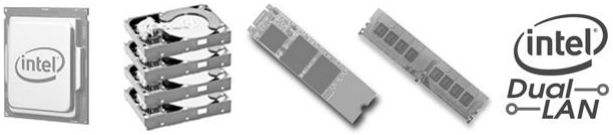
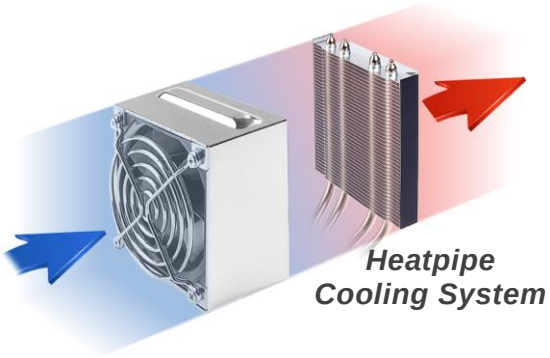
High-end Mini PC with OC Features

Powerful Shuttle XPCs have convinced as workstation machines or gaming rigs for years. You can already guess from the RGB-LED lighting of the R9 front – this barebone that has particularly been designed for gamers has oomph under its bonnet. Simply pressing the turbo button on the front will be enough to activate overclocking mode and squeeze the maximum out of your Intel LGA 1151 processor with K multiplier (such as the Core i7-7700K). Lighting and CPU multiplier can be adjusted and set using the Shuttle OC-Tool. Despite the compact dimensions, the SZ270R9 has room for a dual-slot graphics card such as the GTX 1080, up to 64 GB of DDR4 memory, two M.2 drives and even four 3.5 inch hard disks or SSDs. Cooling is provided by an efficient heatpipe cooling system and a separate fan for the drives.

XPC cube Barebone
SZ270R9



6./7. Gen. Intel Core | **Four Hard Disks** | **2x M.2 2280** | **4x DDR4 max. 64GB** | **Dual LAN**



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Feature Highlights

R9 Chassis	• Black aluminium chassis (14.3-litre) • Gaming style front panel with software controlled RGB-LED lighting • Turbo Button for easy overclocking
CPU	• Supports 6th/7th Gen. Intel® Core™ Processors “Skylake” and “Kaby Lake”, Socket LGA 1151 • Supports Core i3, i5, i7, Pentium, Celeron • Shuttle I.C.E. heatpipe cooling system
Operating System	• An operating system is not included • Supports Windows 7/8.1/10, Linux (64-bit) Windows 7/8.1 only supported with a Skylake CPU
Four 3.5” Bays	• 4x 3.5” storage bay • 4x SATA 3.0 (6Gbps) port, supports RAID/RST
Slots	• 1x PCIe x16 (v3.0) supports dual-slot PCI-Express X16 graphics cards • 1x PCIe x4 (v3.0) • 2x M.2 2280 supports PCIe 3.0 x4 & SATA 3 Prepared for Intel® Optane™ Technology • 1x M.2 2230, supports optional WLAN
Chipset	• Intel Z270 PCH
Integrated Graphics	• Supports three Full HD displays • Supports 1x 4K/UHD resolution (2160p/60)
Memory	• Supports 4x DDR4-2133/2400, max. 64 GB
Other Connectors	• HDMI 1.4b, 2x DisplayPort 1.2, HD-Audio • 6x USB 3.0, 4x USB 2.0, 2x Intel GigaBit LAN
Optional	• COM-Port, Wireless LAN and 2.5” bay
PSU	• 500 Watt power supply (80 PLUS Silver)

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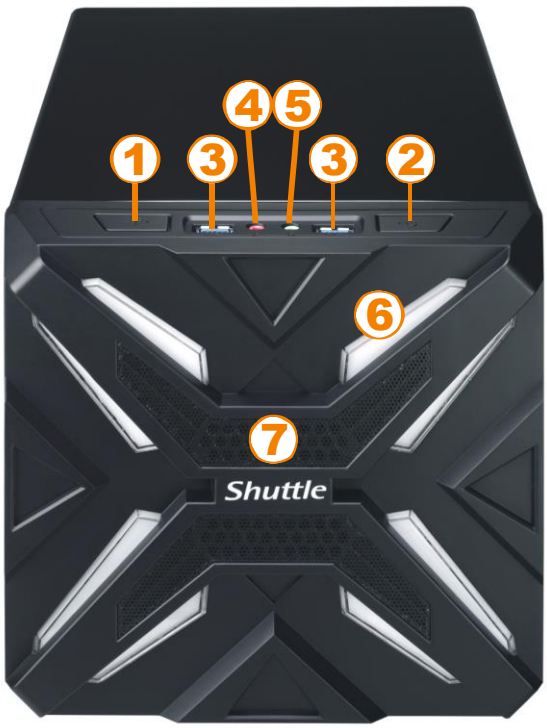
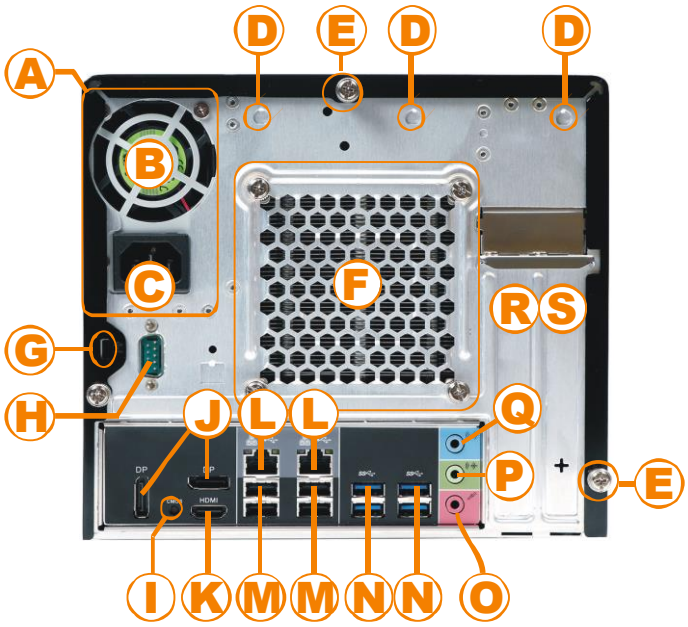
Connectors

