



Everglades 2 Technical Product Specification

NUC10EGC

Version 1.2, 03/09/2023

Preface

The purpose of this document is to provide a technical reference for customers and developers of the Simply NUC Everglades 2 product. The Everglades 2 kit SKU is NUC10EGC.

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1 Description

1.1 Overview

The Simply NUC NUC10EGC (code named Everglades 2) is a mini computer built with an Intel® N5105 processor.

The NUC10EGC featuring the Intel® Celeron®N5105 and Intel® UHD Graphics has the versatility to span a vast number of applications to enable reliable performance in a small, lightweight package. The fanless design makes it perfect for silent operation with no distractions while streaming 4K video in your home theater or focusing on important projects in your home office.

Everglades 2 has the following features:

- Intel Jasper lake CPU, include & N5105
- Intel® UHD Graphics
- Two DDR4-2933 SO-DIMM Sockets
- 64GB Soldered eMMC
- M.2 Slot for PCIe or SATA SSDs
- Two 10/100/1000Mbps Ethernet Ports with Optional POE
- Soldered Wi-Fi/ Bluetooth Radio
- One DisplayPort (4k, 60Hz)
- One HDMI Port (4k, 60Hz)
- One USB Type-C Port
- Four USB 3.0 Type-A Ports
- One SD Card Slot
- 3.5mm Headphone Jack
- Internal SATA Connector for HDD/SSD Expandability
- Kensington Lock
- 12VDC 24W Power Supply Adapter

1.2 Processor

The Everglades 2 APUs have the following features.

Table 1: APU Features

Everglades 2	NUC10EGC
Intel CPU	Celeron N5105
Cores	4
Threads	4
L1 Cache	4x 32KB, 4x 24KB

Everglades 2	NUC10EGC
L2 Cache	1.50Mb
L3 Cache	4Mb
Base Speed (Turbo) [MHz]	2000 (2900)
TDP (Configurable)[W]	10
Integrated Graphics	Intel UHD Graphics

1.3 Integrated Graphics Processing Unit

The Everglades 2 APU has an integrated Radeon graphics processing unit with the following features.

Table 2: GPU Features

Everglades 2	NUC10EGC
GPU	Intel UHD
GPU Speed [MHz]	250
GPU Compute Units	12 (96 Shader Processors)
GFLOPs	124.8
Maximum 1080p Displays	3
Maximum 4k Displays	3
Maximum Single Display Resolution	3840 x 2160, 60Hz
Display Interfaces	HDMI 2.0, DP 1.2, VGA
Memory Size	System-Shared DDR4
API Support	DirectX 12 (12_1), OpenGL 4.6, OpenCL 3.0, Vulkan 1.2, Shader Model 6.4

1.4 Memory

Everglades 2 has two SO-DIMM sockets for system memory with the following features:

- 1.2V LP-DDR4 SDRAM SO-DIMMs supported
- Two memory channels with interleaved support

- Serial Presence Detect
- Unbuffered SO-DIMM support (both single- and dual-sided)
- Minimum 4GB SO-DIMM supported
- Up to 16GB SO-DIMMs supported per socket for a maximum total of 32GB of system memory
- Support for DDR4-2933 data rates

1.5 Storage

Everglades 2 has one M.2 M Key slot for a 2280 storage module supporting PCIe SSD. The M.2 slot is a key-M slot for an PCIe 2280 M.2 module, up to 8TB in density. The PCIe 3.0 x2 interface on the port has a theoretical maximum transfer rate of 16Gbps

1.5.1 SATA Interface

The M.2 slot is a M Key slot for a SATA 2280 M.2 module, up to 2TB in density. The SATA header can be connected to a 2.5" HDD or SSD drive, up to 8TB in density. These SATA III ports each have a theoretical maximum transfer rate of 6Gbps.

1.5.2 PCIe Interface

The M.2 slot is a M key slot for an PCIe 2280 M.2 module, up to 8TB in density. The PCIe 3.0 x4 interface on the port has a theoretical maximum transfer rate of 4Gbps.

