Stylish, flexible, powerful: Shuttle Mini-PC with Intel H97 chipset

xpc Barebone SH97R6

The Shuttle XPC Barebone SH97R6 not only is the eycatcher on your desk thanks to its compact aluminium chassis, it also is a sophisticated solution that packs high performance and flexibility. A value Intel Celeron processor of the Haswell-Series can be enough of a basis to build a complete Mini PC system that connects to three displays at once. If an Intel Core i3 processor or higher is used, playback of 4K-videos on one Ultra-HD-display becomes a reality. The SH97R6 has enough room to accommodate a high-end dual-slot graphics card that makes it cope with the latest games and 3D/CAD applications. Even when fully-loaded with a Core i7 processor, a dual-slot graphics card, 32GB of DDR3 memory, an mSATA-SSD, two hard disks in RAID mode and a Blu-ray drive - the XPC Barebone SH97R6 does the job. Reliably and at a low noise level.

This product supports the 4th Generation of Intel Core Processors

Images for illustration purposes only.

Feature Highlights

R6 chassis	• Black aluminium chassis (14.2 litre) • Bays: 1x 5.25“, 2x 3.5“ (1x external)
CPU	• Supports socket LGA1150 desktop CPUs • Supports Intel® Core i3, i5, i7, Pentium 22nm “Haswell” processors up to 95W • Shuttle I.C.E. Heatpipe cooling system
Slots	• 1x PCIe x16 (v3.0) supports dual-slot PCI-Express X16 graphics cards • 1x PCIe x4 (v2.0) • 1x Mini-PCIe Full Size, supports mSATA 6G • 1x Mini-PCIe Half Size, supports WLAN
Chipset	• Intel® H97 Platform Controller Hub (PCH)
Integrated Graphics	• Intel HD graphics supports three displays and Ultra HD 4K resolution (2160p)
Memory	• Supports 4x DDR3-1600, max. 32 GB
Drive Connectors	• 4x SATA 3.0 (6Gb/s) supports RAID and RST • 1x eSATA (3 Gb/s), 1x mSATA (6 Gb/s)
Other Connectors	• Digital Video: 2x DisplayPort and HDMI • Audio: 7.1-ch Line-out, Line-in, Microphone • GigaBit LAN (RJ45) • 4x USB 3.0, 6x USB 2.0, 1x External SATA
Optional	• COM-Port (H-RS232), Wireless LAN (WLN-C)
PSU	• 300 Watt power supply (80 PLUS Bronze)

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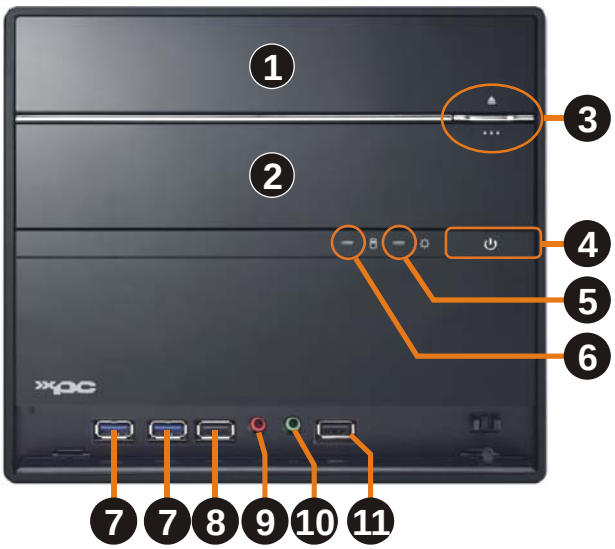
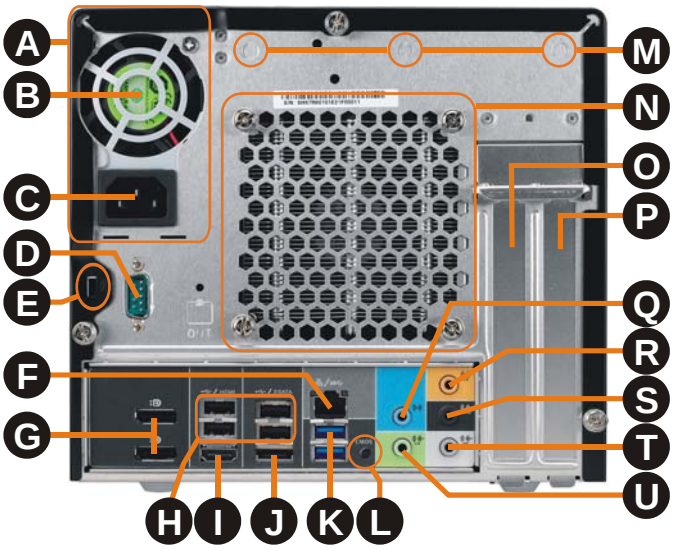
Shuttle XPC Barebone SH97R6 – Connectors

Front View



Rear View



1	Eject button (optical drive)
2	5.25“ bay (optical drive)
3	3.5“ bay with door
4	Hard disk LED indicator
5	Power LED indicator
6	Power button
7	2x USB 3.0 ports
8	USB 2.0 port
9	Microphone input
10	Headphone output
11	USB 2.0 port with fast charger

