

## SH610R4

CUBE PC



<b>PROCESSOR</b>	Supports Intel® 12th/13th/14th* Generation Core™ i3/i5/i7/i9 series, Pentium®, and Celeron® 125W LGA 1700 CPU	
<b>MEMORY</b>	DDR4 3200/2933/2666 MHz, dual channel up to 64GB (32GB x 2)	
<b>VIDEO GRAPHICS</b>	Integrated Intel UHD graphics (depends on processor type used)	
<b>VIDEO OUTPUT</b>	HDMI + DisplayPort + VGA, Supports triple independent displays	
<b>AUDIO</b>	Realtek ALC662/ALC897/ALC888, 5.1 channel HD audio	
<b>ETHERNET</b>	Intel i219LM 10/100/1000 MB/s operation	Supports Wake on LAN function
<b>STORAGE INTERFACE</b>	SATA 6 GB/s	
<b>ONBOARD CONNECTORS</b>	(2) 4 pin fan connector (1) USB 2.0 (4 pin) header	(1) RS232 header (2x5 pin) Front connector for USB, audio, buttons, LEDs
<b>FRONT PANEL</b>	(1) Power Button (1) Power LED (1) HDD LED (2) USB 3.2 Gen 1 port	(1) MIC-in (1) Headphone output
<b>BACK PANEL</b>	(1) HDMI 2.0b (1) DisplayPort 1.4 (1) VGA (2) USB 3.2 Gen 1 (4) USB 2.0 (1) Clear CMOS button	(1) MIC-in (1) Line-in jack 1/8" (1) Line out jack 1/8" (1) Kensington Lock (1) LAN (3) Antenna hole
<b>DRIVE BAYS</b>	(1) 5.25" ODD bay (2) 3.5" HDD bay	Supports up to 2.5" HDD/SSD x 3 if PHD3 HDD rack accessory is used
<b>DIMENSIONS</b>	13(L) x 8.5(W) x 7.75(H) inches	
<b>POWER</b>	Input: 100 - 240V AC, 3A-6A AC Supports 80 PLUS Bronze	80 PLUS 300W power supply
<b>ACCESSORIES</b>	Quick Guide CPU Thermal Grease Screw Package	Driver DVD Power Cord SATA cable
<b>EXPANSION SLOT</b>	(1) PCI-E X16 Gen 5.0 slot (1) PCI-E X1 Gen 3.0 slot	(1) M.2 MAX to 2230 Type E key socket (1) M.2 MAX to 2280 Type M key socket
<b>OS SUPPORT</b>	Windows 10/11 64 bit, Linux	
<b>CERTIFICATION</b>	Safety certification: CB, BSMI, cTUVus EMI certification: FCC, CE, BSMI, RCM, VCCI, UKCA	

