

BAREBONE XPC nano NC50N

Processor: Intel N150

AFFORDABLE NANO PC WITH LOTS OF FEATURES

The NC50N comes with efficient Intel N150 Quad-Core processor, codenamed "Twin Lake-N". Despite the nano format with only 850 ml volume, it offers enormous connection variety and expansion options. Thus, up to two UHD displays (4K/60Hz) and up to seven USB 3.2 devices can be connected, and two NVMe/SSD cards in M.2-2280 format as well as one 2.5" hard drive (up to 15 mm thickness) can be installed. The NC50N series is ideal for Digital Signage, POS, control, office or even multimedia.



16 GB DDR5 SUPPORT



Dual Display SUPPORT



HDMI 2.0b



DISPLAY-PORT 1.4a



1x USB-C



6x USB 3.2 TYPE-A PORTS



INTEL 2.5G LAN PORT



2x NVMe SSD SUPPORT



2.5" HDD/SSD SUPPORT



VESA MOUNT



Optional Stand



Always-On Jumper

NANO DESIGN

- Slim plastic chassis, black
- Dimensions: 142 x 142 x 42 mm (LWH), 850 ml
- Including VESA mount (75/100 mm)
- Optional stand
- Operating temperature: 0~40 °C (non-condensing)

OPERATING SYSTEM

- An operating system is not included
- Supports Windows 11 and Linux (64-bit)

PROCESSOR

- Intel N150 processor, code name "Twin Lake-N"
- 4 Cores, max. 3.6 GHz, 6 MB Smart Cache
- Soldered SoC with 6 W TDP, Intel 7 process (10 nm)

GRAPHICS

- Integrated Intel graphics, GPU clock up to 1 GHz
- Supports two Ultra-HD displays at 60 Hz via HDMI and DisplayPort

RAM MEMORY SUPPORT

- 1x 262-pin SO-DIMM slot
- Supports up to 16 GB DDR5-4800

STORAGE – M.2 / 2.5"

- 2x M.2-2280M slot (supports PCIe Gen 3 x2 NVMe, no SATA)
- 1x 2.5" bay for SATA hard disk (max. 15 mm) or SSD

CONNECTORS

- HDMI 2.0b
- DisplayPort 1.4a
- 7x USB 3.2 Gen 1 (1x USB-C)
- 1x Intel 2.5G LAN (Intel 226LM)
- 2x Audio (Microphone-in + Line-out)
- DC input 19 V

POWER SUPPLY

- External 65W / 19V power adapter

OPTIONAL WLAN

- M.2-2230E slot supports one optional WLAN module
- Two internal WLAN antennas pre-installed
- Optional Shuttle Accessory **WLN-M12**: WLAN kit with two external antennas supports Wi-Fi 6E / 802.11ax and Bluetooth 5.2



MODELS OF THE NC50N and NW10U SERIES

Shuttle Model	Intel Processor	Cores		Base/Turbo Clock		Smart Cache	Graphics		NPU	TDP	UPC Bar Code
		P	E	P	E		Type	Max. Clock			
NC50N	Intel N150	0	4	—	0.8 / 3.6 GHz	6 MB	UHD	1.0 GHz	—	6 W	887993009544
NW10U3	Intel Core 3 304	1	4	1.5 / 4.3 GHz	1.4 / 3.3 GHz	6 MB	Xe	2.3 GHz	15 TOPS	15 W	TBA
NW10U5	Intel Core 5 320	2	4	1.5 / 4.6 GHz	1.4 / 3.4 GHz	6 MB	Xe	2.5 GHz	16 TOPS	15 W	TBA
NW10U7	Intel Core 7 350	2	4	1.5 / 4.8 GHz	1.4 / 3.6 GHz	6 MB	Xe	2.6 GHz	17 TOPS	15 W	TBA

Front and Back Panel

Front Panel



- 1. 2x USB 3.2 Gen 1 Port (blue)
- 2. USB-C (USB 3.2 Gen 1)
- 3. Microphone input
- 4. Headphones output
- 5. LED indicator for storage activity
- 6. Power button
- 7. LED indicator for power state