A	Built-in power supply
B	Power supply fan
C	AC power connector
D	RS232 COM port (optional)
E	Hole for the Kensington lock
F	Gigabit LAN network (RJ45)
G	2x DisplayPort audio/video output
H	4x USB 2.0 port
I	HDMI audio/video output
J	External Serial ATA (eSATA)
K	2x USB 3.0 port
L	Clear CMOS button
M	3x perforation for WLAN antenna
N	Heatpipe cooling system
O	PCI-Express x16 slot
P	PCI-Express x4 slot
Q	Audio Line-in
R	Audio Line-out (Surround Center/Bass)
S	Audio Line-out (Surround Rear)
T	Audio Line-out (Surround Side)
U	Audio Line-out (Surround Front)

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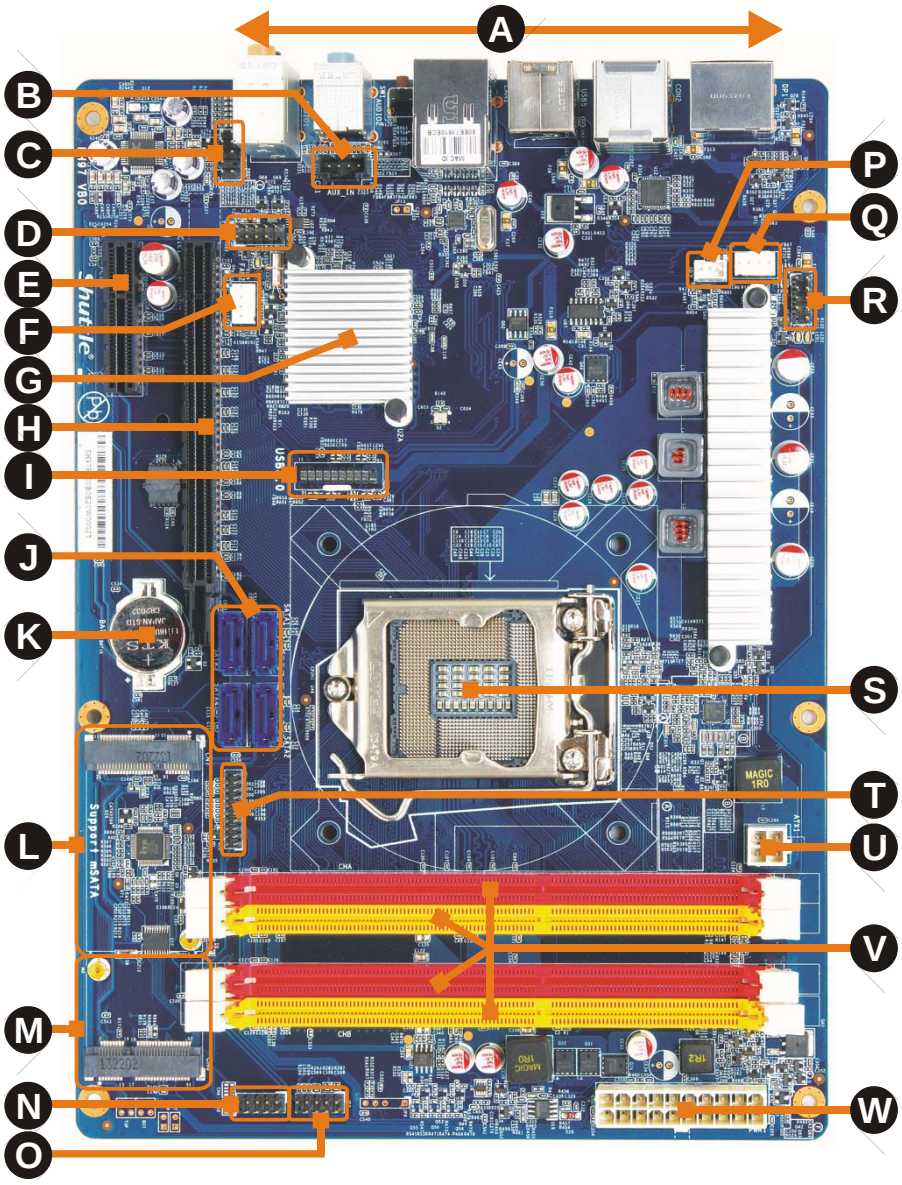
Shuttle XPC Barebone SH97R6 – Mainboard



A	Back panel connectors
B	Audio Line-in onboard (AUX)
C	Audio connector front panel
D	2x USB 2.0 connectors front panel
E	PCI Express slot x4
F	Fan connector (chassis fan)
G	Intel H97 chipset
H	PCI Express slot x16
I	2x USB 3.0 connectors front panel
J	4x Serial ATA 6G connectors
K	Battery for CMOS/RTC
L	Mini PCI Express slot (full size)
M	Mini PCI Express slot (half size)
N	RS232 header (COM port)
O	Connector for buttons/LEDs front panel
P	Digital Audio S/PDIF connector
Q	Fan connector (free)
R	2x USB 2.0 connectors (free)
S	LGA1150 processor socket
T	LPC header
U	ATX power supply connector (2x2-pin)
V	4x DIMM sockets for DDR3 memory
W	ATX power supply connector (2x10-pin)

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Shuttle XPC Barebone SH97R6 – Special Product Features

The R6 chassis design: a clean and modern look

R6 is the new chassis design for the middle / high-end series XPCs in 2015. Shuttle has always placed great emphasis on the interior and exterior aesthetics of the XPC with the belief that a good blend of style and form factor will enable the XPC to be attractive, versatile, and work well in almost any environment. The chassis and case cover are made of aluminium and come with a sleek brushed metal front fascia. The drives and front panel connectors are elegantly hidden by drive doors for superior style and visual appeal.