\*BIOS update required for 14th gen CPU support

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<b>R4-CHASSIS</b>	<p>Black aluminum chassis with acrylic front plate Easily customize front panel design by changing the mylar and adding a photo, graphics, or logo Drive bays: 1 x 5.25" ODD, 2 x 3.5" (internal) HDD Supports up to 2 x 2.5" HDD if PHD3 rack accessory x1 or x2 is used Dimensions: 13 (L) x 8.5 (W) x 7.79 (H) inches Weight: 7.5 LBS (net) / 9.9 LBS (gross)</p>								
<b>MAINBOARD AND CHIPSET</b>	<p>Mainboard w/ Shuttle form factor 275x195mm, proprietary design for XPC SH610R4 Chipset/Southbridge: Intel® H610 Passive chipset cooling with heatsink Solid capacitors for sensitive areas provide excellent heat resistance for enhanced system durability</p>								
<b>BIOS</b>	<p>AMI BIOS, SPI Interface, 32MB Flash-EPROOM Supports Hardware Monitoring, Watch Dog Supports Power Fail Resume Supports Firmware TPM (fTPM) v2.0 Supports boot up from external USB flash memory Supports Unified Extensible Firmware Interface (UEFI)</p>								
<b>POWER SUPPLY</b>	<p>Built-in 300W mini switching power supply (model PC61J) [1]* AC input voltage: 100 - 240V, 50 - 60 Hz 80 PLUS Bronze compliant: PSU provides at least 82/85/82% of efficiency at 20/50/100% load Active PFC Circuit (Power Factor Correction) ATX main power connectors: 2x10 and 2x2 pin Graphics power connector: 6 pin Other connectors: 4 x SATA, 2 x Molex, 1 x Floppy</p>								
<b>OPERATING SYSTEM</b>	<p>The system comes without an operating system. Compatibility: Windows 10/11 64 bit, Linux 64 bit</p>								
<b>PROCESSOR SUPPORT</b>	<p>LGA 1700 socket supports 12th/13th/14th generation Intel® Core® i3/i5/i7/i9, Pentium, and Celeron processors Max supported processor power consumption (TDP): 125W Intel 7 process technology (previously Intel 10 nm Enhanced SuperFin) The unlock function for Intel® K-Series processors is not supported with this model The processor integrates PCI-Express, the memory controller, and graphics engine on the same die (performance features depend on the processor type) Processors with "F" identifier do not support integrated graphics [3]* Please refer to the support list for more detailed processor information at <a href="http://global.shuttle.com">global.shuttle.com</a></p>								
<b>SYSTEM COOLING</b>	<p>Shuttle I.C.E. (Integrated Cooling Engine) advanced heatpipe cooling technology, linear-controlled 92 mm fan Silent X cooling and noise reduction technology with Active Airflow</p>								
<b>MEMORY SUPPORT</b>	<p>2 x 288 pin slots Supports DDR4 3200/2933/2666 MHz memory (PC4-25600/23466/21300) at 1.2V Supports Dual Channel mode Supports a max. of 32GB per DIMM, up to 64GB total</p>								
<b>PCI-E SLOTS</b>	<p>1 x PCI-Express x16 v5.0 slot 1 x PCI-Express x1 v3.0 slot, open-ended Supports dual slot (double width) graphic cards (occupies the second PCI-Express slot) The maximum size acceptable for display cards is 10.7 x 3.9 x 1.5 inches 6 pin power connector for graphic card [1]*</p>								
<b>M.2 SLOTS</b>	<p>This model features two M.2 expansion slots:</p> <table border="0"> <tr> <td>(1) M.2 2280 M SSD slot</td> <td>(2) M.2 2230 E slot for WLAN cards</td> </tr> <tr> <td>-PCI-Express Gen. 4.0 X4, supports NVMe</td> <td>- PCI-Express Gen. 3.0 X1 and USB 2.0</td> </tr> <tr> <td>-SATA v3.0 (max 6 GB/s)</td> <td>-Supports M.2 cards with a width of 22mm and a length of 30 mm (type 2230)</td> </tr> <tr> <td>-Supports M.2 cards with a width of 22mm and a length of 42, 60, or 80 mm (type 2242/2260/2280)</td> <td>-Supports WLAN expansion cards (optional accessory WLN-M)</td> </tr> </table>	(1) M.2 2280 M SSD slot	(2) M.2 2230 E slot for WLAN cards	-PCI-Express Gen. 4.0 X4, supports NVMe	- PCI-Express Gen. 3.0 X1 and USB 2.0	-SATA v3.0 (max 6 GB/s)	-Supports M.2 cards with a width of 22mm and a length of 30 mm (type 2230)	-Supports M.2 cards with a width of 22mm and a length of 42, 60, or 80 mm (type 2242/2260/2280)	-Supports WLAN expansion cards (optional accessory WLN-M)