Front view



Rear view



1	Turbo button
2	Power button Power LED indicator (blue)
3	2x USB 3.0 port
4	Microphone input
5	Headphones output
6	RGB-LED lighting
7	Ventilation grille for hard disk fan

A	Power supply
B	Power supply fan
C	AC power connector
D	Perforation for optional WLAN module (WLN-M)
E	Three thumbscrews
F	Heatpipe cooling system
G	Hole for Kensington Lock
H	COM / RS232 (optional)
I	Clear-CMOS-Button

J	2x DisplayPort output
K	HDMI output
L	2x Gigabit LAN (RJ45)
M	4x USB 2.0
N	4x USB 3.0
O	Audio Mic-In
P	Audio Line-Out
Q	Audio Line-In
R	PCI-Express X16 slot
S	PCI-Express X4 slot

Interior view

Left side

Right side

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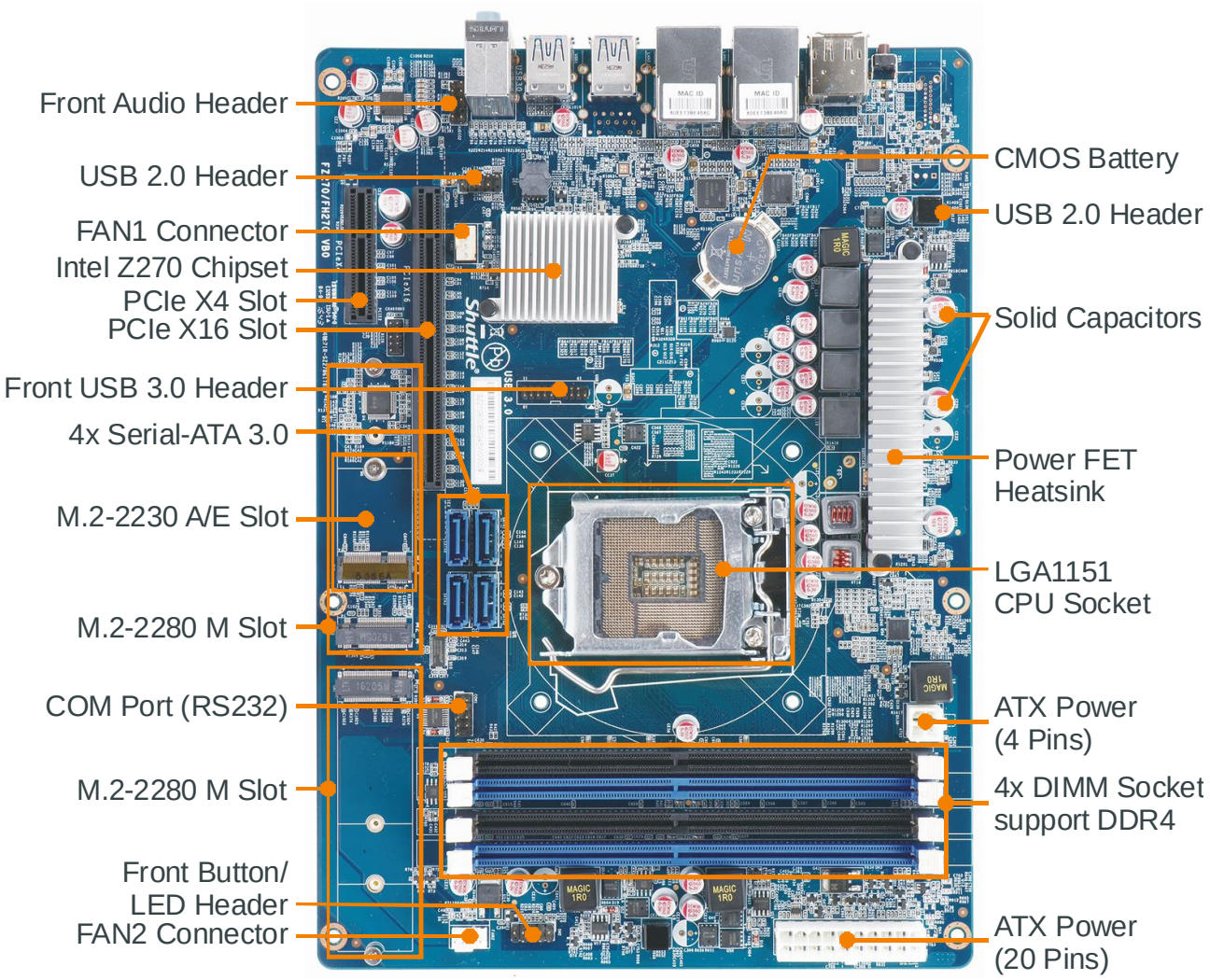
Mainboard

Back Panel Connectors



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Shuttle OC-Tool

You will find the latest version of this software in the download section of this product.

Normal Mode

The processor is supplied with an external clock frequency (Base Clock - BCLK), which is multiplied by a certain value which results in the higher internal frequency. The Enhanced Intel Speedstep® Technology (EIST) automatically downclocks the processor when in power saving mode.