1.6 Networking

1.6.1 RJ-45 Connector for Networking Interface

Everglades 2 has 2 Realtek RTL-8111H gigabit ethernet controllers that interfaces to on-board RJ-45 Ethernet connectors to provide gigabit Ethernet connections. Controller features include;

- Integrated MAC + BASE-T PHY
- Full compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports pair swap/polarity/skew correction
- Auto-negotiation with Next Page capability
- Crossover Detection & Auto-Correction
- Supports 1-lane 2.5Gbps PCI Express Bus
- Embedded OTP memory
- Support hardware ECC (Error Correction Code) function
- Support hardware CRC function
- Transmit/Receive on-chip buffer support
- Supports PCI MSI and MSI-X
- Supports power down/link down power saving/PHY disable mode
- Customized LEDs

- Controllable LED Blinking Frequency and Duty Cycle
- Supports Emac-393 ECMA ProxZzzy Standard for sleeping hosts
- XTAL-Less wake-on-lan
- Lan disable with GPIO pin
- Supports LTR
- Supports PCIe L1 Off & L1.Snooze
- Supports link change wake up
- Wake-On-LAN and “RealWow” Technology (remote wake-up) support
- Supports 32-set 128-byte wake-up frame pattern exact matching
- Supports Microsoft WPI (wake packet indication)
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Supports IEEE802.3az-2010 (EEE)
- Supports Full Duplex flow control (IEEE 802.3X)

1.6.2 Wireless Networking Interface

Everglades 2 has a soldered-on Intel AC7265 and is the VHT-5G Wi-Fi 2x2 and Bluetooth combination single-chip solution. StP2 uses Intel’s 2nd generation 802.11ac Wi-Fi solution and supports both 2.4 and 5.2 GHz bands. The 5.2 GHz band operates on an 80 MHz-wide channel reaching PHY rates of up to 867 Mbps. StP2 uses a Bluetooth core that supports Bluetooth® 4.0 standard.

1.6.3 POE + Module

- Compatible with 802.3af/at Specifications
- 100V 0.48Ω PD Integrated Pass Switch
- 120mA PD Inrush Current
- 840mA PD Operation Current Limit
- Auxiliary Adaptor ORing Power Supply
- Support Flexible Topology Design
- Primary-Side Regulated (PSR) Flyback
- Secondary-Side Regulated (SSR)
- Flyback
- Secondary-Side Regulated (SSR)
- Active-Clamp Forward
- 2A GATE and 0.8A SYNC Drivers
- 160mV Switching Current Sense Limit
- Output Diode Compensation in PSR Mode
- 250kHz Fixed Switching Frequency
- Hiccup Protection for OLP, SCP, OVP and Thermal Shutdown
- EMI Reduction with Frequency Dithering

2 Technical Reference

2.1 Motherboard Headers

Headers on the bottom side of the motherboard are defined below;