Back Panel



- 8. DC-in connector for power adapter
- 9. DisplayPort 1.4a audio/video output
- 10. HDMI 2.0b audio/video output
- 11. 4x USB 3.2 Gen 1 Port (blue)
- 12. RJ45 2.5G LAN Port (Intel 226LM)
- 13. Ventilation openings
- 14. Mounting holes for optional vertical stand

Side View



- 15. 2x perforation for optional WLAN antennas
- 16. Hole for the Kensington Lock
- 17. VESA mount (two parts with screws)

VESA Mounting



REQUIRED COMPONENTS

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

Top View



(1) Memory Module

One module DDR5-4800 or higher rating
SO-DIMM form factor (262 pins)
Capacity: max. 16 GB



(2) 2x M.2-2280 SSDs

Supports up to two SSD cards in M.2-2280 form factor
Both slots support NVMe (PCIe Gen3 x2)
Note: SATA is not supported
(Two thermal pads included in delivery)



(3) 2.5" Storage Drive

Supports one 2.5" SATA hard disk
or Solid State Disk (SSD)
(max. height: 15 mm)



(4) M.2 WLAN Module (optional)

Supports one standard M.2-2230 WLAN module
Two internal antennas are already pre-installed
and antenna cables are ready to be connected.



Optional Shuttle WLAN-Accessory Kit with two external antennas

WLN-M12 (802.11ax / Wi-Fi 6E / BT 5.2)

Including WLAN card and two external antennas with
cables (internal antennas can also be used instead)



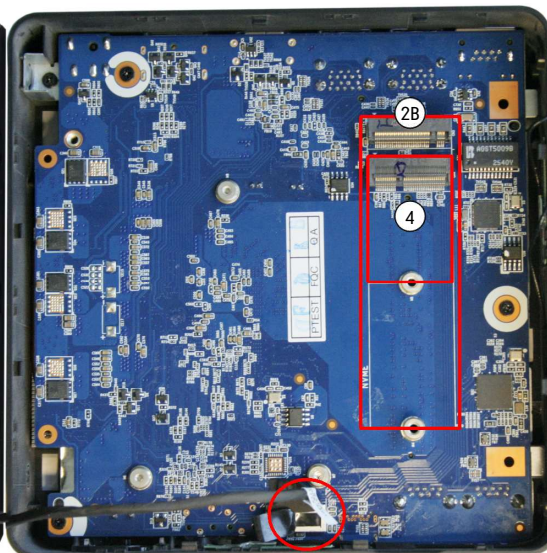
(5) Operating System

Windows 11 or Linux (64-bit only)







