Protectli Appliance

Protectli Vault FW4C

4 Port 2.5G - Intel® J3710

January 28th, 2025

Overview

The Protectli Vault FW4C is the 2.5GbE variant of the FW4 series, with four 2.5GB Intel® I226-V ethernet ports. This vault features an Intel® Pentium® J3710U processor, with support for 8GB DDR3L RAM and connectors for both mSATA and 2.5" SSD storage. This unit also includes a connector for an optional Wi-Fi or LTE card and can support an external LTE modem.

Protectli Vaults utilize Intel components ensuring persistent compatibility with a wide range of operating systems (OS) and applications. The "FW" 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	FW4C
Description	4x 2.5G Network Port Fanless Appliance
Processor	Intel® Pentium® J3710 (64 Bit, 1.6 GHz, 2MB L2 Cache)
Processor Cores	4
Processor Threads	4
Intel® AES-NI	Supported
Virtualization	Intel® Vt-x
Network	4x Intel® I226-V 2.5G Ethernet, RJ-45
Video / Graphics	Intel® Clear Video HD, 2x HDMI 1.4
Audio	Audio over HDMI, 1x 3.5mm Audio Jack
Memory	1x SO-DIMM DDR3L-1600, 1.35v, Max 8GB
Storage	1x mSATA
Optional Storage	1x Internal SATA 3.0 Data and Power Connector
External I/O	4x RJ-45 Ethernet
	2x USB 3.2 Gen 1 Type-A ports
	2x HDMI
	1x 3.5mm Audio Jack (Realtek ALC897)
	1x RJ-45 COM
	2x WiFi/LTE Antenna Mounting Holes
	1x 12V DC Power Jack
Internal I/O	1x Mini PCIe for mSATA
	1x SATA Header, 1x SATA Power

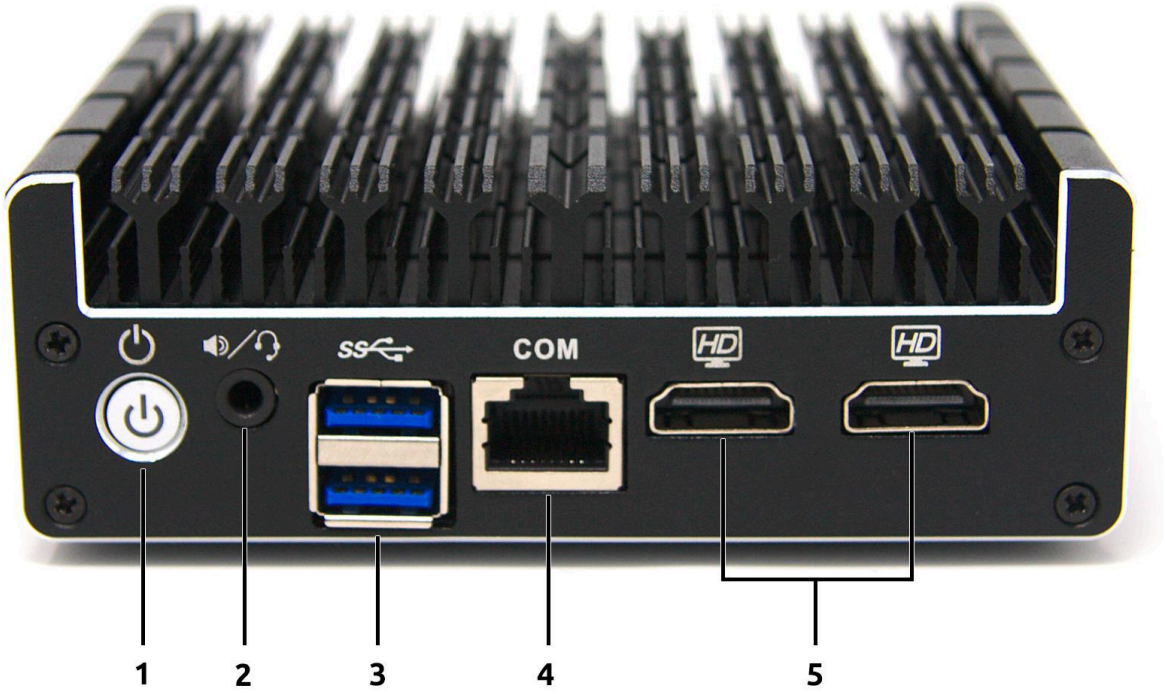
	1x Full Height mPCIe (USB) for WiFi or LTE
	1x USB 2.0 Header
	1x CMOS Reset (2 pin)
	1x Front Panel Header (9 pin)
Super I/O Chip	IT8613E
BIOS	AMI® or coreboot
Indicators	1x LED Power Button (Blue), 1x LED Power Indicator (Green), 1x LED Disk Activity Indicator (Red), 1x LED Disk Activity Indicator (Yellow)
Power	Input 12V DC, 1x DC Power Jack
Power Usage	Max 20W
Chassis	Fanless, Aluminum, Black
Chassis Dimensions	4.5 x 4.3 x 1.5 in, 115 x 107.5 x 39 mm
Mounting Options	Desktop, VESA Bracket, Optional 1RU Rack Mount
Weight	1 lb 2 oz, 0.50 kg
Shipping Weight	2 lbs 13 oz, 1.2 kg
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, RCM, RoHS
Country of Origin	Made in China, Assembled in USA, Canada, or Germany
Optional WiFi	1x mPCIe 802.11b/g/n (USB)
Optional LTE Cellular	1x mPCIe 4G LTE (USB)