Intel® Turbo-Boost-Technology (Core i5/i7 only)

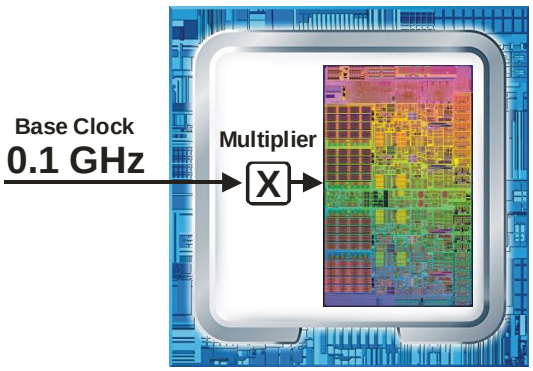
Under heavy load, the processor automatically increases the multiplier and thus also the core frequency.

Overclocking through multiplier setting (only with K series processors, e.g. Core i5-7600K or i7-7700K)

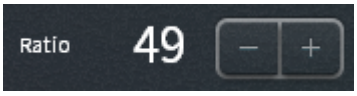
With Shuttle's OC-Tool you can easily change the multiplier in Turbo Boost mode under Windows 10. The CPU voltage is automatically set to a reasonable value. This is called "overclocking", because the maximum clock frequency in Turbo Boost mode exceeds the manufacturer's specifications within which reliable operation is guaranteed. It depends on the processor used what grade of overclocking still warrants stable operation. Please note that overclocking happens always at your own risk - Shuttle cannot be held liable for loss of data or hardware damage.

Turbo Button

OC mode can be enabled/disabled by just pressing the Turbo Button. The current state of the machine is indicated by the RGB-LED lighting of the front panel.



Example: Intel Core i7-7700K Processor



Selected multiplier for Turbo Mode = 49 (Example)

Mode	Multi-plicator	CPU Clock in GHz	Over-clocking?
No Load	42	4.2	No
Under Load without Turbo	44 ~ 45*	4.4 ~ 4.5*	No
Under Load with Turbo	49	4.9	**Yes**

*) higher value is possible, if only one CPU core is under load

Screenshots of Shuttle's OC-Tool:

Turbo Mode disabled

Turbo Mode enabled

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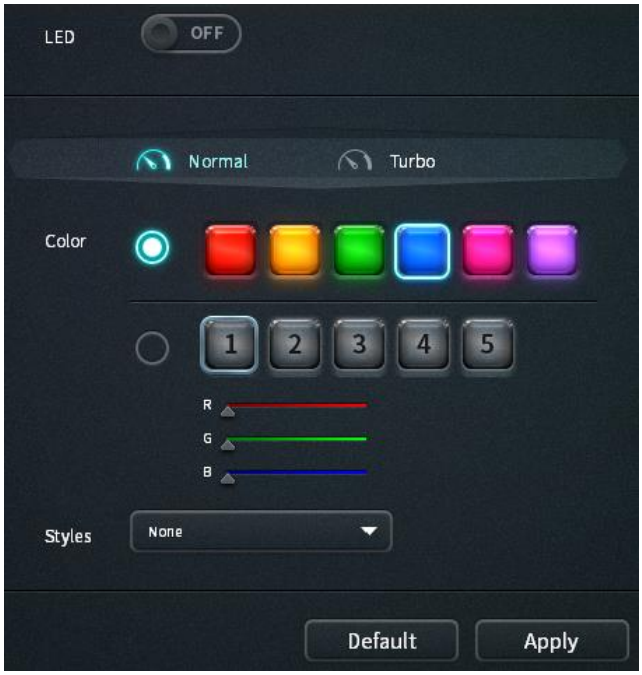
Watchdog Function
The Watchdog function can be enabled/disabled by clicking the Watchdog icon. The Watchdog automatically performs a hardware reset, if the system hangs.

RGB-LED lighting
The lighting of the front panel can also be configured with Shuttle's OC-Tool. One colour each for “Normal" and "Turbo" mode needs to be selected to distinguish the two different states of the machine. The desired colours can be chosen from a pre-defined palette, or can be created individually using the RGB slider control. In addition, the LED can also be set to "Flashing" or "Breathing" style.



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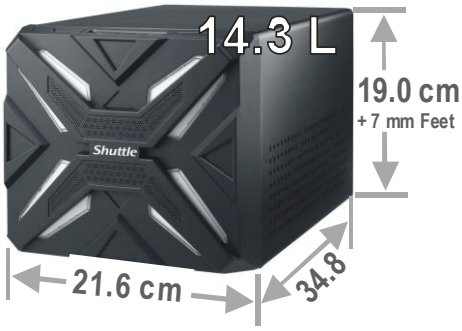
Product Features

R9 - Performance meets extraordinary design

The R9 case with its eye-catching RGB-LED lighting was designed for serious gamers and power users that want big-stage performance instead of standing in the shadow. The R9 won's shy away and demonstrates brute strength not only by its look. Fueled by high-end components such as socket LGA 1151 processors, DDR4, dual-slot graphics cards, four 3.5" hard drives, NVMe and Intel Optane support, the R9 is your ideal weapon to eclipse the competition. The case uses light aluminium as its base material.



Small, but easy to install

Shuttle XPC cubes offer the performance of a desktop PC at a third of the size while using standard desktop components. Shuttle keeps the concept of being futureproof in mind when designing the new R9 chassis. The meticulously designed internal layout already comes with cables fitted to reduce clutter, increase airflow and make the installation of components easy.

What is a Barebone?

The Shuttle XPC cube Barebone SZ270R9 consists of a stylish case with a pre-installed mainboard, power supply unit (PSU) and cables. Despite its small form factor, it offers outstanding connectivity, functionality and performance. For a full PC system, a processor, memory, mass storage and optionally a graphics card need to be added. Shuttle XPC cube Barebones are completely customisable meaning users can pick certain components on their own to ideally match their individual needs.

Turbo Button for Intel K Series Processors

The Shuttle XPC cube Barebone SZ270R9 supports 6th/7th Gen. Intel Core Processors with socket LGA 1151 (Skylake and Kaby Lake). If a K series processor is used, OC mode can be activated by just pressing the turbo button to boost performance when required.

Integrated Cooling Engine (I.C.E.)