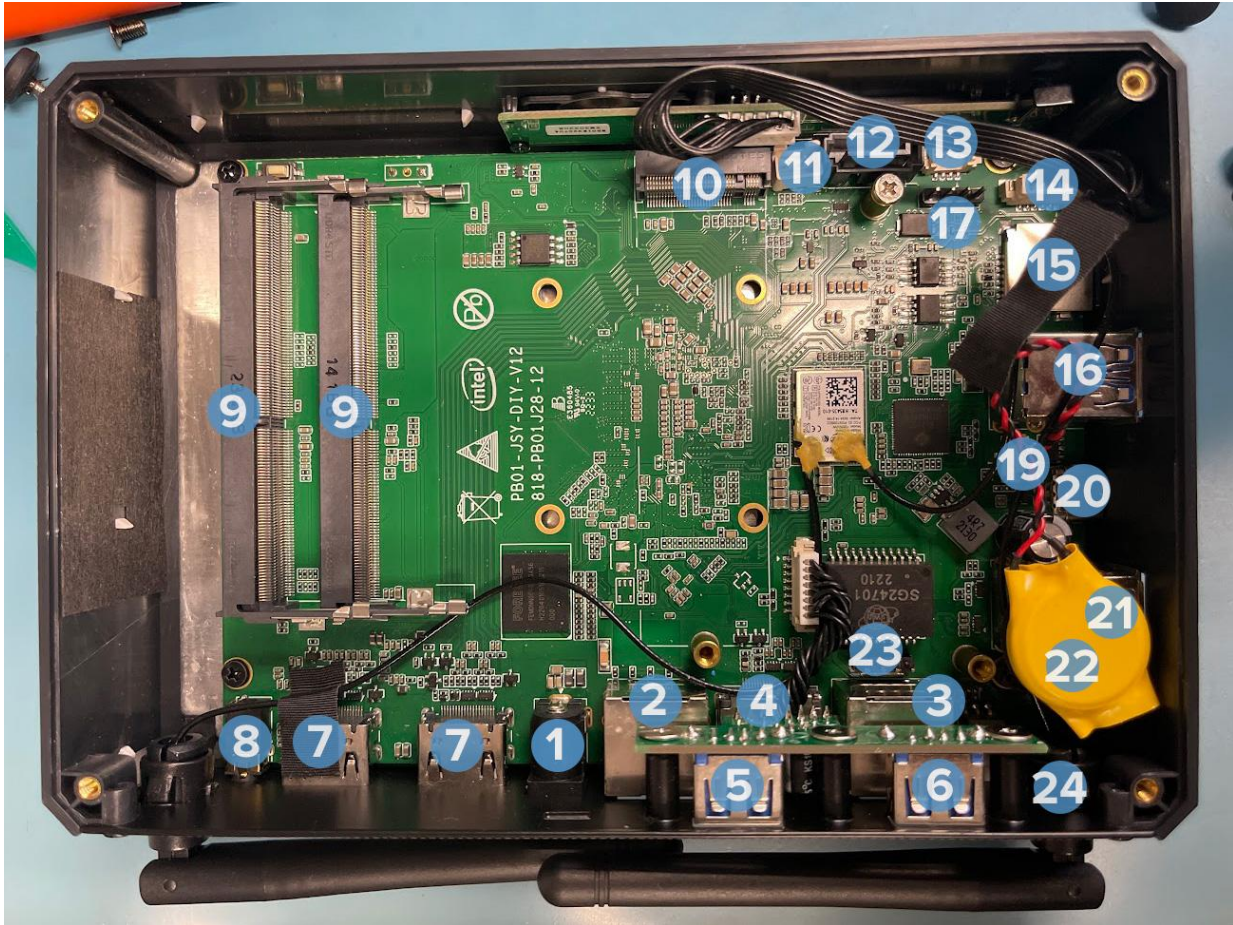


Figure 1: Bottom Side Header Locations

Table 3: Bottom-Side Header Definitions

Identifier	Header	Header	Identifier
1	DC power Connector	Fan Header	13
2	RJ45 with POE+	Front Panel Header	14

Identifier	Header	Header	Identifier
3	RJ45	SD Card Reader	15
4	Displayport	USB3.0 Port	16
5	USB3.0 Port	POE Header	17
6	USB3.0 Port	CMOS Battery Header	18
7	HDMI Port	USB Type C Port	19
8	3.5mm Audio Jack	USB3.0 Port	20
9	DIMM socket	CMOS Battery	21
10	DDR4 SODIMM Socket	POE Header	22
11	SATA Power Header	Always Power on Button	23
12	SATA Data Header		

2.1.1 DDR4 SO-DIMM Sockets

The Everglades 2 motherboard has two 260-pin SO-DIMM sockets for DDR4 memory and supports the following features:

- 1.2v DDR4 DIMMs with dual channel architecture
- DDR4-2933 speeds for a peak transfer rate of 19200MBps
- Non-ECC, unbuffered, single or dual-sided SO-DIMMs
- 4GB to 8GB of total system memory
- Serial Presence Detect (SPD)
- DDR4 SDRAM organizations 1Rx8, 1Rx16 and 2Rx8 supported

2.1.2 M.2 For Storage

The M.2 storage socket supports both SATA III and PCI Express (PCIe) drives in a 2280 M key module. SATA drives support a theoretical maximum transfer rate of 8Gbps, and PCIe drives utilizing PCIe Gen 3 can deliver up to 4Gbps bandwidth.