Small, but easy to install

Shuttle XPCs 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 R6 chassis. The meticulously designed internal layout is tidy and makes installation of components easy.

What is a Barebone?

The Shuttle XPC Barebone SH97R6 consists of a stylish case with 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, hard disk and operating system need to be added. Shuttle XPC Barebones are completely customisable meaning users can pick certain components on their own to ideally match their individual needs.

Supports Intel 22nm Haswell Processors

Haswell is the codename for Intel's 4th Generation of Core Processors with socket LGA1150 introduced in 2013 along with the 8-Series chipsets, now superseded by the 9-Series chipsets in 2014. One monolithic die incorporates up to four CPU cores, the shared L3 cache, the memory controller, PCIe links, the graphics processor and now also the integrated voltage regulator (IVR). The 4th generation of Intel Core processors brings the highest performance currently available in mainstream computing with the additional benefit of superior graphics support. It provides a better branch prediction, a doubling of the bandwidth of both the L1 and the L2 caches and integrates a new generation of integrated HD graphics circuitry with a new level of performance for 3D games and HD media playback.

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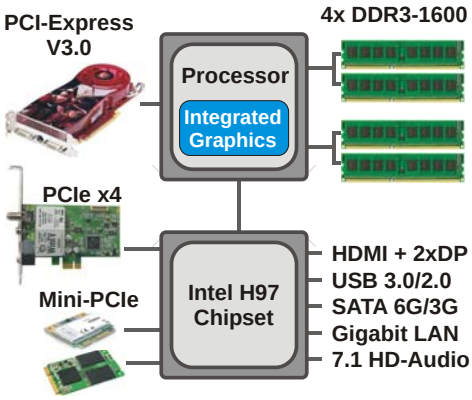
Integrated Cooling Engine (I.C.E.)

Shuttle XPCs 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 in the Shuttle XPC. Shuttle's industry-leading I.C.E. heatpipe technology delivers efficient cooling and is exceptionally quiet.



Single-Chip Chipset: Intel H97

The Shuttle XPC Barebone SH97R6 sports Intel's H97 Platform Controller Hub (PCH) which is from the 9-Series, codenamed "Wildcat Point". The H97 chipset consists of a single chip and integrates the hard drive controller, network controller, firmware interface, PCIe links, USB and other input/output interfaces.

80 PLUS BRONZE certified 300W Power Supply

The Shuttle XPC Barebone SH97R6 is equipped with a rock-stable built-in 300W power supply which was tested with the latest graphics cards and powerful Core i3/i5/i7 processors. Its 80 Plus Bronze logo indicates that it provides more than 82/85/82% of energy efficiency at 20/50/100% of rated load. This means a reduction of energy consumption while it increases the computer's reliability. In addition, the power supply uses a 50mm cooling fan providing the same airflow, but spins at a slower speed than previous 40mm models to make the system run even more quietly.

Energy efficiency

The Shuttle XPC Barebone SH97R6 is an excellent choice when performance and energy efficiency matter. Simply opt for a power-optimised processor and do away with an additional graphics card. Here are some measured values of a sample configuration:

- Soft-Off mode (S5, BIOS: ErP=on): 0.31 W
- Standby mode (S3): 1.39 W
- Idle mode: 19.8 W
- Benchmark (Passmark / Prime 95): 56.1W / 96.4 W

Configuration: SH97R6, CPU: Intel Core i5-4690S ES (3.2 / 3.9 GHz, 65W TDP), 4x 4GB DDR3-1600, SATA-6G SSD 120GB, Windows 8 Pro 64 bit.

Supports up to 32 GB of memory

The Shuttle XPC Barebone SH97R6 supports up to 32 GB of DDR3-1600 memory which is ideal for workstations powered by 64-bit operating systems. This enables users to take full advantage of high-performance configurations.

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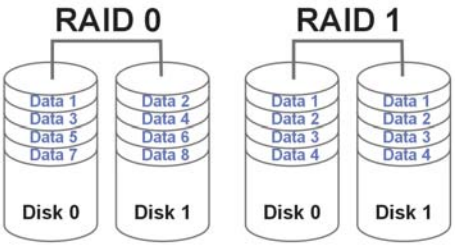
SATA 3.0 with up to 6 Gbit/s speed

The Shuttle XPC Barebone SH97R6 sports four onboard Serial ATA ports Revision 3.0 delivering super-fast 6 Gbps link speeds for twice the data transfer rates of SATA Revision 2.0 (3 Gbps). A move from SATA 3 Gbit/s to SATA 6 Gbit/s allows the new generation of Solid-State Drives (SSDs) to work at their full speed. As for standard hard disks (HDDs), read times from their built-in DRAM cache will be faster, too.

