# Shuttle®

# BAREBONE
## XPC nano
# NS03A

### 0.5-LITRE FANLESS PC WITH ANDROID OS
### SUPPORTS DUAL DISPLAY

The Shuttle XPC nano NS03 series is one of the most affordable models in the Shuttle XPC product range. It not only convinces by its stunning looks and reliable long-term performance alone, it also comes with an integrated Quad-Core ARM processor and pre-installed Android 11 operating system. Two HDMI ports support either two Full HD displays or one 4K display. Featuring 4x USB, Gigabit-LAN, WLAN-ac, M.2 SSD slot and a built-in SD card reader, they easily connect to diverse peripheral devices for different kinds of application. While NS03**A** is supplied via an included power adapter, NS03**E** is supplied via the network port (Power-over-Ethernet). The NS03 series is particularly intended for digital signage and Thin Client applications



| ANDROID 11 | 2 GB RAM 32 GB FLASH | M.2 SSD SUPPORT | Dual HDMI (1x UHD) | SD CARD-READER | 2x USB 2.0 2x USB 3.2 | GIGABIT LAN PORT | Wi-Fi 5 BT 5.2 | 75/100 mm VESA MOUNT | Max. 40 °C | 24/7 OPERATION | 36 W POWER ADAPTER |

### NANO-DESIGN
■ Slim plastic chassis, black ■ Dimensions: 141 x 141 x 29 mm (LWH), ca. 577 ml ■ Weight: 0.27/0.81 kg net/gross ■ VESA-mount (75/100 mm) ■ Supports 24/7 Nonstop Operation ■ Operating temperature: 0~40 °C (non-condensing)

### OPERATING SYSTEM & SOFTWARE
■ Android 11 (code name „Red Velvet Cake") pre-installed
■ Debian 10 Linux OS on request [6]
■ Pre-installed Shuttle DS Player for media playback
■ DS Creator App for Android/iOS mobile devices

### PROCESSOR
■ Rockchip RK3568 Quad-Core Cortex-A55 SOC, 22 nm, max. 2.0 GHz
■ Mali G52 GPU supports 2x 1080p/60 or 1x 2160p/60 displays

### RAM/SSD memory
■ 2 GB RAM and 32 GB  eMMC Flash memory onboard
■ Supports one M.2-2280 SSD card (PCIe or SATA)
■ Supports external USB storage and SD memory cards

### CONNECTORS
■ HDMI 2.0 and HDMI 1.4 (supports 1x UHD or 2x Full-HD displays)
■ 2x USB 3.2 Gen1 (blue) ■ 2x USB 2.0 ■ 1x Gigabit LAN ■ Card Reader
■ Audio Combo Port (Microphon + Line-out) ■ DC input 12 V
■ 2x2 pin connector for external Power-Button / Android Recovery
■ Hole for Kensington-Lock ■ Power Button with Power LED

### WLAN
■ WLAN function with internal antenna, Wi-Fi 5 (ac), Bluetooth 5.2

### POWER ADAPTER
■ External 36W / 12V power adapter

### OTHER FEATURES
■ Screen rotation function ■ HDMI output scaler function (zoom in/out)
■ Auto power-on-after-power-fail ■ Wake up / Standby by RTC time
■ Wake-on-LAN (WoL)

## MODELS OF THE NS03 SERIES

| Product | Power Adapter | Power over Ethernet (PoE) | The PC is supplied with power via ... | UPC Code |
|---|---|---|---|---|
| NS03A | Included | – | ... the provided power adapter | 887993601687 |
| NS03E | – | Supported | ... the RJ45 network port | 887993601700 |

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## PRODUCT FEATURES


141 mm  141 mm
Height: 29 mm

### Stylish and absolutely small
The black plastic case with its curves is certain to be the eyecatcher – even on your desk. At a volume of barely 580 ml, it may also be elegantly hidden behind a Digital Signage Display thanks to the supplied 75/100mm VESA mount. Despite its dinky dimensions, it provides generous connectivity options and functionalities.

