0.5-litre fanless PCs with HDMI 2.0 based on Android

The NS02A/NS02E are the most affordable models Shuttle's product family of Mini PCs has on offer. These two models of the XPC nano range not only convince by their stunning looks and reliable long-term performance alone, they also come 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 also includes Power-over-Ethernet (PoE). The NS02A/NS02E are particularly intended for digital signage and Thin Client applications.

XPC nano System

NS02A

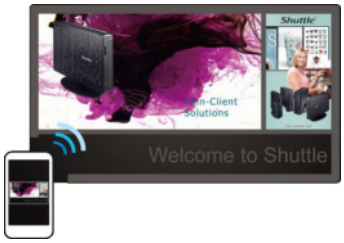
NS02E

Images for illustration purposes only.

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
Optional 2.5" Bay	• One 6.35 cm/2.5" bay, 7 mm height supports one SATA hard disk or SSD Note: requires optional accessory PHD5
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 (NS02E only)	• Power-over-Ethernet (PoE) – the Ethernet cable provides electric power and data
Power Supply (NS02A only)	• External 24 W power adapter Input: 100~240 V AC, Output: 12V/2A
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

Supplied Software



Shuttle DS Player

Model NS02A

8 87993 60053 6

Model NS02E

8 87993 60054 3

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NS02A / 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

Operating Positions

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

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Digital Signage Software

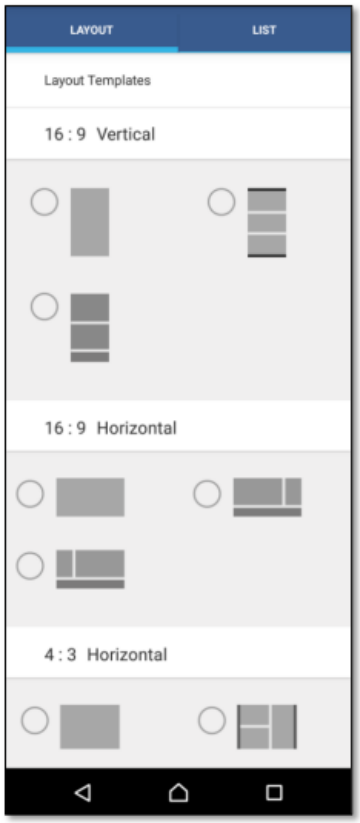
Introduction

"DS Creator 2.0" is an application for the Shuttle XPC nano NS02 series. You can use "DS Creator 2.0" on your Android phone or tablet to upload digital signage content such as scrolling text, pictures, videos and webpage links to your digital signage player by following these simple steps. The "DS Creator 2.0" app requires Android 4.2.X or higher.

Preparing for first-time use

1) Please install the "DS Creator 2.0" app on your Android phone or tablet, 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.



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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.

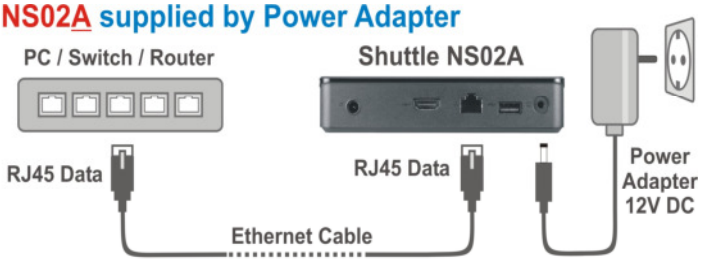
Power-over-Ethernet (PoE) technology enables network devices to be powered over the existing network cable and will not need separate power and data cable installations and costly AC outlets in hard-to-reach places. PoE even works with long cables (CAT5e or better) of up to 100 m (330 ft) and delivers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

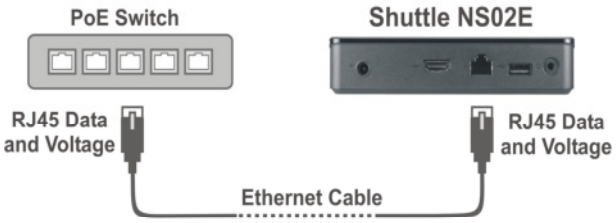
Power Sourcing Equipment (PSE): provides power over the Ethernet cable. The two methods are:
- Endspan: PoE Switch incorporating Powerover-Ethernet technology (see Solution 2 below)
- Midspan: PoE Injector (see Solution 3 below)

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).

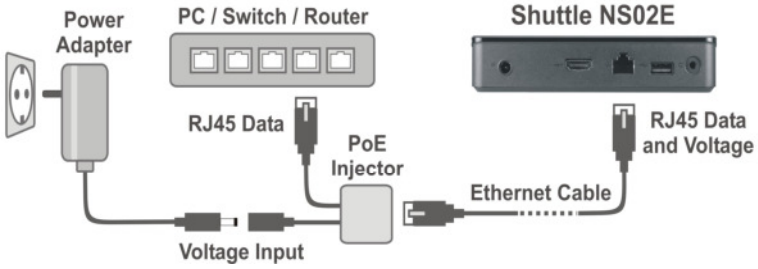
Solution 1: NS02A supplied by Power Adapter



Solution 2: NS02E supplied by PoE Switch



Solution 3: NS02E supplied by PoE Injector



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Shuttle XPC nano NS02A/E - 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]**
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
Power Adapter (NS02A only)	External 24 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz, max. 0.7 A Output: 12 V DC, max. 2.0 A, max. 24 W DC Connector: 5.5/2.5 mm (outer/inner diameter) Note: the power adapter is supplied with **NS02A** only. It is available optionally for **NS02E**.
Memory	2 GB DDR3L onboard
Flash Memory	16 GB eMMC Flash Memory onboard
2.5" Drive Bay (Optional)	Supports one Serial ATA hard disk or one SATA SSD drive in 6.35 cm/2.5" format Device height: 7 mm (max.) Note: for the drive installation the **PHD5** accessory kit is required

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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 (NS02E only)	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)

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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.

[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.

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