PC BAREBONE
XPC nano
NA20H2
AMD Ryzen™ 7 H 255 APU

AFFORDABLE NANO-PC WITH AMD APU OFFERS PLENTY OF PROCESSING POWER AND PORTS

The NA20H series featuring AMD processors includes the entry-level model NA20H2, which offers impressive computing power but without NPU. The NA20H5 and NA20H7 models, on the other hand, are based on AMD Ryzen AI processors, whose NPU performance meets the requirements of Microsoft Copilot+ to utilise certain AI features in Windows 11. This Nano PC supports up to 96 GB of DDR5 memory and offers extensive connectivity options, including four UHD graphics ports and two USB4 ports. It offers a powerful and cost-effective solution for applications such as content creation, gaming, entertainment, office tasks and AI.

1 L — 1-LITRE Nano PC
CPU — AMD RYZEN Processor
Supports 96 GB DDR5
M.2 — M.2 SSD Support
4X — 4x DISPLAY Support
2x HDMI 2.0
2x USB4 with DP 1.4
SS — 5x USB 3.2 1x USB 2.0
Dual 2.5G LAN
SD Card Reader
VESA MOUNT included
24/7 — 24/7 Support

NANO DESIGN
■ Nano plastic chassis, black ■ Dimensions: 132 x 143 x 55 mm (WLH), 1.04 Litre (height incl. feet: 57.8 mm) ■ Weight: 800g net
■ Operating temperature: 0~40 °C at 10-90 %RH (non-condensing)
■ VESA mount included, supports 75x75 and 100x100 mm

OPERATING SYSTEM
■ An operating system is not included
■ Supports Windows 11 and Linux (64-bit)
■ Windows driver download: https://go.shuttle.eu/NA20H (no DVD included)

PROCESSOR
■ AMD Ryzen™ 7 H 255 APU, code name "Hawk Point"
■ 4-nm process, cTDP: 35-54 W (configurable)
■ 8 Zen4 Cores (3.8-4.9 GHz), 16 Threads
■ 16 MB L3-Cache + 8 MB L2-Cache
■ Dual fan heat-pipe cooling system for optimized air-flow: 80 mm CPU fan and 60 mm chassis fan (bottom)

GRAPHICS ENGINE
■ AMD Radeon 780M graphics accelerator
■ supports four independent UHD displays at 60 Hz

RAM MEMORY SUPPORT
■ 2x 262-pin SO-DIMM slot ■ Supports up to 2x 48 GB DDR5-5600

M.2 SLOTS AND CARD READER
■ 1x M.2-2280M slot supports one SSD card with PCIe Gen 4 x4 NVMe
■ 1x M.2-2230E slot supports M.2 WLAN card (not included), two internal antennas are already pre-installed
■ 1x SD Card Reader (left side)

CONNECTORS
■ 2x HDMI 2.0 ■ 2x USB4 Type-C (max. 40 Gbps) supports DisplayPort 1.4 and 3A PD ■ 5x USB 3.2 Gen2 Type-A (max. 10 Gbps) ■ 1x USB 2.0
■ 2x 2.5G LAN (Realtek) ■ 3.5 mm Audio Combo port ■ DC input 19 V
■ Power Button with Power LED Indicator

POWER ADAPTER
■ 120W power adapter (DC: 19V/6.32A, 3-pin AC plug with earth contact)