External Serial ATA (eSATA)

Until the introduction of USB 3.0, the External Serial ATA port (eSATA) was the best choice for high data transfer rates for external hard disks. Its speed is up to six times faster than USB 2.0 and it allows for up to two meters of shielded data cables.

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 can take advantage of enhanced performance and lower power consumption. Valuable digital memories are protected against hard drive failure when the system is configured for any one of the three fault-tolerant RAID levels: RAID 1, RAID 5, and RAID 10. By seamlessly storing copies of data on one or more additional 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 one optical drive and two hard disks

Users can install one optical drive and up to two hard disks (or SSDs) into the SH97R6. But what about heat? The solution is obvious - the drive rack built into the SH97R6 leaves space between the hard disks to improve airflow. Intelligently-engineered airflow mechanics channels cool air where it is needed most - protecting components and providing optimum performance.

Intel® Smart Response Technology ("SSD caching")

The Shuttle XPC Barebone SH97R6 supports Intel Smart Response Technology which allows a SATA solid-state drive to function as a cache for a conventional hard disk drive (HDD). It uses intelligent block-based caching of frequently used applications to improve system performance and responsiveness. This allows users to experience system performance similar to SSD-only systems meaning an 60% performance improvement over HDD-only systems in PC Mark Vantage Suite. SRT is implemented in the device driver and firmware and can be enabled when the disk controller is configured in RAID mode (not AHCI or IDE).

4x USB 3.0

The Shuttle XPC Barebone SH97R6 sports four USB 3.0 ports (2x front and 2x rear) besides six 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 compatible to USB 2.0.

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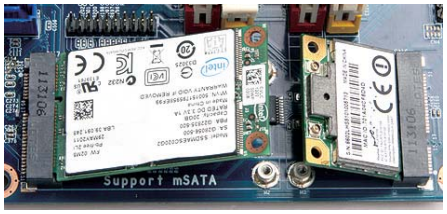


2x expansion slot for Mini-PCI-Express cards

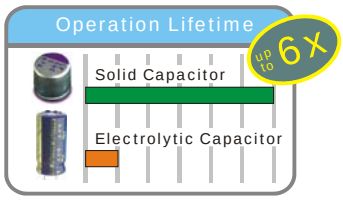
The Shuttle XPC Barebone SH97R6 features two expansion slots for Mini-PCIe cards. One is a half size slot dedicated for Wireless LAN adapter cards (e.g. the accessory WLN-C). The second has full size format and not only features a PCIe interface, but also supports mSATA (Mini Serial ATA) for the new generation of Solid State Drives (SSD) in a compact Mini PCIe card form factor. The mSATA interface is made for high-speed storage of up to 6 Gb/s.
Photos: full size mSATA SSD card (left) and half size WLAN card (right).

Quick charge USB port for Apple iPhone/iPad

The USB port on the right side of the front panel (marked with a flash symbol) does not only serve as a normal USB port, it can also be used as a quick charge port for your Apple iPhone/iPad. Simply charge as quickly from your Shuttle XPC as from a wall socket. Moreover, it charges your Apple device even if your PC is turned off. By supporting a maximum current of 2A, it will cut down on charging time significantly as compared to traditional USB ports.

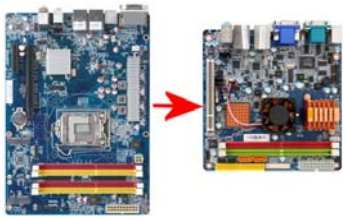
7.1 HD Audio capabilities

The Shuttle XPC Barebone SH97R6 supports 7.1 channel audio via four analog stereo audio ports. In addition, HDMI and DisplayPorts combine a high-bandwidth video signal 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 higher than the more common and less expensive electrolytic capacitors.



Mini-ITX Mainboard Support

Shuttle expands the capabilities of its R chassis adding support for Mini-ITX mainboards (17 x 17cm or 6.7 x 6.7 inches). This makes upgrading or downgrading the mainboard easy without having to modify the chassis.

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Shuttle XPC Barebone SH97R6 – Graphics Features

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

The Shuttle XPC Barebone SH97R6 supports the new PCI-Express x16 Version 3.0 specification in combination with the 22nm Intel Haswell processor slot delivering a bandwidth of up to 16GB/s which is twice the speed of PCI-E 1.0. So there is plenty of potential for the newest graphics cards. It is downward compatible, allowing for use of the most of present graphics cards as well.

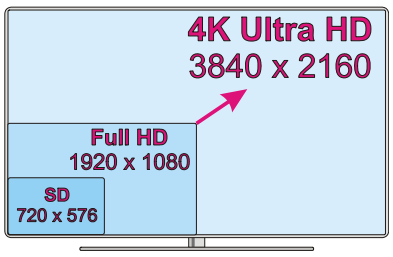
PCI-Express 3.0 Expansion Slot supports Dual-Slot Graphics Cards

Despite the small housing, the Shuttle XPC Barebone SH97R6 is capable of running dual-slot (double-height) PCI Express graphics cards. The system provides an additional 6-pin power connector for the demanding graphics cards. Please refer to the support list for detailed support information. Shuttle's Power Supply Calculator helps to determine whether the power supply should be upgraded to 500W or not.

