BAREBONE
XPC slim
XH610G2

FLEXIBLE 4.7-LITRE PC WITH PCIe SLOT

The Shuttle XPC slim Barebone XH610G2 is a 4.7-litre PC with two slots for PCI-Express expansion cards. Together with an LGA 1700 Intel Core desktop processor of the Intel Core Gen 12/13/14 range, this platform is perfectly suited for many professional applications where performance, flexibility and a compact form factor matter. This includes video wall presentations, graphics workstations, media capturing, surveillance, POS, POI as well as network and industrial applications. Even mid-range gaming is possible.

DUAL-SLOT PCI-EXPRESS | 2x HDMI 2.0 & DisplayPort | 4K UHD | 2x M.2 SSD SUPPORT | 2.5" HDD/SSD SUPPORT | DUAL LAN 2.5G + 1G | COM / VGA OPTIONAL | HEATPIPE COOLING | ALWAYS-ON-JUMPER | VESA MOUNT | Max. 50 °C | 24/7 SUPPORT

SLIM DESIGN

■ Robust 4.7-litre steel chassis, black ■ Dimensions: 250 x 200 x 95 mm (LWH) ■ Including VESA mount (75/100 mm) ■ Supports 24/7 Nonstop Operation ■ Operating temperature: 0~50 °C (non-condensing)

OPERATING SYSTEM

■ An operating system is not included
■ Supports Windows 10, Windows 11 and Linux (64-bit)

PROCESSOR SUPPORT & CHIPSET

■ Socket LGA1700 supports 12/13/14th-Gen Intel Core i9/i7/i5/i3, Pentium Gold und Celeron processors, codenamed "Alder Lake-S" and "Raptor Lake-S, max. 65W TDP ■ Heatpipe cooling system with two fans
■ Intel H610 Chipset

TWO PCIe SLOTS

■ 1x PCI Express X16 Gen 5 slot ■ Supports dual-slot expansion cards with max. 208 x 120 x 45 mm in size and max. 75 W TDP
■ 1x PCI Express X1 Gen 3 slot (not usable with dual-slot graphics card)
■ 5V auxiliary voltage (max. 2 A) with 4-pin Molex connector

MEMORY SUPPORT

■ 2x 262-pin SO-DIMM slot ■ Supports DDR5-4800/5200/5600
■ max. 2x 32 GB (max. 2x 48 GB with Gen. 13/14 CPU)

STORAGE – SATA / M.2

■ 1x 2.5" bay for SATA hard disk or SSD, max. 9.5 mm
■ 2x M.2-2280M slot for SSD cards (both support SATA, one supports PCIe Gen 3 x4 NVMe)
■ 1x M.2-2230E (PCIe Gen 3 x1 + USB2) for an optional WLAN card

CONNECTORS

■ 2x HDMI 2.0b ■ DisplayPort 1.4 ■ 4x USB 3.2 Gen1 ■ 4x USB 2.0
■ 1x USB 2.0 (4-pin onboard header) ■ 2x audio (line out, mic)
■ 2x Intel LAN (1G + 2.5G) ■ Connector for external power button
■ "Always-On" jumper ■ DC input

POWER SUPPLY

■ External 180 W / 19.5 V power adapter

OPTIONAL ACCESSORIES

■ WLAN kit (WLN-M1) ■ RS232 COM port (PCP11) ■ D-Sub VGA port (PVG01) ■ LTE Adapter Kit (WWN03) ■ Cable for external power button (CXP01) ■ Expansion kit (PRC01) to support an additional power adapter (PE90 or PE180) for powerful graphics cards

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MODELS OF THE XH610G SERIES

Product	Dimensions	PCIe Slots	2nd Power Adapter	UPC Code	Availability
XH610G	250 x 200 x 78.5 mm (3.9 L)	Single Slot (PCIe X16)	–	887993006789	on request only (MOQ)
XH610G2	250 x 200 x 95 mm (4.75 L)	Dual Slot (PCIe X16 + X1)	Optional: PRC01+PE180	887993006796	available

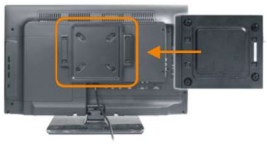
PRODUCT FEATURES

The slim chassis - a clean and modern look

Shuttle has always placed great emphasis on the interior and exterior aesthetics of their Mini-PCs with the belief that a good blend of style and form factor allows the Mini-PC to be attractive, versatile and work well in almost any environment. The XH610G2 was designed just like that and shines in a clean and modern appearance. The front panel connectors are easy to access for daily use, and this tiny tot barely stands at 9.5 cm in height.

