0.5- litre fanless PC with Android supports HDMI 2.0 and PoE

XPC nano System
NS 02E

The Shuttle XPC nano NS02E is one of the most affordable models Shuttle's product family of Mini PCs has on offer. It not only convinces by its stunning looks and reliable long-term performance alone, it also comes with an integrated Octa-Core ARM processor and pre-installed Android operating system. Featuring HDMI 2.0, 3x USB, Gigabit-LAN, Wireless LAN and a built-in card reader, they easily connect to diverse peripheral devices for different kinds of application. The NS02E version includes Power-over-Ethernet (PoE), while NS02A is supplied by a power adapter. The NS02A/NS02E are particularly intended for digital signage & Thin Client applications.

Feature Highlights

nano Design	• Slim plastic chassis, black, 577 ml • Dimensions: 141 x 141 x 29 mm (LWH) • Weight: 0.65kg gross, 0.27kg net • VESA mount (75x75 / 100x100mm)
Operating System	• Android 5.1.1 (Lollipop) [1]
Processor	• Rockchip RK3368 Octa Core Cortex-A53 64-bit SoC, 1.5 GHz max. clock speed
Graphics	• PowerVR SGX6110 GPU up to 600 MHz • Supports H.265 videos at 4K@60fps
Memory / Storage	• 2 GB RAM onboard • 16 GB eMMC onboard
Front Panel	• Power Button with Power LED and HDD LED • 2x USB 2.0, SD card reader
Back Panel	• HDMI 2.0, USB 2.0, RJ45 Gigabit LAN • Audio Line-out 3.5 mm jack • DC-Input, Hole for Kensington Lock
Network	• Wired Gigabit LAN (RTL8211-CG) • Wireless LAN (RTL8723BS, 1T1R) supports 802.11 b/g/n and Bluetooth 4.0
POE	• Power-over-Ethernet (PoE) – the Ethernet cable provides electric power and data • Power adapter is **not** included
Other Features	• Screen rotation function • HDMI output scaler function (zoom in/out) • Auto power-on-after-power-fail • Wake up / Standby by RTC time • Operation temperature range: 0 – 40 °C • Approved for 24/7 permanent operation
Applications	• Digital Signage, Thin Client, etc.
Certifications	• EMI: CE, FCC, BSMI, RCM, CCC, R&TTE • Safety: CB, BSMI, ETL • Other: RoHS, EuP Lot 6

Images for illustration purposes only.

Supplied Software

Shuttle DS Player installed on NS02E

Shuttle DS Creator for your Android, iOS or Windows device

Welcome to Shuttle

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NS02E Connectors

A   2x USB 2.0
B   SD card reader
C   HDD LED indicator
D   On/Off button
E   Power LED indicator
F   DC power input *)
G   HDMI 2.0 audio/video output
H   RJ45 Gigabit network connector
I   USB 2.0
J   Audio Line output (headphones)
K   VESA mount

*) NS02E has no power adapter included and Shuttle does not offer an appropriate accessory. If you need a power adapter, then please use NS02A, which has no PoE function.

Operating Positions

1. **Horizontal**
2. **VESA-mounted behind a monitor**

Product comparison: NS02A versus NS02E

NS02A is powered by the provided 12V/24W power adapter connected to DC-input.
NS02E has no power adapter included. It is intended to be powered by PoE.

Product	Power Adapter	PoE	UPC bar code
NS02A	included	–	887993600536
NS02E	–	supported	887993600543

Digital Signage Software

Introduction

Shuttle DS Player
This software is already pre-installed on the Shuttle XPC nano NS02A/E. This player software plays digital signage content which was previously created and uploaded with the Shuttle DS Creator software.

Shuttle DS Creator 2.0
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 NS02A. Connection happens using WLAN within the local network.
For Android: download from Google Play (requires Android 4.2.X or later)
For Apple: download from the App Store (requires iOS 8.0 or later)
For Windows: Download from http://global.shuttle.com/main/productsDownload?productId=2099

Preparing for first-time use

1) Please install the "DS Creator 2.0" app on your phone or tablet with Android or iOS operating system, then follow the link to install the "DS Connector 2.0" which is needed to connect to your Shuttle XPC nano NS02x.

2) Please make sure your phone or tablet is in the same local area network (LAN) as the Shuttle XPC nano NS02x.

Supplying power to NS02A and NS02E

NS02A is powered by the provided 12V/24W power adapter connected to DC-input.
NS02E 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 802.3af / IEEE 802.3at standards. The Shuttle XPC nano NS02E complies with both:

| PoE Standards	Minimum PSE power	Maximum PD power	PD voltage	Sufficient for **NS02E**?
IEEE 802.3**af** (PoE)	15.4 W	12.95 W	44~48 V	**NS02E without** additional components
IEEE 802.3**at** (PoE+)	30.0 W	25.5 W	44~57 V	**NS02E with** 2.5" drive and external USB peripherals

Power Sourcing Equipment (PSE): provides power over the Ethernet cable. The two methods are:
- Endspan: PoE Switch incorporating Powerover-Ethernet technology (see Solution 2 below)
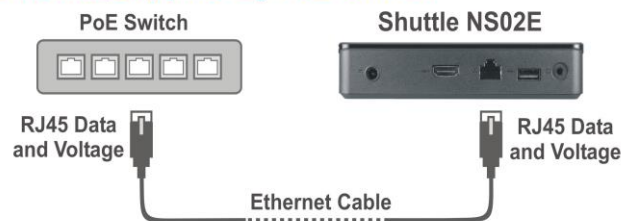- Midspan: PoE Injector (see Solution 3 below)

