The R8 among the XPC cubes

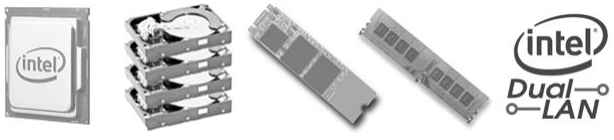
The Shuttle XPC cube Barebone SZ170R8V2, as the company's first model, is able to accommodate up to four 3.5 inch hard drives which makes an overall maximum capacity of up to 40TB a reality. Ideal for both home and commercial applications. Still, there's much room for expansion in the form of a M.2 SSD for PCI-E which means transfer rates of up to 2,5 GB/s making it up to four times faster as compared to current SATA-SSDs. However, this barebones platform is way more than just about storage - the SH170R8 has enough grunt under its aluminium bonnet to be a high-end gaming PC or a workstation for intensive graphics or even video applications. The mainboard sports Intel's high-performance Z170 chipset that is designed for next-gen LGA 1151 "Skylake" and "Kaby Lake" processors up to the top-end Core i7 ones of the K-Series. Additionally, large dual-slot graphics cards and up to 64GB of DDR4 memory can be fitted.

Feature Highlights

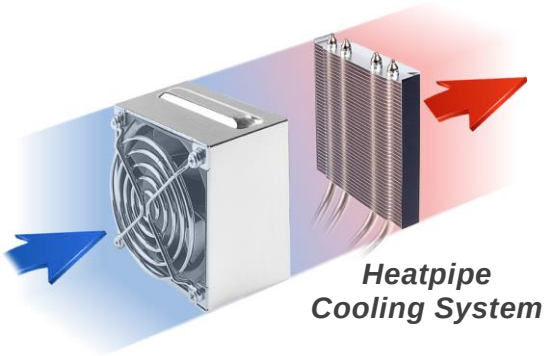
R8 Chassis	• Black aluminium chassis (14.2 litre)
CPU	• Supports 6th/7th Gen. Intel® Core™ Processors “Skylake” and “Kaby Lake”, Socket LGA1151 • Supports Core i3, i5, i7, Pentium, Celeron • Shuttle I.C.E. heatpipe cooling system
Operating System	• An operating system is not included • Supports Windows 7/8.1/10, Linux - 64 bit Windows 7/8.1 not supported w/ Kaby Lake CPU
Four 3.5” Bays	• 4x 3.5” storage bays • 4x SATA 3.0 (6Gbps) ports, supports RAID/RST
Slots	• 1x PCIe x16 (v3.0) supports dual-slot PCI-Express X16 graphics cards • 1x PCIe x4 (v3.0) • 1x M.2 2280 supports PCIe 3.0 x4 & SATA 3 • 1x M.2 2230, supports optional WLAN
Chipset	• Intel Z170 PCH
Integrated Graphics	• Supports three Full HD displays at once • Supports 4K/UHD resolution (2160p/60)
Memory	• Supports 4x DDR4-2133, max. 64 GB
Other Connectors	• Video: HDMI 1.4 and 2x DisplayPort 1.2 • Audio: 7.1-ch Line-out, Line-in, Microphone • 2x Intel GigaBit LAN (RJ45), supports Teaming • 8x USB 3.0
Optional	• COM-Port, Wireless LAN and 2.5” bay
PSU	• 500 Watt power supply (80 PLUS Silver)

XPC cube Barebone

SZ170R8V2



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



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Images for illustration purposes only.

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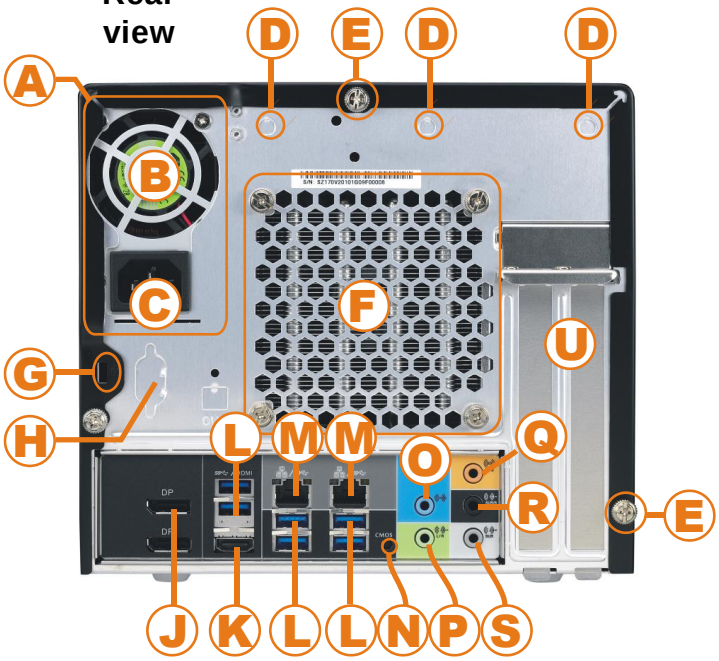
Shuttle XPC cube Barebone SZ170R8V2 – Connectors