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<b>INTEGRATED GRAPHICS (OPTIONAL)</b>	<p>Intel HD graphics function features depend on the processor type used PC features four video outputs (three can be used at the same time):</p> <p>This model has four video outputs: -HDMI v2.0b (4K Ultra HD, 2160p/60 supported) -DisplayPort v1.4 (4K Ultra HD, 2160p/60 supported) x 2 -VGA / D-sub</p> <p>Certain processor models do not support integrated graphics [3]* Supports triple independent displays with integrated graphics function Supports more displays in combination with a discrete graphics card DisplayPort and HDMI supports multi-channel digital audio over the same cable</p>	
<b>HD AUDIO</b>	<p>Audio Codec: Realtek ALC888/ALC662/ALC897, 5.1 channel Three analog audio connectors (3.5mm) on the back panel: Line-in (blue), Line-out (green), MIC in (pink) shared with 5.1 channel line-out (front, rear, center/bass) Front panel: MIC in (input) and Headphone output (line-out)</p>	
<b>GIGABIT LAN CONTROLLER</b>	<p>Intel i219 Ethernet controller Supports 10/100/1000 MB/s operation Supports Wake-on-LAN Supports network boot by Preboot eXecution environment (PXE)</p>	
<b>DRIVE CONNECTORS</b>	<p>3x Serial ATA 6G ( rev. 3.0, max 6GB/s, color: blue), Storage bays: 1 x 5.25" ODD, 2 x 3.5" HDD</p>	
<b>FRONT PANEL CONNECTORS</b>	<p>Microphone input (3.5 mm) Headphone output (3.5 mm) 2x USB 3.2 Gen 1</p>	<p>Power button Power indicator (Blue LED) Hard disk drive indicator (Yellow LED)</p>
<b>BACK PANEL CONNECTORS</b>	<p>HDMI 2.0a (digital video &amp; audio) DisplayPort 1.4 (digital video &amp; audio) [2]* VGA (analog video) USB 2.0 x 4 USB 3.2 Gen 1 x 2 Audio line-out (3.5 mm)</p>	<p>Audio line-in (3.5 mm) MIC in (3.5 mm) Clear CMOS button Gigabit LAN (RJ45) WLAN antenna holes (optional) Serial RS232 port (optional, H-RS232 accessory)</p>
<b>OTHER CONNECTORS (ONBOARD)</b>	<p>Front panel: USB, audio, buttons, LEDs RS232 x 1 (serial interface, 5 pin)</p>	<p>Fan connectors x 2 (4 pin) USB 2.0 interface x 1 (4 pin)</p>
<b>INCLUDED ACCESSORIES</b>	<p>XPC installation guide Driver DVD Serial ATA cables x 2</p>	<p>AC Power Cord (with protective earth contacts) Thermal paste, screw pack Protector cap for CPU socket (don't use if heatpipe/fan is mounted)</p>
<b>OPTIONAL ACCESSORIES</b>	<p>Back panel adapter for serial RS232 port (PCP11) Wireless LAN 802.11ac kit and Bluetooth kit with two antennas (WLN-M) or WLAN 802.11 ax (WLN-M1) Adapter for 2.5" drives (PHD3 rack) 850W power supply (PC850)</p>	
<b>ENVIRONMENTAL CRITERIA</b>	<p>Operating temperature: 0 - 40°C</p>	<p>Humidity: 10 - 90%</p>
<b>CERTIFICATIONS</b>	<p>EMI: FCC, CE, BSMI, -Tick Safety: CB 60950/62368, cTUVus, BSMI</p> <p>Other: RoHS, Energy Star 5.0, ErP</p> <p>This model is classed as a technical information equipment (ITE) in class B and is intended for use in living rooms and offices. The CE mark approves conformity by the EU directives: (1) 2014/30/EC relating to electromagnetic compatibility (EMC) (2) 2014/35/EC relating to Electrical Equipment designed for use within certain voltage limits (LVD) (3) 2009/125/EC relating to eco-design requirements for energy related products (ErP)</p>	