EMC & SAFETY
■ EMI: CE, FCC, BSMI
■ Safety: CB IEC62368, cTUVus (UL 62368), BSMI

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MODELS OF THE NA20U SERIES

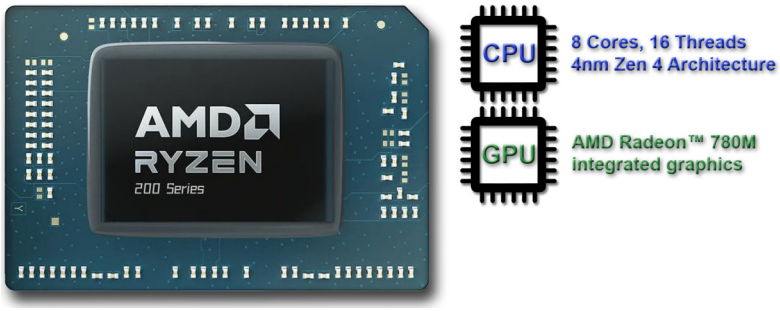
Shuttle Model	AMD Processor (APU)	Processor Code Name	Cores (Threads)			CPU Clock Frequency Base-Turbo	L2/L3 Cache	NPU Perf.	Radeon Graphics	cTDP configurable	UPC Bar Code
			Zen 5	Zen 5C	Zen 4						
NA20H2	Ryzen 7 H 255	Hawk Point	—	—	8 (16)	3.8-4.9 GHz	8/16 MB	—	780M	35/45/54 W	887993009674
NA20H5	Ryzen AI 5 Pro 340	Krackan Point	3 (6)	3 (6)	—	2.0-4.8 GHz (2.0-3.4 GHz)	6/16 MB	50 TOPS	840M	35/45/54 W	887993008745
NA20H7	Ryzen AI 7 Pro 350	Krackan Point	4 (8)	4 (8)	—	2.0-5.0 GHz (2.0-3.5 GHz)	8/16 MB	50 TOPS	860M	35/45/54 W	887993008738

PRODUCT FEATURES

Quad 4K/UHD Display support

NA20H2 features four digital video outputs:
2x HDMI 2.1 and 2x DisplayPort 1.4 via USB-C.

This allows for the connection of four independent displays at 4K resolution (3840 x 2160), leveraging hardware decoding and encoding for popular video codecs. Using four displays can be a game-changer in various applications, enhancing productivity and providing a more immersive experience. This is advantageous for scenarios such as: Financial Trading, Software Development, Graphic Design, Video Editing, Gaming, Command Centers, Surveillance.



AMD Ryzen™ AI 5 Pro 340 Processor

The NA20H2's advanced Zen 4 architecture supercharges productivity across diverse scenarios. In data analysis, it speeds up complex calculations, while in scientific simulations, it enables real-time modeling. For content creators, AI-enhanced tools accelerate video editing and 3D rendering, significantly reducing production time.

The integrated top-tier Radeon 780M graphics (GPU) with 12 compute units (768 Shader) is one the fastest of its kind and performs competitively in games and real-life applications – best choice if graphics performance is crucial for you.

The NA20H2 does not include a Neural Processing Unit (NPU). For this feature, select the NA20H5 or NA20H7 models.

x2
DDR5-5600
M.2 SSD
SD CARD

Fast Data Access with DDR5 and PCIe 4.0

Experience high-bandwidth, energy-efficient, and unparalleled speed memory for smooth multitasking and data-intensive tasks.
Benefit from the advantages of DDR5 memory with higher bandwidth and lower voltage compared to DDR4.
NA20H2 also features a M.2-2280-Slot with PCI-Express Gen. 4 interface for faster speeds of compact modern M.2 SSD cards.
NA20H2 also integrates a SD card reader for quickly access documents, photos and other files on your SD card.

Multiple modern I/O Ports

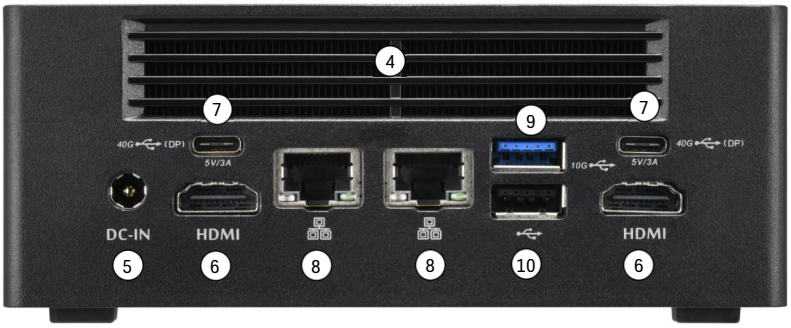
The NA20H2 can connect up to four digital 4K/UHD displays. Two USB4 Type-C ports support data transfer speeds of up to 40 Gbps, significantly faster than previous USB versions. Five USB 3.2 plus one USB 2.0 allow you to connect a variety of legacy and modern devices simultaneously. Dual 2.5G LAN ports provide higher network speeds compared to traditional 1G ports, making them ideal for bandwidth-intensive applications like gaming, video streaming, and large file transfers. The Audio Combo port supports both headphone and microphone connections. It allows you to connect a headset with an integrated microphone, making it convenient for activities like video calls, gaming, and listening to music.