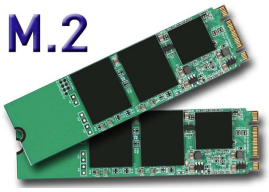
Supports extended temperature range and 24/7 operation

The Shuttle XPC slim Barebone XH610G2 is officially approved for 24/7 permanent operation. Thanks to its efficient cooling, this PC runs highly reliable making it perfectly suitable for digital signage and POI/POS applications - even at ambient temperatures of up to 50 °C (non-condensing).
Caution: For high ambient temperatures over 40 °C we strongly recommend to use only SSDs instead of hard disks.



VESA mount included

With the supplied VESA mount you can easily attach the XH610G2 to the backside of an appropriate display, to a VESA arm or just to the wall. It is compatible with 75x75 mm and 100x100 mm VESA standards.

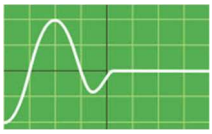


Two M.2-Slots for SSD cards

XH610G2 even offers two M.2-2280M slots for M.2 SSD flash memory cards – both support SATA and one also supports NVMe/PCIe.

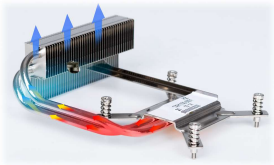
Supports 12/13/14th Generation Intel® Core™ processors

"Alder Lake-S" and "Raptor Lake-S" are the codenames for Intel's 12th and 13/14th Generation of Intel® Core™ Desktop Processors for socket LGA1700 in combination with the 600/700-Series chipsets. These processors feature a new hybrid design combining a number of performance cores (P-cores) and efficiency cores (E-cores). Get the performance you need, where you need it – whether you're a gamer, creator, streamer, or everyday user.



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 (3), keep system turned off (4), Power-On by LAN or (5) Power-On by Real-Time-Clock. As a matter of the nature of this function, it may fail after short power failures. This is why the XH610G2 also comes with a hardware-based solution. By removing Jumper JP1, the system will start unconditionally once power is applied.



Low noise thanks to heatpipe cooling system

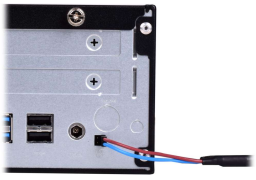
An active dual-fan heatpipe cooling system ensures whisper-quiet operation and system stability. A heatpipe is a hollow tube containing a liquid to transfer heat. As the liquid evaporates, it carries heat to the cool end, where it condenses and then runs back to the hot end. Heatpipes have a much higher thermal conductivity than solid materials. Please keep the vent holes clear.

External power button by separate remote line

If, because of space constraints (e.g. in case of fixed installation), the machine cannot be switched on by pressing the front power button, it can be powered on by a separate remote line. You will find an appropriate four-pin connector at the back panel of the XH610G2 (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for a power LED indicator.

Triple 4K Display support

The XH610G2 features three digital video outputs: two HDMI 2.0b and one DisplayPorts (DP 1.4) which all can run at 4K (3840 x 2160) high resolution at 60 Hz frames per second. Furthermore, the XH610G2 supports an optional D-Sub/VGA port. The PC supports a maximum of three displays.



+5V voltage (2) Clear CMOS (1)

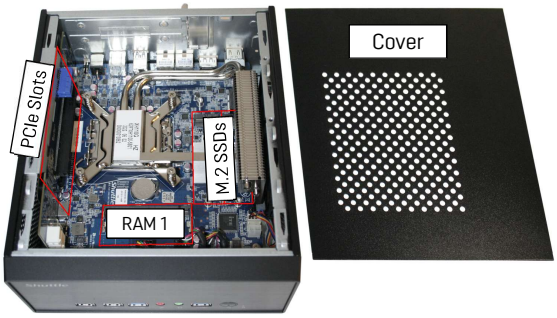
(4) Power Button
(3) Ground

REQUIRED COMPONENTS

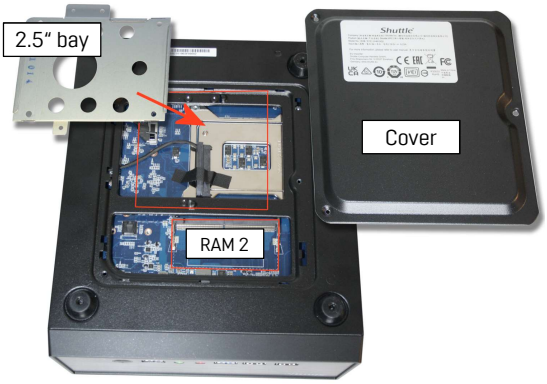
The following components need to be added to make it a fully-configured Mini PC