Front view

Rear view



1	Hard disk LED indicator
2	Power button Power LED indicator
3	2x USB 3.0 port
4	Microphone input
5	Headphone output

A	Power supply
B	Power supply fan
C	AC power connector
D	Perforation for optional WLAN module
E	Three thumbscrews
F	Heatpipe cooling system
G	Hole for Kensington Lock
H	COM / RS232 (optional)
J	2x DisplayPort output
K	1x HDMI output

L	6x USB 3.0
M	2x Gigabit LAN (RJ45)
N	Clear-CMOS-Button
O	Audio Line-in
P	Audio Surround Front
Q	Audio Center/Bass
R	Audio Surround Rear
S	Audio Surround Side
T	PCI-Express X16 slot
U	PCI-Express X4 slot

Interior view

left side

right side

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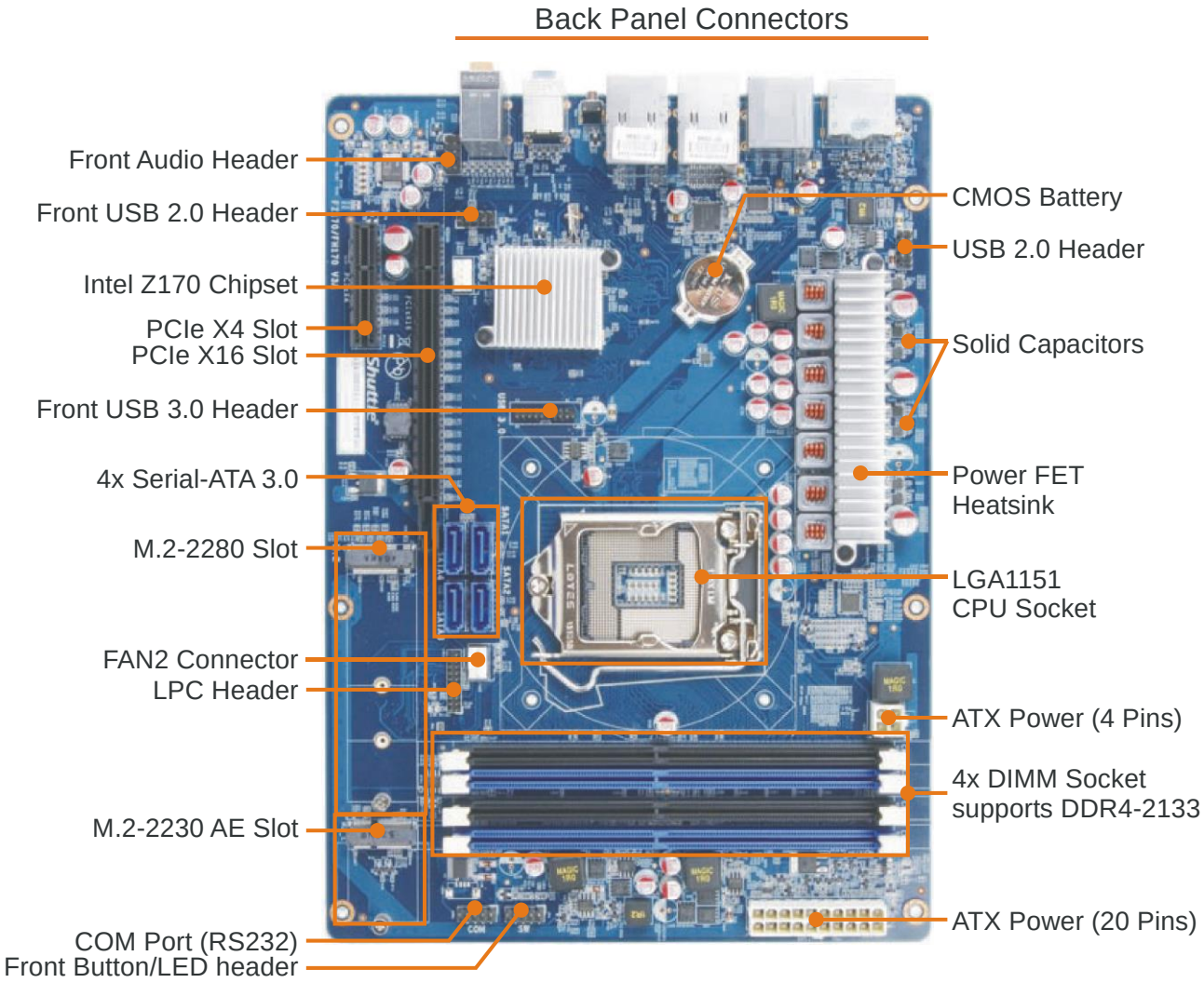
Shuttle XPC cube Barebone SZ170R8V2 – Mainboard