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## [1] ONLINE POWER CALCULATOR

The PCI-E X16 slot provides a maximum of 75W + 75W from the 6-pin connector of the power supply; power consumption of the graphics card must not exceed 150W and the processor may have a maximum TDP of 125W. Check with the power supply calculator to see if the built-in 300W supports your configurations:

<https://global1.shuttle.com/Support/PowerSupplyCalculator>

## [2] HOW TO CONVERT DISPLAYPORT TO HDMI/DVI

The DisplayPort output can be converted into a HDMI or DVI output using an additional passive adapter cable. The integrated graphics automatically detects the connected display and outputs 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.

## [3] INTEGRATED GRAPHICS IS OPTIONAL FOR SOME PROCESSORS

Processors with model numbers ending with "F" (like Intel Core i5-12600F) do not support integrated graphics. In cases of these processors, a discrete PCI-E graphics card is mandatory.

**BIOS DOWNLOADS:** <https://global.shuttle.com/products/productsDownload?pn=SH610R4>

**SUPPORT LIST:** <https://global.shuttle.com/products/productsSupportList?pn=SH610R4>

**FAQ LIST:** <http://global.shuttle.com/support/faq>

**PRODUCT WARRANTY:** <https://www.shuttlecomputers.com/warrantypolicies>

# SH610R4

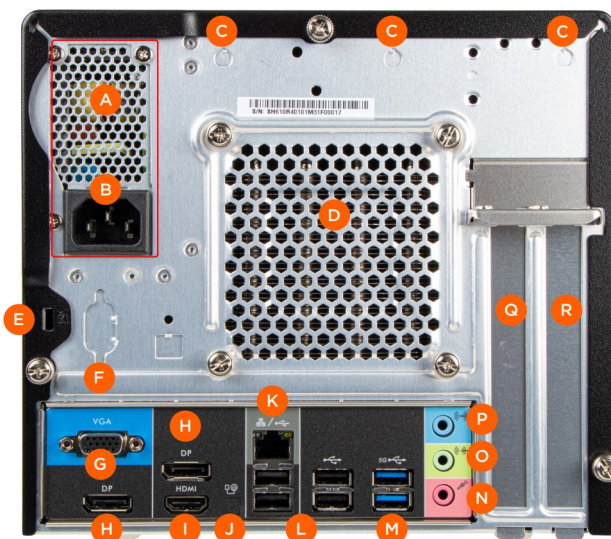
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## Front View



- 1 5.25" optical drive bay
- 2 Hard disk LED indicator
- 3 Power switch with LED
- 4 Removable acrylic plate
- 5 USB 3.2 Gen 1 x 2 ports
- 6 Microphone input
- 7 Headphone input

## Back View



- A Power supply unit
- B AC power connector
- C holes for WLAN antenna
- D Heat-pipe cooling system
- E Kensington Lock
- F Optional COM port
- G VGA video output
- H DisplayPort video output x 2
- I HDMI video output
- J Clear CMOS button
- K Gigabit LAN port (RJ45)
- L USB 2.0 x 4
- M USB 3.2 Gen 1 x 2
- N Microphone input
- O Audio line-out
- P Audio line-in
- Q PCI-Express X16 slot
- R PCI-Express X1 slot

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# SH610R4

CUBE PC



## SUPPORTS INTEL® 12TH/13TH/14TH GENERATION PROCESSORS

The SH610R4 supports both Intel® 12th/13th/14th Generation Core™, Pentium® Gold, and Celeron® processors. DDR4 3200 MHz memory is supported up to 64GB and with Intel® UHD 700 series graphics integrated, it comes with outstanding performance to boost image processing in streaming, video recording, and content creation as well as potential for multi-platform AI deployment.



## SUPERB PCI-E SCALABILITY

One PCI-E X16 5.0 and PCI-E X1 4.0 slots are provided for use with multi-display graphic cards, monitor cards, RAID cards, professional sound cards, network video recorder and more.



## FRONT PANEL CUSTOMIZATION

The R4 chassis is easily customized by changing the acrylic front plate. Insert any design such as a photo, graphic, or a company logo to the front panel.



## 24/7 NONSTOP OPERATION

Officially approved for 24/7 operation, the SH610R4 provides stable operation to run reliably for long term demands of computing work.



## SMART FAN DESIGN

A heat pipe cooling system with smart fan design can be set in the BIOS for faster fan speed automatically when CPU temperature increases for high stability and low noise during long term operation.