In order to ensure proper airflow inside such a small case, more advanced cooling technologies have been developed and implemented. Shuttle's industry-leading I.C.E. heatpipe technology delivers efficient cooling and is exceptionally quiet.

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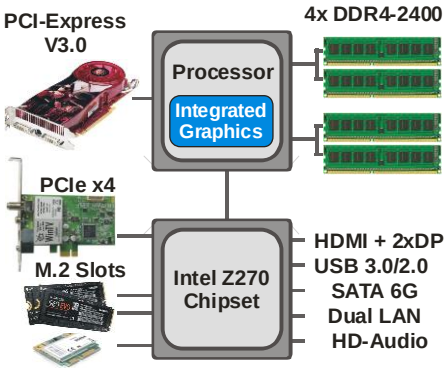


Intel Z270 Chipset

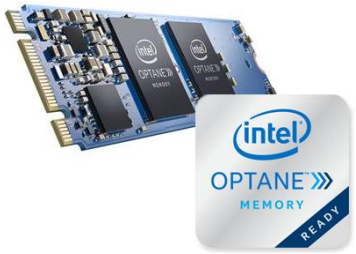
The Shuttle XPC cube Barebone SZ270R9 sports Intel's Z270 Platform Controller Hub (PCH), which is part of the 200 Series "Union Point" chipset. The Z270 chipset consists of a single chip and integrates the hard drive controller, network controller, firmware interface, PCIe links, USB and other connectors.

Supports up to 64 GB DDR4 memory

The Shuttle XPC cube Barebone SZ270R9 supports up to 64 GB of DDR4-2133/2400 memory, which is ideal for workstations powered by 64-bit operating systems, so users take full advantage of high-performance configurations. Compatible memory comes in 288-pin DIMM modules at 1.2V operating voltage.

Two M.2-2280-Slots for SSD cards

The M.2-2280 BM slots support two M.2 SSD storage cards with SATA or with the more advanced PCIe interface.
Type 2280 means, it supports the usual M.2 cards with a width of 22mm and a length of 80mm, but also 2242 and 2260 standard cards. The SZ270R9 is ready for Intel® Optane™ Technology.



Intel® Optane™ Ready

With a 7th Gen Intel® Core™ "Kaby Lake" processor, the SZ270R9 supports Intel® Optane™ memory technology which reduces boot-up times even more while enhancing system performance.

M.2-2230-Slot for optional WLAN

The M.2-2230 AE slot is intended for Wireless LAN (Wifi), Bluetooth, GSM/UMTS cards and other.
Shuttle offers the optional accessory „WLN-M" (see picture on the left), which adds WLAN 802.11ac and Bluetooth 4.0 to your Shuttle XPC cube Barebone SZ270R9.

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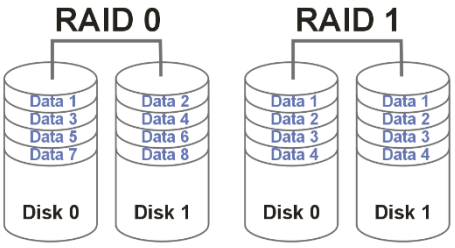
Additional power plugs for graphics cards with 6 and 6+2 pins

Efficient power supply provides maximum stability

The Shuttle XPC Barebone SZ270R9 is equipped with a rock-stable and efficient 500W power supply. Its 80 Plus Silver logo indicates that it provides more than 85/89/85% of energy efficiency at 20/50/100% of rated load which reduces energy consumption and increases the computer's reliability. The system provides maximum stability even if components like the Intel® Core™ i7-7700K and a GeForce® GTX 1080 graphics card is used.

6x USB 3.0

The Shuttle XPC cube Barebone SZ270R9 sports six USB 3.0 ports (2x front, 4x rear) plus four USB 2.0 ports. USB 3.0 achieves a maximum data transfer rate of up to 5.0 Gbps (640 MBytes/sec) which is ten times faster than USB 2.0. USB 3.0 is fully downward compatible to USB 2.0.



Intel Rapid Storage Technology - RAID support

Intel® Rapid Storage Technology offers new levels of protection, performance and expandability for desktop platforms. No matter if one or multiple hard drives are used, users benefit from enhanced performance and lower power consumption. Valuable data is protected from hard drive failure, if the system is configured in any of the following three fault-tolerant RAID configurations: RAID 1, RAID 5, and RAID 10. By seamlessly storing copies of data on one or more hard drives, any hard drive may fail without loss of data or system downtime. Once the defective drive is removed and a replacement hard drive is installed, data security is guaranteed again.

Supports up to four hard disks for storage applications

The SZ270R9 has room for up to four 3.5" hard disks (or SSDs). An integrated 80 mm fan in front of the hard disk rack ensures low operating temperatures and higher reliability. Thanks to the integrated RAID controller, different configurations are possible. For example, with a RAID 10 array with four 8 TB hard disks it can be used as a network-attached storage server for SMBs. One additional SSD can be installed in the M.2 slot and can be used for the system partition. Put simply, the SZ270R9 can be turned into a professional storage system at just a volume of 14 litres while it is also suitable as a powerful graphics workstation or gaming PC.

Intel Dual Gigabit LAN

The Shuttle XPC cube SZ270R9 also features two high-speed Intel Gigabit LAN ports which allows for example to connect to two different network segments.

HD Audio capabilities

The Shuttle XPC cube Barebone SZ270R9 supports multi-channel audio either via three analog stereo audio ports or digitally through its HDMI and DisplayPort connectors to combine high-bandwidth video with digital audio in one single port.