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Shuttle XPC cube Barebone SZ170R8V2 – Product Features

The R8 chassis design: stylish and sophisticated

The R8 is the case design of choice when it comes to flexible storage solutions thanks to its four-hard-drive support. At the same time it provides even more room for large state-of-the-art graphics cards. With no drive doors on the front, the case appears more uniform and elegant as ever before with Shuttle XPC cubes. Its high-quality finish and aesthetics remain untouched - the R8 case uses light aluminium as its stylish base material and the brushed surfaces are truly eye-catching.

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 R8 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 SZ170R8V2 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 optional 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.

Supports Intel 14nm Skylake and Kaby Lake Processors

Skylake and Kaby Lake are codenames for Intel's 6th/7th Generation of Intel Core Processors introduced in 2015 along with the 100-Series chipsets. The Shuttle XPC cube Barebone SZ170R8V2 supports the desktop version with socket LGA1151, while the previous generation (code name "Haswell", LGA1150) is not compatible. Thanks to the advanced Z170 chipset the SZ170R8V2 also supports Intel's K-series processors with unlocked multiplier settings.

Integrated Cooling Engine (I.C.E.)

Shuttle XPC cubes offer the performance of a desktop PC at a third of the size. 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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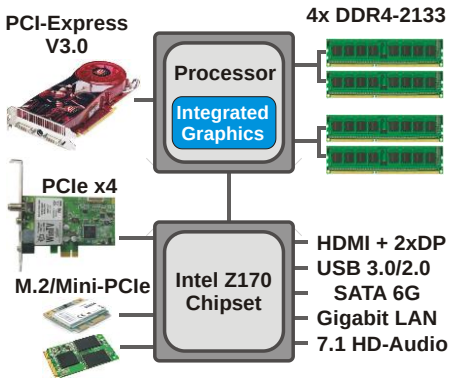

Single-Chip Chipset: Intel Z170

The Shuttle XPC cube Barebone SZ170R8V2 sports Intel's Z170 Platform Controller Hub (PCH) which is part of the 100 Series "Sunrise Point" chipset. The Z170 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 SZ170R8V2 supports up to 64 GB of DDR4-2133 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, while the predecessor is 244-pin at 1.5V operating voltage. DDR3L runs at 1.35V.

M.2-2280-Slot for SSD cards

The M.2-2280 BM slot supports 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 are supported.

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 SZ170R8V2.

80 PLUS SILVER

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

500W power supply with 80 Plus Silver efficiency

The Shuttle XPC Barebone SZ170R8V2 is equipped with a rock-stable 500W power supply which has been tested with some of the latest graphics cards and powerful Core i3/i5/i7 processors. 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. In addition, the power supply uses a 50mm cooling fan providing the same airflow, but spins slower than previous 40mm models to make the system run even more quietly.