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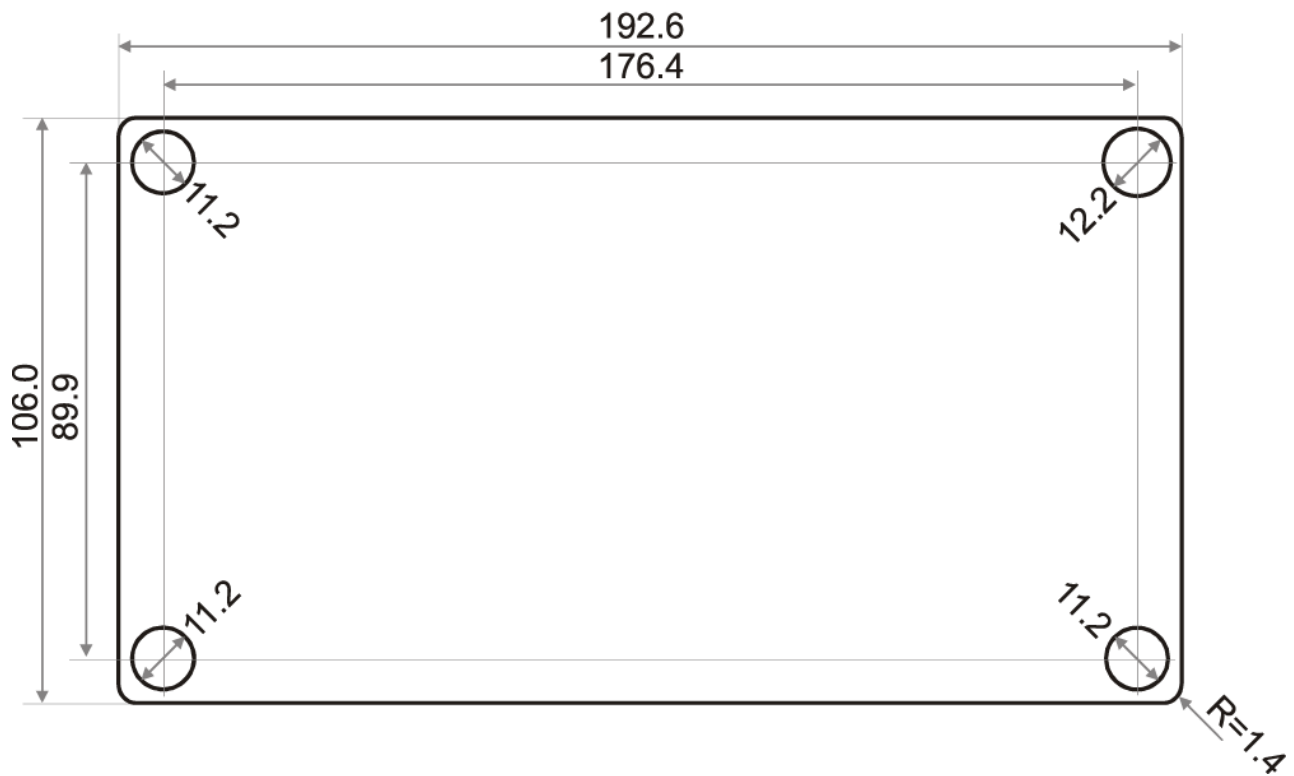
# SH610R4

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## MYLAR DIMENSIONS

The R4 front panel comes with a removable acrylic plate which allows for easy customization of the front design. 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.



\*Measurements are in mm

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<b>ACCESSORY</b>	<b>WLN-M</b>
<b>DESCRIPTION</b>	The WLN-M wireless LAN kit can be used to equip XPC cube and slim series models with the wireless LAN standard 802.11 n/ac at 2.4/5 GHz. The combo device supports Bluetooth 4.0.
<b>ITEMS INCLUDED</b>	M.2 2230 (NGFF) WLAN card, XPC slim antenna cables x 2 (8.3 in and 11.4 in), XPC cube antenna cables x 2 (20.8 in), Dipole antennas x 2, Quick guide, Driver DVD
<b>OS SUPPORT</b>	Windows 7, Windows 8.1, Windows 10, Linux (32/64 bit)



<b>ACCESSORY</b>	<b>H-RS232</b>
<b>DESCRIPTION</b>	With the help of this adapter, a serial RS232 port can be equipped in several XPCs. A sub-D connector is added to the back panel and is connected to the serial interface on the motherboard.
<b>PORTS</b>	External: Sub-D, 9 pins, male Internal: 10 pin (2x5), female



<b>ACCESSORY</b>	<b>PC850</b>
<b>DESCRIPTION</b>	The PC850 can be utilized as a power supply upgrade for certain XPC cube models. With 80 PLUS Platinum certification, it consumes less power and saves more energy.
<b>REMARKS</b>	Input voltage: 100 - 240V AC Input current: 6A - 10A Input frequency: 50 - 60 Hz Operating temperature: 10°C to 50°C Storage temperature: -20°C to 80°C Watt: 850W



<b>ACCESSORY</b>	<b>PHD3</b>
<b>DESCRIPTION</b>	The PHD3 allows for installation of up to two 2.5" HDD/SSD into a larger 3.5" drive bay. With a second PHD3, up to four 2.5" drives can be installed (4th drive can only be installed in XPCs of the J & R series)
<b>REMARKS</b>	Please check number of available SATA data and power connectors. Current XPC models usually offer four SATA data connector and three SATA power connectors.