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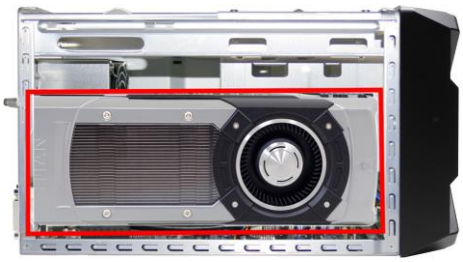
Graphics Features

PCI-Express v3.0 for high-performance graphics cards

The Shuttle XPC cube Barebone SZ270R9 supports PCI-Express x16 Version 3.0 combined with a 14nm Intel Kaby Lake processor to deliver a bandwidth of up to 16 GB/s. So expect plenty of potential for the newest graphics cards.

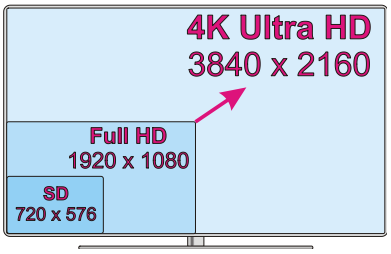


Ample space for demanding dual-slot graphics cards

Despite the small housing, the SZ270R9 is capable of running dual-slot (double-height) high-performance PCI Express graphics cards. The system provides additional 6-pin and 8-pin power connectors for more power-hungry graphics cards. Please refer to the compatibility list for detailed support information. The length of the graphics cards can be up to 280 mm (or 273 mm, if the power connectors are on the back side).

Built-in Intel® HD Graphics Engine

The integrated Intel HD Graphics processor has been moved to the same die as the CPU. Some of the graphics features depend on the processor type. It supports 3D stereoscopic playback, video hardware encoding, Blu-ray playback with HDCP, 4K resolution, DirectX 12, OGL 5.x and OCL 2.x. With all these features, the GPU is comparable to entry-level discrete cards.



Supports 4K Ultra HD at 60Hz

The Shuttle XPC cube Barebone SZ270R9 supports one 4K display running at 3840 x 2160 @ 60 Hz (2160p/60) when connected to one of the barebone's DisplayPort video outputs. As the successor to the Full HD standard, Ultra HD delivers a four times higher resolution with a wider colour space and colour depth. Dual channel memory (2 or 4 modules) is required for smooth 4K (2160p) video playback.

Triple Display with HDMI and 2x DisplayPort

The Shuttle XPC cube Barebone SZ270R9 features three digital video outputs: 1x HDMI 1.4 and 2x DisplayPort 1.2. Triple View technology brings you multiple display support on up to three separate monitors at Full HD resolution. This helps improve on productivity by allowing for spreading multiple windows across three monitors while working with them simultaneously.

Connect even more displays with a discrete graphics card

The Shuttle XPC cube Barebone SZ270R9 supports even more additional displays in combination with a discrete PCI-Express graphics card, based on the Switchable Graphics feature. Expand your Windows desktop across many monitors, but note it does not support a 2x2 configuration or clone mode with the monitors connected.

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Optional Accessories

Wireless LAN (Accessory WLN-M)

The Shuttle Accessory WLN-M is a wireless LAN kit consisting of a M.2-2230 card, two antennas and appropriate cables. Using this, the Shuttle XPC cube Barebone SZ270R9 can be equipped with a wireless LAN module according to IEEE 802.11ac standards. WPA2 with AES encryption is supported, too. WLN-M also supports Bluetooth 4.0.

Serial RS-232 port (Accessory H-RS232)

Add one serial COM port (RS232) to the back panel. While today's consumer PCs rarely have it, as it has been superseded by USB, it is still commonly used for industrial automation systems, scientific analysis and POS systems.

Two 2.5" drives in one 3.5" bay

The optional Shuttle Accessory PHD3 allows for installation of up to two 63.5 mm (2.5") hard drives or SSDs into one larger 89 mm (3.5") drive bay. This makes for a more flexible configuration in your drive rack.

The Shuttle XPC cube Barebone SZ270R9 can be installed up to eight 2.5" SATA hard disks (or SSDs) in combination with the Shuttle Accessory PHD3. For more than five SATA hard disks, though, extra SATA cables, power cables and a SATA controller card is required.

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Comparison: Shuttle XPC cubes with socket LGA 1151

Product:	SH170R6	SZ170R8V2	SZ270R8	SZ270R9
Front Design	**R6** chassis Plastic front	**R8** chassis Brushed Alu Look		**R9**: RGB-LED lighting Gaming Design
Chipset	Intel H170	Intel Z170	**Intel Z270**	
CPU Support	**Socket LGA 1151, TDP max. 95W** – code name "Skylake" and "Kaby Lake"			
OS Support	**Supports Windows 10 and Linux (64-bit)** – Windows 7 and 8.1 with Skylake CPU only			
Overclocking?	No	**Yes**, supports overclocking of K series CPUs		
Turbo-button?	No	No	No	**Yes**
CPU Cooling	Heatpipe with 3 pipes	**Heatpipe with 4 pipes**		
Storage Bays	1x 5.25“ 2x 3.5“ (1x ext.)	**4x 3.5“** (internal)		
Max. Memory	**4x 16 GB or 2x 32 GB** DDR4-2133/2400 (max. 64 GB total)			
Video Outputs	HDMI, 2x DisplayPort – Triple Display Support			
4K Support	HDMI: 2160p/30 Hz, DisplayPort: 2160p/60 Hz			
PCI Express Slots	1x PCIe X16 V3 and 1x PCIe X4 V3			
M.2 SSD Slots	**1x M.2-2280 slot** SATA and PCIe **V3** X4 (**NVMe support**)		**2x M.2-2280 slot** SATA and PCIe **V3** X4 (**NVMe support**)	
Intel Optane	No		**Supports Intel® Optane™**	
WLAN Slot	Mini-PCIe, Half-Size	M.2 2230 AE		
LAN Chipset	Intel i218LM	Intel i211 + i219LM	2x Intel i211	
Audio	Realtek ALC892		Realtek ALC662	
USB	8x USB 3.0 2x USB 2.0	8x USB 3.0	6x USB 3.0 4x USB 2.0	
SATA Ports	4x SATA 6G 1x eSATA 6G	4x SATA 6G	4x SATA 6G	
Power Supply	300 W, 80 Plus Bronze	**500 W**, 80 Plus Silver		
Optional Accessories	**PHD3**: 3.5“/2.5" bay **H-RS232**: COM port **WLN-C/P**: WLAN kit **PC63J**: 500W PSU	**PHD3**: 3.5“/2.5" bay adapter **H-RS232**: COM port **WLN-M**: WLAN kit		
Front Panel				
Rear Panel				