Front and Back Panel

Front Panel

1. 4x USB 3.2 Gen 2 Type-A Port
   Note: the left USB port delivers 0.9A/5V even in S5/Off mode
2. 3.5 mm Audio Combo port supports headphones and headsets (with microphone)
3. Power button with Power LED

Back Panel

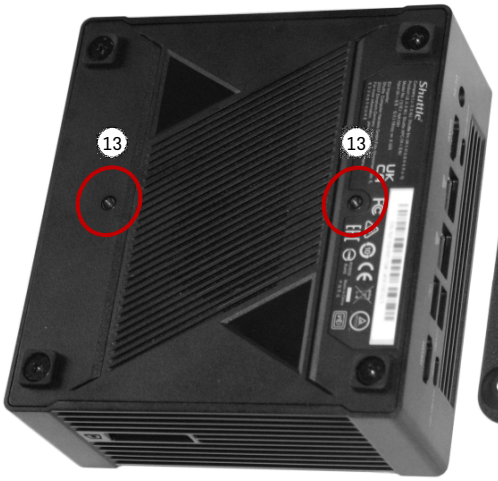


4. Ventilation openings
5. DC-in connector for power adapter
6. 2x HDMI 2.1
7. 2x USB4 Type-C (max. 40 Gbps) with DisplayPort function (DP 1.4) and Power Delivery (PD max. 5V / 3A)
8. 2x 2.5G LAN Port (RJ45)
9. USB 3.2 Gen 2 Port (max. 10 Gbps)
10. 1x USB 2.0 Port
11. SD Card Reader
12. Hole for the Kensington Lock

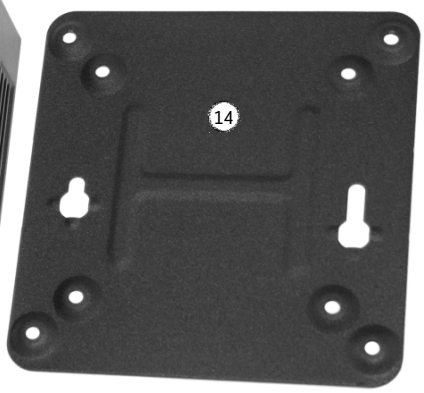
Left View

Right View

Bottom View



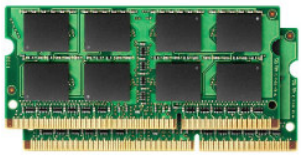
VESA Mount



13. Threads for installing the VESA mount (please refer to the Quick Installation Guide)
14. VESA mount supports 75x75 mm and 100x100 mm (screws included)

REQUIRED COMPONENTS

The following components need to be added to make it a fully-configured Mini PC:



(1) Memory Modules

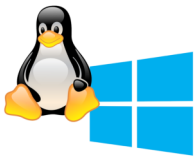
Supports two SO-DIMM DDR5 memory modules
- type: DDR5-5600 (or higher clock rate)
- form factor: SO-DIMM with 262 pins
- max. capacity per module: 48 GB
- total capacity of two modules: max. 96 GB

(2) M.2 SSD Card

Supports one M.2 SSD card
- form factor: M.2-2280 (the length is 80 mm)
- interface: PCI-Express (supports PCEe Gen4x4 and NVMe)
  Note: SATA is not supported!

(3) M.2 WLAN Card (optional)

Supports one WLAN card in M.2-2230 (E-Key) form factor, which is not included in the scope of delivery (possible models: e.g. Intel AX200, AX210 or AzureWave AW-XB547NF, AW-XB591NF or similar).
Two internal antennas are pre-installed, so you just need to install the WLAN module and connect the antennas.



(4) Operating System

Windows 11 or Linux (64-bit only)
Windows driver download: https://go.shuttle.eu/NA20H

For installation please refer the Quick Installation Guide.

