

Intel CPU Performance goes XPC nano

The Shuttle XPC nano NC2000BA is a PC system based on the XPC nano Barebone NC02U with Windows 10 Home. It is equipped with a power-saving Intel Celeron 3855U processor of the current Skylake generation, 4 GB RAM and 32 GB of SSD storage. Expanding it with a 2.5" hard disk (e.g. 4 TB with 15 mm height) is easily possible. The DisplayPort connector supports video resolutions of up to 4K at 60 frames per second. Another display can be connected via HDMI. One of the USB 3.0 ports is supplied as type C. Professional users will appreciate Intel Gigabit-LAN and one serial port which indicates what purposes the NC2000BA is mainly intended for: Digital Signage, POS, control, office or even multimedia.

Feature Highlights

Slim Design	<ul style="list-style-type: none"> • Slim plastic chassis, black, 835 ml • Dimensions: 142 x 142 x 42 mm (LWH), 835ml • Incl. Stand & VESA mount (75/100 mm) • Hole for Kensington Lock • Operating temperature: max. 40 °C
Operating System	<ul style="list-style-type: none"> • Windows 10 Home (64-bit) • Languages: EN, DE, FR, NL, IT, ES, SE, DK, FI, NO
Processor	<ul style="list-style-type: none"> • Intel Celeron 3855U, 1.6 GHz "Skylake" • Intel HD510 Graphics, DX 12, supports 4K
Memory	<ul style="list-style-type: none"> • 4 GB GB DDR3L-1600 SO-DIMM
Drive Bay	<ul style="list-style-type: none"> • One 6.35 cm / 2.5" bay, 15 mm height supports one SATA hard disk or SSD
M.2 SSD	<ul style="list-style-type: none"> • 32 GB SSD as M.2 card
Connectors	<ul style="list-style-type: none"> • HDMI 1.4, DisplayPort 1.2 supports 2160p/60 • 2x USB 3.0 (Type A/C), 2x USB 2.0, Gigabit LAN • SD card reader, Audio Combo, COM port
WLAN	<ul style="list-style-type: none"> • Wireless LAN 802.11n, internal antenna
Power Supply	<ul style="list-style-type: none"> • External 65 W fanless power adapter
Applications	<ul style="list-style-type: none"> • Home Media, Office, Digital Signage, etc

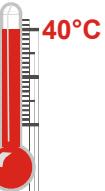
XPC nano System

NC2000BA

Intel Celeron, 4 GB RAM, 32 GB M.2 SSD
Windows 10 Home



Upgradable with 2.5" hard disk



Images for illustration purposes only.
This product does include the stand and VESA mount.



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Shuttle XPC nano System NC2000BA – Product Views



- A** USB 3.0 Type A
- B** USB 3.0 Type C
- C** SD Card reader
- D** Hard disk LED indicator
- E** On/Off Button
- F** Power-on LED indicator
- G** 2x perforation for optional WLAN antenna
- H** Vents
- I** Hole for Kensington Lock
- J** 2x Vertical stand

- K** DC input for power adapter
- L** HDMI
- M** DisplayPort
- N** Gigabit LAN (RJ45)
- O** 2x USB 2.0
- P** Audio Combo (Headphones & Mic)
- Q** 4x Mounting hole for vertical stand
- R** RS232/422/485 COM port *)
- S** 4x Rubber foot
- T** VESA mounting kit (2 pieces)

*) Note: The serial connector (COM port) cannot be used, if NC2000BA is operated in vertical position.

Operating Positions

1. Horizontal
2. Vertical with Stand
3. VESA-mounted behind a monitor

Stand and VESA mount with screws are included.



Product Features



Stylish and absolutely small

The black plastic case with its curves and coppery elements is certain to be the eyecatcher on your desk. Its volume of barely 850 ml makes it hardly noticeable as a PC, particularly when it is hidden behind monitors thanks to the supplied VESA mount. Despite its dinky dimensions, it provides generous connectivity options and even room for one 2.5 inch drive which can be an SSD or HDD.



SD Card Reader

The built-in SD card reader at the front side makes file transfer from and to a digital camera easy. It takes SD, SDHC and SDXC memory flash cards in standard size format and also supports booting from bootable SD cards.



Serial Port

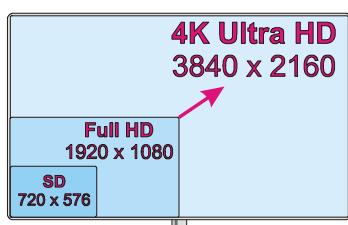
Many PCs do not have these legacy ports any longer, since they have been superseded and replaced by USB for most consumer applications, but they are still commonly used for applications such as industrial automation systems, scientific analysis, POS systems and other such fields. The Shuttle XPC nano System NC2000BA features one serial RS-232 interface with the traditional 9-pin D-Sub connector for easy connection of appropriate components. Note: The serial connector (COM port) cannot be used, if NC2000BA is operated in vertical position.