### Fanless, quiet
The Shuttle XPC nano NS03A uses a passive thermal module which makes the system not only quiet, but also dust-free and virtually maintenance-free. Thanks to its low power consumption and completely fanless cooling, this PC runs highly reliably and makes it perfectly suitable for noise sensitive areas.

### 24/7 Permanent operation
The Shuttle XPC nano NS03A is officially approved for 24/7 permanent operation. The factory default setting is for permanent operation which means: the system starts immediately when DC-voltage is applied. By changing the jumper setting, the system can also be switched on via power button.

Conditions for permanent use:
- Free circulation of air amongst the PC must be guaranteed
- Ventilation holes must be clear

### Dual Display support
The Shuttle XPC nano NS03A system offers two digital graphics outputs: HDMI 2.0 and HDMI 1.4. The system supports either two Full-HD displays at 1080p/60Hz or one UHD display at 2160p/60Hz.

### Connector for an external power button
If, because of space constraints (e.g. in case of fixed installation), the machine cannot be switched on by pressing the front power button, it can be powered on by a separate remote line.

### Shuttle DS Creator Duo App
Use the free app "Shuttle DS Creator Duo" on your mobile phone or tablet to compile digital signage content such as scrolling text, images, videos and website links and upload them to the Shuttle XPC nano NS03A. Connection happens using WLAN within the local network. The NS03A comes with a pre-installed player software which plays digital signage content.
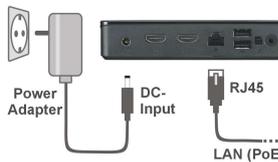
### Shuttle NS03A versus NS03E
Regarding the power supply Shuttle offers two options:
**NS03A** is powered by the provided 12V/36W power adapter connected to DC-input.
**NS03E** has no power adapter included. It is intended to be powered by PoE.

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## FRONT AND REAR VIEW

**Front View**



**Rear View**



**Left Side**



**Right Side**



**VESA Mount**



1. SD card reader
2. 2x USB 3.2 Gen 1 Port (blue)
3. Power button with LED indicator
4. DC-in connector for power adapter (12 V)
5. HDMI 1.4 port
6. HDMI 2.0 port
7. RJ45 Gigabit LAN port
8. 2x USB 2.0 port (black)
9. 2x2-pin connector (2.54 mm pitch)
   Left side: for Android Recovery (short with jumper during boot process)
   Right side: connector for the external power button
10. 3.5 mm / 4-pin audio combo connector for head-phones and microphone

11. Perforation for a SMA connector to install an external WLAN antenna (cable with SMA connector is included, the antenna is not included)
12. Ventilation holes
13. Hole for the Kensington Lock
14. Mounting with 2-part VESA bracket (attach large part with 4 screws to the display and small part with 2 screws to the PC)
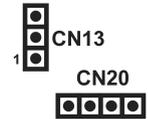
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## INSIDE VIEW / JUMPER SETTING
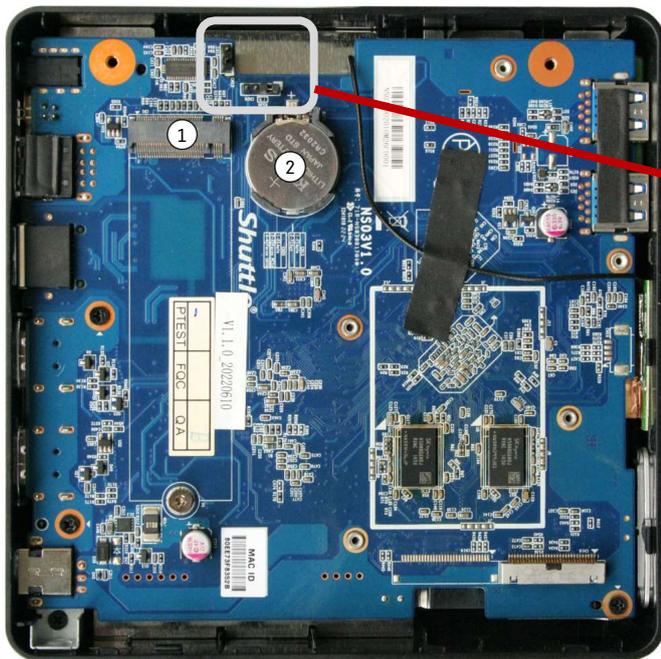