Shuttle AI-PC Product Overview

	NA20H Series	NA10H Series	NT10H Series	DN11H Series
Product Models Processor-Type	AMD processor **NA20H2** –Ryzen 7 H 255 **) **NA20H5** –Ryzen AI 5 Pro 340 **NA20H7** –Ryzen AI 7 Pro 350 Code name "Krackan Point" (Zen5/5c)	AMD processor **NA10H7** –Ryzen R7-8845HS Code name "Hawk Point" (Zen4)	Intel processor **NT10H5** – Core Ultra 5-125H **NT10H9** – Core Ultra 9-185H Code name "Meteor Lake-H"	Intel processor **DN11H5** – Core Ultra 5-125H **DN11H7** – Core Ultra 7-155H **DN11H9** – Core Ultra 9-185H) Code name "Meteor Lake-H"
Chassis Dimensions	**1.04L Nano Chassis** 132 x 143 x 55 mm (WDH)	**1.04L Nano Chassis** 132 x 143 x 55 mm (WDH)	**1.04L Nano Chassis** 132 x 143 x 55 mm (WDH)	**1.35L Slim Chassis** 165 x 190 x 43 mm (WDH)
Operation System Support	Windows 11 & Linux (64-bit) Windows drivers available as download	Windows 11 & Linux (64-bit) Windows drivers available as download	Windows 11 & Linux (64-bit) Windows drivers available as download	Windows 11 & Linux (64-bit) Windows drivers included (DVD)
M.2 Slots for SSD Cards	1x Slot M.2-2280 supports PCIe Gen4x4/NVMe (SATA not supported)	1x Slot M.2-2280 supports PCIe Gen4x4/NVMe (SATA not supported)	1x Slot M.2-2280 supports PCIe Gen4x4/NVMe (SATA not supported)	**3x Slots M.2-2280** supports PCIe Gen4x4/NVMe supports NVMe Raid 0, 1 and 5 supports SATA (only 2 slots) supports SATA Raid 0 and 1
RAM Support	max. **2x 48 GB** DDR5-5600 (SO-DIMM)	max. **2x 48 GB** DDR5-5600 (SO-DIMM)	max. **2x 48 GB** DDR5-5600 (SO-DIMM)	max. **2x 48 GB** DDR5-5600 (SO-DIMM)
Integrated Graphics	**AMD Radeon™ 840M/860M**)** **supports 4x UHD-Displays** 2x HDMI 2.0 2x USB4 Type-C (with DP 1.4)	**AMD Radeon™ 780M** **supports 4x UHD-Displays** 2x HDMI 2.0 2x USB4 Type-C (with DP 1.4)	**Intel® Arc™ mit Xe-Cores** **supports 4x UHD-Displays** 2x HDMI 2.0 2x USB4 Type-C (with DP 1.4)	**Intel® Arc™ mit Xe-Cores** **supports 4x UHD-Displays** 2x HDMI 2.1 2x DisplayPort 1.4
USB Ports	2x USB4 Type-C (with DP 1.4) 5x USB 3.2 Gen 2 Type-A 1x USB 2.0	2x USB4 Type-C (with DP 1.4) 5x USB 3.2 Gen 2 Type-A 1x USB 2.0	2x USB4 Type-C (with DP 1.4) 5x USB 3.2 Gen 2 Type-A 1x USB 2.0	2x USB 3.2 Gen 2x2 Type-C 6x USB 3.2 Gen 2 Type-A
Audio Ports	Audio Combo Port (3.5 mm) supports Mic-in and Line-out	Audio Combo Port (3.5 mm) supports Mic-in and Line-out	Audio Combo Port (3.5 mm) supports Mic-in and Line-out	1x Microphone Input (3.5 mm) 1x Line-out Output (3.5 mm)
Card-Reader	Yes	Yes	Yes	—
LAN Ports	**Dual LAN – Realtek RTL8125B** 2x 2.5 Gbps RJ45 Ports	**Dual LAN – Realtek RTL8125B** 2x 2.5 Gbps RJ45 Ports	**Dual LAN – Intel i226V** 2x 2.5 Gbps RJ45 Ports	**Quad LAN – Intel i226LM** 4x 2.5 Gbps RJ45 Ports
WLAN	prepared *)	prepared *)	prepared *)	optional (WLN-M1)
VESA Mount	included (75x75 & 100x100 mm)	included (75x75 & 100x100 mm)	included (75x75 & 100x100 mm)	included (75x75 & 100x100 mm)
Power Adapter	120 W, 19V	120 W, 19V	120 W, 19V	120 W, 19V
Optional Accessories	—	—	—	Cable for external Power Button (CXP01) 2U Rack Mount Kit (PRM01) DIN-Rail Mount (DIR01) Vertical Stand (PS02) WLAN Kit with ext. ant. (WLN-M1) 4G/5G Kit with 4 ant. (WWN04)
Front View				
Rear View				