Table 4: M.2 M Key- SSD Pinout

Pin	Signal	Signal	Pin
74	3.3V	GND	75

Pin	Signal	Signal	Pin
72	3.3V	GND	73
70	3.3V	GND	71
68	SUSCLK(32kHz) (O)(0/3.3V)	PEDET (NC-PCIe / GND-SATA)	69
66	CONNECTOR KEY	N/C	67
64	CONNECTOR KEY	CONNECTOR KEY	65
62	CONNECTOR KEY	CONNECTOR KEY	63
60	CONNECTOR KEY	CONNECTOR KEY	61
58	N/C	CONNECTOR KEY	59
56	N/C	GND	57
54	PEWAKE# (I/O)(0/3.3V) or N/C	REFCLKp	55
52	CLKREQ# (I/O)(0/3.3V) or N/C	REFCLKn	53
50	PERST# (O)(0/3.3V) or N/C	GND	51
48	N/C	PETp0/SATA-A+	49
46	N/C	PETn0/SATA-A-	47
44	N/C	GND	45
42	SMB_DATA	PERp0/SATA-B-	43
40	SMB_CLK	PERn0/SATA-B+	41
38	DEVSLP (O)	GND	39
36	N/C	PETp1	37
34	N/C	PETn1	35
32	N/C	GND	33
30	N/C	PERp1	31
28	N/C	PERn1	29
26	N/C	GND	27

Pin	Signal	Signal	Pin
24	N/C	PETp2	25
22	N/C	PETn2	23
20	N/C	GND	21
18	3.3V	PERp2	19
16	3.3V	PERn2	17
14	3.3V	GND	15
12	3.3V	PETp3	13
10	DAS/DSS# (I/O)/LED1# (I)(0/3.3V)	PETn3	11
8	USB_D-	GND	9
6	USB_D+	PERp3	7
4	3.3V	PERn3	5
2	3.3V	GND	3
		GND	1

2.1.3 SATA Power Header

The motherboard has a 2.54mm, 1x2, 2-circuit, male header used to provide 5V power to the SATA III connector. The lower pin is pin 1.

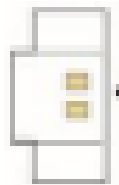


Figure 2: SATA Power Header

Table 5: SATA power Header

Pin	Signal	Signal	Pin
1	5V	GND	2

2.1.4 SATA-III Connector

The SATA III connector is a standard SATA plug that can be used to connect a single SATA drive to the motherboard at speeds of up to 6Gbps.

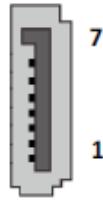


Figure 3: SATA III Connector

Table 6: SATA III Connector Pinout

Pin	Signal Definition
1	GND
2	TX+
3	TX-
4	GND
5	RX
6	RX+
7	GND

2.1.5 POE Module Header

The two POE module headers are input pins. They are 4 pin header and receive power from the RJ45 connector with POE+.

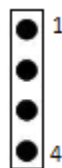


Figure 4: POE Header

Table 7: POE Header Pinout

Pin	Signal
1	PA, Get power supply from the first set of differential signal lines of the network cable
2	PB, Get power supply from the second set of differential signal lines of the network cable
3	PC, Get power supply from the third set of differential signal lines of the network cable
4	PD, Get power supply from the fourth set of differential signal lines of the network cable

2.1.6 Front Panel Header

The front panel connector is a 1.25mm pitch and 6 Pin header.

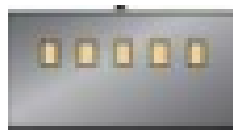


Figure 5: Front Panel Header

Table 8: Front Panel Header Pinout

Pin	Signal
1	3V3
2	Work led(work:light sleep:blind/0:light)
3	Standby led (standby: light/0:light)
4	Power key (standby and sleep,press it,power on/0:ACTIVE)
5	IR in (remote receiver)
6	GND

2.1.7 Clear CMOS Button

CMOS battery header is a 2 pin connector that is a 1.25mm pitch connector.

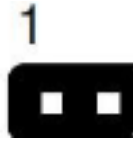


Figure 6: CMOS Header

Table 9: CMOS Clear Pinout

Pin	Signal
1	CMOS BATTERY INPUT PIN, 2V---3.3V active
2	GND

2.2 Chassis I/O Connectors

2.2.1 Connectors - Side Panel

Side connector locations are shown below.