### Mainboard components

1. M.2-2280M slot supports M.2 SSD cards
2. CMOS battery for the Real-Time-Clock (RTC)

### Jumper Setting

CN13

CN20

**Jumper CN13 for power-on setting**

**Auto** (default)
System would power up immediately after DC-Input

**Power Button**
System would power up after power button pressed

**Jumper CN20 for M.2 slot setting (SATA/PCIe mode)**

**Auto** (Default) — Mode defined by M key Pin 49: Open: PCIe mode Ground: SATA mode

**Force PCIe** — PCIe mode

**Force SATA** — SATA mode

## Power Supply via Power Adapter or PoE

**NS03A** is powered by the provided 12V/36W power adapter connected to DC-input.
**NS03E** has no power adapter included. It is intended to be powered by PoE.

Power-over-Ethernet (PoE) technology enables network devices to be powered over the existing network cable and will not need separate power and data cable installations and costly AC outlets in hard-to-reach places. PoE even works with long cables (CAT5e or better) of up to 100 m (330 ft) and delivers galvanically isolated power supply according to IEEE 802.3at standard.

### Solution 1: NS03A supplied by Power Adapter

Shuttle NS03A

PC / Switch / Router

Power Adapter 12V DC

DC-Input

RJ45 Data

Ethernet Cable

### Solution 2: NS03E supplied by PoE Switch

Shuttle NS03E

PoE Switch

RJ45 Data and Voltage

Ethernet Cable

### Solution 3: NS03E supplied by PoE Injector

Shuttle NS03E

PC / Switch / Router

RJ45 Data and Voltage

PoE Injector

RJ45 Data

Ethernet Cable

Voltage Input
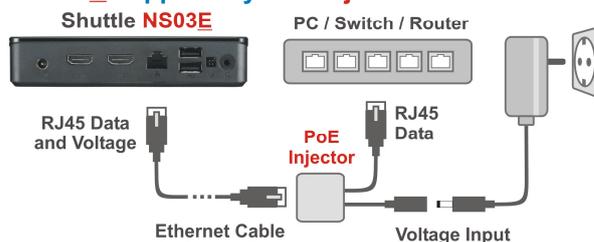
## Shuttle Product Comparison: NS03 Series versus NS02-V2 Series

| MODELL | NS02-V2-Series | NS03-Series |
|---|---|---|
| Version | **NS02AV2:** with Power Adapter (without PoE)<br>**NS02EV2:** with PoE function (no power adapter) | **NS03A:** with Power Adapter (without PoE)<br>**NS03E:** with PoE function (no power adapter) |
| Chassis | Plastic chassis, black<br>LWH: 141 x 141 x 29 mm (577 ml) | Plastic chassis, black<br>LWH: 141 x 141 x 29 mm (577 ml) |
| Operating System | Android 8.1 | Android 11 (Debian Linux is planned) |
| Processor | Rockchip RK3368 (28 nm process)<br>max. 1.5 GHz | Rockchip RK3568 (22 nm process)<br>max. 2.0 GHz |
| GPU (Graphics) | PowerVR SGX6110, max. 600 MHz | Mali G52, max. 800 MHz |
| RAM | 2 GB DDR3L | 2 GB DDR4 |
| Flash eMMC | 16 GB | 32 GB |
| M.2 Slot | – | M.2-2280 Slot supports M.2 SSD cards |
| HDMI | 1x HDMI 2.0 | 1x HDMI 2.0<br>1x HDMI 1.4 |
| USB | 4x USB 2.0 | 2x USB 3.2 Gen1 (blue)<br>2x USB 2.0 |
| LAN | Gigabit LAN | Gigabit LAN |
| WLAN | Wi-Fi 5 (802.11ac), Bluetooth 5.0<br>Internal antenna (1T1R) | Wi-Fi 5 (802.11ac), Bluetooth 5.2<br>Internal antenna (1T1R) |
| Audio | 3-pin/3.5 mm Audio Port<br>for head-phones (Line-out) | 4-pin/3.5 mm Combo Audio Port<br>for head-phones (Line-out) and microphone |
| Card Reader | SD card reader | SD-card reader |
| 4 Pin Connector | 1) for Flash- and Recovery Mode<br>2) for external Power-Button | 1) for Flash- and Recovery Mode<br>2) for external Power-Button |
| VESA Mount | included | included |
| Power Adapter | 24W (12V / 2A) | 36W (12V / 3A) |
| Front View |  |  |
| Back View |  |  |