Included Accessories and Components

40W Power Supply with barrel connector
US/CA Power Cable *(Other regional power cables available)*
RJ45 to DB-9 Console Cable
VESA Bracket mount with hardware
4x Component Screws
Quick Start Guide

External Interfaces

Front Panel Configuration

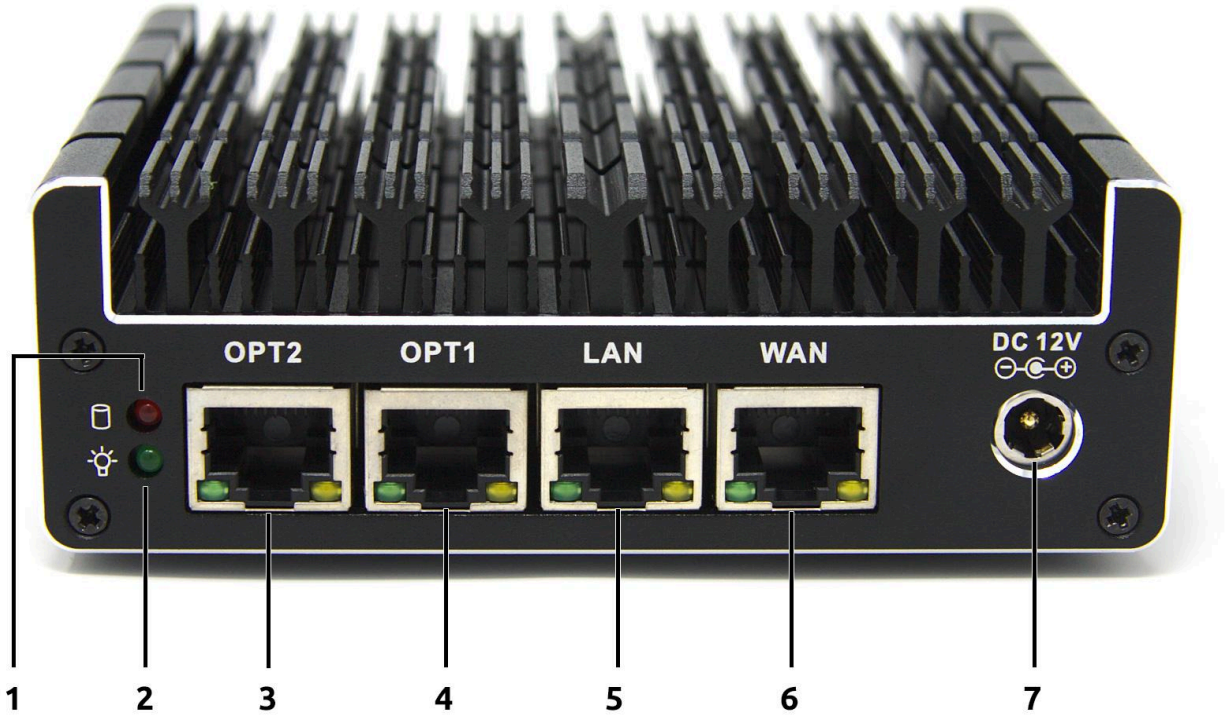


Item #	Object	Label	Description
1	Power Button	⏻	Pressing the Power Button will power the unit on and illuminate with a blue LED. *In OSes configured to handle ACPI signals, pressing the power button initiates a shutdown.* *Pressing and holding the Power Button for 5 seconds will force the unit to power off.*
2	Speaker and Microphone Port	🎤/🎧	A 3.5mm TRRS plug can be used to output stereo sound and input mono microphone. (Realtek ALC897)
3	Two USB3 Connectors	SS	USB 3.2 Gen 1† Type-A connectors. (Maximum theoretical throughput of 5000Mbps [500MBps])
4	Serial Console	**COM**	RS-232 serial communications via RJ-45. Default port