Shuttle XPC slim Barebone XH610G2

Top view:



Bottom view:

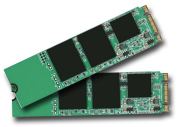


LGA1700 Processor

Intel Core Gen 12 "Alder Lake-S"
or Gen 13/14 "Raptor Lake-S (Refresh)"
Core i9 / i7 / i5 / i3, Pentium Gold or Celeron
TDP max. 65 W

Memory Modules

Up to two DDR5-4800/5200/5600
SO-DIMM memory modules with 262 pins
max. 32 GB each
(max. 2x 48 GB with Gen. 13/14 CPU)



Up to two M.2 SSDs

Supports one M.2-2280 SSD card
with SATA or PCIe/NVMe interface
Supports a second M.2-2280 SSD card with SATA

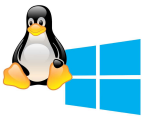
PCI-Express Card (optional)

e.g. Dual Slot Graphics Card, PCIe X16, max. 75 W TDP
Dimensions: max. 208 mm x 120 mm x 45 mm
Two Single-Slot PCIe cards (X16 and X1) can also be used.

Graphics cards up to 225W are supported with optional accessory CXP01 and PE180 – see below)

2.5" Storage Drive

SATA hard disk or Solid State Disk (SSD)
(max. height: 9.5 mm)



Operating System

Windows 10/11 or Linux (64-bit only)

OPTIONAL ACCESSORIES FROM SHUTTLE

COM-Port-Adapter PCP11

To add a COM-Port (RS232) in the back panel.
This accessory cannot be used in combination with PVG01.

VGA port adapter PVG01

To add an analog D-Sub/VGA-Port in the back panel.
This accessory cannot be used in combination with PCP11.

WLAN-Accessory WLN-M1

M.2-2230 card supports
WLAN-ax and Bluetooth
including two external antennas

LTE Adapter Kit WWN03

allows the installation of an M.2 LTE card and nano SIM card. This adapter is screwed to the chassis from the inside.

Cable CXP01

Cable for external push button switch (without button)

Riser Card PRC01 and Power Adapter PE90 or PE180

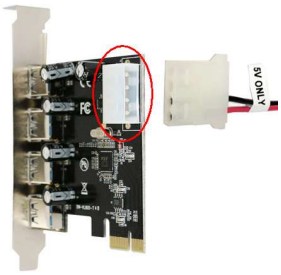
With the **PRC01** expansion kit, a second power adapter **PE90** or **PE180** can be used to support more powerful graphics cards.

EXAMPLES WITH PCE-EXPRESS EXPANSION CARDS

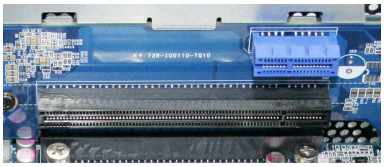
Shuttle XPC slim Barebone XH610G2
with powerful graphics card installed

Despite its compact dimensions, the Shuttle XPC slim Barebone XH610G2 sports a full-size PCI-Express-X16 slot for dual-slot cards not exceeding 205 mm (length), 120 mm (height) and 45 mm (width) and max. 75 W power consumption. Two single-slot cards can also be used. At the same time, other powerful PC components such as an Intel Core i9 processor or 64 GB RAM are supported. This makes it particularly versatile in use which often asked for a bigger PC in the past.