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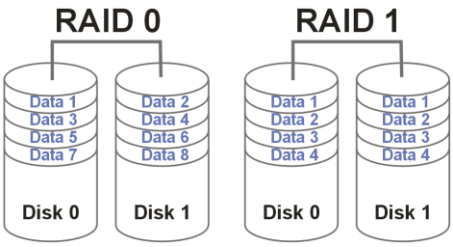
8x USB 3.0

The Shuttle XPC cube Barebone SZ170R8V2 sports eight USB 3.0 ports (2x front, 6x rear) besides two USB 2.0 ports. USB 3.0 achieves a maximum data transfer rate of up to 5.0Gbps (640MBytes/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 take advantage of enhanced performance and lower power consumption. Valuable digital memories are protected from hard drive failures, if the system is configured in any of these 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

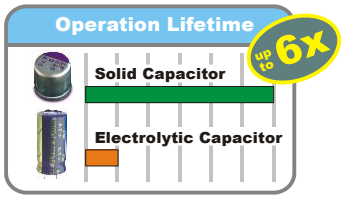
Users can install up to four 3.5" hard disks (or SSDs) into the XPC cube Barebone SZ170R8V2. An integrated 80mm fan in front of the hard disk rack ensures low operating temperatures for more reliability. Thanks to the integrated RAID controller, different configurations are possible. For example, a RAID 10 array with four 8TB hard disks can be used as a network-attached storage server for SMB's.Otherwise an SSD can be installed in the M.2 socket that can be used for the system partition. In conclusion, the SZ170R8V2 can be turned into a professional storage system at a volume of just 14 litres while it may be a powerful graphics workstation or gaming PC at the same time.

Intel Dual Gigabit LAN with Teaming Support

This Shuttle XPC Cube Barebone also features two high-speed Gigabit LAN ports. The teaming function allows for grouping both available network adapters together to work as one single adapter - a method to set up a virtual LAN. The benefit of this approach is to enable load balancing and failover.

7.1 HD Audio capabilities

The Shuttle XPC cube Barebone SZ170R8V2 supports 7.1 channel audio either via four analog stereo audio ports or digitally through the HDMI and DisplayPort connectors that combine high bandwidth video with digital audio in one single port.



Solid Capacitors

By using all-solid capacitors (except the audio part) Shuttle mainboards are long-life and provide industry leading stability and reliability. The average lifespan of one solid capacitor is more than six times greater than the more common and less expensive electrolytic capacitors.

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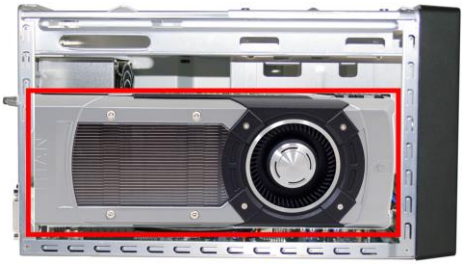
Shuttle XPC cube Barebone SZ170R8V2 – Graphics Features

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

The Shuttle XPC cube Barebone SZ170R8V2 supports PCI-Express x16 Version 3.0 combined with a 14nm Intel Skylake processor to deliver a bandwidth of up to 32 GB/s. So expect plenty of potential for the newest graphics cards.

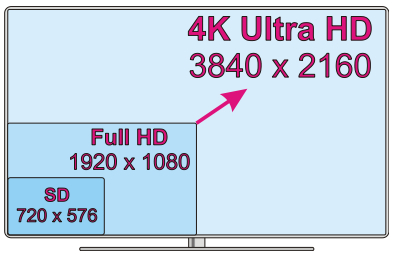


Ample space for demanding dual-slot graphics cards

Despite the small housing, the SZ170R8V2 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 support list for detailed support information.

Built-in Intel® HD Graphics Engine

The integrated Intel HD Graphics processor has been moved onto the same die as the CPU. Some of the graphics features depend on the processor type. It supports 3D stereoscopic playback, hardware encoding for H.264 and MPEG-2 video, Blu-ray playback with HDCP, 4K resolution, DirectX 12, OGL 5.x and OCL 2.x. With all these features, this GPU is comparable to entry level discrete cards.



Supports 4K Ultra HD at 60Hz

The Shuttle XPC cube Barebone SZ170R8V2 supports one 4K display running at 3840 x 2160 @ 60Hz (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. An Intel Core i3 processor or higher and dual channel memory (2 or 4 modulels) is required for smooth 4K (2160p) video playback.

Triple Display with HDMI and 2x DisplayPort

The Shuttle XPC cube Barebone SZ170R8V2 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. [6]

Connect even more displays with a discrete graphics card

The Shuttle XPC cube Barebone SZ170R8V2 supports at least five 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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Shuttle XPC cube Barebone SZ170R8V2 – Optional Accessories

Wireless LAN (Accessory WLN-C / WLN-P)

The Shuttle Accessory WLN-C/-P is a wireless LAN kit consisting of a Mini-PCIe card, two antennas and appropriate cables. Using this, the Shuttle XPC cube Barebone SZ170R8V2 can be equipped with a wireless LAN module according to IEEE 802.11n standards and WPA2 with AES encryption is supported, too. WLN-P also supports IEEE 802.11ac and Bluetooth 4.0.

