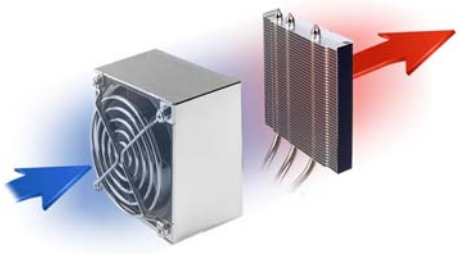
Entry-level, affordable cube PC

The Shuttle XPC cube Barebone SH110R4 is an entry-level Mini PC with a stylish aluminium chassis and offers several advantages in comparison with its predecessor SH81R4. It supports the 6th generation of Intel Core desktop processors with LGA1151 socket, up to 32 GB memory, 4K displays with 60Hz, high-performance M.2 SSDs with PCIe x4 interface and up to four USB 3.0 devices. SH110R4 can be enhanced by a high-performance graphics card for more demanding applications and the second PCIe-X1-slot can be used for a TV tuner card or I/O extension card for example. WLAN and COM port can be added as an option. The SH110R4 comes with a built-in 80 PLUS Bronze certified power supply and Shuttle's exclusive I.C.E. heatpipe cooling which means it is highly energy-efficient and ready for long-term operation. For a personal look and feel, the front panel can be customised by adding individual designs to it.

Feature Highlights

R4 Chassis	• Black aluminium chassis (13.3 litre) • Bays: 1x 5.25“ external, 2x 3.5“ internal
CPU	• Supports LGA 1151 processors (14nm Skylake) • Supports Intel Core i7/i5/i3, Pentium, Celeron • Shuttle I.C.E. Heatpipe cooling system
OS	• Supports Windows 7, 8.1, 10 and Linux – 64 bit
Chipset	• Intel H110 PCH chipset
PCI-Express Slots	• PCIe X16 (v3.0) slot – supports dual-slot graphics cards with 6-pin power connector • PCIe X1 (v2.0) slot supports PCIe X4 cards
Graphics	• Intel HD graphics integrated in the processor • Supports Dual-Monitoring • DisplayPort supports 2150p/60Hz UltraHD
Memory	• Supports up to 2x 16 GB DDR4-2133 memory
Drive Connectors	• 3x Serial ATA 6Gb/s • M.2-2280-Slot for M.2-SSDs (SATA / PCIe X4)
Connectors	• HDMI 1.4, DisplayPort 1.2, VGA/D-Sub • GigaBit LAN (Intel 219-LM) • 4x USB 3.0, 4x USB 2.0 • 5.1 ch. HD-audio, mic / head phone ports • PS/2 Combo (Keyboard/Mouse)
Optional Accessories	• RS232 Serial COM-Port (H-RS232) • Wireless LAN 802.11ac + BT module (WLN-M)
PSU	• 300 Watt mini power supply, 80 PLUS Bronze
Application	• Entry-level Home/Office, Multimedia

XPC cube Barebone
SH110R4



Shuttle I.C.E. Heatpipe cooling

Images for illustration purposes only

8 87993 00067 1

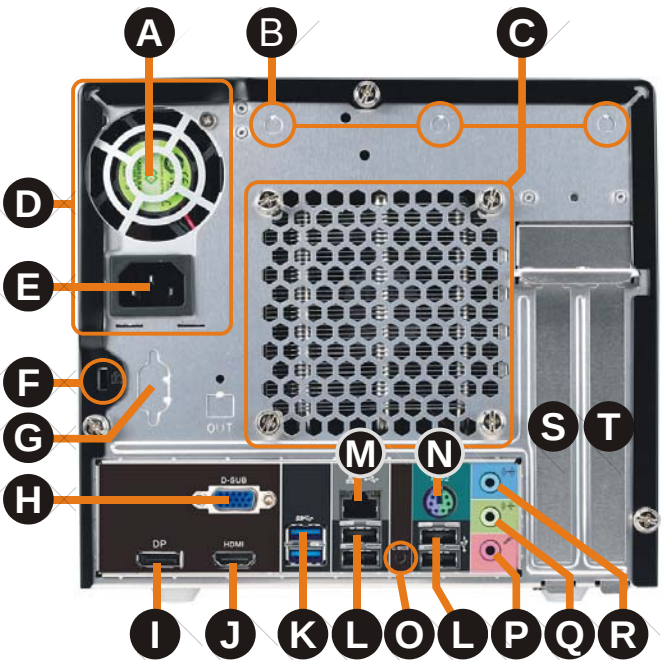
Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany

Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Shuttle XPC cube Barebone SH110R4 – Connectors

Front view

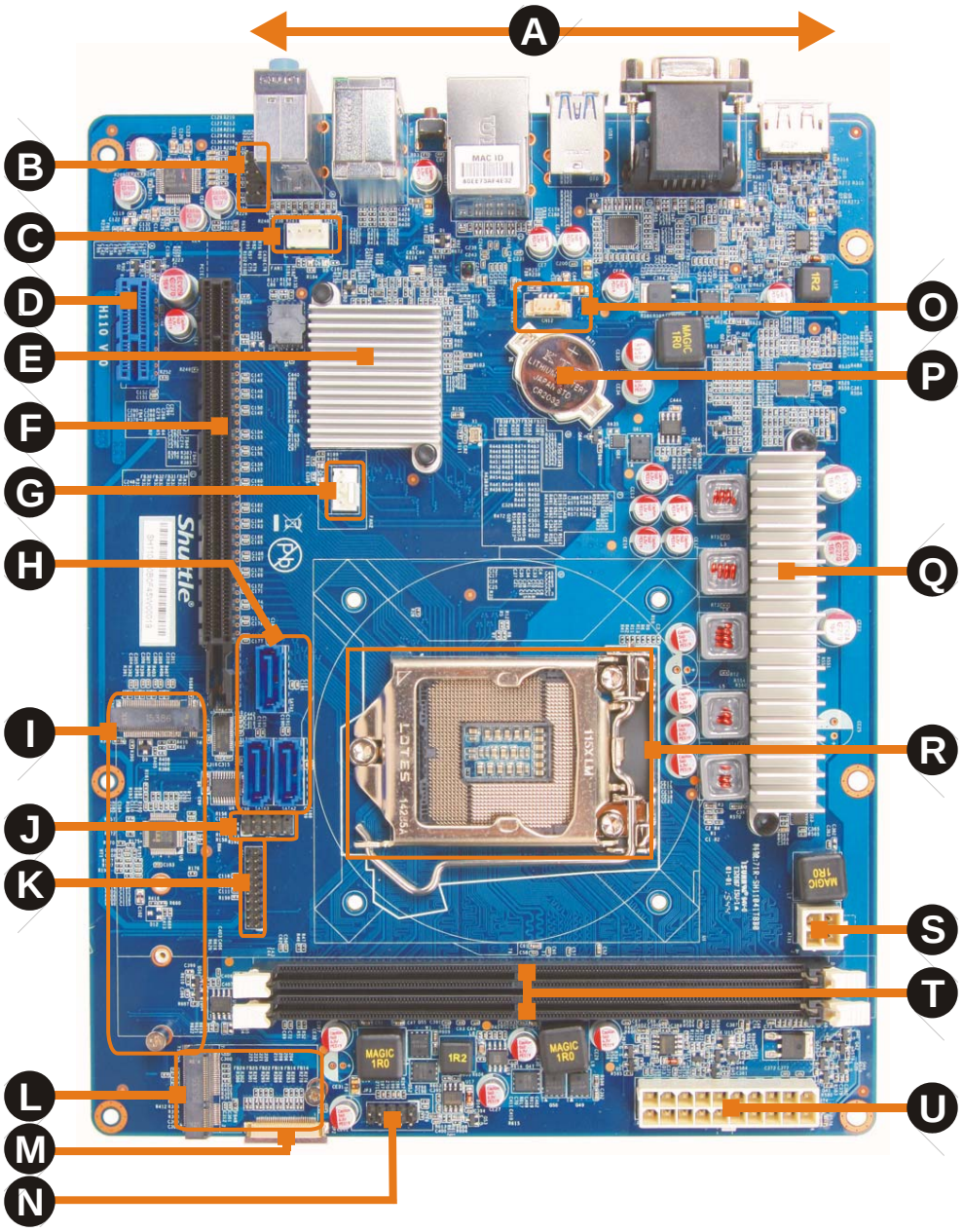
Rear view



1	5.25“ optical drive bay	**A**	Power supply fan	**K**	2x USB 3.0
2	Removable acryllic plate	**B**	Optional WLAN antennas	**L**	4x USB 2.0
3	Hard disk LED indicator	**C**	Heatpipe cooling system	**M**	Gigabit LAN (RJ45)
4	Power switch with LED	**D**	Power supply	**N**	PS/2 Combo
5	2x USB 3.0 ports	**E**	AC power connector	**O**	Clear-CMOS-Button
6	Microphone input	**F**	Hole for Kensington Lock	**P**	Microphone input
7	Headphone output	**G**	Optional COM port	**Q**	Audio Line-out
		H	VGA/D-Sub video output	**R**	Audio Line-in
		I	DisplayPort video output	**S**	PCI-Express X16 slot
		J	HDMI video output	**T**	PCI-Express X1 slot

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Shuttle XPC cube Barebone SH110R4 – Mainboard



A	Back Panel Connectors	**H**	3x SATA 6G Connectors	**O**	Onboard USB Connector
B	Front Audio Header	**I**	M.2-2280 Slot	**P**	CMOS Battery
C	Fan 1 connector	**J**	Serial Port Header (RS232)	**Q**	CPU Voltage Regulator
D	PCI-Express X1 Slot	**K**	LPC Port Header	**R**	LGA1151 CPU Socket
E	Intel H110 Chipset	**L**	M.2-2230 Slot	**S**	ATX Power (4 Pins)
F	PCE-Express X16 Slot	**M**	Front USB 3.0 Connector	**T**	2x DDR4 DIMM Sockets
G	Fan 2 connector	**N**	Front Button/LED Connector	**U**	ATX Power (20 Pins)

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany

Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Shuttle XPC cube Barebone SH110R4 – Product Features

The R4 chassis design: a clean and modern look

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 allows the XPC to be attractive, versatile and work well in almost any environment. The construction and cover of the R4 chassis is made of aluminium. This leads to a stylish, but robust appearance which has made the R4 a popular chassis design. The drives and media connectors on the front are easy to access in daily use.