Including 4-pin Molex connector with 5V/2A auxiliary voltage for special expansion card:



EXPANSION CARD	POSSIBLE APPLICATIONS
Standard Graphics Card (Single Slot) e.g. Gigabyte GT-1030	• Desktop PC • 3D Workstation
Multi-port Graphics Card e.g. AMD FirePro W600 or Matrox C680 with 6x Mini-DisplayPort	• Visualisation for Control Rooms • Surveillance and Security • Digital Signage with Video Wall • Information Display (POI)
CAD Graphics Card e.g. NVIDIA Quadro P2200	• CAD Applications • Content Creation • 3D Workstation
Video Capture Card e.g. with 4x SDI/BNC	• Multi-channel Capture System
Special Network Card e.g. Multiport or 10 Gbps	• Proxy and Firewall Applications • Intranet Server
Fieldbus Card e.g. EtherCAT, Profibus, CAN, Modbus, etc.	• Industry Automation • Conveyor Technology • Building Automation
Multi I/O Card e.g. 8x COM-Port, DA/AD converter, general-purpose input/output (GPIO)	• Point of Sales (POS) • Vending Machine • Automation / Control System
Receiver Card e.g. for SAT, DVB-T2, Cable	• Home Entertainment



Two PCI-Express Slots: X16 and X1

Optional Shuttle accessory for powerful graphics cards

With the **Shuttle XPC accessory PRC01** you can equip this PC with a second DC input to connect a second power adapter. This allows the use of even more powerful graphics cards. Graphics cards with 75W power dissipation are supported as standard. With an additional 90W or 180W power supply unit, this value increases to 150W or 225W.

PRC01
Expansion Kit

PE90
90W power adapter

PE180
180W power adapter

Optional Shuttle Accessory	Graphics Power Connector	Graphics TDP Power
XH610G2 without accessory	n.a.	max. 75 Watts
... with **PRC01** and **PE90** (2nd power adapter: 90W)	6-pin power connector	max. 150 Watts
... with **PRC01** and **PE180** (2nd power adapter: 180W)	8-pin power connector	max. 225 Watts

Graphics Power Connector

Front and Back Panel

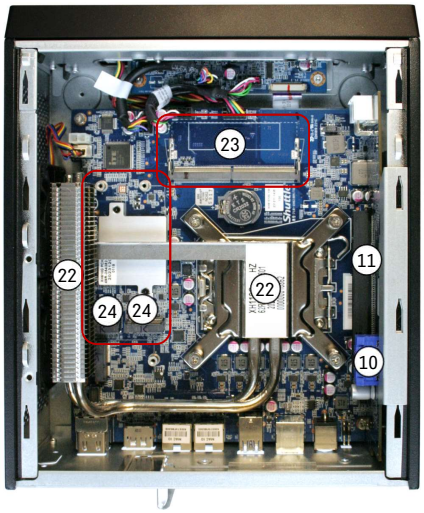
Front Panel

1. 2x USB 2.0 port
2. 2x USB 3.2 Gen 1 port (blue)
3. Microphone input
4. Headphones output
5. Power button with Power LED indicator
6. LED indicator for storage activity

Back Panel

7. 2x Thumbscrew
8. 2x WLAN perforation
9. Hole for Kensington Lock
10. PCI-Express X1 expansion slot
11. PCI-Express X16 expansion slot
12. Perforation for optional COM or VGA port
13. 2x HDMI 2.0b port
14. DisplayPort 1.4
15. LAN port (RJ45, 2.5 Gbps)
16. LAN port (RJ45, 1 Gbps)
17. 2x USB 3.2 Gen 1 port (blue)
18. 2x USB 2.0 port
19. DC-in connector for power adapter
20. Optional: second DC-in connector (PRC01) for second power adapter (PE90 or PE180)
21. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage

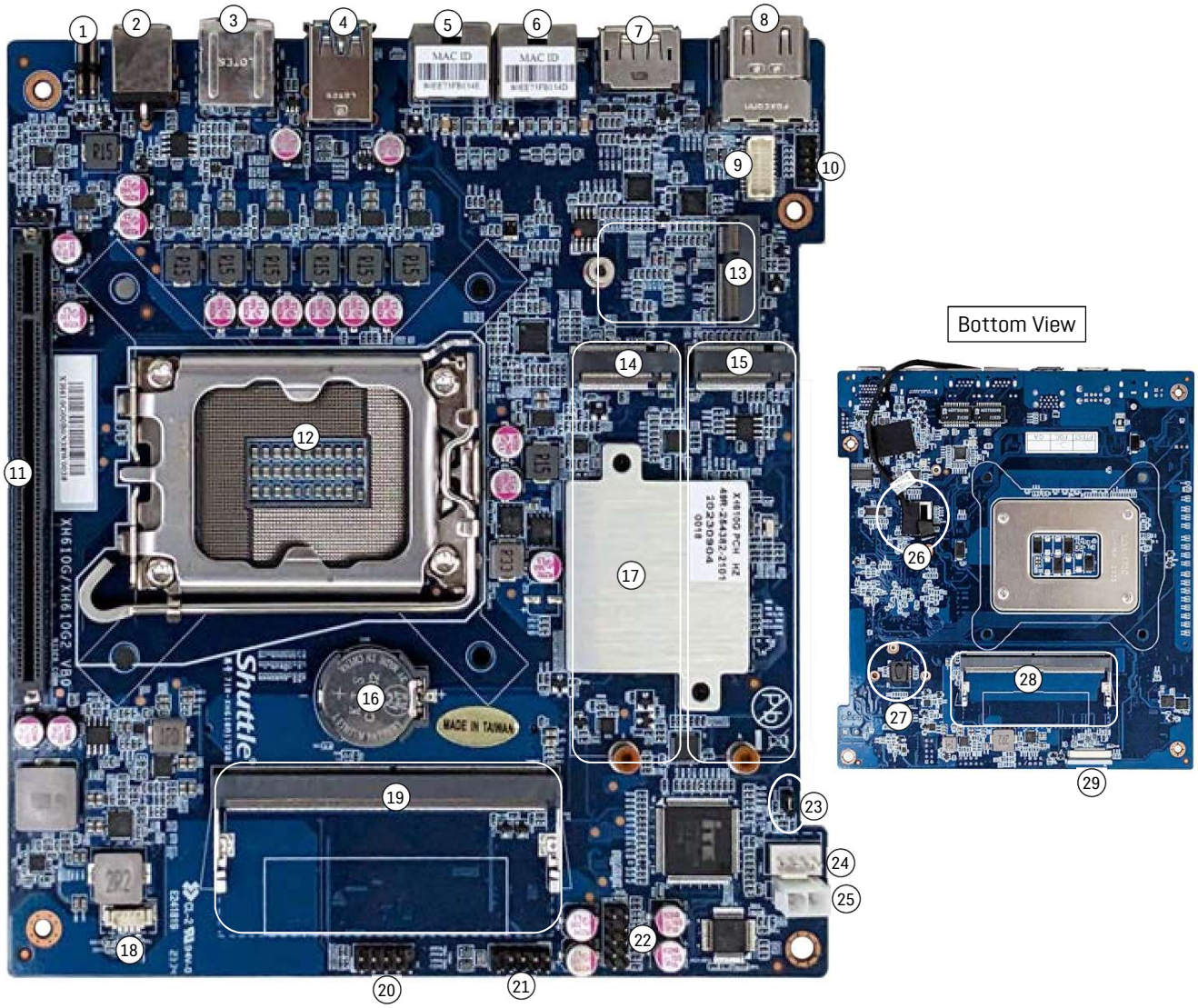
Top View



Bottom View

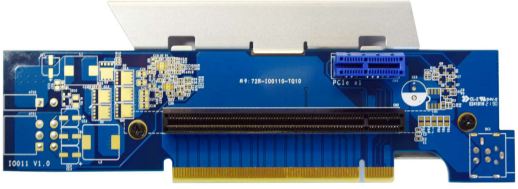
22. Installed heatpipe cooling system with two fans
23. Two SO-DIMM slots for RAM memory modules
24. Two M.2-2280 slots for M.2 SSD modules
25. Storage bay for 2.5" drive with SATA cable

Mainboard



1. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage
2. DC-in connector for power adapter
3. 2x USB 2.0 port
4. 2x USB 3.2 Gen 1 port
5. 1G LAN port (RJ45)
6. 2.5G LAN port (RJ45)
7. DisplayPort 1.4
8. 2x HDMI 2.0b port
9. Onboard VGA port (analog)
10. Onboard COM port supports RS232
11. PCI-Express X16 slot for the built-in Riser Card (see below)
12. LGA1700 processor socket
13. M.2-2230E slot for WLAN card
14. M.2-2280M slot for SSD card supports SATA only
15. M.2-2280M slot for SSD card supports PCIe/NVMe and SATA
16. CMOS battery
17. Intel H610 chipset with heat sink
18. 4-pin USB 2.0 connector (for optional WWN03 accessory)
19. SO-DIMM memory slot #1
20. Front panel power button and LED connector
21. Front panel USB 2.0 connector
22. Front panel Audio connector
23. Always-Power-On jumper
24. 4-pin connector for cooling fan
25. 5V power supply connector
26. SATA v3.0 connector for 2.5" bay
27. Flash-EPROM chip with BIOS/Firmware
28. SO-DIMM memory slot #2
29. Front panel USB 3.0 connector