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## SHUTTLE XPC SLIM BAREBONE NS03A — SPECIFICATIONS

| | |
|---|---|
| **FANLESS & SILENT** | Passive cooling, no fan noise at all<br>Perfect to be used in noise-sensitive environments<br>Fanless, dust-free and thus virtually maintenance-free |
| **24/7 NONSTOP OPERATION** | Approved for 24/7 permanent operation |
| **CHASSIS** | PC system with a black plastic chassis<br>Dimensions: 141 x 141 x 29 mm (LWH) = 577 ml<br>Weight: 0.27 kg net, 0,81 kg gross<br>Hole for Kensington Lock |
| **OPERATION SYSTEM** | Android 11 (code name "Red Velvet Cake") pre-installed [4]<br>Other operating system images are available on request:<br>- Android 11 with root privileges<br>- Debian 10 Linux [6] |
| **PRE-INSTALLED PLAYER-SOFTWARE** | This player software plays digital signage content which was previously created and uploaded on a mobile device with the Shuttle DS Creator Duo software. |
| **FREE APP SOFTWARE** | Free app: Shuttle DS Creator Duo<br>Use this free app on your phone or tablet to upload digital signage content such as scrolling text, pictures, videos and website links to your Shuttle XPC nano NS03A/NS03E. Connection happens using WLAN within the local network.<br>For Android: download from Google Play<br>For Apple: download from the App Store<br>For Windows: Download from global.shuttle.com |
| **SPECIAL FEATURES** | + Supports either automatic power-on when DC voltage is applied or power-on via power button [5]<br>+ Supports wake-up and shut-down by time setting<br>+ Supports screen rotation<br>+ Supports video output scaler function (zoom in/out)<br>+ Supports Wake-on-LAN (WOL)<br>+ Supports Dual Display (2x FullHD or 1x UHD)<br>+ Supports external USB hard disk and USB Camera |
| **POWER ADAPTER** | External 36 W power adapter (fanless)<br>Input: 100~240 V AC, 50-60 Hz, max. 0.9A, automatics voltage adjustment<br>Output: 12 V DC, max. 3.0 A, max. 36 W<br>DC Connector: 5.5 / 2.5mm (outer/inner diameter)<br>AC Connector: This power adapter is designed to plug directly into an electrical outlet, and includes a set of interchangeable/detachable power plug adapors to accommodate most outlet types:<br>EU (type C), UK (type G), US (type A), AU (type I) |
| **PROCESSOR** | Rockchip RK3568 Quad-Core Cortex-A55<br>64-bit SoC with NEON/FPU coprocessor<br>22nm process technology<br>Clock speed: 2.0 GHz max.<br>512kB L3-Cache |
| **INTEGRATED GRAPHICS** | Mali G52 2EE graphics processor, Clock speed: up to 800 MHz<br>Video Decoder: 4KP60 H.264/H.265/VP9<br>Video Encoder: 1080P60 H.264/H.265<br>Supports Dual Display [2] |
| **RAM MEMORY** | 2 GB DDR4 onboard<br>(optional 4 GB possible on project requests) |
| **FLASH MEMORY** | 32 GB eMMC Flash Memory onboard |
| **M.2-2280M SSD SLOT** | M.2-2280 M-key slot<br>Supports M.2 cards with a length of 80 mm and a width of 22 mm<br>Supports M.2 SSDs with SATA or PCI-Express interface<br>The mode (SATA or PCIe) is detected automatically, but can also be forced to SATA or PCIe via jumper setting (CN20). |
| **AUDIO** | Audio chip: Rockchip RK809-5<br>3.5 mm / 4-pole combo audio connector for head-phones and microphone [1]<br>Digital audio output via one HDMI connector [2] |