Customisable

The front of this XPC Barebone can easily be customised by simply changing the mylar behind the acylic front plate. Add your individual design such as a photo, graphics or a company logo to the front panel in just a few steps.

Small, but easy to build

Shuttle XPCs offer the performance of a desktop PC at a third of the size while using standard desktop components. Be ready for the future when banking on Shuttle's R4 chassis. The meticulously designed internal layout features pre-routed cables to reduce clutter, increase airflow and make the installation of components easy.

What does “Barebone” mean?

The Shuttle XPC cube Barebone SH110R4 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, components such as a processor, memory, hard disk and operating system need to be added that can be chosen individually to ideally match personal needs. Some XPC models require a graphics card to be added.

Integrated Cooling Engine (I.C.E.)

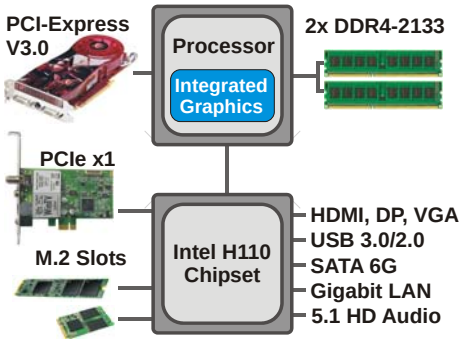
In order to ensure proper airflow inside such a small case, more advanced cooling technologies have been developed and implemented in the Shuttle XPC. Shuttle's industry-leading I.C.E. heatpipe technology delivers efficient cooling and is exceptionally quiet.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany

Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Supports Intel 14nm Skylake Processors

Skylake is the codename for Intel's 6th Generation of Intel Core Processors introduced in 2015 along with the 100-Series chipsets. The Shuttle XPC cube Barebone SH170R6 supports the desktop version with socket LGA1151, while the previous generation (code name “Haswell”, LGA1150) is not compatible.