PCIe Riser Card (90° angle) with X16 and X1 slot



Shuttle Product Comparison: XH610G2 versus XH510G2

MODEL	XH610G2	XH510G2
Processor Support	12/13/14th Gen. Intel Core Processors "Alder Lake-S" and "Raptor Lake-S" Socket LGA1700, TDP max. 65W	10th / 11th Gen. Intel Core Processors "Comet Lake-S" and "Rocket Lake-S" Socket LGA1200, TDP max. 65W
OS Support	Windows 10/11 & Linux – 64-bit	Windows 10/11 & Linux – 64-bit
Chipset	Intel H610	Intel H510
Memory (max.)	2x 32 GB DDR5-4800/5200/5600 SO-DIMM (262 pins)	2x 32 GB DDR4-2666/2933/3200 *) SO-DIMM (260 pins)
Drive Bays	1x 2.5" bay (SATA v3.0) Max. 9.5 mm height	1x 2.5" bay (SATA v3.0) Max. 9.5 mm height
PCI-Express Slot X16	PCI-Express Gen 5.0 X16 Max. length/width: 205/45 mm Max. TDP: 75 W	PCI-Express Gen 3.0/v4.0 X16 *) Max. length/width: 205/45 mm Max. TDP: 75 W
PCI-Express Slot X1	PCI-Express Gen 3.0 X1	PCI-Express Gen 3.0 X1
M.2 Slots	M.2-2280M (for PCIe or SATA SSDs) M.2-2280M (for SATA SSDs) M.2-2230E (for WLAN modules)	M.2-2280M (for PCIe or SATA SSDs) M.2-2280M (for SATA SSDs) M.2-2230E (for WLAN modules)
Front Panel Ports	2x USB 3.2 Gen 1 (5 Gbps, blue) 2x USB 2.0 (black) 2x Audio (Mic.+Line out) Power-Button Power-LED, HDD-LED	2x USB 3.2 Gen 1 (5 Gbps, blue) 2x USB 2.0 (black) 2x Audio (Mic.+Line out) Power-Button Power-LED, HDD-LED
Back Panel Ports	2x HDMI 2.0b DisplayPort 1.4 2x USB 3.2 Gen 1 (5 Gbps, blue) 2x USB 2.0 (black) 2x LAN (1G + 2.5G) Connector for ext. Power Button Optional COM or VGA port **) DC input	HDMI 2.0a/1.4b*) DisplayPort 1.4 2x USB 3.2 Gen 1 (5 Gbps, blue) 2x USB 2.0 (black) 1x LAN (1G) Connector for ext. Power Button Optional COM or VGA port **) DC input
Internal Ports and Jumpers	USB 2.0 (4-Pin onboard Anschluss) Always-Power-On-Jumper 5V Spannungsausgang (2-Pin)	USB 2.0 (4-Pin onboard Anschluss) Always-Power-On-Jumper 5V Spannungsausgang (2-Pin)
Power Adapter	180 W / 19.5 V	180 W / 19.5 V
Optional Accessories	WLAN kit with antennas (**WLN-M1**) Power Button cable (**CXP01**) COM port adapter (**PCP11**) **) D-Sub/VGA port adapter(**PVG01**) **) 4G/LTE kit with antennas (**WWN03**) Second power adapter (**PRC01**+**PE180**)	WLAN kit with antennas (**WLN-M1**) Power Button cable (**CXP01**) COM port adapter (**PCP11**) **) D-Sub/VGA port adapter(**PVG01**) **) 4G/LTE kit with antennas (**WWN03**) Second power adapter (**PRC01**+**PE180**)
Chassis Dimensions	25 x 20 x 9.5 cm (3.9 L)	25 x 20 x 9.5 cm (3.9 L)
Front View		
Back View		

*) DDR4-3200, PCI-Express X16 v4 and HDMI 2.0a is only supported with Gen 11 "Rocket Lake-S" Processor
**) The Accessories CXP01 (COM port) and PVG01 (VGA port) cannot be used at the same time