Powered Device (PD): In this case the PD is the NS02E, which receives power and data over the same cable.
The Shuttle XPC nano System **NS02E** accepts a PoE input voltage of 36~57 V. Additionally, it can also be supplied over the 12V DC-in connector (power adapter not included).
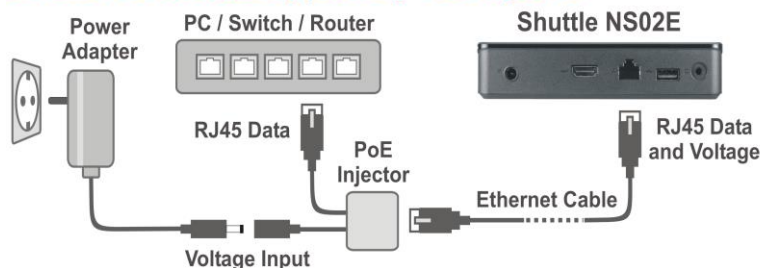
Solution 1: NS02A supplied by Power Adapter
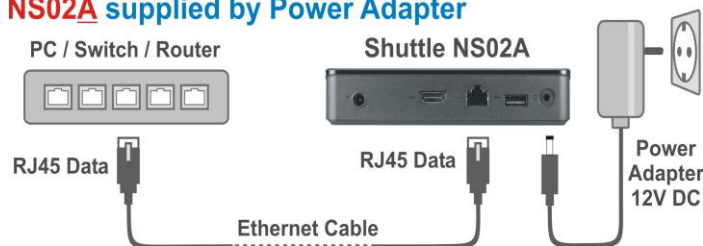
Solution 2: NS02E supplied by PoE Switch

Solution 3: NS02E supplied by PoE Injector

Shuttle XPC nano NS02E - Specifications

Chassis	PC system with a black plastic chassis Dimensions: 141 x 141 x 29 mm (LWH) = 577 ml Weight: 0.27 kg net, 0,65 kg gross Hole for Kensington Lock
24/7	Approved for 24/7 permanent operation
Operating System	Android 5.1.1 (Lollipop) pre-installed **[1]**
Installed Software	This player software plays digital signage content which was previously created and uploaded with the Shuttle DS Creator software.
Free app	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 NS02E. Connection happens using WLAN within the local network. For Android: download from Google Play (requires Android 4.2.X or later) For Apple: download from the App Store (requires iOS 8.0 or later) For Windows: Download from global.shuttle.com
Special Features	+ Supports hardware solution for auto power on (power-on-after-power-fail) + Supports wake-up and shut-down by time setting + Supports screen rotation + Supports video output scaler function (zoom in/out)
Processor	Rockchip RK3368 Octa Core Cortex-A53 64-bit SoC with NEON co-processor 28 nm HKMG process Clock speed: 1.5 GHz max.
Integrated Graphics	PowerVR SGX6110 GPU, Clock speed: up to 600 MHz Supports OpenGL ES3.1 and OpenCLES3 Video Hardware Decoder supports: - 4Kx2K@30fps with H.264 coding - 4Kx2K@60fps with H.265 coding - 1080p@30fps with H.264/MVC/VP8 coding Note: 4K UHD video playback 60 Hz refresh rate (2160p/60Hz) is only supported with an H.265 decoder
Memory	2 GB DDR3L onboard
Flash Memory	16 GB eMMC Flash Memory onboard

Audio	Audio chip: Realtek® ALC5640-VB Analog 3.5 mm audio line output for headphones Digital audio output via the HDMI connector
Gigabit LAN	LAN chip: Realtek® RTL8211F-CG Supports 10 / 100 / 1.000 MBit/s operation (Gigabit) Supports Wake On Lan (WOL)
Power-over-Ethernet (PoE)	NS02E supports Power-over-Ethernet (PoE) according to IEEE 802.3at [2] PoE voltage range of the RJ45 connector: 36~57 VDC.
Wireless Network (WLAN & BT)	Chipset: Realtek® RTL8723BS One internal antenna (1T1R) Supports Wireless LAN IEEE 802.11b/g/n at 2,4 GHz Max. PHY data rate: 150 Mbps in 802.11n mode Supports Miracast, Supports Bluetooth 4.0
Card Reader	Integrated SD card reader Supports SD, SDHC and SDXC memory flash cards Supports booting from SD card for image update
Front Panel Connectors	2x USB 2.0 SD card reader (supports SD, SDHC, SDXC) Power button Power LED (blue), HDD LED (orange)
Back Panel Connectors	HDMI 2.0 supports 2160p/60Hz USB 2.0 Gigabit LAN (RJ45) - **NS02E** supports PoE Audio Line Out / headphones connector, 3.5 mm jack DC-input connector for external power adapter
VESA Mount	VESA mount set (made of steel, includes screws) Supports 75x75 and 100x100 mm
Supplied Accessories	Quick Installation Guide VESA mount includin screws AC Power Adapter (NS02A only) Rubber feet
Environmental Specifications	Operating temperature range: 0~40 °C Relative humidity range: 10~90% (non-condensing)

Conformity Certifications	EMI: CE, FCC, BSMI, RCM, CCC, R&TTE, VCCI 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] An Android image with root privileges is available on request. The NS02A/NS02E does not support Google Play services which includes the Google Play Store. The installed operating system Android 5.1.1 is delivered with the Security Patch Level from April 2016. Future updates are not planned.

[2] NS02E can be powered by IEEE 802.3at from either a PoE switch or a PoE injector. At the same time, it can be powered by an optional external power supply. Please note, that Shuttle does not offer this power adapter as accessory. If you need a power adapter, then you can either use the product version **NS02A** (without PoE function) or purchase a suitable power adapter with these output specifications: 12 V DC, at least 2 A and 20W, DC Connector: 5.5/2.5 mm (outer/inner diameter).