Bottom View



2.5" tray
with hard disk



Shuttle Product Comparison: NW10U and NC50N versus predecessor NC40U

MODEL	NW10U Series	NC50N	NC40U Series
Chassis	Plastic chassis, black LWH: 103 x 97 x 36.5 mm (365 ml)	Plastic chassis, black LWH: 142 x 142 x 42 mm (847 ml)	Plastic chassis, black LWH: 142 x 142 x 42 mm (847 ml)
Processor	NW10U3: Intel Core 3 304 NW10U3: Intel Core 5 320 NW10U3: Intel Core 7 350 Intel "Wildcat Lake-U" Technology: 18A (1.8 nm), TDP: 15 W	NC50N: Intel N150 Processor Intel "Twin Lake-N" Technology: Intel 7 (10 nm), TDP: 6 W	NC40U: Intel Celeron 7305 NC40U3: Intel Core i3-1215U NC40U5: Intel Core i5-1235U NC40U7: Intel Core i7-1255U Intel "Alder Lake-U" (12th Gen Core) Technology: 10 nm, TDP: 15 W
RAM Support	1x SO DIMM (262-pins) max. 1x 64 GB DDR5-6400	1x SO DIMM (262-pins) max. 1x 16 GB DDR5-4800 (or higher)	2x SO DIMM (260-pins) max. 2x 32 GB DDR4-3200
2.5" bay	—	Supports 2.5" SATA drive max. height: 15 mm	Supports 2.5" SATA drive max. height: 15 mm
M.2-2280 slot	Two M.2-2280M slots: 1) supports PCIe Gen4 X2 2) supports PCIe Gen4 X2 No SATA support	Two M.2-2280M slots: 1) supports PCIe Gen3 X2 2) supports PCIe Gen3 X2 No SATA support	Two M.2-2280M slots: 1) supports PCIe Gen3 X4 and SATA 2) supports PCIe Gen4 X4 Supports Intel VMD Raid function
Video	Supports Triple 4K/UHD Display via HDMI 2.1 and 2x DP 2.1 (USB-C)	Supports Dual 4K/UHD Display via HDMI 2.0b and DP 1.4a	Supports Triple 4K/UHD Display via HDMI 2.0b and 2x DP 1.4a (1x USB-C)
Audio	C-Media CM6542 (USB)	C-Media CM6542 (USB)	C-Media CM6542 (USB)
LAN (Network)	Supports Gigabit (Intel i219LM)	Supports 2.5G (Intel 226LM)	Supports Gigabit (Intel i219)
WLAN (M.2-2230 Slot)	Prepared for optional WLAN card M.2-2230E slot onboard 2x internal antennas pre-installed	Prepared for optional WLAN card M.2-2230E slot onboard 2x internal antennas pre-installed	Prepared for optional WLAN card M.2-2230E slot onboard 2x internal antennas pre-installed
Front Panel	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 2, Type A 3.5 mm Combo Audio (Mic + Headph.)	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 1, Type A 1x USB 3.2 Gen 1, Type C 2x 3.5 mm Audio (Mic + Headphones)	On/Off button Power LED, HDD LED 2x USB 3.2 Gen 1, Type A 1x DP 1.4a / USB 3.2 Gen 1, Type C 2x 3.5 mm Audio (Mic + Headphones)
Back Panel	HDMI 2.1 2x DP 2.1 / USB 3.2 Gen 2, Type-C 2x USB 2.0 RJ45 Gigabit LAN (i219LM) DC-Input for power adapter	HDMI 2.0b DisplayPort 1.4 4x USB 3.2 Gen 1, Type A RJ45 2.5G LAN (i226LM) DC-Input for power adapter	HDMI 2.0b DisplayPort 1.4a 2x USB 3.2 Gen 2, Type A 2x USB 3.2 Gen 1, Type A RJ45 Gigabit LAN (i219) DC-Input for power adapter
Right Side	—	2x Perforation for optional ext. antennas	2x Perforation for optional ext. antennas
Power Adapter	65 W (19 V, 3.42 A)	65 W (19 V, 3.42 A)	65 W (19 V, 3.42 A)
Vertical Stand	—	Optional	included
VESA Mount	Included (75x75 mm)	included (75x75 / 100x100 mm)	included (75x75 / 100x100 mm)
Optional Accessories	—	WLN-M12: WLAN kit with ext. antennas PS02: Vertical Stand	WLN-M12: WLAN kit with ext. antennas
Front View			
Back View			