SHUTTLE XPC SLIM BAREBONE XH610G2 — SPECIFICATIONS

CHASSIS	Slim X-type chassis, colour: black Dimensions: 250 x 200 x 95 mm (LWH), Volume: ca. 4.7 litres Weight: 2.98 kg net, 3.49 kg gross Open front - no concealed front panel connectors Hole for Kensington Lock at the backpanel
OPERATING POSITION	(1) horizontal on its feet (2) vertical with the supplied VESA mount bracket
POWER ADAPTER	External 180 W power adapter (fanless) Input: 100~240 V AC, 50~60 Hz, max. 2.5 A Output: 19.5 V DC, max. 9.23 A, max. 180 W output wattage AC Connector with protective-earth contacts, cable length: 1.7 m DC Connector: 5.5 / 2.5 mm (outer/inner diameter) Dimensions: ca. 167 x 82 x 25.5 mm = 350 ml
OPERATING SYSTEM	This system comes without an operating system. It is compatible with Windows 10/11 (64-bit) and Linux (64-bit)
PROCESSOR SUPPORT	Processor Socket LGA1700 Supports Intel Core i9 / i7 / i5 / i3, Pentium Gold and Celeron processors Supports the following generations of Intel Core processors: - Gen 12 "Alder Lake-S" - Gen 13 "Raptor Lake-S" - Gen 14 "Raptor Lake-S Refresh" Maximum supported processor power consumption (TDP) = 65 W. Check whether the processor used has an integrated graphics function [6]. Does not support the unlock-function of Intel K-Series processors. Download-Website: https://global.shuttle.com/support/download.
PROCESSOR COOLING	Processor cooling with heatpipe technology and two fans (60 mm)
MAINBOARD / CHIPSET	Mainboard in a Shuttle form factor proprietary design (17 x 19 cm) for the XPC XH610G2 Chipset/Southbridge: Intel® H610 Desktop Chipset Passive chipset cooling with heat sink Solid Capacitors for sensitive areas provide excellent heat resistance for enhanced system durability
BIOS	AMI BIOS, SPI Interface, 32 MB Flash-EEPROM Supports Hardware Monitoring and Watchdog functionality Supports Firmware-TPM (fTPM) v2.0 [5] Supports boot up from external USB flash memory Supports Unified Extensible Firmware Interface (UEFI) Supports power on after power failure [1]
MEMORY SUPPORT	2x SO-DIMM slot with 262 pins Supports DDR5-5600 (PC5-44800) SDRAM at 1.1 V Supports Dual Channel mode Supports a maximum of 32 GB per DIMM, maximum total size: 64 GB Note: In combination with an Intel Core Gen 13/14 "Raptor Lake" processor two 48 GB RAM modules are also supported. Supports two unbuffered DIMM modules (no ECC or registered) Included in delivery: 3x thermal pad (instruction: see quick guide)
INTEGRATED GRAPHICS	The features of the integrated Intel UHD graphics function depend on the processor type used. [6] The PC features three video outputs: - 2x HDMI v2.0b - 1x DisplayPort v1.4 All these outputs support displays with 4K Ultra HD resolution at 3840 x 2160 with 60 Hz refresh rate (2160p60) and support multi-channel digital audio over the same cable. Supports three independent displays with the integrated graphics function Optional analog D-Sub/VGA video output [4]

