
			Some modems use Pins 20 and 22 for adding additional control functions like controlling airplane mode, resetting the modem, or are utilized as voltage sensing pins. Some modems will not work unless proper voltage is applied to specific pins. It is important to reference the documentation of your modem to verify if you need to utilize this switch.	
18	CPU Fan Header	CPU_FAN1	Four-pin PicoBlade-compatible header available for an optional PWM fan. Based on the image layout above, pin 1 is on the top. (1x4, 1.25mm pitch)	
			Pin 1: Ground	
			Pin 2: VCC +12V	
			Pin 3: FG (Fan Tachometer / RPM Signal)	
			Pin 4: PWM (Pulse Width Modulation Control)	
19	JNTP (NTP/i2c) Header	JNTP1	Four-pin PicoBlade-compatible header used for NTP/i2c, commonly used for GPS capabilities, but offers many other solutions. (1x4, 1.25mm pitch)	
			Pin 1: i2c0_SCL	
			Pin 2: i2c0_SDA	
			Pin 3: +3.3V	
			Pin 4: Ground	



Heatsink and Screws Information



ltem #	Object	Description
1	Large Heatsink Bottom Thermal Pad	Placed between the large heatsink and the bottom plate to dissipate heat from the heatsink through the chassis. Dimensions: 84mm (L) x 68mm (W) x 1mm (H)
2	NVMe Bottom Thermal Pad	Placed between the NVMe headsink and bottom plate to dissipate heat from the heatsink through the chassis. Dimensions: 53mm (L) x 20mm (W) x 1mm (H)



3	WiFi Module Thermal Pad 1	Placed between the WiFi card and large heatsink. Two thermal pad sizes have been supplied to account for different sizes of WiFi cards. Dimensions: 34mm (L) x 30mm (W) x 3mm (H)
4	WiFi Module Thermal Pad 2	Placed between the WiFi card and large heatsink. Two thermal pad sizes have been supplied to account for different sizes of WiFi cards. Dimensions: 32mm (L) x 30mm (W) x 4mm (H)
5	NVMe Thermal Pad	Placed between the NVMe and NVMe heatsink. Dimensions: 68mm (L) x 20mm (W) x 3mm (H)
6	4G/5G Modem Thermal Pad	Placed between the 4G/5G Modem and large heatsink. Dimensions: 44mm (L) x 31mm (W) x 3mm (H)
7	RAM Thermal Pad	Placed between the RAM and large heatsink. Dimensions: 60mm (L) x 25mm (W) x 3mm (H)
8	Large Heatsink	The large heatsink is mounted onto the brackets on the Vault's bottom plate to provide additional passive cooling. Installing the large heatsink prevents the installation of a 2.5" SSD
9	NVMe Heatsink	The NVMe heatsink is mounted on the Vault's bottom plate to provide passive cooling for the NVMe SSD. This heatsink has a designated mounting location on the bottom plate.
10	M3 Screws for Large Heatsink or 2.5" SSD	Used to mount either the large heatsink or a 2.5" SSD to the brackets on the bottom plate. Dimensions: Flat head, M3 screw size, 4.8mm length, 2.9mm thread diameter
11	M2 Screws	Used to secure internal computer components (Wifi, LTE, NVMe, etc.) to the standoffs on the motherboard. When a Vault is purchased through protectli.com, these screws are used to install the components selected during checkout. Dimensions: Rounded head, M2 screw size, 4.75mm length, 1.9mm thread diameter.
12	M3 screws for NVMe Heatsink	Used to mount the NVMe heatsink to the bottom plate. Dimensions: Flat head, M3 screw size, 11.75mm length, 2.86mm thread diameter



Heatsink and Thermal Pad Installation

The image below shows a completed heatsink and thermal pad installation. Items #1 and #2 (the large heatsink bottom thermal pad and NVMe bottom thermal pad) from the Heatsink and Screw Information table are not visible, as they are positioned between the heatsink and bottom plate for optimal heat dissipation. Full installation instructions are available on the VP2430 Hardware Overview page in our Knowledge Base.





Dimension View

External chassis dimensions: 144mm (L) x 143mm (W) x 55mm (H)







Document History

2025-04-04

• Initial document