Footnotes:

*) **Supports one WLAN card** in M.2-2230 (E-Key) form factor, which is not included in the scope of delivery (possible models: e.g. Intel AX200, AX210 or AzureWave AW-XB547NF, AW-XB591NF or similar). Two internal antennas are pre-installed, so you just need to install the WLAN module and connect the antennas.

) **NA20H2 with AMD Ryzen 7 H 255 processor (with code name: "Hawk Point") has no integrated NPU and features the integrated Radeon 780M graphics

SHUTTLE XPC nano BAREBONE NA20H2 — SPECIFICATIONS

CHASSIS	Barebone PC with a black plastic chassis Dimensions: 132 x 143 x 55 mm (WLH) = 1038 ml The height is 57.8 mm including rubber feet Weight: 0.8 kg net, 1.7 kg gross Hole for Kensington Lock Includes VESA mount for 75x75 and 100x100 mm standard
OPERATION SYSTEM	This barebone system comes without operating system. It is compatible with: - Windows 11, 64-bit - Linux, 64-bit Windows 11 driver download: https://go.shuttle.eu/NA20H
PROCESSOR	APU Model: AMD Ryzen™ 7 H 255 Code name: "Hawk Point" with Zen 4 architecture System-on-a-chip architecture (SoC) with integrated memory and graphics controller 8 CPU cores with 16 Threads, 3.8 - 4.9 GHz clock rate Cache memory: 6 MB L2 cache and 16 MB L3 cache Default TDP: 45 W AMD Configurable TDP (cTDP): 35-54 W [1] AI performance of the XDNA2 NPU: up to 50 TOPS (INT8) Overall AI performance (including NPU, CPU, GPU): up to 59 TOPS Supported extensions: AES, AMD-V, AVX, AVX2, AVX512, FMA3, MMX-plus, SHA, SSE, SSE2, SSE3, SSE4.1, SSE4.2, SSE4A, SSSE3, x86-64 Manufacturing process technology of the cores: TSMC 4nm FinFET Maximum Tjunction Temperature (Tjmax): 100 °C
COOLING SYSTEM	Heat-pipe cooling system with dual fan concept for optimal airflow: 1) Processor fan 80 mm 2) Chassis fan (bottom) 60 mm Supports temperature-controlled RPM fan speed **[1]**
INTEGRATED GRAPHICS	AMD Radeon™ 780M graphics engine Graphics cores: 12 CUs / 768 Shader CPU clock: 2600 MHz This PC supports up to four independent screens with up to 4K/60Hz (Ultra HD 3840×2160 resolution): - 2x HDMI 2.1 - 2x USB4 Type-C with DisplayPort 1.4 function
UEFI FIRMWARE (BIOS)	AMI UEFI Firmware (BIOS) Supports resume after power failure Supports Wake-on-LAN (WOL) and Power on by real time clock (RTC) Supports Firmware TPM v2.0 (fTPM) (Hardware TPM with Infineon SLB9670VQ2.0 optional, on project request only)
MEMORY SUPPORT	2x SO-DIMM slot with 262 pins Supports DDR5-5600 (PC5-44800) SDRAM at 1.1 V Supports Dual Channel mode Supports a maximum of 48 GB per DIMM, maximum total size: 96 GB Supports two unbuffered DIMM modules (no ECC or registered)
M.2-2280M SSD SLOT	M.2-2280M slot for SSD cards in M.2 form factor Supports PCIe Gen4 x4 with NVMe (no SATA) Supports M.2 cards with a width of 22 mm and a length of 80 mm Supports M.2 cards with M key or B+M key
AUDIO	RealTek ALC269Q-VC3-GR Audio Controller 3.5 mm / 4-pole combo audio connector (combines Line-out and Microphone input) Can be used for headphones/headsets with 3- or 4-pole jack plug **[2]** Digital multi-channel audio output: via HDMI and DisplayPort (USB-C)