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# SH610R4 vs SH510R4

**CUBE PC**


MODEL	SH610R4	SH510R4
CHIPSET	Intel H610	Intel H510
PROCESSOR SUPPORT	LGA 1700, max TDP 125W 10nm Alder/Raptor Lake (12th/13th/14th* Gen Core CPU) Intel® Core™ i3/i5/i7/i9, Pentium, Celeron	LGA 1200, max TDP 125W 14++nm Comet/Rocket Lake (10th/11th Gen Core CPU) Intel® Core™ i3/i5/i7/i9, Pentium, Celeron
MEMORY	2 x 32GB DDR4 3200 MHz max	2 x 32GB DDR4 3200 MHz max (11th Gen Rocket Lake) DDR4 2933 MHz max (10th Gen Comet Lake) DDR4 2666 MHz max (other Comet Lake)
PCI-E SLOTS	(1) PCI-E X16 v5.0 (1) PCI-E X1 v3.0	(1) PCI-E X16 v4.0 (1) PCI-E X1 v3.0
VIDEO OUTPUT	HDMI 2.0b + DisplayPort 1.4 x 2 + VGA Supports three independent displays Supports 4K Ultra HD	HDMI 2.0b + DisplayPort 1.4 + VGA Supports two independent displays Supports 4K Ultra HD
AUDIO	Realtek ALC897/888/662, 5.1 channel HD audio	Realtek ALC897/888S/662, 5.1 channel HD audio
ETHERNET	Intel i219 10/100/1000 MB/s operation Supports Wake on LAN function	Intel i219LM 10/100/1000 MB/s operation Supports Wake on LAN function
SATA ONBOARD	SATA 6G x 3	SATA 6G x 3
FRONT PANEL	Power button with LED, HDD LED, MIC-in, Headphone out, USB 3.0 x 2	Power button with LED, HDD LED, MIC-in, Headphone out, USB 3.0 x 2
BACK PANEL	HDMI 2.0a, DisplayPort 1.4 x 2, VGA USB 2.0 x 4, USB 3.2 Gen 1 x 2 Gigabit LAN (Intel i219) Audio x 3, Clear CMOS button	HDMI 1.4b, DisplayPort, VGA USB 2.0 x 4, USB 3.0 x 2, PS/2 combo Gigabit LAN (Intel i219LM) Audio x 3, Clear CMOS button
DRIVE BAYS	(1) 5.25" ODD bay (2) 3.5" HDD bay	(1) 5.25" ODD bay (2) 3.5" HDD bay
POWER	300W 80 PLUS Bronze	300W 80 PLUS Bronze
OPTIONAL ACCESSORIES	850W power supply (PC850) RS232 port (H-RS232) WLAN kit 802.11n/ac + BT (WLN-M)/802.11ax(WLN-M1) 2.5" drive rack (PHD3)	850W power supply (PC850) RS232 port (H-RS232) WLAN kit 802.11n/ac + BT (WLN-M)/802.11ax(WLN-M1) 2.5" drive rack (PHD3)
EXPANSION SLOT	(1) M.2 2280 Type M key socket (1) M.2 2230 Type E key socket	(1) M.2 2280 Type M key socket (1) M.2 2230 Type E key socket
OS SUPPORT	Windows 10/11, Linux 64 bit	Windows 10/11, Linux 64 bit

\*BIOS update required for 14th gen CPU support

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## SH610R4

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## 12th Generation Intel Core Desktop Processors LGA 1700 10 nm "Alder Lake S" (October 2022)