Figure 7: Side Connector Locations

Table 10: Side Connections Defined

Identifier	Connector
1	SD Card Reader
2	Dual USB 3.2 Gen2 Type-A
3	Dual USB 3.2 Gen2 Type-C

The four USB 3.2 Gen2 Type-A and Type-C ports on the side of the board support transfer speeds up to 10Gbps. The dual Type-C ports also support DP 1.2a via “DP Alt Mode” to display output with a maximum output resolution of 4096 x 2160, 60Hz.

2.2.2 Connectors - Rear Panel

Connector locations shown on the back side of the motherboard are shown below.



Figure 8: Back Side Connector Locations

Table 11: Back Side Connections Defined

Identifier	Connector
1	USB 3.2 Gen2 Type-A
2	POE RJ-45
3	RJ 45
4	RJ-45 for Gigabit Ethernet
5	12V Power plug
6	Kensington Lock
7	HDMI Port
8	3.5mm Audio Jack
9	Wi-Fi Antenna

2.3 Mechanical Dimension

The dimensions of the internal PCB are 148mm x 105mm x 1.2mm.

The dimensions of the chassis are 168mm x 115mm x 37.4mm. Also shown in figure 9 below.

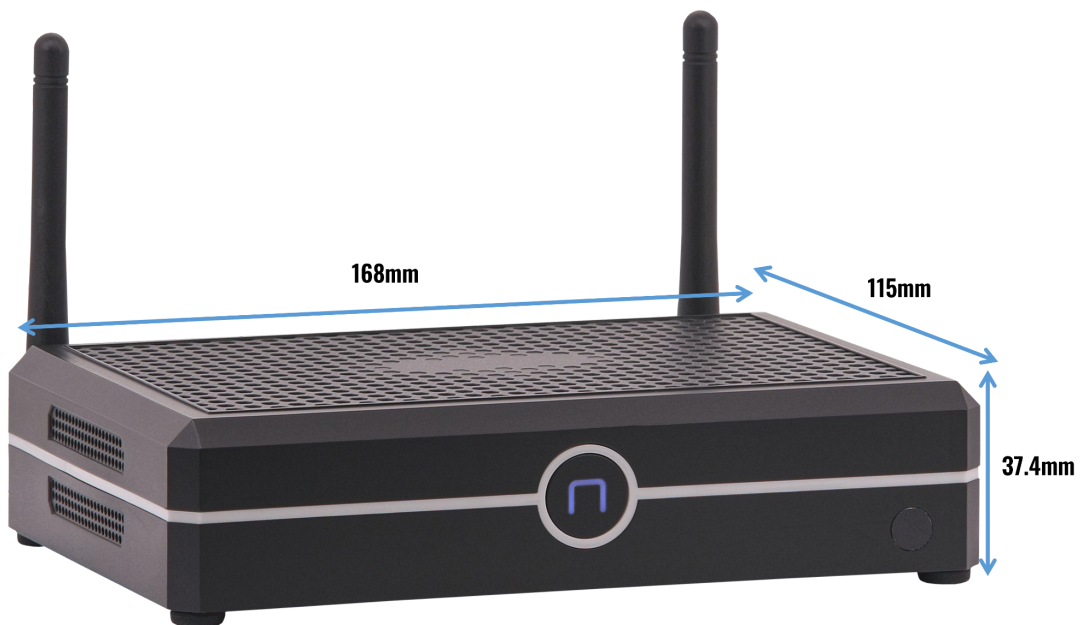


Figure 9: System Dimensions

3 Environmental Specifications

Table 12: Environmental Specifications

Condition	Specification
Input Voltage	12V \pm 10%
Input Voltage Connector	5.5 x 2.5mm Barrel Plug
Recommended PSU Wattage	24W
Operating Temperature	0°C– 30°C
Operating Humidity	5% – 90%
Storage Temperature	-10°C – 50°C
Storage Humidity	5% – 90%

4 Version History

Version	Date	Comments
<i>0.1</i>	<i>2022.01.20</i>	<i>Initial creation</i>
<i>1.0</i>	<i>2023/03/09</i>	<i>1.0 Release Version, formatting and minor technical updates...</i>
<i>1.1</i>	<i>2023/3/13</i>	<i>Updated Max RAM to reflect 64GB</i>
<i>1.2</i>	<i>2023/3/14</i>	<i>Reverted RAM specification to 32GB per Intel's spec on the processor</i>