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Shuttle XPC cube Barebone SZ270R9 - Specifications

R9-Chassis	Black aluminium chassis with plastic front panel Gaming style front panel with software controlled RGB-LED lighting Kensington Security Slot at the back panel (also called K-Slot or Kensington lock) as a part of an anti-theft system Dimensions without the 7 mm rubber feet: 348.4 x 215.4 x 190.2 mm (LWH), 14.3-litre Weight: 3.5 kg net / 5.0 kg gross
Storage Bays	Storage bays: 4 x 3.5" (internal) Using the optional accessory PHD3 two 2.5" drives can be installed into one 3.5" bay.
Mainboard and Chipset	Shuttle Mainboard "FZ270", Shuttle Form Factor proprietary design for XPC cube Barebone SZ270R9 Dimensions: 270 x 195 mm Chipset: Intel® Z270 Chipset, code name "Union Point" Platform Controller Hub (PCH) as Single-Chip-Solution Solid Capacitors for sensitive areas provide excellent heat resistance for enhanced system durability
BIOS	AMI BIOS, SPI Interface, 32 MBit Flash-ROM with SPI interface Supports PnP, ACPI 3.0, Hardware Monitoring Supports Unified Extensible Firmware Interface (UEFI) Supports boot-up from external USB flash memory
Power Supply	Built-in 500 Watt mini switching power supply (PC63J) AC input voltage: supports 100~240V, 50~60 Hz 80 PLUS Silver compliant: the PSU provides at least 85/89/85% of efficiency at 20/50/100% of load. Active PFC circuit (Power Factor Correction) ATX main power connectors: 2x 10 and 2x 2-pin Graphics power connector: 6-pin and 8-pin Other connectors: 4x SATA, 2x Molex, 1x Floppy
Operation System	This system comes without operating system. It is compatible with Windows 7 / 10 and Linux (64-bit). Note: Windows 7 is only supported in combination with 6th generation Intel Core processors "Skylake". Additional note on Windows 7 see **[7]**

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Processor Support	Socket LGA 1151 (H4) supports Intel Core i7 / i5 / i3, Pentium and Celeron processors - 6th generation, code name "Skylake" - 7th generation, code name "Kaby Lake" Maximum supported processor power consumption (TDP) = 95 W 14 nm process technology, up to 8 MB of L3 cache Not compatible with Intel Xeon E3 V5 processors for socket LGA 1151 and processors with the older Socket LGA 1150. Supports the unlock function of Intel K-Series processors. The processor integrates PCI-Express, memory controller and the graphics engine on the same die (performance features depending on processor type) Please refer to the support list for detailed processor support information at global.shuttle.com.
Processor Cooling	Shuttle I.C.E. (Integrated Cooling Engine) Advanced I.C.E. Heatpipe technology with 4 pipes Temperature controlled 92 mm fan SilentX cooling and noise reduction technology with Active Airflow
Memory Support	4 x 288-pin slot Supports DDR4-2133/2400 memory (PC4-17066/19200) at 1.2V Supports 2+2 Dual Channel mode Supports max. 32 GB per DIMM, maximum total size of 64 GB
Integrated Graphics	The features of the integrated Intel HD graphics function depend on the processor type used. Supports DirectX 12, OGL 5.x, OCL 2.x The PC features three digital video outputs: - HDMI v1.4b (supports 1080p/60 and 2160p/30) - 2x DisplayPort v1.2 (support 1080p/60 and 2160p/60) Supports displays with 4K Ultra HD resolution at 3840 x 2160 **[3]** Supports three independent Full HD displays with the integrated graphics function Supports more displays in combination with a discrete graphics card **[2]** Supports Blu-ray (BD) playback with HDCP copy protection Supports multi-channel digital audio over the same cable Maximum shared memory of 512 MB
PCIe-Expansion Slots	1x PCI-Express x16 v3.0 slot (PEG, for graphics cards only) 1x PCI-Express x4 v3.0 slot This XPC supports dual-slot (double-width) graphics cards. Using one will occupy the second PCI-Express slot. The length of the graphics cards can be up to 280 mm or 273 mm, if the power connectors are on the back side. Graphics power connectors: 6-pin and 8-pin

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Two M.2-2280 SSD Slots	The mainboard provides two M.2 2280 slots with the following interfaces: - PCI-Express Gen. 3.0 X4 with up to 32 Gbps Data Transfer Speed - SATA v3.0 (max. 6 Gbps) It supports M.2 cards with a width of 22 mm and a length of 42, 60 or 80 mm (type 2242, 2260, 2280). Supports M.2 SSDs with SATA or PCI-Express interface. Prepared for Intel® Optane™ Technology.
Supports Intel® Optane™	The SZ270R9 supports Intel® Optane™ Technology which accelerates the speed of one hard disk through data caching. This requires a 7th gen. Intel Core processor ("Kaby Lake") and an Optane-SSD with 3D-Xpoint memory (e.g. in M.2 format).
M.2-2230 WLAN Slot	Interfaces: PCI-Express Gen. 2.0 X1 and USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN expansion cards (optional Shuttle accessory WLN-M **[6]**)
Multi-Channel Audio	High Definition Audio with Realtek ALC662 codec Back panel: three analog audio connectors (3.5 mm): Line-in (blue), line-out (green) and microphone input (pink) shared with 5.1 channel line-out (front, rear, center/bass) Front panel: microphone input and headphones output 7.1 channel Digital Audio: via HDMI and DisplayPort outputs
Dual Gigabit-LAN Controller	Dual network with two RJ45 ports 2x Intel i211 Ethernet Controller with MAC, PHY and PCIe interface Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
SATA Connectors	The mainboard provides five Serial-ATA 3.0 interfaces, max. 6 Gbps supported 4x Serial ATA connector onboard Supports Intel Rapid Storage Technology (RST, Raid 0/1/5/10, JBOD)
Front Panel Connectors and Buttons	Microphone input Headphones output (line-out) 2x USB 3.0 Power button with Power indicator (blue LED) Turbo button to activate overclocking mode **[8]** Front RGB-LED lighting (configurable with Shuttle OC-Tool)
Back Panel Connectors	1x HDMI v1.4b 2x DisplayPort v1.2 **[4]** 4x USB 3.0 4x USB 2.0 2x Gigabit LAN (RJ45) 3x Audio 3.5 mm (Line-in, Line-out, Microphone-in) Clear CMOS button Optional: 1x Serial port RS-232 (Accessory: H-RS232) 3x perforation for optional WLAN antennas (Accessory: WLN-M)