(see http://global.shuttle.com/support)

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 11.1, OpenCL 1.2, OpenGL 4.0, Shader 5.0 and it has up to 20 execution units (similar to shader/stream processors). With all these features, this GPU is comparable to entry level discrete cards.



Supports 4K Ultra HD at 60Hz

The Shuttle XPC Barebone SH97R6 supports one 4K displayrunning at 3840 x 2160 / 2160p 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 is recommended for smooth 4K (2160p) video playback. [8]

Triple Display with HDMI and 2x DisplayPort

The Shuttle XPC Barebone SH97R6 features three digital video outputs: 1x HDMI 1.4 and 2x DisplayPort 1.2. Triple View technology offers 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. [11]

Supports more displays in combination with a graphics card

The Shuttle XPC Barebone SH97R6 supports at least five displays in combination with a discrete PCI-Express graphics card, based on the Switchable Graphics feature. Extend 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 Barebone SH97R6 – Optional Accessories

Wireless LAN (Accessory WLN-C)

The Shuttle XPC Accessory WLN-C is a wireless LAN kit consisting of a Mini-PCIe card, two antennas and appropriate cables. Using this, the Shuttle XPC Barebone SH97R6 can be equipped with a wireless LAN module according to IEEE 802.11b/g/n standards. Data transfer speeds of up to 300 MBit/s can be reached and WPA2 with AES encryption is supported, too.

Serial RS-232 port (Accessory H-RS232)

Adds one serial COM port (RS232) to the back panel which is still commonly used for applications of industrial automation systems, scientific analysis and POS systems.

Two 2.5" drives in one 3.5" bay (Accessory PHD3)

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

500 Watt Power Supply (Accessory PC63J)

The optional Shuttle XPC Accessory PC63J is a high-end power supply with a maximum output wattage of 500W. Thanks to its 80 PLUS Silver certification for power-efficient devices, this power supply is also suitable for ENERGY STAR® compliant systems. The power supply features two additional power connectors for graphics cards (6 and 8-pin). An upgrade to the PC63J power supply is required, if the total wattage of the system under full load exceeds 300 Watt. The maximum power consumption depending on the components chosen can be determined using the Shuttle Power-Supply Calculator: http://global.shuttle.com/support/power.

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Overview: Shuttle XPC Barebones for LGA1150 Processors

Shuttle XPC Barebone	SH81R4	SH87R6	SZ87R6	SH97R6
Chipset	**Intel H81**	**Intel H87**	**Intel Z87**	**Intel H97**
CPU Support	LGA1150 / 95W "Haswell"	LGA1150 / 95W "Haswell"	LGA1150 / 95W "Haswell"	LGA1150 / 95W "Haswell"
K-Series Overclocking	-	-	Yes	-
Heatpipe (CPU cooling)	3 pipes	3 pipes	4 pipes	3 pipes
Max. Memory	2x 8GB DDR3-1600	4x 8GB DDR3-1600	4x 8GB DDR3-1600	4x 8GB DDR3-1600
Video output	HDMI, DVI-I Dual Display	HDMI, DVI-I Dual Display	HDMI, DVI-I Dual Display	HDMI, 2x DisplayPorts Triple Display
4K-Support (Ultra HD)	HDMI: 2160p/30	-	-	HDMI: 2160p/30 DP: 2160p/60
PCI Express Slots	1x PCIe X16 V3 1x PCIe X1 V2	1x PCIe X16 V3 1x PCIe X1 V2	1x PCIe X16 V3 1x PCIe X1 V2	1x PCIe X16 V3 1x PCIe X4 V2
Mini PCI Express Slots	1x Full-Size (mSATA 6G) 1x Half-Size	1x Full-Size (mSATA 6G) 1x Half-Size	1x Full-Size (mSATA 6G) 1x Half-Size	1x Full-Size (mSATA 6G) 1x Half-Size
Gigabit LAN	Realtek RTL 8111E	Realtek RTL 8111E	Dual Realtek RTL 8111E	Realtek RTL 8111G
Audio	5.1-ch Realtek ALC662	7.1-ch, S/PDIF Realtek ALC888S	7.1-ch, S/PDIF Realtek ALC888S	7.1-ch Realtek ALC892
USB	2x USB 3.0 8x USB 2.0	4x USB 3.0 6x USB 2.0	4x USB 3.0 6x USB 2.0	4x USB 3.0 6x USB 2.0
Drive Bays	1x 5.25" optical drive 2x 3.5" (internal only)	1x 5.25" optical drive 2x 3.5" (1x external)	1x 5.25" optical drive 2x 3.5" (1x external)	1x 5.25" optical drive 2x 3.5" (1x external)
SATA Ports	2x SATA 6G 1x SATA 3G	4x SATA 6G 1x eSATA 3G	4x SATA 6G 1x eSATA 3G	4x SATA 6G 1x eSATA 3G
Power Supply	300W (PC61J) 80+ Bronze	300W (PC61J) 80+ Bronze	500W (PC63J) 80+ Silver	300W (PC61J) 80+ Bronze
Graphics card power connectors	6-pin	6-pin	6+8-pin	6-pin
Front face	R4 chassis design Acrylic front plate, customisable design	R6 chassis design Glossy plastic with horizontal line texture	R6 chassis design Brushed aluminium	R6 chassis design Glossy plastic with horizontal line texture
Optional Accessories	PHD3: 3.5" to 2.5" Adapter H-RS232: COM Port WLN-C: WLAN Adapter PC63J: 500W Power Supply	PHD3: 3.5" to 2.5" Adapter H-RS232: COM-Port WLN-C: WLAN Adapter PC63J: 500W Power Supply	PHD3: 3.5" to 2.5" Adapter H-RS232: COM Port r WLN-C: WLAN Adapter	PHD3: 3.5" to 2.5" Adapter H-RS232: COM Port WLN-C: WLAN Adapter PC63J: 500W Power Supply
Front Panel				
Rear Panel				