Dual Monitoring via HDMI and DisplayPort

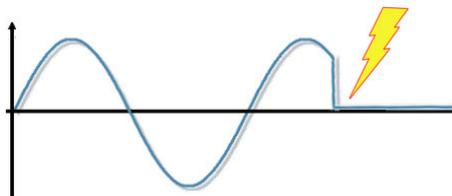
The NC2000BA can connect two digital displays through its HDMI and DisplayPort. Dual monitoring helps improve on productivity by allowing for spreading multiple windows across two monitors while working with them simultaneously.

Note: Dual channel memory (two identical modules) is required to support 4K Ultra-HD resolution (2160p).



Supports 4K Ultra HD at 60Hz

The NC2000BA supports displays running at 4K (3840 x 2160 / 2160p) high resolution at 60Hz frames per second when connected to its DisplayPort video output. Being the successor to the Full HD standard, Ultra HD delivers a four times higher resolution with a wider colour space and colour depth. Note: dual channel memory (two identical modules) is required.



USB 3.0 type A and type C

The Shuttle XPC nano System NC2000BA has four USB ports, two of which are USB 3.0. USB 3.0 "SuperSpeed" provides a significant performance increase over previous USB generations making it the ideal interface for demanding, external peripherals. USB 3.0 supports up to 5Gb/s full duplex which means an up to 10 times greater performance than USB 2.0. One of the USB 3.0 connectors is a "type-C" connector with reversible plug orientation. This type of connector is especially intended to connect new-generation mobile devices.

Supports high-capacity drives

The NC2000BA supports 2.5 inch drives up to a maximum height of 15 mm. This makes overall capacities of up to 4 TB possible, while many other PCs in a similar form factor are limited to drives with a maximum height of 7 to 9.5 mm.

Power on after Power fail

The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". As the name indicates, 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 the NC2000BA also comes with a hardware-based solution. By removing Jumper JP1 (see Quick Installation Guide) the system will start unconditionally once power is applied.

Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. The Shuttle XPC nano System NC2000BA provides an appropriate hole on both sides of its chassis. The lock-and-cable is not included.

Shuttle XPC nano System NC2000BA - Specifications

<i>Chassis</i>	Barebone PC with a black plastic chassis Dimensions: 142 x 142 x 42 mm (LWH) = 835 ml Weight: 0.4 kg net, 1.2 kg gross Hole for Kensington Lock Includes vertical stand and 75 / 100 mm VESA mount
<i>Low Power Consumption</i>	Power consumption: - Idle mode: 6.7~7.8 W - Full load: 11.3 / 21.7 W (without/with graphics)
<i>Operation Position</i>	1) Horizontal 2) Vertical with stand 3) VESA-mounted behind an appropriate monitor
<i>Operation System</i>	Windows 10 Home - 64-bit Languages: EN, DE, FR, NL, IT, ES, SE, DK, FI, NO
<i>Processor</i>	Model: Intel Celeron 3855U (ULV) System-on-a-chip architecture (SoC): no chipset required BGA1356 package - directly soldered onto the mainboard Code name: Skylake-U (6th Generation Intel Core) Cores / Threads: 2 / 2, Clock rate: 1.6 GHz L1/L2/L3 Cache: 128 kB / 512 kB / 2048 kB Memory controller: DDR3L-1600 Dual Channel (1.35 V) TDP wattage: 15 W maximum Manufacturing process: 14 nm Maximum Tjunction Temperature: 100 °C Supports 64-bit, VT-x (EPT), VT-d, Enhanced SpeedStep, NX bit, AES-NI, SSE 4.1/4.2 Integrated graphics engine
<i>Cooling fan</i>	Built-in CPU cooling fan with 4 pin connector Supports temperature-controlled RPM fan speed
<i>Integrated Graphics</i>	Intel HD graphics 510 (Intel HD Gen. 9) Two digital audio/video ports support two independent screens: 1) DisplayPort 1.2 [1] supports 3840 x 2160 @ 60 Hz 2) HDMI 1.4b supports 3840 x 2160 @ 24 Hz Supports Ultra HD / 4K resolution GPU clock rate: 300~900 MHz Execution Units (EU): 12 Supports DirectX 12, OpenGL 4.4 Supports full H264, H265 8/10-bit, VP8/9, VC-1, AVC hardware decoding Supports Quick Sync Video and Clear Video HD technology Supports HD video plus multi-channel digital audio via a single cable Dynamic, shared memory: up to 1.7 GB Note: dual channel memory (two identical modules) is required for 4K Ultra-HD (2160p) support.