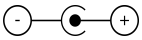
	Port		settings: ● 115200 baud ● No parity ● 8 databits ● 1 stopbit
5	Two HDMI Connectors	HD	Dual video and audio output via HDMI.

†USB-IF naming standard for USB transfer rates: "USB 3.2 Gen 1" is the equivalent and current name for "USB 3.1 Gen 1" offering a theoretical maximum speed of 5 Gigabits (~500MBps) 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.pdf

Rear Panel Configuration



Item #	Object	Label	Description
1	HDD Activity LED		This red LED will light up when data activity is detected on either the mSATA or SATA interfaces.
2	Power Indicator LED		This LED will stay solid green when the device is powered on.
3	Ethernet Port 4	**OPT2**	The fourth 10/100/1000/2500 Mbps Intel® I225-V or I226-V†† ethernet port. This port is labeled “OPT2” for convenience, but is not limited in its capacity. Bottom left LED emits solid Green at 2500Mbps, Amber at 1000Mbps, and is turned off at 100/10Mbps.
4	Ethernet Port 3	**OPT1**	The third 10/100/1000/2500 Mbps Intel® I225-V or I226-V†† ethernet port. This port is labeled “OPT1” for convenience, but is not limited in its capacity. Bottom left LED emits solid Green at 2500Mbps, Amber at 1000Mbps, and is turned off at 100/10Mbps.
5	Ethernet Port 2	**LAN**	The second 10/100/1000/2500 Mbps Intel® I225-V or

			I226-V†† ethernet port. This port is labeled “LAN” for convenience, but is not limited in its capacity. Bottom left LED emits solid Green at 2500Mbps, Amber at 1000Mbps, and is turned off at 100/10Mbps.
6	Ethernet Port 1	**WAN**	The first 10/100/1000/2500 Mbps Intel® I225-V or I226-V†† ethernet port. This port is labeled “WAN” for convenience, but is not limited in its capacity. Bottom left LED emits solid Green at 2500Mbps, Amber at 1000Mbps, and is turned off at 100/10Mbps.
7	Power Supply Connector	**DC 12V** 	12V DC barrel connector for the 40W external power supply. Positive rail is the tip, negative is sleeve.

†† The FW4C will either contain 4x 2.5GbE Intel® I225-V or I226-V NICs depending on manufacturing date. FW4C units manufactured after June of 2024 will contain I226-V NICs. Units manufactured before this time frame will contain I225-V NICs. Both of these NICs use the same igc driver within FreeBSD. Some operating systems like Windows may require a manual driver install to work properly. These drivers are available from Intel’s website at: (https://www.intel.com/content/www/us/en/download/15084/intel-ethernet-adapter-complete-driver-pack.html)