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Shuttle XPC Barebone SH97R6 Specifications

R6-Chassis	Black aluminium chassis Front panel: glossy plastic with horizontal line texture Storage bays: 1 x 5.25" (external), 2 x 3.5" (1x internal, 1x external) With the optional accessory PHD3 two 2.5" drives can be installed into one 3.5" bay. Front doors for I/O ports and storage drives 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
Mainboard and Chipset	Shuttle "FH97", Shuttle form factor proprietary design for XPC Barebone SH97R6 Dimensions: 270 x 195 mm Chipset: Intel® H97 Chipset (Intel® DH82H97 PCH, code name "Wildcat Point") Platform Controller Hub (PCH) as Single-Chip-Solution Passive chipset cooling with heat sink The Northbridge is integrated into the processor. 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) [3] Supports boot up from external USB flash memory
Power Supply	Built-in 300 Watt mini switching power supply (PC61J) AC input voltage: supports 100~240V, 50~60 Hz 80 PLUS® Bronze compliant: the PSU provides at least 82/85/82% 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 Other connectors: 4x SATA, 2x Molex, 1x Floppy
Operating System	This system comes without operating system. It is compatible with Windows 8 / 8.1, Windows 7 and Linux

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Processor Support	Socket LGA 1150 (H3) supports the fourth generation of Intel Core i7 / i5 / i3, Pentium and Celeron processors Maximum supported processor power consumption (TDP) = 95W Codename "Haswell", 22nm process technology, up to 8 MB of L3 cache Supports "Haswell Refresh" processors. Not compatible with older Socket LGA 1155 processors. Does not support 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 3 pipes Temperature controlled 92 mm fan SilentX cooling and noise reduction technology with Active Airflow
Memory Support	4 x 240-pin slots Supports DDR3-1600/1333 SDRAM memory (PC3-12800/10600) [2] Supports 2+2 Dual Channel mode Supports max. 8 GB per DIMM, maximum total size of 32 GB
Integrated graphics	The features of the integrated Intel HD graphics function depend on the processor type used. Supports OpenCL 1.2, DirectX 11.1, OpenGL4.1 and DX extensions, SH97R6 features three digital video outputs [11]: - 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 [8] Supports three independent Full HD displays with the integrated graphics function Supports more displays in combination with a discrete graphics card [7] Supports Blu-ray (BD) playback with HDCP content protection Supports multi-channel digital audio over the same cable
PCIe-Expansion Slots	1x PCI-Express x16 v3.0 slot (PEG, for graphics cards only) 1x PCI-Express x4 v2.0 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
Mini-PCIe Expansion Slots	This XPC features two Mini PCI Express expansion slots: 1) half-size, supports PCIe 2.0 and USB 2.0, e.g. for WLAN cards [4] 2) full-size, supports PCIe 2.0, SATA 3.0 (6 Gbps) and USB 2.0 e.g. for Mini SATA (mSATA) flash memory cards [5]
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