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Other Connectors (onboard)	2x USB 2.0 (2x 5-pin) 1x RS232 (2x 5-pin) for optional accessory H-RS232 2x fan connector (4-pin), both connectors are occupied Occupied front connectors: USB 3.0, USB 2.0, audio, power buttons, LEDs
Included Accessories	Multi-language XPC Installation Guide (EN, DE, FR, ES, JP, KR, SC, TC) 32/64-bit driver disk for Windows 4x Serial ATA cables AC Power Cord (with protective-earth contacts) Heatsink Compound Protector cap for the CPU socket (do not use if heatpipe or fan is mounted) Bag with screws
Optional Accessories	**PHD3**: 3.5" to 2.5" adapter **H-RS232**: Backpanel COM port adapter for RS232 serial interface **WLN-M**: Wireless LAN 802.11ac + BT4.0 module with two external antennas **[6]**
Environmental Spec	Operating temperature range: 0~40 °C Relative humidity range: 10~90 % (non-condensing)
Certifications and Compliance	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)

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Notes:

[1] Overclocking Warning
Please note there is a certain risk involved with overclocking, including adjusting the settings in the BIOS or using overclocking tools. Overclocking may affect your system stability or even cause damage of the components and devices of your system. It is done at your own risk and expense. Shuttle cannot be held responsible for possible damage caused by overclocking.

[2] Supports additional displays in combination with a discrete graphics card
The integrated graphics function already supports three independent displays via its digital video outputs. This PC even supports more displays in combination with a discrete PCI-Express graphics card. This function is based on the Switchable Graphics feature introduced with the 2nd Generation of Intel® Core™ processors. To enable this, please enter the BIOS Setup Utility by pressing the "Delete" key after powering on the PC, then go to the "Advanced" tab and change the "Initiate Graphics Adapter" setting to "Switchable".

[3] 4K Ultra-HD resolution
A 4K-display with Ultra-HD resolution (3840 x 2160) should be connected via DisplayPort, as only this port supports a higher refresh rate of 60 Hz. The video playback performance depends on the video format, bitrate and the processor used. Daily office applications usually won't require the system to run under full load, however for smooth 4K (2160p) video playback requirements are different. An Intel Core i3 processor or higher and dual channel memory (2 or 4 modules) is recommended here.

[4] How to convert DisplayPort to 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 via 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.

[5] Three independent displays simultaneously
The Shuttle XPC cube Barebone SZ270R9 supports a maximum of two displays with a DVI or HDMI input. A third digital display, if required, must be connected directly to the DisplayPort output (without an adapter).

[6] Optional Wireless LAN module (WLN-M): This XPC cube Barebone supports the optional Shuttle XPC Accessory WLN-M which consists of a M.2-2230 card with IEEE 802.11ac and BT4.0 functionality and two external antennas with appropriate antenna cables.

[7] Installation of Windows 7
The Intel® 100/200 chipset series has no support for the Enhanced Host Controller Interface (EHCI) which is the driver software for the USB 2.0 ports. The new chipset only supports the Extensible Host Controller Interface (xHCI for USB 3.0) which is not supported by the original Windows 7 installation disk. This means, that peripheral devices connected by USB (like keyboard, mouse and external optical drive) will not work during Windows 7 installation. Please therefore add the required USB 3.0 drivers to the Windows 7 installation files. This is also explained in the Shuttle FAQ section at faq.shuttle.eu.
Note: Windows 7 is only supported if a 6th generation Intel Core processor ("Skylake") is used.

[8] Turbo Button
Please make sure the following requirements are met to enable the Turbo Button:
1) Operating system: Windows 10
2) Intel Core processor of the K series (with unlocked multiplier)
3) Install and run the Shuttle OC-Tool. You will find the latest version of this software here.

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6th Generation Intel Core Desktop Processor Family