DUAL 2.5G LAN	Two RJ45 ports with 2 status LEDs each Ethernet Controller: Realtek RTL8125BG Supports 10 / 100 / 1.000 / 2.500 MBit/s operation (max. 2.5 Gbps) Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
M.2-2230-SLOT FOR WLAN CARDS	M.2-2230E slot supports WLAN expansion cards Interfaces: PCI-Express X1 and USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) This PC comes with two pre-installed internal WLAN antennas with I-PEX4/MHF-IV connectors
SD CARD READER (LEFT SIDE)	SD card reader with PCIe interface Supports SD cards in the size of 24 mm × 32 mm Supports Micro SD (11 x 15 mm) cards with appropriate adapter (not included) Supports SDHC (4 GB - 32 GB) and SDXC (32 GB - 2 TB).
FRONT PANEL CONNECTORS	1x Power button with Power LED (blue) 4x USB 3.2 Gen 2 Type-A (max. 10 Gbps) Note: the left USB port supports USB power in S5/Off mode (max. 0.9 A) 1x Audio Combo port (3.5 mm jack plug, 4-pole) **[2]**
BACK PANEL CONNECTORS	2x HDMI 2.1 2x USB4 Type-C (max. 40 Gbps) with DisplayPort function (DP 1.4) and Power Delivery (PD max. 5V / 3A) 1x USB 3.2 Gen 2 Type A (max. 10 GBit/s) 1x USB 2.0 2x 2.5G Ethernet LAN (RJ45, Realtek RTL8125BG) 1x DC-Eingang für externes Netzteil (5,5 / 2,5 mm)
POWER ADAPTER	External 120 W power adapter (fanless) Dimensions: 64.5 mm x 22.5 mm x 98 mm (WHD) Input: 100~240 V AC, 50-60 Hz, max. 1.4 A Output: 19.0 V DC, max. 6.32 A, max. 120 W DC cable ca. 150 cm with coaxial connector: 5.5 / 2.5 mm (outer/inner diameter) The DC-input of the computer supports 19V ± 5%. AC cable, ca. 170 cm, 3-pin Micky MM C6 and Schuko earthed safety plug
BUTTON CELL BATTERY	The product contains a built-in 3V button cell battery For further information see footnote **[3]**
SUPPLIED ACCESSORIES	- Multi-language Quick Installation Guide - VESA mount with screws (supports 75x75 and 100x100 mm standards) - Heat sink with two thermal pads for the M.2 SSD card - Power adapter 120 W with AC power cord A DVD driver disk is not supplied. Windows 11 driver download: https://go.shuttle.eu/NA20H
ENVIRONMENTAL SPECIFICATIONS	Operating temperature range: 0~40 °C Relative humidity range: 10~90% (non-condensing)
CERTIFICATIONS / COMPLIANCE	EMI: CE, FCC, BSMI Safety: CB IEC60950/62368, cTUVus (UL 62368), BSMI Other: RoHS, Energy Star, ErP This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office. The CE-mark approves the conformity by the EU directives: (1) 2004/108/EC relating to electromagnetic compatibility (EMC), (2) 2006/95/EC relating to Electrical Equipment designed for use within certain voltage limits (LVD), (3) 2009/125/EC relating to ecodesign requirements for energy-related products (ErP)

Footnotes:

[1] Configurable fan speed and power consumption of the processor
In the BIOS setup, there is a "Fan Mode" option on the "Advanced" page to configure the fan control, which also has an effect on the maximum power consumption of the processor. The default setting "Normal Mode" offers a good balance between performance, temperature and fan speed. The "Fan Mode" setting also defines the upper limits for the average power dissipation (cTDP) and short-term power dissipation in turbo mode (Turbo TDP):

„Fan Mode" Setting	CPU Performance	Fan Speed	cTDP	Turbo TDP
Performance Mode	maximum	high	54 W	65 W
Normal Mode	high	medium	45 W	65 W
Silent Mode	medium	low	35 W	50 W

[2] Audio connector
The 3.5 mm audio jack at the front panel of this device supports both: headphones with a 3-pole connector and also headsets (with microphone) with a 4-pole connector. Headsets with separate connectors for headphones and microphone, though, require an appropriate adapter, if also the microphone should be used.