SHUTTLE XPC nano BAREBONE NC50N — SPECIFICATIONS

CHASSIS	<p>Barebone PC with a black plastic chassis</p> <p>Dimensions: 142 x 142 x 42 mm (LWH) = 847 ml</p> <p>Weight: 0.4 kg net, 1.2 kg gross</p> <p>Hole for Kensington Lock</p> <p>Includes vertical stand and 75 / 100 mm VESA mount</p>
OPERATION POSITION	<p>1) Horizontal</p> <p>2) Vertical with optional stand (Accessory PS02)</p> <p>3) VESA-mounted behind an appropriate monitor</p>
OPERATION SYSTEM	<p>This barebone system comes without operating system.</p> <p>It is compatible with</p> <ul style="list-style-type: none"> - Windows 11, 64-bit - Linux, 64-bit
PROCESSOR	<p>Model: Intel® Processor N150</p> <p>Max. Turbo clock frequency: 3.6 GHz</p> <p>Code name: "Twin Lake"</p> <p>Intel 7 (10 nm) process, BGA1264 package (soldered)</p> <p>CPU cores / Threads: 4 / 4</p> <p>L2 Cache: 6 MB</p> <p>Thermal Design Power (TDP): 6 W</p> <p>System-on-Chip processor (SoC) with integrated graphics processor, no chipset required</p>
COOLING FAN	<p>Built-in CPU cooling fan with 4-pin connector</p> <p>Supports temperature-controlled RPM fan speed</p>
INTEGRATED GRAPHICS	<p>Intel® Graphics</p> <p>GPU clock frequency: max. 1000 MHz</p> <p>Execution Units (EUs): 24</p> <p>Supports DirectX 12.1, OpenGL 4.6, OpenCL 3.0</p> <p>Two video ports supports up to two independent screens with up to 4K/60Hz (Ultra HD 3840×2160 resolution):</p> <ol style="list-style-type: none"> 1) DisplayPort (DP 1.4a) 2) HDMI-Port (HDMI 2.0b)
UEFI FIRMWARE (BIOS)	<p>AMI BIOS in 32 MByte EEPROM with SPI interface</p> <p>Supports resume after power failure</p> <p>Supports Wake on LAN (WOL)</p> <p>Supports Power on by RTC Alarm</p> <p>Supports Hardware Monitoring and Watchdog function</p> <p>Supports Unified Extensible Firmware Interface (UEFI)</p>
BUTTON CELL BATTERY	<p>The product contains a built-in 3V button cell battery</p> <p>For further information see footnote [5]</p>
TPM	<p>Supports Firmware TPM v2.0 (fTPM)</p> <p>(Hardware TPM 2.0 chip optional, on project request only)</p>
MEMORY SUPPORT	<p>1x SO-DIMM slot with 262 pins</p> <p>Supports DDR5-4800 (PC5-38400) SDRAM at 1.1 V</p> <p>Supports a maximum capacity of 16 GB</p> <p>Supports DDR5 memory modules with higher frequency rating</p> <p>Supports two unbuffered DIMM modules (no ECC or registered)</p>
2.5" DRIVE BAY	<p>2.5" Drive Bay supports one Serial ATA hard disk or one SATA SSD drive in 6.35 cm / 2.5" format</p> <p>Device height: 15 mm (max.)</p> <p>Supports Serial-ATA III, 6 Gb/s (max. 600 MB/s) bandwidth</p> <p>Pre-installed SATA/power cable</p>
Two M.2-2280M SSD SLOTS	<p>This PC comes with two slot for NVMe SSD cards in M.2 form factor.</p> <ul style="list-style-type: none"> - support M.2-2280 cards with a width of 22 mm and a length of 80 mm - supports SSD cards with NVMe, not SATA (interface: PCIe Gen3 x2) <p>Two thermal pads for M.2 SSDs are included (70 x 20 x 10 mm and 70 x 20 x 8 mm).</p>