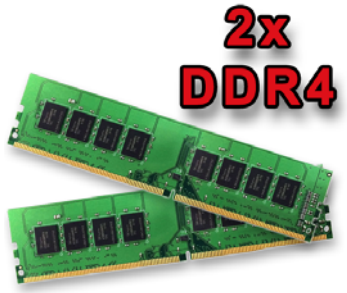


Single-Chip Chipset: Intel H110

The Shuttle XPC cube Barebone SH110R4 sports Intel's H110 Platform Controller Hub (PCH) which is part of the 100 Series "Sunrise Point" chipset. The H110 chipset consists of a single chip and integrates the hard drive controller, network controller, firmware interface, PCIe links, USB and other connectors.

Internal Drives

Up to one optical drive and two hard disks can be fitted in the Shuttle XPC cube Barebone SH110R4. To reduce heat and improve on airflow, the drive rack built into the SH110R4 leaves generous space between the hard disks. Intelligently-engineered airflow mechanics channels cool air to where it is needed most - protecting components and providing optimal performance.



Supports up to 32 GB DDR4 memory

The Shuttle XPC cube Barebone SH110R4 supports up to 32 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 240-pin at 1.5V operating voltage. ForDDR3L it is 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.

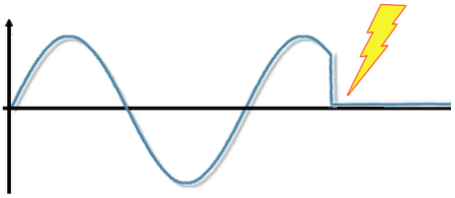
Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

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 SH110R4.

4x USB 3.0 and 4x USB 2.0

The Shuttle XPC cube Barebone SH110R4 sports two USB 3.0 ports on both front and rear, besides four USB 2.0 ports on rear. USB 3.0 achieves a maximum data 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. USB 2.0 can provide a maximum output of 500mA to the USB device while USB 3.0 can provide a maximum output of 900mA which is particularly important for portable hard drives.

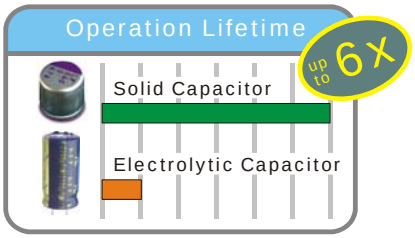


Power on after Power fail

The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". As the name indicates, this function determines the PC's behaviour after power failure: (1) unconditional power on, (2) restore former status or (3) keep system turned off.

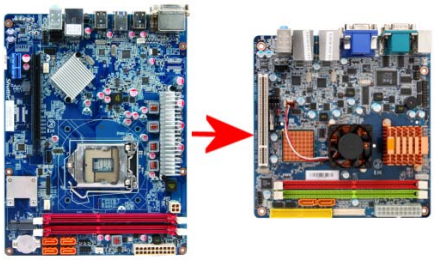
80 PLUS BRONZE certified 300W Power Supply

The Shuttle XPC cube Barebone SH110R4 is equipped with a rock-stable built-in 300W power supply which works excellent with the latest graphics cards and 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 delivering the same airflow, but spins at a slower speed than previous 40mm models to make the system run even more quietly.



Solid Capacitors

By using all-solid capacitors (audio excepted) Shuttle mainboards are long-life and provide industry-leading stability and reliability. The average lifespan of one solid capacitor is more than six times longer compared to the previous generation of electrolytic capacitors.

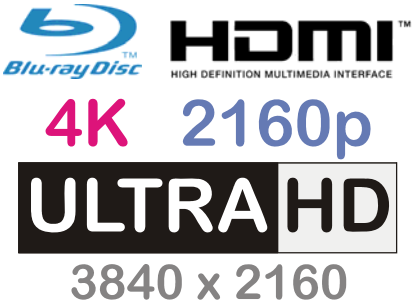


Mini-ITX Mainboard Support

Shuttle expands the capabilities of its R chassis adding support for Mini-ITX mainboards (17 x 17cm or 6.7 x 6.7 inches) which means the mainboard can easily be up- or downgraded without any modifications to the chassis.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Graphics Features