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Gigabit-LAN Controller	Realtek RTL 8111G Ethernet network controller PCI Express interface IEEE 802.3u 1000Base-T compliant Supports 10 / 100 / 1.000 MBit/s operation Supports Wake-on-LAN (WOL)
Serial ATA connectors	4x Serial ATA, max. 6 Gbps (onboard) 1x External Serial ATA (eSATA), max. 3 Gbps (back panel) Supports Intel Rapid Storage Technology (RST 12, Raid 0/1/5/10, JBOD) 1x mSATA Mini-Slot for flash memory cards, max. 6 Gbps [5] Supports Smart Response Technology (SRT, "SSD Caching")
Front panel connectors and buttons	Microphone input Headphone output (line-out) 2x USB 3.0 2x USB 2.0 (1x Quick charge with up to 2A) [9] Power button Power indicator (blue LED) Hard disk drive indicator (yellow LED)
Back panel connectors	HDMI v1.4 2x DisplayPort v1.2 2x USB 3.0 4x USB 2.0 GigaBit LAN (RJ45) External Serial ATA (eSATA 3Gb/s) 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 [4]
Other connectors (onboard)	4x USB 2.0 (two 2x5-pin, one set is occupied) 1x RS232 (2x5-pin) for optional accessory H-RS232 2x fan connectors (4 pins), one connector is occupied Audio AUX input / Line-in (4-pin) Low Pin Count header (LPC, 2x 10 pins, 2 mm pitch size) Digital Audio S/PDIF header (3-pin) Occupied front connectors: USB 3.0/2.0, audio, power buttons, LEDs
Included Accessories	Multilanguage XPC Installation Guide (EN, DE, FR, ES, JP, KR, SC, TC) 32/64 bit driver disk 2x Serial ATA cables Power Cord Screws, Heatsink Compound Protector for CPU socket (do not use, if heatpipe or fan is mounted)
Optional Accessories	**PHD3** - 3.5" to 2.5" adapter **H-RS232** - Backpanel COM port adapter for RS232 serial interface **WLN-C**- Wireless LAN 802.11n module with external antennas [4] **PC63J** - 500W power supply, 80 PLUS® Silver

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Environmental Spec	Operating temperature range: 0~35°C Relative humidity range: 10~90% (non-condensing)
Certifications Compliance	EMI: FCC, CE, BSMI, C-Tick Safety: ETL, CB, BSMI, TÜV Other: RoHS, ErP 2013 Lot 6, Energy Star 5
Conformity	This device is classed as a technical information equipment (ITE) in class B and is intended for use in the living room or office. The CE-mark approves the conformity by the EU-guidelines: - EMV-guideline 89/336/EWG electromagnetic tolerance - LVD-guideline 73/23/EWG use of electric devices within certain voltage limits

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[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] The memory is directly connected to the processor and you can use DDR3-1333 and DDR3-1600 memory modules. Almost all compatible processors support both clock rates. However, Celeron and some Pentium processors are limited to 1333 MHz memory clock rate, but you can still use DDR3-1600 memory modules in this case.
[3] The Unified Extensible Firmware Interface (UEFI) is required when booting from hard disks larger than 2.2 TB.
[4] Optional Wireless LAN module: this XPC supports the optional Shuttle XPC Accessory WLN-C which consists of a half-size Mini-PCIe card with IEEE 802.11n functionality up to 300 Mbit/s data transfer rate and and two external antennas with appropriate antenna cables.
[5] mini-SATA (mSATA)
Do not confuse with "micro SATA". **mSATA** is a newer industry standard which converts the electrical SATA interface to the pysical "Mini PCI Express" mini card form factor. Applications include mobile devices that require a smaller solid state drive and mainboards that use Intel's Smart Response Technology (SRT).
[6] Intel Smart Response Technology (SRT, formerly "SSD caching")
The Shuttle XPC Barebone SH97R6 supports the Intel Smart Response Technology which allows a SATA solid state drive (SSD) to work as a cache for a conventional hard disk drive (HDD). This allows users to experience system performance similar to SSD-only systems. The maximum cache size is 64 GB.
[7] SH97R6 supports additional displays in combination with a discrete graphics card
The integrated graphics function already supports three independent displays via its digital video outputs. The SH97R6 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".

[8] 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, bit rate 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 recommended here, since the performance of the integrated graphics engine of a Celeron or Pentium processor might not suffice.
[9] Right Front USB port with Quick Charge feature
Quick charge Apple iPhone/iPad devices with up to 2A under Windows XP,Windows 7 and 8 (not under Linux).
[10] How to convert DisplayPort into 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)
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.
[11] Three independent displays simultaneously
The DS87 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).

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4th Generation Intel Core Processor Family

LGA1150 socket 22nm "Haswell" processor overview (Date: August 2014)