Serial RS-232 port (Accessory H-RS232)

Add one serial COM port (RS232) to the back panel. While it is no longer found on today's consumer PCs, as it has been superseded by USB, it is still commonly used for applications of 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 63.5mm (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 SZ170R8V2 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 cube products with socket LGA 1151

Shuttle XPC cube Barebone	SH110R4	SH170R6 SH170R6 Plus	SZ170R8	SZ170R8V2
Chipset	**Intel H110**	**Intel H170**	**Intel Z170**	**Intel Z170**
CPU Support	**Socket LGA1151, TDP max. 95W, code name "Skylake" and „Kaby Lake“**			
Operating System	**Supports Windows 7, 8.1, 10 and Linux 64 bit** (Windows 7, 8.1 with Skylake CPU only)			
K serie CPU Overclocking?	No	No	**Yes**	
CPU Cooling	Heat-pipe 3 pipes		**Heat-pipe** **4 pipes**	
Storage Bays	1x 5.25“ 2x 3.5“ (internal)	1x 5.25“ 1x 3.5“ (external) 1x .2.5“ (internal)	**4x 3.5“** (internal)	
Max. Memory	**2x 16 GB DDR4-2133**	**4x 16 GB DDR4-2133**		
Video Outputs	HDMI, DisplayPorts, VGA Dual Display	HDMI, 2x DisplayPorts Triple Display		
4K-Support (Ultra HD)	HDMI: 2160p/30 Hz DP: 2160p/60 Hz	HDMI: 2160p/30 Hz DP: 2160p/60 Hz		
PCI Express Slots	1x PCIe X16 V3 1x PCIe X1 V2	1x PCIe X16 V3 1x PCIe X4 **V3**		
M.2 Slot	**M.2-2280 slot** SATA and PCIe **V2** X4	**M.2-2280 slot** SATA and PCIe **V3** X4 (NVMe support)		
Slot for WLAN	**M.2 2230 AE**	Mini-PCIe, Half-Size		**M.2 2230 AE**
Gigabit LAN	**Intel i219LM**	**Intel i218LM**		**Intel i211 und i219LM**
Audio	2 ch Realtek ALC662	**7.1 channel, Realtek ALC892**		
USB	4x USB 3.0 4x USB 2.0	8x USB 3.0 2x USB 2.0	**8x USB 3.0**	
SATA Ports	3x SATA 6G	4x SATA 6G 1x eSATA **6G**		4x SATA 6G
Power Supply	300W **[A]**	300W **[A]** **Plus**: 500W **[B]**	**500W [B]**	
Front Face	R4 chassis customizable	R6 chassis Plastic front	**R8 chassis** **Brushed Alu**	
Optional Accessories	**PHD3**: 3.5“/2.5" adapter **H-RS232**: COM port **WLN-M**: WLAN **PC63J**: 500W PSU	**PHD3**: 3.5“/2.5" adapter **H-RS232**: COM port **WLN-C / WLN-P**: WLAN **PC63J**: 500W PSU	**PHD3**: 3.5“/2.5" adapter **H-RS232**: COM port **WLN-C / WLN-P**: WLAN	**PHD3**: 3.5“/2.5" adapter **H-RS232**: COM port **WLN-M**: WLAN
Front Panel				
Rear Panel				

Power Supply A: **300W** - 80+ Bronze, with 6-pin power connector for the graphics card
Power Supply B: **500W** - 80+ Silver, with 6-pin and 8-pin power connector for the graphics card

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Shuttle XPC cube Barebone SZ170R8V2 - Specifications