Built-in Intel® HD Graphics Engine

The integrated Intel® HD Graphics depends on the type of processor used and supports hardware decoding for HEVC (4K/H.265) video, Intel® Quick-Sync video encoding, 2160p high-definition resolution, HDCP, Blu-ray*) playback, DirectX 12 and up to 1760MB shared graphics memory. The graphics performance is comparable to entry-level discrete graphics cards.
*) appropriate software and optical drive required

Supports 4K Ultra-HD video playback

4K resolution is the next technological milestone in high-definition content delivery, utilizing more than four times of 1080p Full HD pixel density. The Shuttle XPC cube Barebone SH110R4 supports 4K Ultra-HD video content at 2160p/60Hz via its DisplayPort video output in conjunction with Intel Core™ i3/i5/i7 processors.

Video outputs

The PC features three video outputs:
- HDMI v1.4 (supports 1080p/60 and 2160p/30)
- DisplayPort v1.2 (support 1080p/60 and 2160p/60)
- VGA / 15-pin D-Sub (supports analog video)

Supports two independent displays simultaneously.

Dual View Technology

Dual View technology offers multiple display support for up to two separate monitors. This helps improve on productivity by allowing to spread multiple windows across two monitors while working with them simultaneously. For this, the Shuttle XPC cube Barebone SH110R4 features two digital video outputs (DisplayPort and HDMI) and an analog VGA port.

Support of up to four displays

The Shuttle XPC cube Barebone SH110R4 can be connected to up to four displays, if a dedicated discrete PCI-Express graphics card is used. This function is based on the “Switchable Graphics” feature.

PCI-Express V3.0 for high-performance graphics cards

Thanks to the optimised internal layout,the XPC cube Barebone SH110R4 even takes large dual-slot graphics cards. The modern PCI Express V3.0 interface makes sure there is no bottleneck when gaming or working with 3D applications. This barebone PC also features an additional 6pin ATX auxiliary power connector for top-of-the-range graphics cards.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Optional Accessories

WLAN-Kit (WLN-M)

Shuttle offers the optional accessory „WLN-M“, which adds WLAN 802.11ac and Bluetooth 4.0 to your Shuttle XPC cube Barebone SH110R4.

Serial RS-232 port (H-RS232)

One serial COM port (RS232) can optionally be installed to the back panel. This is particularly relevant for professional applications such as electronic POS, industrial automation systems and scientific analysis.

500W Power Supply with 80 PLUS Silver Logo (PC63J)

The PC63J is a high-end power supply with a maximum output wattage of 500W. It features additional 6-pin and 8-pin ATX auxiliary power connectors for high-end graphics cards. Thanks to its 80 PLUS Silver certification for power-efficient devices, this power supply is also suitable for ENERGY STAR® compliant systems.

Adapter for 2.5“ drives (PHD3)

The PHD3 allows for installation of 63.5mm (2.5") hard drives or SSDs into a larger 89 mm (3.5") drive bay.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany

Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Shuttle XPC cube Barebone SH110R4 - Specifications