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| GIGABIT LAN | LAN chip: Realtek® RTL8211E-VB-CG<br>Supports 10 / 100 / 1.000 MBit/s operation (Gigabit)<br>Supports Wake On LAN (WOL) |
|---|---|
| POWER OVER ETHERNET (PoE) | NS02A does not support Power over Ethernet (PoE).<br>For this purpose use NS02E instead. |
| WIRELESS NETWORK (WLAN+BT) | Chipset: AMPAK AP6256 (UART interface)<br>One internal antenna (1T1R) **[3]**<br>Supports Wireless LAN IEEE 802.11a/b/g/n/ac at 2,4 and 5 GHz<br>Supports Bluetooth 5.2 |
| CARD READER | Integrated SD card reader<br>Supports SD, SDHC and SDXC memory flash cards<br>Supports booting from SD card for image update |
| FRONT PANEL CONNECTORS | 2x USB 3.2 Gen 1 (blue)<br>SD card reader (supports SD, SDHC, SDXC)<br>Power button **[5]**<br>Power LED (blue) |
| BACK PANEL CONNECTORS | HDMI 2.0 supports 2160p/60Hz **[2]**<br>HDMI 1.4 supports 1080p/60Hz **[2]**<br>2x USB 2.0<br>Gigabit LAN (RJ45)<br>Audio Combo Port for headphones and microphone (3.5 mm jack, 4-pole) **[1]**<br>DC-input connector for external power adapter<br>2-pin connector for external power button (wakeup/suspend mode)<br>2-pin connector for image flash or android recovery mode |
| VESA MOUNT | VESA mount set (two parts made of steel, including 6 screws)<br>Supports 75x75 and 100x100 mm |
| SUPPLIED ACCESSORIES | Quick Installation Guide<br>VESA mount including screws<br>AC Power Adapter (36W) with interchangeable AC plugs for EU, UK, US, AU<br>WLAN antenna cable, 10 cm **[3]**<br>Four Rubber feet |
| ENVIRONMENTAL SPECIFICATIONS | Operating temperature range: 0~40 °C<br>Relative humidity range: 10~90% (non-condensing) |
| CERTIFICATIONS / COMPLIANCE | EMI/RF: CE, FCC, BSMI, RCM, VCCI<br>Safety: CB (IEC 60950/62368), cTUVus, BSMI<br>Other: RoHS, ErP<br>This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office.<br>The CE-mark approves the conformity by the EU directives:<br>(1) 2014/30/EU relating to electromagnetic compatibility (EMC),<br>(2) 2014/35/EU relating to Electrical Equipment designed for use within certain voltage limits (LVD),<br>(3) 2009/125/EC relating to ecodesign requirements for energy-related products (ErP),<br>(4) 2014/53/EU Radio Equipment Directive (RED) |

**[1] 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.

**[2] Dual Display and Digital Audio**
The system offers two digital graphics outputs: HDMI 2.0 and HDMI 1.4. It supports either two Full-HD displays at 1080p/60Hz or one UHD display at 2160p/60Hz.
The second display works in clone mode (same content). Only the "DS Creator Duo" App can play different contents on two displays.
If two displays are connected, then the the "DS Creator Duo" App outputs the digital sound only via the HDMI 1.4 port.

**[3] WLAN-Antenna**
The device is equipped with an internal WLAN antenna. The chassis also features a perforation for the optional installation of an external WLAN antenna. The matching antenna cable with SMA connector is included, the antenna, however, is not.

**[4] Google Play Store**
The NS03A / NS03E does not support Google Play services which includes Google Play Store.

**[5] Power-on Mode**
The factory default setting is that the system starts immediately when DC-voltage is applied (non-stop operation). By changing the CN13 jumper setting, it can also be started by power button.

**[6] Linux support**
Shuttle also plans to provide a Linux operating system image based on Debian 10 on request, starting with the product launch of the NS03 series. Note that only Linux programs developed for this ARM platform are executable. Linux programs for the x86 platform must be ported accordingly.

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