Name	Model	Cores/Threads	CPU Clock/ Turbo	E-CORES	E-CORES Clock/Turbo	Smart Cache	TDP	Memory	Graphics (Max Clock)
Core i9	12900KS	8 / 16	3.4 - 5.2 GHz	8	2.5 - 4.0 GHz	30 MB	150W	DDR4-3200	UHD 770 (1.55 GHz)
	12900K	8 / 16	3.2 - 5.1 GHz	8	2.4 - 3.9 GHz	30 MB	125W	DDR4-3200	UHD 770 (1.55 GHz)
	12900KF	8 / 16	3.2 - 5.1 GHz	8	2.4 - 3.9 GHz	30 MB	125W	DDR4-3200	None
	12900	8 / 16	2.4 - 5.0 GHz	8	1.8 - 3.8 GHz	30 MB	65W	DDR4-3200	UHD 770 (1.55 GHz)
	12900F	8 / 16	2.4 - 5.0 GHz	8	1.8 - 3.8 GHz	30 MB	65W	DDR4-3200	None
	12900T	8 / 16	1.4 - 4.8 GHz	8	1.0 - 3.6 GHz	30 MB	35W	DDR4-3200	UHD 770 (1.55 GHz)
Core i7	12700K	8 / 16	3.6 - 4.9 GHz	4	2.7 - 3.8 GHz	25 MB	125W	DDR4-3200	UHD 770 (1.5 GHz)
	12700KF	8 / 16	3.6 - 4.9 GHz	4	2.7 - 3.8 GHz	25 MB	125W	DDR4-3200	None
	12700	8 / 16	2.1 - 4.9 GHz	4	1.6 - 3.6 GHz	25 MB	65W	DDR4-3200	UHD 770 (1.5 GHz)
	12700F	8 / 16	2.1 - 4.9 GHz	4	1.6 - 3.6 GHz	25 MB	65W	DDR4-3200	None
	12700T	8 / 16	1.4 - 4.6 GHz	4	1.0 - 3.4 GHz	25 MB	35W	DDR4-3200	UHD 770 (1.5 GHz)
Core i5	12600K	6 / 12	3.7 - 4.9 GHz	4	2.8 - 3.6 GHz	20 MB	125W	DDR4-3200	UHD 770 (1.45 GHz)
	12600KF	6 / 12	3.7 - 4.9 GHz	4	2.8 - 3.6 GHz	20 MB	125W	DDR4-3200	None
	12600	6 / 12	3.3 - 4.8 GHz	-	-	18 MB	65W	DDR4-3200	UHD 770 (1.45 GHz)
	12600T	6 / 12	2.1 - 4.6 GHz	-	-	18 MB	35W	DDR4-3200	UHD 770 (1.45 GHz)
	12500	6 / 12	3.0 - 4.6 GHz	-	-	18 MB	65W	DDR4-3200	UHD 770 (1.45 GHz)
	12500T	6 / 12	2.0 - 4.4 GHz	-	-	18 MB	35W	DDR4-3200	UHD 770 (1.45 GHz)
	12490F	6 / 12	3.0 - 4.6 GHz	-	-	20 MB	65W	DDR4-3200	None
	12400	6 / 12	2.5 - 4.4 GHz	-	-	18 MB	65W	DDR4-3200	UHD 730 (1.45 GHz)
	12400F	6 / 12	2.5 - 4.4 GHz	-	-	18 MB	65W	DDR4-3200	None
	12400T	6 / 12	1.8 - 4.2 GHz	-	-	18 MB	35W	DDR4-3200	UHD 730 (1.45 GHz)
Core i3	12300	4 / 8	3.5 - 4.4 GHz	-	-	12 MB	60W	DDR4-3200	UHD 730 (1.45 GHz)
	12300T	4 / 8	2.3 - 4.2 GHz	-	-	12 MB	35W	DDR4-3200	UHD 730 (1.45 GHz)
	12100	4 / 8	3.3 - 4.3 GHz	-	-	12 MB	60W	DDR4-3200	UHD 730 (1.45 GHz)
	12100F	4 / 8	3.3 - 4.3 GHz	-	-	12 MB	58W	DDR4-3200	None
	12100T	4 / 8	2.2 - 4.1 GHz	-	-	12 MB	35W	DDR4-3200	UHD 730 (1.4 GHz)
Pentium Gold	G7400	2 / 4	3.7 GHz	-	-	6 MB	46W	DDR4-3200	UHD 710 (1.35 GHz)
	G7400T	2 / 4	3.1 GHz	-	-	6 MB	35W	DDR4-3200	UHD 710 (1.35 GHz)
Celeron	G6900	2 / 2	3.4 GHz	-	-	4 MB	46W	DDR4-3200	UHD 710 (1.3 GHz)
	G6900T	2 / 2	2.8 GHz	-	-	4 MB	35W	DDR4-3200	UHD 710 (1.3 GHz)

**K = unlocked, T = power optimized, F = no integrated graphics, TDP = Thermal Design Power (max power consumption).**

Note: **The Shuttle XPC cube barebone SH610R4 does not support the unlock function of Intel K-series processors.**