R4-Chassis	Black aluminium chassis with acrylic front plate Customisable front panel design: simply change the mylar and add a personal design such as a photo, graphics or a logo to the front panel. Storage bays: 1 x 5.25" (external), 2 x 3.5" (internal) Dimensions: 32.5 x 21.5 x 19.8 cm (LWH) = 13.8 liters (without rubber feet) Weight: 3.4 kg net / 4.5 kg gross
Mainboard and Chipset	Shuttle mainboard FH110, Shuttle form factor, proprietary design for XPC SH110R4 Chipset/Southbridge: Intel® H110 (code name: Lynx Point) Platform Controller Hub (PCH) Intel® GL82H110 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, 32MBit Flash-ROM Supports PnP, ACPI 3.0, Hardware Monitoring Supports boot up from external USB flash memory Supports Unified Extensible Firmware Interface (UEFI) [2]
Power Supply	Builtin 300 Watt mini switching power supply (model PC61J) AC input voltage: 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
Operation System	This system comes without operating system. It is compatible with Windows 10 / 8.1 / 7 and Linux.- 64 bit. Note on Windows 7 see [9]
Processor Support	Socket LGA 1151 (H4) supports the sixth generation of Intel Core i7 / i5 / i3, Pentium and Celeron processors Maximum supported processor power consumption (TDP) = 95W Codename "Skylake", 14nm process technology, up to 8 MB of L3 cache Not compatible with Intel Xeon E3 V5 processors with Socket LGA1151 and processors with the older Socket LGA 1150. 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.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Heatpipe Processor Cooling	Shuttle I.C.E. (Integrated Cooling Engine) advanced I.C.E. heatpipe technology, linear-controlled 92mm fan SilentX cooling and noise reduction technology with Active Airflow
Memory Support	2 x 288-pin slots Supports DDR4-2133 memory (PC4-17066) at 1.2V [2] Supports Dual Channel mode Supports max. 16 GB per DIMM, maximum total size of 32 GB
PCEe 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]
Two M.2-Slots	This XPC features two M.2 expansion slots: (1) M.2 2280 BM slot - Interfaces: PCI-Express Gen. 2.0 X4 (max. 16 Gbit/s) and SATA v3.0 (max. 6 Gbit/s) - supports M.2 cards with a width of 22 mm and a length of 42, 60 or 80 mm (type 2242, 2260, 2280) - supports SATA SSDs (BM-Key) or PCIe SSDs (M-Key) (2) M.2 2230 AE 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 M.2-WLAN cards (accessory WLN-M [4])
Integrated Graphics (optional)	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 video outputs: - HDMI v1.4 (supports 1080p/60 and 2160p/30) - DisplayPort v1.2 (support 1080p/60 and 2160p/60) - VGA / 15-pin D-Sub (supports analog video) Supports displays with 4K Ultra HD resolution at 3840 x 2160 Supports two independent displays with the integrated graphics function Supports more displays in combination with a discrete graphics card [6] Supports Blu-ray (BD) playback with HDCP content protection [7] DisplayPort and HDMI support multi-channel digital audio over the same cable Maximum shared memory of 1760 MB
6-Channel Audio	Audio Codec: Realtek ALC662, 5.1 channel Three analog audio connectors (3.5mm) at the back panel: 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 head phone output (line-out)
Gigabit-LAN Controller	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)

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Drive Connectors	3x Serial ATA 6G (rev. 3.0, max. 6 Gbit/s, colour: blue)
Front Panel Connectors	Microphone input (3.5 mm) Headphone output (3.5 mm) 2x USB 3.0 Power button Power indicator (Blue LED) Hard disk drive indicator (Yellow LED)
Back Panel Connectors	HDMI 1.4 (digital video and audio) DisplayPort 1.2 (digital video and audio) D-Sub VGA (analog video) 2x USB 3.0, 4x USB 2.0 GigaBit LAN (RJ45) Audio Line-out (3.5 mm), Audio Line-in (3.5 mm), Microphone Input (3.5 mm) PS/2 Combo - supports keyboard or mouse Clear CMOS button Optional: Serial RS232 port (Accessory: "H-RS232") Perforations for optional WLAN antennas [4]
Other Connectors (onboard)	Front-Panel-Anschlüsse: USB, Audio. Buttons, LEDs 1x RS232, serielle Schnittstelle (4 Pins) 2x Lüfter-Anschlüsse (4 Pins)
Included Accessories	Multi-language XPC Installation Guide (EN, DE, FR, ES, JP, KR, SC, TC) 32/64-bit driver disk 2x Serial ATA cables AC Power Cord (with protective-earth contacts) Heatsink Compound, Bag with screws Protector cap for the CPU socket (do not use if heat-pipe or fan is mounted)
Optional Accessories	Back panel adapter for serial RS232 port **(H-RS232)** Wireless LAN 802.11n kit with two antennas **(WLN-M)** [4] Adapter for 2.5" drives such as SSDs **(PHD3)** 500W power supply, 80Plus Silver **(PC63J)**
Environmental criteria	Operating temperature: 0~35°C Humidity: 10~90%
Certifications Compliance	EMI: FCC, CE, BSMI, C-Tick Safety: ETL, CB, BSMI Other: RoHS, Energy Star 5.0, EuP Lot6 Conformity: 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-guidelines: - EMV-guideline 89/336/EWG electromagnetic tolerance - LVD-guideline 73/23/EWG use of electric devices within certain voltage-limits

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

[1] Overclocking Notice
Please note there is a certain risk involved with overclocking, including adjusting the BIOS settings 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] Memory Support - the mainboard supports DDR4-2133 momory modules with 1066MHz I/O clock and 267MHz memory clock. You can also use higher rated modules (e.g. DDR4-2400), however, they will also be operated like DDR4-2133 modules.