Left Side Features

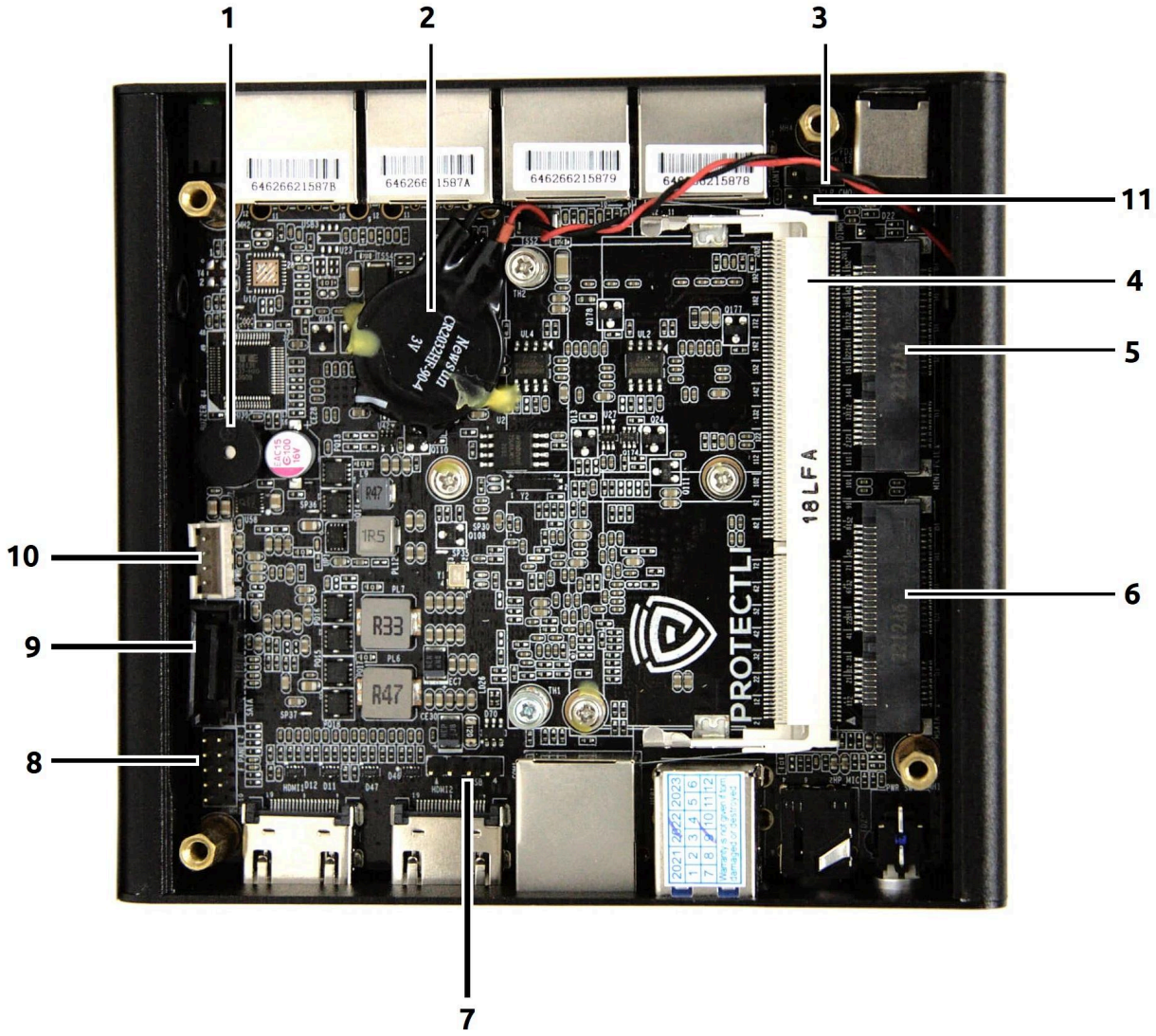
Item #	Object	Description
1	Antenna Ports	Two antenna ports for adding radio antennas (WiFi, LTE, etc.). The ports are covered by plugs while not in use.

Right Side Features

Item #	Object	Description
1	Security Slot	A security slot allows for a physical security cable lock or similar devices.

Internal Interfaces

Motherboard Layout and Pin Configuration



Item #	Object	Label	Description
1	Buzzer		PC speaker. Produces “beep” sounds that may be utilized by system firmware or certain operating systems.
2	CMOS Battery		3V CR2032 connected via 2-pin connector on the opposite