Mainboard & BIOS	AMI BIOS in 8 MByte EEPROM with SPI interface Supports resume after power failure Supports Wake on LAN (WOL) Supports Power on by RTC Alarm Supports booting from USB devices and SD card reader Supports hardware monitoring and watch dog function Supports Unified Extensible Firmware Interface (UEFI) Supports Firmware TPM v2.0 (fTPM) since BIOS version NC02U000.103
Power Adapter	External 65 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz, max. 1.6 A Output: 19 V DC, max. 3.42 A, max. 65 W DC Connector: 5.5/2.5 mm (outer/inner diameter)
DRAM Memory	4 GB DDR3L-1600 (PC3-12800) SDRAM at 1.35 V 204-pin SO-DIMM Supports a maximum of 16 GB per DIMM, maximum capacity: 32 GB
2.5" Drive Bay	Supports one Serial ATA hard disk or one SATA SSD drive in 6.35 cm / 2.5" format Device height: 15 mm (max.) Supports Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth
Card Reader	Integrated SD card reader Supports SD, SDHC and SDXC memory flash cards Supports booting from SD card
M.2 SSD	32 GB SSD drive as M.2 card SATA v3.0 (max. 6 Gbps)
Audio	Audio Realtek® ALC 662 High-Definition Audio Codec 3.5 mm / 4-pole combo audio connector for headphones and microphone [2] Digital multi-channel audio output: via HDMI and DisplayPort
Gigabit LAN	Ethernet Controller Intel i211 Supports 10 / 100 / 1.000 MBit/s operation (Gigabit) Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE) IEEE 802.3az Energy Efficient Ethernet (EEE) Interface: PCIe v2.1
Wireless Network (WLAN)	Built-in M.2-2230-A/E WLAN card and internal antenna Single-Chip 1T1R WLAN Controller Realtek RTL8188EE Supports IEEE 802.11b/g/n, max. 150Mbps up-/downstream Security: WPA/WPA2(-PSK), WEP 64/128-bit, IEEE 802.11x/i

<i>Front Panel connectors</i>	USB 3.0 type A USB 3.0 type C SD card reader (supports SD, SDHC, SDXC) Power button Power LED (blue, blinking when in suspend mode) HDD LED (orange)
<i>Back Panel connectors</i>	DisplayPort 1.2 [1] HDMI 1.4b 2x USB 2.0 Gigabit LAN (RJ45) Audio Combo Port for headphones and microphone (3.5 mm jack, 4-pole) [2] DC-input connector for external power adapter 2x perforation for optional external WLAN antennas
<i>Left Side connectors</i>	Serial RS232 COM port (D-Sub, 9-pin) This port is switchable to RS422 and RS485 in the BIOS setup Note: The serial connector (COM port) cannot be used, if NC2000BA is operated in vertical position.
<i>Always-On Jumper</i>	By removing Jumper JP1 (please refer to the Quick Installation Guide) the system will start unconditionally once power is applied. [4]
<i>Clear CMOS Jumper</i>	Short Jumper JP2 for about 10 seconds in order to reset all BIOS configuration setting to factory default.
<i>Supplied Accessories</i>	Multi-language Quick Installation Guide Driver DVD for Windows VESA mount set (two parts, made of steel, with 6 screws) 2x aluminium stand with screws for vertical operation Bracket for a 2.5" drive with 8 screws Power adapter with AC power cord
<i>Environmental Spec</i>	Operating temperature range: 0~40°C [3] Relative humidity range: 10~90% (non-condensing)
<i>Conformity & Certifications</i>	EMI: FCC, CE, BSMI, C-Tick Safety: ETL, CB, 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), (4) 1999/5/EC related to Radio and Telecommunications Terminal Equipment (R&TTE)

[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).

However, a monitor with a DisplayPort connector cannot be connected to the HDMI port with a simple, passive adapter. In this case an active adapter like Delock 62496 is required.

Connecting a UHD/4K display via the present HDMI port means the refreshing rate is limited to 24 Hz. 60 Hz can only be achieved by using the DisplayPort port. Should your display have a HDMI 2.0 connector, a refreshing rate of 60 Hz can be achieved by using an active adapter such as the Club 3D CAC-1070 for example.

[2] Audio connector

The 3.5 mm audio jack at the back panel of this device supports both a 4-pole connector for headphones and microphone and headphones with only a 3-pole connector. Headsets with separate connectors for headphones and microphone, though, require an appropriate adapter, if also the microphone should be used.

[3] Caution: for high ambient temperatures over 35 °C we strongly recommend to use SSDs (supporting at least 70 °C) instead of hard disks.**[4] 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.