[3] Button Cell Battery

- **Purpose:**
  The built-in button cell battery on the mainboard supplies the CMOS memory and the Real-Time Clock (RTC) with power so that certain settings are retained and the internal clock continues to run – even if the PC is completely switched off or disconnected from the power supply.
- **Specification:**
  Model: Shenzhen Lideo (Brand: Malak) CR2032 with 75 mm cable and connector (Molex 51021-8602, 2-pin, 1.25 mm pitch)
  Type: Lithium metal battery, non-rechargeable, transport identification: UN 3091 (battery is built-in)
  Nominal voltage: 3.0V, nominal capacity: 230 mAh (0.69 Wh)
  Dimensions: 20 mm diameter, 3.2 mm thickness
  Weight: 3.1 g, of which 0.062 g lithium (2.0%)
- **Manufacturer:** The M&LAK (Hong Kong) holding company owns these companies:
  - Shenzhen Lidea Battery Co., Ltd (Factory), Lidea-Malak Tech. Park, No.249 Lidu Road, Loucun, Guangming District, Shenzhen, China, http://lideabattery.com/
  - Shenzhen Malak Industrial Co., Ltd = (Sales and commercial center), No.5, Houhai Xufa science and technology Park, GongMing new district, Shenzhen, China, http://www.malak.cn/
- **Certificates:**
  Material Safety Data Sheet (MSDS), UN38.3 test report, ISO 9001 of the manufacturer, EU DoC
  Download here: https://go.shuttle.eu/Py1Jn
- **Replace the battery:**
  If the PC issues error messages about the clock or CMOS when starting up, the system's CMOS battery probably needs to be replaced. Use a model with the same technical characteristics as a replacement battery or contact our technical support at support@shuttle.eu.
  The replacement of a CMOS battery may only be carried out by qualified specialist personnel. Improper handling can lead to damage to the mainboard, loss of data or electrical risks. Disconnect the device from the power supply before opening it. Make sure that you do not injure yourself on the sharp metal edges inside the computer. Open the device according to the Quick Installation Guide supplied. Find the battery and pull on the connecting cable so that the plug comes off the mainboard (see photo below). Before pulling out, pay attention to the polarity based on the cable colours (red and black). Carefully remove the old battery, which is stuck on with an adhesive pad. With the new battery, remove the protective film from the adhesive pad and stick the battery in the same position, connect the cable and reassemble the PC. When switching on for the first time, press the "DEL" key, load the "Default Settings" in the BIOS and make any other necessary settings before saving the settings and exiting the BIOS setup.