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## SH610R4

## CUBE PC

## 13th Generation Intel Core Desktop Processors LGA 1700 7/10 nm “Raptor Lake S” (January 2023)

Name	Model	Cores/Threads	CPU Clock/ Turbo	E-CORES	E-CORES Clock/Turbo	Smart Cache	TDP	Memory	Graphics (Max Clock)
Core i9	13900KS	8 / 16	3.2 - 6.0 GHz	16	2.4 - 4.3 GHz	36 MB	150W	DDR4-3200	UHD 770 (1.65 GHz)
	13900K	8 / 16	3.0 - 5.8 GHz	16	2.0 - 4.3 GHz	36 MB	125W	DDR4-3200	UHD 770 (1.65 GHz)
	13900KF	8 / 16	3.0 - 5.8 GHz	16	2.0 - 4.3 GHz	36 MB	125W	DDR4-3200	None
	13900	8 / 16	2.0 - 5.2 GHz	16	1.5 - 4.2 GHz	36 MB	65W	DDR4-3200	UHD 770 (1.65 GHz)
	13900F	8 / 16	2.0 - 5.2 GHz	16	1.5 - 4.2 GHz	36 MB	65W	DDR4-3200	None
	13900T	8 / 16	1.1 - 5.1 GHz	16	0.8 - 3.9 GHz	36 MB	35W	DDR4-3200	UHD 770 (1.65 GHz)
Core i7	13700K	8 / 16	3.4 - 5.4 GHz	8	2.5 - 4.2 GHz	30 MB	125W	DDR4-3200	UHD 770 (1.6 GHz)
	13700KF	8 / 16	3.4 - 5.4 GHz	8	2.5 - 4.2 GHz	30 MB	125W	DDR4-3200	None
	13700	8 / 16	2.1 - 5.1 GHz	8	1.5 - 4.1 GHz	30 MB	65W	DDR4-3200	UHD 770 (1.6 GHz)
	13700F	8 / 16	2.1 - 5.1 GHz	8	1.5 - 4.1 GHz	30 MB	65W	DDR4-3200	None
	13700T	8 / 16	1.4 - 4.8 GHz	8	1.0 - 3.6 GHz	20 MB	35W	DDR4-3200	UHD 770 (1.6 GHz)
Core i5	13600K	6 / 12	3.5 - 5.1 GHz	8	2.6 - 3.9 GHz	20 MB	125W	DDR4-3200	UHD 770 (1.5 GHz)
	13600KF	6 / 12	3.5 - 5.1 GHz	8	2.6 - 3.9 GHz	20 MB	125W	DDR4-3200	None
	13600	6 / 12	2.7 - 5.0 GHz	8	2.0 - 3.7 GHz	24 MB	65W	DDR4-3200	UHD 770 (1.55 GHz)
	13600T	6 / 12	1.8 - 4.8 GHz	8	1.3 - 3.4 GHz	24 MB	35W	DDR4-3200	UHD 770 (1.55 GHz)
	13500	6 / 12	2.5 - 4.8 GHz	8	1.8 - 3.5 GHz	24 MB	65W	DDR4-3200	UHD 770 (1.55 GHz)
	13500T	6 / 12	1.6 - 4.6 GHz	8	1.2 - 3.2 GHz	24 MB	35W	DDR4-3200	UHD 770 (1.55 GHz)
	13400	6 / 12	2.5 - 4.6 GHz	4	1.8 - 3.3 GHz	20 MB	65W	DDR4-3200	UHD 730 (1.55 GHz)
	13400F	6 / 12	2.5 - 4.6 GHz	4	1.8 - 3.3 GHz	20 MB	65W	DDR4-3200	None
	13400T	6 / 12	1.3 - 4.4 GHz	4	1.0 - 3.0 GHz	20 MB	35W	DDR4-3200	UHD 730 (1.55 GHz)
Core i3	13100	4 / 8	3.4 - 4.5 GHz	-	-	12 MB	60W	DDR4-3200	UHD 730 (1.5 GHz)
	13100F	4 / 8	3.4 - 4.5 GHz	-	-	12 MB	58W	DDR4-3200	None
	13100T	4 / 8	2.5 - 4.2 GHz	-	-	12 MB	35W	DDR4-3200	UHD 730 (1.5 GHz)

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