AUDIO	<p>C-Media CM6542 Audio Codec with USB interface</p> <p>Two analog audio connectors (3.5 mm) on the front side:</p> <ol style="list-style-type: none"> 1) Line-out (head-phones) 2) Microphone input <p>Digital multi-channel audio output: via HDMI and DisplayPort</p>
2.5G LAN	<p>Ethernet Controller Intel i226LM</p> <p>Supports 100 / 1.000 / 2.500 MBit/s operation (up to 2.5 Gbps)</p> <p>Supports WAKE ON LAN (WOL)</p> <p>Supports network boot by Preboot eXecution Environment (PXE)</p>
M.2-2230-SLOT FOR WLAN CARDS	<p>M.2-2230E slot supports WLAN expansion cards</p> <p>Interfaces: PCI-Express Gen3 X1, USB 2.0 and CNVi</p> <p>Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230)</p> <p>This PC comes with two pre-installed internal antennas with I-PEX4/MHF-IV connectors</p> <p>Optional Shuttle accessory: WLN-M12 (WLAN card with external antennas)</p>
FRONT PANEL CONNECTORS	<p>1x USB-C (USB 3.2 Gen 1 at max. 5 GBit/s, no DisplayPort)</p> <p>2x USB 3.2 Gen 1 Type A (max. 5 GBit/s, blue)</p> <p>Audio line-out / headphones (3.5 mm jack plug)</p> <p>Microphone input (3.5 mm jack plug)</p> <p>Power button</p> <p>Power LED (blue)</p> <p>Hard Disk LED (orange)</p>
BACK PANEL CONNECTORS	<p>DisplayPort 1.4a [1]</p> <p>HDMI 2.0b</p> <p>4x USB 3.2 Gen 1 Type A (max. 5 Gbps, blue)</p> <p>RJ45 port supports 2.5G LAN (Intel i226LM chip)</p> <p>1x DC-input connector for external power adapter (5.5 / 2.5 mm)</p>
RIGHT SIDE	<p>2x perforation (6.5 mm diameter) for optional external WLAN antennas</p>
ALWAYS-ON JUMPER	<p>By removing Jumper JP1 (please refer to the Quick Installation Guide) the system will start unconditionally once power is applied. [3]</p>
CLEAR CMOS JUMPER	<p>Short Jumper JP2 for about 10 seconds to restore factory settings of BIOS.</p>
POWER ADAPTER	<p>External 65 W power adapter (fanless)</p> <p>Input: 100~240 V AC, 50/60 Hz, max. 1.6 A</p> <p>Output: 19 V DC, max. 3.42 A, max. 65 W</p> <p>DC cable ca. 180 cm with coaxial connector: 5.5 / 2.5 mm (outer/inner diameter)</p> <p>The DC-input of the computer supports 19V±5%.</p> <p>AC cable, ca. 180 cm, 3-pin Micky MM C5 plug and Schuko earthed safety plug</p>
SUPPLIED ACCESSORIES	<p>Multi-language Quick Installation Guide</p> <p>Driver DVD for Windows 11</p> <p>VESA mount set (two parts), made of steel, with six screws (4x M4x10, 2x M2.5x3)</p> <p>Bracket for a 2.5" drive with four screws (M3x5)</p> <p>Two aluminium stands (110 mm width) with four screws M3x7 for vertical operation</p> <p>Four black, rounded rubber feet, ca. 10 mm diameter x 2.5 mm</p> <p>Three screws for mounting of M.2 cards (M3 x 4)</p> <p>Two self-adhesive thermal pads for M.2 SSD cards (70 x 20 x 10 mm and 70 x 20 x 8 mm)</p> <p>Power adapter 65 W with AC power cord</p>
OPTIONAL ACCESSORIES	<p>WLN-M12: WLAN module with external antennas [4]</p> <p>PS02: two feet for vertical operation</p>
ENVIRONMENTAL SPECIFICATIONS	<p>Operating temperature range: 0~40 °C [2]</p> <p>Relative humidity range: 10~90% (non-condensing)</p>
CERTIFICATIONS / COMPLIANCE	<p>EMI: CE, UKCA, FCC, BSMI, RCM, VCCI</p> <p>Safety: CB IEC60950/62368, cTUVus (UL 62368), BSMI</p> <p>Other: RoHS, Energy Star, ErP</p> <p>This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office.</p> <p>The CE-mark approves the conformity by the EU directives:</p> <ol style="list-style-type: none"> (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)

[1] How to convert DisplayPort into HDMI/DVI

The DisplayPort outputs can be converted to HDMI or DVI by an additional, passive adapter cable. For example:

DELOCK 82590: 1 m, DisplayPort (male, 20p) to HDMI-A (male, 19p)

DELOCK 82435: 5 m, DisplayPort (male, 20p) to DVI-D (male, 24p)

The integrated graphics automatically detects the connected display and puts out the appropriate electric signal - either DisplayPort (without an adapter) or HDMI/DVI (with an adapter).

[2] Caution: For high ambient temperatures over 35 °C we strongly recommend to use SSDs (supporting at least 70 °C) instead of hard disks. Ensure free circulation of air amongst the PC and ventilation holes must stay clear.

[3] Power-on after Power Fail:

The BIOS setup provides a "Power-on after Power Fail" function that can be found under "Power Management Configuration". This function determines the PC's behaviour after power failure. As a matter of the nature of this function, it may fail after short power failures. This is why this PC also comes with a hardware-based solution. By removing Jumper JP1 (please refer to the Quick Installation Guide), the system will start unconditionally once power is applied.

[4] Optional Wireless LAN module:

This Nano PC can optionally be upgraded with WLAN/Bluetooth functionality. Shuttle offers the suitable accessory kit "WLN-M12", consisting of a WLAN card in M.2-2230 format and two external antennas with appropriate antenna cables.

Note: two internal antennas are already pre-installed and can also be used instead.