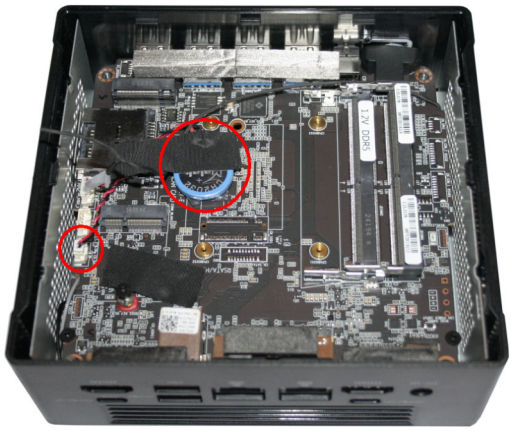
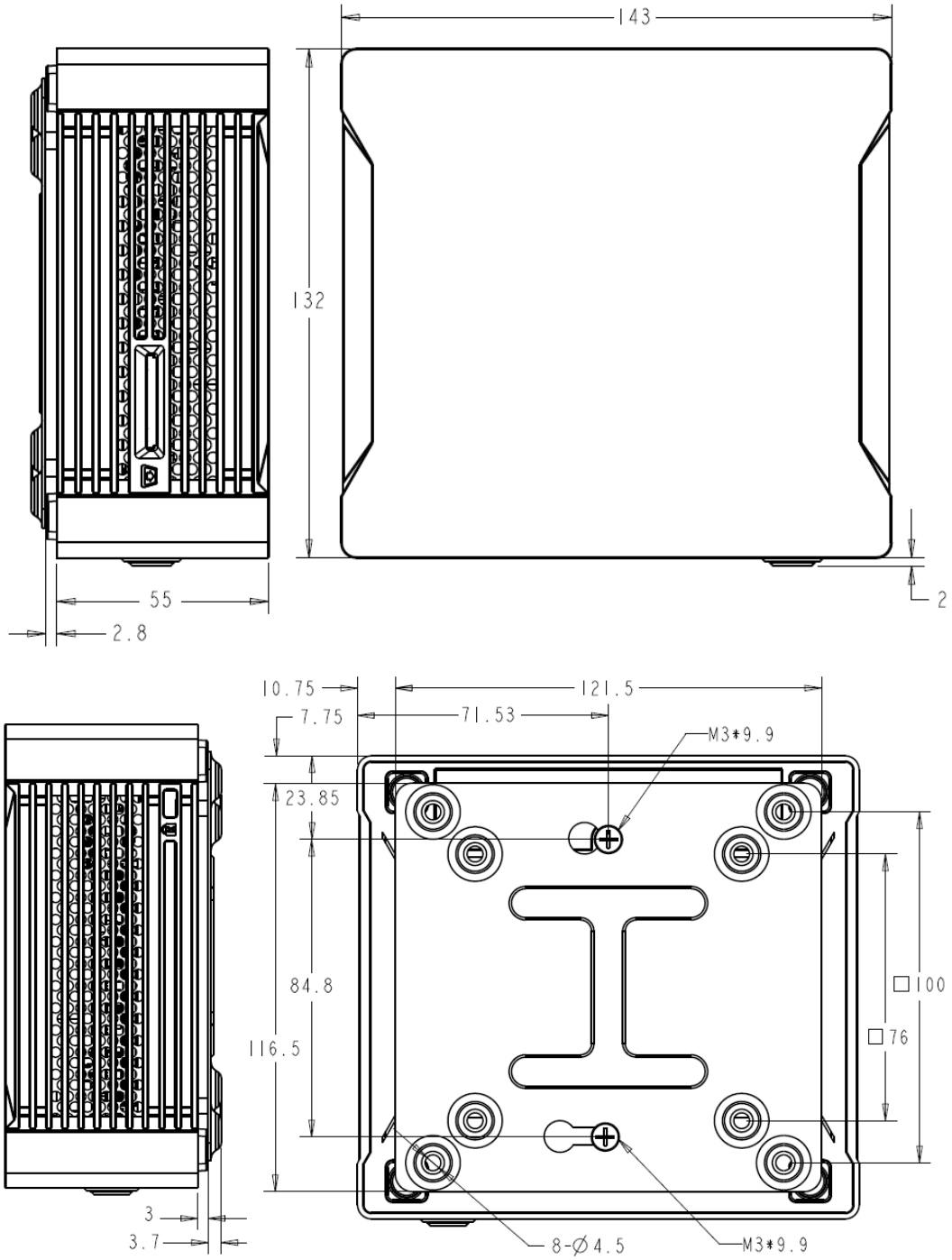


Photo: Position of the button cell battery and the connector on the mainboard with the computer housing open.

- **Disposal:**
  Batteries are classified as hazardous waste and must be disposed of properly. Do not throw them in the household trash. Dispose of batteries at the designated collection points prescribed by law in your country, e.g. at the dealers' collection points.
- **Safety instructions:**
  This product contains a lithium button cell battery that can cause serious or fatal injury within 2 hours if swallowed. Not intended for children under the age of three.

SHUTTLE XPC nano BAREBONE NA20H2 — Technical Drawings



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