Name	Model	Cores	HT	Clock	Turbo	Cache	TDP	Graphics	GPU max.	DDR3
Core i7	4790	4	Yes	3.6 GHz	4.0 GHz	8 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4790S	4	Yes	3.2 GHz	4.0 GHz	8 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4790T	4	Yes	2.7 GHz	3.9 GHz	8 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4785T	4	Yes	2.2 GHz	3.2 GHz	8 MB	35 W	HD 4600	1.20 GHz	1333/1600
	4771	4	Yes	3.5 GHz	3.9 GHz	8 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4770K	4	Yes	3.5 GHz	3.9 GHz	8 MB	84 W	HD 4600	1.25 GHz	1333/1600
	4770	4	Yes	3.4 GHz	3.9 GHz	8 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4770S	4	Yes	3.1 GHz	3.9 GHz	8 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4770T	4	Yes	2.5 GHz	3.7 GHz	8 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4770TE	4	Yes	2.3 GHz	3.3 GHz	8 MB	45 W	HD 4600	1.00 GHz	1333/1600
	4765T	4	Yes	2.0 GHz	3.0 GHz	8 MB	35 W	HD 4600	1.20 GHz	1333/1600
Core i5	4690T	4	-	2.5 GHz	3.5 GHz	6 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4690S	4	-	3.2 GHz	3.9 GHz	6 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4690	4	-	3.5 GHz	3.9 GHz	6 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4670T	4	-	2.3 GHz	3.3 GHz	6 MB	45 W	HD 4600	1.20 GHz	1333/1600
	4670S	4	-	3.1 GHz	3.8 GHz	6 MB	65 W	HD 4600	1.20 GHz	1333/1600
	4670K	4	-	3.4 GHz	3.8 GHz	6 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4670	4	-	3.4 GHz	3.8 GHz	6 MB	84 W	HD 4600	1.20 GHz	1333/1600
	4590T	4	-	2.0 GHz	3.0 GHz	6 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4590S	4	-	3.0 GHz	3.7 GHz	6 MB	65 W	HD 4600	1.15 GHz	1333/1600
	4590	4	-	3.3 GHz	3.7 GHz	6 MB	84 W	HD 4600	1.15 GHz	1333/1600
	4570TE	2	Yes	2.7 GHz	3.3 GHz	4 MB	35 W	HD 4600	1.00 GHz	1333/1600
	4570T	2	Yes	2.9 GHz	3.6 GHz	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4570S	4	-	2.9 GHz	3.6 GHz	6 MB	65 W	HD 4600	1.15 GHz	1333/1600
	4570	4	-	3.2 GHz	3.6 GHz	6 MB	84 W	HD 4600	1.15 GHz	1333/1600
	4460T	4	-	1.9 GHz	2.7 GHz	6 MB	35 W	HD 4600	1.10 GHz	1333/1600
	4460S	4	-	2.9 GHz	3.4 GHz	6 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4460	4	-	3.2 GHz	3.4 GHz	6 MB	84 W	HD 4600	1.10 GHz	1333/1600
	4440S	4	-	2.8 GHz	3.3 GHz	6 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4440	4	-	3.1 GHz	3.3 GHz	6 MB	84 W	HD 4600	1.10 GHz	1333/1600
	4430S	4	-	2.7 GHz	3.2 GHz	4 MB	65 W	HD 4600	1.10 GHz	1333/1600
	4430	4	-	3.0 GHz	3.2 GHz	6 MB	84 W	HD 4600	1.10 GHz	1333/1600
Core i3	4370	2	Yes	3.8 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4360T	2	Yes	3.2 GHz	-	4 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4360	2	Yes	3.7 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4350T	2	Yes	3.1 GHz	-	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4350	2	Yes	3.6 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4340	2	Yes	3.6 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4330TE	2	Yes	2.4 GHz	-	4 MB	35 W	HD 4600	1.00 GHz	1333/1600
	4330T	2	Yes	3.0 GHz	-	4 MB	35 W	HD 4600	1.15 GHz	1333/1600
	4330	2	Yes	3.5 GHz	-	4 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4160T	2	Yes	3.1 GHz	-	3 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4160	2	Yes	3.6 GHz	-	3 MB	54 W	HD 4600	1.15 GHz	1333/1600
	4130T	2	Yes	2.9 GHz	-	3 MB	35 W	HD 4400	1.15 GHz	1333/1600
	4130	2	Yes	3.4 GHz	-	3 MB	54 W	HD 4400	1.15 GHz	1333/1600

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Name	Modell	Kerne	HT	Takt	Turbo	Cache	TDP	Grafik	GPU max.	DDR3
Pentium	G3460	2	-	3.5 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3450T	2	-	2.9 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3450	2	-	3.4 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3440T	2	-	2.8 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3440	2	-	3.3 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3430	2	-	3.3 GHz	-	3 MB	53 W	HD	1.10 GHz	1333/1666
	G3420T	2	-	2.7 GHz	-	3 MB	35 W	HD	1.10 GHz	1333/1666
	G3420	2	-	3.2 GHz	-	3 MB	53 W	HD	1.15 GHz	1333/1666
	G3320TE	2	-	2.3 GHz	-	3 MB	35 W	HD	1.00 GHz	1333/1666
	G3250T	2	-	2.8 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3250	2	-	3.2 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
	G3240T	2	-	2.7 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3240	2	-	3.1 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
	G3220T	2	-	2.6 GHz	-	3 MB	35 W	HD	1.10 GHz	1333
	G3220	2	-	3.0 GHz	-	3 MB	53 W	HD	1.10 GHz	1333
Celeron	G1850	2		2.9 GHz	-	2 MB	53 W	HD	1.05 GHz	1333
	G1840T	2		2.5 GHz	-	2 MB	35 W	HD	1.05 GHz	1333
	G1840	2		2.8 GHz	-	2 MB	53 W	HD	1.05 GHz	1333
	G1830	2	-	2.8 GHz	-	2 MB	54 W	HD	1.05 GHz	1333
	G1820TE	2	-	2.2 GHz	-	2 MB	35 W	HD	1.00 GHz	1333
	G1820T	2	-	2.4 GHz	-	2 MB	35 W	HD	1.05 GHz	1333
	G1820	2	-	2.7 GHz	-	2 MB	54 W	HD	1.05 GHz	1333

K = unlocked, **S** = Performance optimized lifestyle, **T** = Power optimized lifestyle, **HT** = Hyper Threading (SMT).
Please refer to the support list for detailed processor support information at *global.shuttle.com*.

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