[5] Button Cell Battery

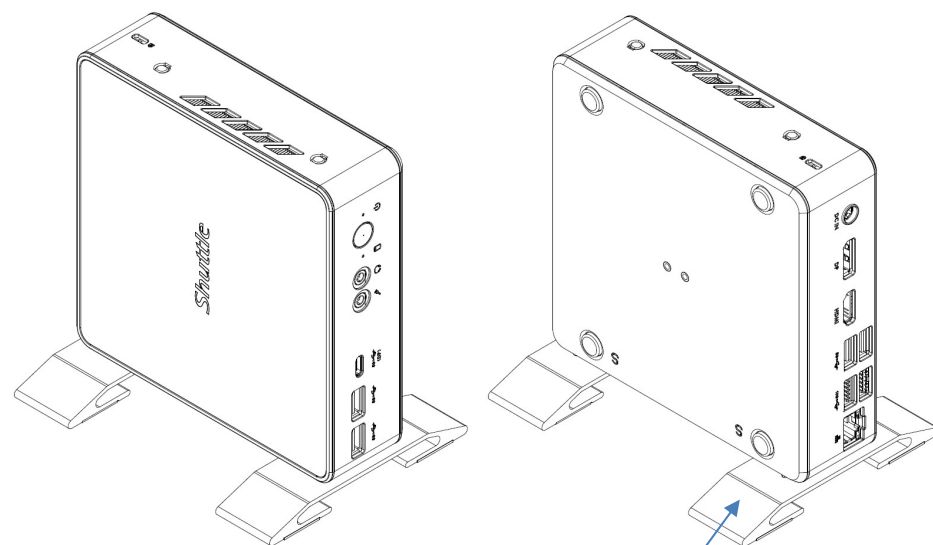
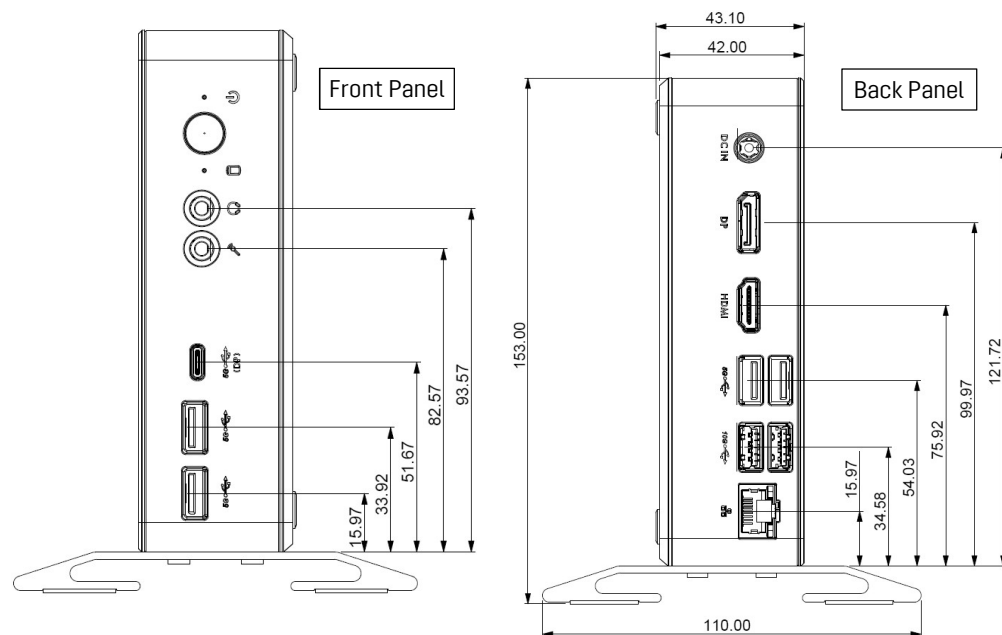
- Purpose:**
The built-in button cell battery on the mainboard supplies the CMOS memory and the Real-Time Clock (RTC) with power so that certain settings are retained and the internal clock continues to run – even if the PC is completely switched off or disconnected from the power supply.
- Specification:**
Model: Lixing KTS CR2032 with 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: 220 mAh (0.66 Wh)
Dimensions: 20 mm diameter, 3.2 mm thickness
Weight: 3.2 g, of which 0.063 g lithium (2.1%)
Manufacturer: Wuhan Lixing (Torch) Power Sources Co, Ltd, Address: No. 7 Plot, Guandong, Science and Technology Industrial Park, East Lake Development Zone, Wuhan, Hubei, China
- 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
with the computer housing open.
(on the top of the housing)

- 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 NC50N-Series – Technical Drawings



The vertical stand is not included but is available as an optional accessory PS02.