<table>
<tr><td></td><td></td><td></td><td>side of the motherboard. (connects to a 2 pin, 1.25mm pitch connector)</td></tr>
<tr><td>3</td><td>Power Restore Jumper</td><td>JPWR</td><td>Jumper setting determines system state after power loss. Closing the jumper will cause the unit to automatically power on when power is restored after an outage.</td></tr>
<tr><td>4</td><td>Memory Slot</td><td>DDR3_1</td><td>DDR3 SODIMM.</td></tr>
<tr><td>5</td><td>WiFi Expansion Slot</td><td>WIFI</td><td>Connector uses USB protocol over an mPCI connector. Designed for Protectli WiFI and LTE modems, but is not limited in its capabilities.</td></tr>
<tr><td>6</td><td>mSATA Connector</td><td>MSATA</td><td>Connector for an mSATA storage device, such as an SSD.</td></tr>
<tr><td>7</td><td>USB 2.0 Header</td><td>JUSB</td><td>Internal header for additional USB 2.0 connections. (1x4, 2.00mm pitch)<table><tr><td>Pin 1: 5V</td><td>Pin 2: USB Port 3 Negative Data Line</td><td>Pin 3: USB Port 3 Positive Data Line</td><td>Pin 4: Ground</td></tr></table></td></tr>
<tr><td>8</td><td>Front Panel Header</td><td>F Panel</td><td>Internal header for adding external device controls and indicators featured through the front panel, such as power button, reset button, activity LEDs, etc. (2x5, pin 10 clipped, 2.0mm pitch)<table><tr><td>Pin 1: +3.3V HDD LED+</td><td>Pin 2: +5V Power LED</td></tr><tr><td>Pin 3: SATA LED -</td><td>Pin 4: Ground</td></tr><tr><td>Pin 5: Ground</td><td>Pin 6: Panel Switch</td></tr><tr><td>Pin 7: Front Panel Reset</td><td>Pin 8: Ground</td></tr><tr><td>Pin 9: Ground</td><td>X</td></tr></table></td></tr>
<tr><td>9</td><td>SATA Data Connector</td><td>SATADATA</td><td>SATA III data connector. Available for additional storage, such as a 2.5” SATA SSD. (Standard 7-PIN SATA III Plug)</td></tr>
<tr><td>10</td><td>SATA Power Connector</td><td>SATAPWR</td><td>SATA III power connector for additional storage. (1x4, 2.0mm pitch, JST PH style connector)</td></tr>
<tr><td>11</td><td>NVRAM Reset Jumper</td><td>JCMOS</td><td>Shorting this jumper while the CMOS battery is connected will reset the BIOS NVRAM.</td></tr>
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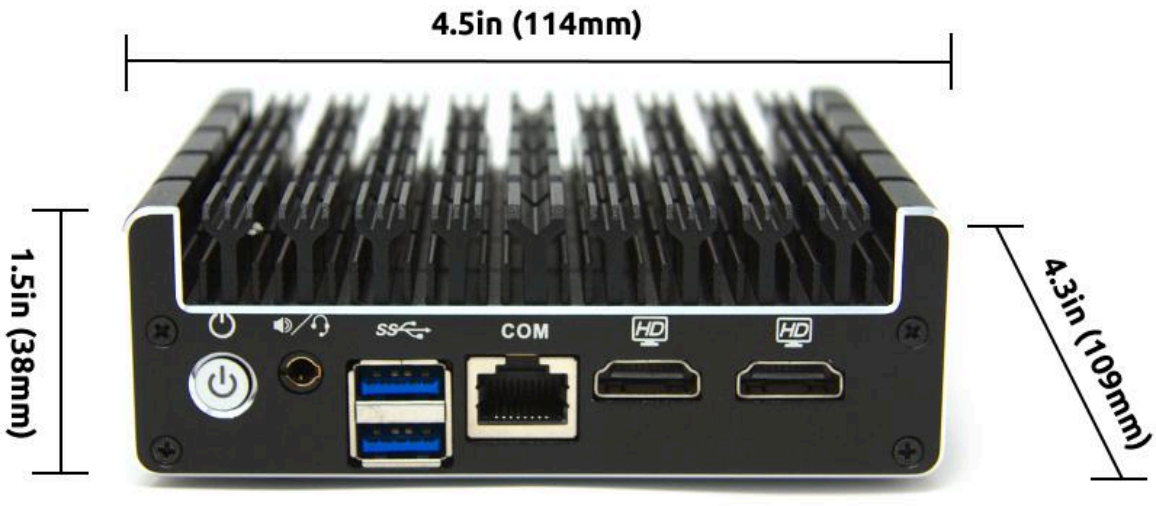
Dimension View



Document History

2025-01-28
- Added note regarding NIC LED behavior based on speeds
- Changed USB3 Connectors to USB 3.2 Gen 1 to accurately reflect generation
- Added audio codec to Speaker and Microphone Port
- Changed Motherboard Top View image to properly reflect the unit
- Changed label of USB 2.0 Header to JUSB to accurately reflect silkscreen on motherboard, added pitch and pin layout
- Added "F Panel" label for Front panel to accurately reflect silkscreen on motherboard, added pitch and pin layout
- Added pitch and connector type for SATADATA and SATAPWR

2024-08-01
- Updated “RS232” to “RS-232”
- Updated linked spec sheet with ® and ™ as necessary for Intel and AMI

2024-06-28
- Clarified PCI and USB specifications such as speed, protocol, etc.

2024-05-17
- Clarified LTE and/or WiFi slot naming schemes

2023-08-31
- Clarify details about the i225-V network interfaces.

2023-03-21
- Initial document