Socket LGA 1151 14 nm “Skylake-S” processor overview

Name	Model	Cores/ Threads	CPU Clock	Turbo Clock	Cache	TDP	Graphics Engine	Graphics Clock
Core i7	6700K	4 / 8	4.0 GHz	4.2 GHz	8 MB	91 W	HD 530	350~1150 MHz
	6700	4 / 8	3.4 GHz	4.0 GHz	8 MB	65 W	HD 530	350~1150 MHz
	6700T	4 / 8	2.8 GHz	3.6 GHz	8 MB	35 W	HD 530	350~1100 MHz
Core i5	6600K	4 / 4	3.5 GHz	3.9 GHz	6 MB	91 W	HD 530	350~1150 MHz
	6600	4 / 4	3.3 GHz	3.9 GHz	6 MB	65 W	HD 530	350~1150 MHz
	6600T	4 / 4	2.7 GHz	3.5 GHz	6 MB	35 W	HD 530	350~1100 MHz
	6500	4 / 4	3.2 GHz	3.6 GHz	6 MB	65 W	HD 530	350~1150 MHz
	6500T	4 / 4	2.5 GHz	3.1 GHz	6 MB	35 W	HD 530	350~1100 MHz
	6400	4 / 4	2.7 GHz	3.3 GHz	6 MB	65 W	HD 530	350~1150 MHz
	6400T	4 / 4	2.2 GHz	2.8 GHz	6 MB	35 W	HD 530	350~1100 MHz
Core i3	6320	2 / 4	3.9 GHz	–	4 MB	65 W	HD 530	350~1150 MHz
	6300	2 / 4	3.8 GHz	–	4 MB	65 W	HD 530	350~1150 MHz
	6300T	2 / 4	3.3 GHz	–	4 MB	35 W	HD 530	350~1100 MHz
	6100	2 / 4	3.7 GHz	–	4 MB	65 W	HD 530	350~1150 MHz
	6100T	2 / 4	3.2 GHz	–	4 MB	35 W	HD 530	350~1100 MHz
Pentium	G4520	2 / 2	3.6 GHz	–	3 MB	51 W	HD 530	350~1150 MHz
	G4500	2 / 2	3.5 GHz	–	3 MB	51 W	HD 530	350~1150 MHz
	G4500T	2 / 2	3.0 GHz	–	3 MB	35 W	HD 530	350~1100 MHz
	G4400	2 / 2	3.3 GHz	–	3 MB	51 W	HD 530	350~1150 MHz
	G4400T	2 / 2	2.9 GHz	–	3 MB	35 W	HD 530	350~1100 MHz
Celeron	G3920	2 / 2	2.9 GHz	–	2 MB	51 W	HD 530	350~1050 MHz
	G3900	2 / 2	2.8 GHz	–	2 MB	51 W	HD 530	350~1050 MHz
	G3900T	2 / 2	2.6 GHz	–	2 MB	35 W	HD 530	350~950 MHz

K = unlocked, **T** = Power optimized lifestyle, **HT** = Hyper Threading (SMT).
Note: The Shuttle XPC cube Barebone SZ270R9 also supports the unlock function of Intel K-Series processors.
Please refer to the support list for detailed processor support information at global.shuttle.com.

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7th Generation Intel Core Desktop Processor Family

Socket LGA 1151 14 nm “Kaby Lake-S” processor overview

Name	Model	Cores/ Threads	CPU Clock	Turbo Clock	Cache	TDP	Graphics Engine	Graphics Clock
Core i7	7700K	4 / 8	4.2 GHz	4.5 GHz	8 MB	91 W	HD 630	350~1150 MHz
	7700	4 / 8	3.6 GHz	4.2 GHz	8 MB	65 W	HD 630	350~1150 MHz
	7700T	4 / 8	2.9 GHz	3.8 GHz	8 MB	35 W	HD 630	350~1150 MHz
Core i5	7600K	4 / 4	3.8 GHz	4.2 GHz	6 MB	91 W	HD 630	350~1150 MHz
	7600	4 / 4	3.5 GHz	4.1 GHz	6 MB	65 W	HD 630	350~1150 MHz
	7600T	4 / 4	2.8 GHz	3.7 GHz	6 MB	35 W	HD 630	350~1100 MHz
	7500	4 / 4	3.4 GHz	3.8 GHz	6 MB	65 W	HD 630	350~1100 MHz
	7500T	4 / 4	2.7 GHz	3.3 GHz	6 MB	35 W	HD 630	350~1100 MHz
	7400	4 / 4	3.0 GHz	3.5 GHz	6 MB	65 W	HD 630	350~1000 MHz
	7400T	4 / 4	2.4 GHz	3.0 GHz	6 MB	35 W	HD 630	350~1000 MHz
Core i3	7350K	2 / 4	4.2 GHz	–	4 MB	60 W	HD 630	350~1050 MHz
	7320	2 / 4	4.1 GHz	–	4 MB	51 W	HD 630	350~1050 MHz
	7300	2 / 4	4.0 GHz	–	4 MB	51 W	HD 630	350~1050 MHz
	7300T	2 / 4	3.5 GHz	–	4 MB	35 W	HD 630	350~1100 MHz
	7101E	2 / 4	3.9 GHz	–	3 MB	54 W	HD 610	350~1100 MHz
	7101TE	2 / 4	3.4 GHz	–	3 MB	35 W	HD 610	350~1100 MHz
	7100	2 / 4	3.9 GHz	–	3 MB	51 W	HD 630	350~1100 MHz
	7100T	2 / 4	3.4 GHz	–	3 MB	35 W	HD 630	350~1100 MHz
Pentium	G4620	2 / 4	3.7 GHz	–	3 MB	51 W	HD 630	350~1100 MHz
	G4600	2 / 4	3.6 GHz	–	3 MB	51 W	HD 630	350~1100 MHz
	G4600T	2 / 4	3.0 GHz	–	3 MB	35 W	HD 630	350~1050 MHz
	G4560	2 / 4	3.5 GHz	–	3 MB	54 W	HD 610	350~1050 MHz
	G4560T	2 / 4	2.9 GHz	–	3 MB	35 W	HD 610	350~1050 MHz
Celeron	G3950	2 / 2	3.0 GHz	–	2 MB	51 W	HD 610	350~1050 MHz
	G3930	2 / 2	2.9 GHz	–	2 MB	51 W	HD 610	350~1050 MHz
	G3930T	2 / 2	2.7 GHz	–	2 MB	35 W	HD 610	350~1000 MHz

K = unlocked, **T** = Power optimized lifestyle, **HT** = Hyper Threading (SMT).
Note: The Shuttle XPC cube Barebone SZ270R9 also supports the unlock function of Intel K-Series processors.
Please refer to the support list for detailed processor support information at global.shuttle.com.

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