R8-Chassis	Black aluminium chassis Front panel: brushed aluminium Front doors for USB ports Kensington Security Slot at the back panel (also called K-Slot or Kensington lock) as a part of an anti-theft system Dimensions: 33.2 x 21,6 x 19.8 cm (LWH), 14.2 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 "FZ170_V3", Shuttle Form Factor proprietary design for XPC cube Barebone SZ170R6V2 Dimensions: 270 x 195 mm Chipset: Intel® Z170 Chipset (Intel® GL82Z170 PCH, code name "Sunrise 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: 2x10 and 2x2-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 10 / 8.1 / 7 and Linux.- 64 bit. Note: Windows 7 and 8.1 is only supported in combination with the 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" [10] Maximum supported processor power consumption (TDP) = 95W 14nm process technology, up to 8 MB of L3 cache Not compatible with Intel Xeon E3 V5 processors for socket LGA1151 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 memory (PC4-17066) at 1.2V Supports 2+2 Dual Channel mode Supports max. 16 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 [6]: - HDMI v1.4 (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 content 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 - in this case the second PCI-Express slot will be occupied. Graphics power connector: 6-pin and 8-pin
M.2-2280 SSD Slot	The M.2 2280 BM slot provides 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

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M.2-2230 WLAN slot	Interfaces: PCI-Express Gen. 2.0 X1 und USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN extension cards (optional Shuttle accessory WLN-M [9])
7.1 Channel Audio	7.1 channel High Definition Audio with Realtek ALC892 codec Analog: line-out (7.1-ch), line-in, microphone, AUX input (onboard) Digital Audio via HDMI and DisplayPort outputs
Dual Gigabit-LAN Controller	Dual network with two RJ45 ports Used network chips: 1) Intel i211 Ethernet Controller with MAC, PHY and PCIe interface 2) Intel i219LM PHY connected to the MAC of the processor Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE) Supports Teaming mode [8]
SATA Connectors	The mainboard provides five Serial-ATA 3.0 interfaces, max. 6 Gbps supported 4x Serial ATA connector onboard 1x M.2 slot onboard for flash memory cards Supports Intel Rapid Storage Technology (RST, Raid 0/1/5/10, JBOD)
Front panel Connectors and Buttons	Microphone input Headphone output (line-out) 2x USB 3.0 Power button Power indicator (blue LED) Hard disk drive indicator (yellow LED)
Back Panel Connectors	HDMI v1.4 2x DisplayPort v1.2 [5] 6x USB 3.0 2x GigaBit LAN (RJ45) 7.1-ch Audio line-out (2x rear/front, bass/center, surround/back) Audio Line-in Clear CMOS button Optional: serial port RS-232 (Accessory: H-RS232) 3x perforation for optional WLAN antennas
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 Low Pin Count header (LPC, 2x 10-pin, 2 mm pitch size) Occupied front connectors: USB 3.0, USB2.0, audio, power buttons, LEDs

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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
Environmental Spec	Operating temperature range: 0~40°C Relative humidity range: 10~90% (non-condensing)
Certifications 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)

Notes:

[1] Overclocking Warning
Please note there is a certain risk involved with overclocking, including adjusting the settings in the BIOS or using third-party 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 can even support 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 60Hz. 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 is required here.

[5] 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: 1m, DisplayPort (male, 20p) to HDMI-A (male, 19p)
DELOCK 82435: 5m, DisplayPort (male, 20p) to DVI-D (male, 24p)

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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.

[6] Three independent displays simultaneously
The Shuttle XPC cube Barebone SZ170R8V2 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).

[7] Installation of Windows 7
Intel® 100 chipset series has removed their 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 updated 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) do not work during the Windows 7 Installation. As a solution please add the required USB 3.0 drivers to the Windows 7 installation files - this procedure is explained in the Shuttle FAQ section at http://global.shuttle.com/support/faqDetail?faqId=2380.

[8] Teaming Mode
The teaming function allows you to group both available network adapters together to function as a single adapter. The benefit of this approach is that it enables load balancing and failover.
Driver download: https://downloadcenter.intel.com/download/21642

[9] Optional Wireless LAN module (WLN-M): This XPC 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.

[10] Kaby Lake processor support
The 7th generation Intel Core processors "Kaby Lake" are supported from BIOS version SZ170200.207. Download website: http://global.shuttle.com/products/productsDownload?productId=2013&panelId=1
Note: If a Kaby Lake processor is used, this XPC will only support Windows 10 and Linux operating systems. Windows 7 and 8.1 will no longer be supported.

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6th Generation Intel Core Desktop Processor Family

Socket LGA1151 14 nm "Skylake-S" processor overview (Date: September 2015)

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 SZ170R8V2 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 LGA1151 14nm "Kaby Lake-S" processor overview (Date: January 2017)

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 SZ170R8V2 also supports the unlock-function of Intel K-Series processors.
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