[3] Open-ended PCI-E slot - The X1 slot uses an open-ended socket to permit physically longer cards (e.g. X4 or X8) while the speed is limited to X1.

[4] 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.

[5] How to convert DisplayPort to HDMI/DVI
The DisplayPort output 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.

[6] Supports additional displays in combination with a discrete graphics card
The integrated graphics function already supports two 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".

[7] For Blu-ray playback appropriate software and a Blu-ray drive is required (not included).

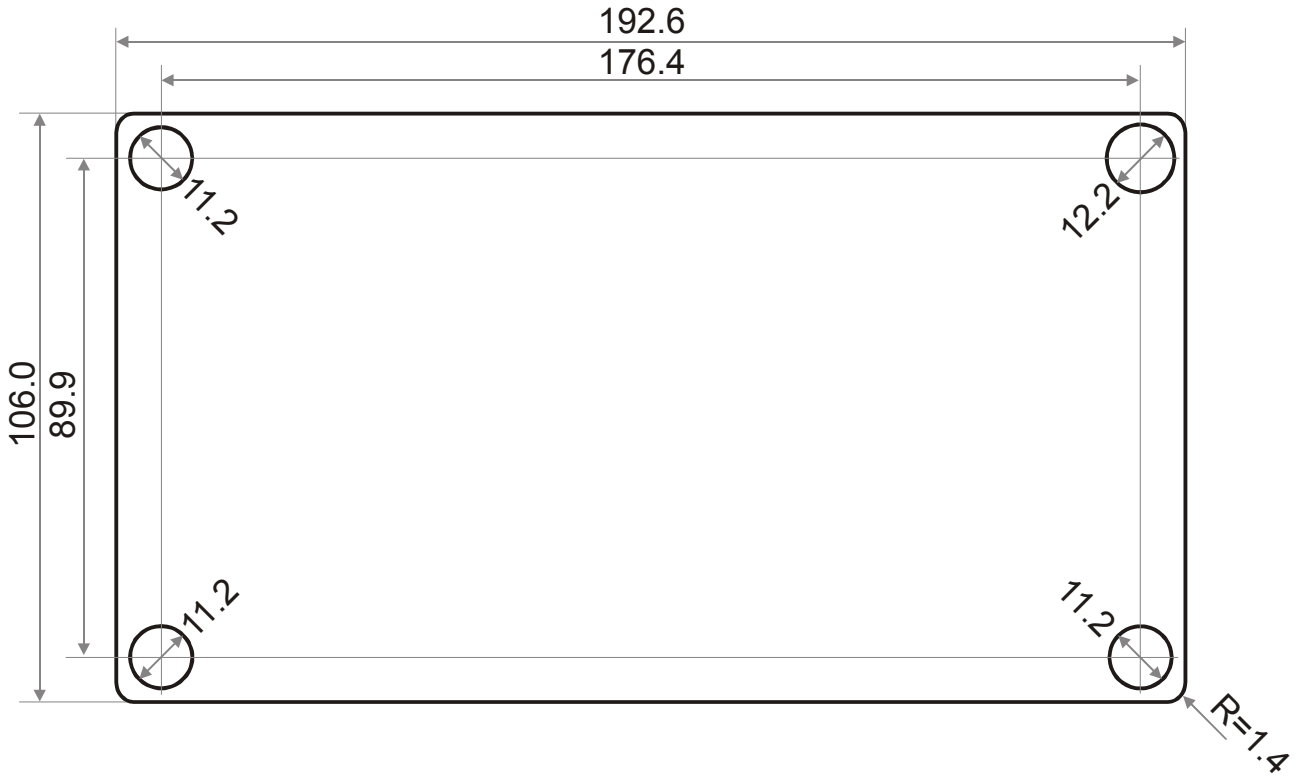
[8] Why may the PS/2 port help install Windows 7?
The Intel® 100 chipset series has done away with support for the Enhanced Host Controller Interface (EHCI) which is the driver software for the USB 2.0 ports. The new chipset only supports the updated Extensible Host Controller Interface (xHCI for USB 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) will not work during Windows 7 Installation. There are two solutions: (1) use a PS/2 keyboard or a PS/2 mouse and install Windows 7 from an internal DVD drive or (2) add the required USB 3.0 drivers to the Windows 7 installation files - this procedure is explained in the Shuttle FAQ section at global.shuttle.com.

[9] Why may the PS/2 port help install Windows 7?
The Intel® 100 chipset series has done away with 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) will not work during Windows 7 Installation. There are two solutions: (1) use a PS/2 keyboard or a PS/2 mouse and install Windows 7 from an internal DVD drive or (2) add the required USB 3.0 drivers to the Windows 7 installation files - this procedure is explained in the Shuttle FAQ section at global.shuttle.com.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

Shuttle XPC cube Barebone SH110R4 – Mylar Dimensions

The R4 front panel comes with a removable acrylic plate which allows for creating individual front designs. Simply change the mylar and add your individual design such as a photo, graphics or a company logo to the front panel in just a few steps.



All dimensions in millimeter (mm)

Example

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

SH81R4 versus SH110R4

Comparison with the predecessor

Barebone Model	SH81R4	SH110R4
Back Panel		
Intel Processor Support	LGA1150, max. 95W 22nm Haswell (4th Gen. Core CPU) Intel Core i7, i5, i3, Pentium, Celeron	LGA1151, max. 95W 14nm Skylake (6th Gen. Core CPU) Intel Core i7, i5, i3, Pentium, Celeron
Chipset	Intel H81	Intel H110
Memory	Max. 2x 8 GB DDR3-1600	Max. 2x 16 GB DDR4-2133
PCI-Express Slots	(1x) PCIe X16 v3.0 (1x) PCIe X1 v2.0	(1x) PCIe X16 v3.0 (1x) PCIe X1 v2.0
Mini-Slots	1x Mini-PCIe Full Size (mSATA) 1x Mini-PCIe Half Size	1x M.2-2280BM (PCIe X4, SATA) 1x M.2-2230AE (PCIe X1, USB 2.0)
Front Panel	Power Button with LED, HDD LED Microphone-in, Head phone out 2x USB 2.0	Power Button with LED, HDD LED Microphone-in, Head phone out 2x USB 3.0
Back Panel	HDMI, DVI-I 6x USB 2.0, 2x USB 3.0 GigaBit LAN (Realtek 8111E) 3x Audio, Clear CMOS Button	HDMI, DisplayPort, D-Sub/VGA 4x USB 2.0, 2x USB 3.0, PS/2 Combo GigaBit LAN (Intel i219-LM) 3x Audio, Clear CMOS Button
UltraHD Support	HDMI: 2160p/30Hz	HDMI: 2160p/30Hz DisplayPort: 2160p/60Hz
SATA onboard *)	2x SATA 6G 1x SATA 3G	3x SATA 6G
Power Supply	300W 80 PLUS Bronze	300W 80 PLUS Bronze
Optional Accessories	500W PSU (PC63J) RS232 port (H-RS232) WLAN kit 802.11n (WLN-C) 2.5" drive kit (PHD3)	500W PSU (PC63J) RS232 port (H-RS232) WLAN kit 802.11n/ac+BT (WLN-M) 2.5" drive kit (PHD3)

*) Note: The H81 and H110 chipsets both support four SATA devices in total.
three are used for the onboard SATA connectors for regular SATA drives and one for the mSATA slot (SH81R4) or for the M.2-2280-slot (SH110R4), respectively.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu

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, **S** = Performance optimized lifestyle, **T** = Power optimized lifestyle
Note: The SH170R6 does not support the unlock-function of Intel K-Series processors.
Please refer to the support list for detailed processor support information at *global.shuttle.com*.

Shuttle Computer Handels GmbH
Fritz-Strassmann-Str. 5
25337 Elmshorn | Germany
Tel. +49 (0) 4121-47 68 60
Fax +49 (0) 4121-47 69 00
sales@shuttle.eu