TWO PCIe EXPANSION SLOT	The pre-installed 90° Riser Card provides two PCI-Express expansion slots: 1x PCI-Express X16 Gen 5 slot 1x PCI-Express X1 Gen 3 slot Supports dual-slot (double-width) graphics cards (occupies the second PCI-Express slot) The used PCIe X16 expansion card must meet the following conditions: 1) Maximum dimensions: 205 mm x 120 mm x 45 mm 2) Maximum power consumption: 75 W (optional up to 225 W [8]) For special purposes, the mainboard provides a 5V auxiliary voltage (max. 2 A) via 4-pin Molex connector.
AUDIO	Audio Realtek® ALC888S High-Definition Audio Two analog audio connectors (3.5 mm) at the front panel: 1) Microphone input 2) Headphones output (Line out) Digital 7.1 audio output: possible via the HDMI and DisplayPort connectors
DUAL LAN (1G + 2.5G)	Two network controller support max. 2.5G and 1G transfer speed 1) Intel i226LM supports 10 / 100 / 1.000 / 2.500 Mbps operation 2) Intel i219LM supports 10 / 100 / 1.000 Mbps operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
2.5" STORAGE BAY	This system features one 2.5" drive bay which is accessible from the bottom of the housing. It supports one 2.5" / 6.35 cm hard disk or SSD with max. 9.5 mm height. The system includes a pre-installed data/power cable [3]. The connector supports SATA III with max. 6 Gbps.
TWO M.2 SLOTS FOR SSD CARDS	This system features two M.2-2280M slots. Both slot support M.2 cards with a length of 80 mm (type 2280) and key M or key B+M M.2-Slot 1: - is located on the side edge of the mainboard - supports SATA v3.0 (6 Gbps) or PCIe v3.0 X4 (NVMe) M.2-Slot 2: - is located next to the first slot - supports SATA v3.0 (6 Gbps) only
M.2-2230E SLOT	The M.2 2230E slot has the following interfaces: - PCI-Express X1 Gen 3 - USB 2.0 It supports M.2 cards with a width of 22 mm and a length of 30 mm. This slot is intended for Wireless LAN (Wifi) cards.
FRONT PANEL CONNECTORS	1x Microphone input (3.5 mm) 1x Headphones output (3.5 mm, line out) 2x USB 3.2 Gen 1 (blue, max. 5 Gbps) 2x USB 2.0 1x Power button with Power LED (blue) 1x HDD LED (yellow)
BACK PANEL CONNECTORS	2x HDMI 2.0b 1x DisplayPort 1.4 2x USB 3.2 Gen 1 (blue, max. 5 Gbps) 2x USB 2.0 2x RJ45 LAN (left port: 2.5G, right port: Gigabit) 1x DC-input connector for external power adapter (supports 19.5 V) 1x 4-pin connector (2.54 mm pitch) supports: - external power on button - Clear CMOS function - +5V DC voltage for external components 1x perforation for optional VGA or COM port [4] 2x perforation for optional Wireless LAN antennas 1x hole for Kensington Lock

OTHER ONBOARD CONNECTORS	2-pin onboard ATX connector with 5V (max. 2 A) output voltage with 4-pin Molex adapter cable Power-on-after-power-fail "JP1" (hardware solution by jumper) [1] RS232 COM port "COM1" (2x5-pin header, 2 mm pitch) Analog VGA graphics output "VGA1" (2x 10-pin, 1 mm pitch) [4] Front connector for power button, LEDs, USBs, audio ports 4-pin fan connectors "FAN1" (occupied by the CPU cooling system) 4-pin USB 2.0 connector "USB4" (for the optional WWN03 accessory)
SUPPLIED ACCESSORIES	Multi-language installation guide (EN, DE, FR, ES, JP, KR, SC, TC) Driver DVD Bracket for one 2.5" drive Four screws M3 x 4 mm (to mount a 2.5" storage device into the bay/bracket) Three screws M2 x 5 mm (to mount the drive bracket) VESA mount brackets (2 parts, metal) supports 75x75 and 100x100 mm VESA standard Four screws M3 x 5 mm (screws together VESA mount and PC) Four screws M4 x 10 mm (to affix VESA mount on the PC) Three screws M3 x 5 mm (silver colour, to mount up to three M.2 cards) Three thermal pads for RAM modules (2x thin, 1x thick) Internal adapter cable with 4-pin Molex connector for 5V/2A auxiliary voltage External power adapter with 1.7 m power cord with earthing contact Protector cap for the CPU socket (do not use if heat-pipe or fan is mounted) CPU heatpipe cooling system with heatsink compound
OPTIONAL ACCESSORIES	- WLN-M1: WLAN module supports WLAN and Bluetooth, with two external antennas - WWN03: LTE adapter kit with antennas, but without LTE card [7] - PCP11: Backpanel COM port adapter for RS232 serial interface [4] - PVG01: optional D-Sub VGA video output [4] - CXP01: Adapter cable for external power button - PRC01: Expansion kit to support an additional power adapter (PE90 or PE180) for more powerful graphics cards [8]
ENVIRONMENTAL SPECIFICATIONS	Operating temperature range: 0~50 °C [2] Relative humidity range: 10~90 % (non-condensing)
CERTIFICATIONS / COMPLIANCE	EMI: CE, UKCA, FCC, BSMI, VCCI, RCM Safety: CB (IEC 60950/62368), cTUVus (UL 62368-1:2014), BSMI Other: RoHS, Energy Star v8.0, 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)

Footnotes:

[1] 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 indi-cates, this function determines the PC's behaviour after power failure: (1) unconditional power on, (2) restore former status or (3) keep system turned off. As a matter of the nature of this function, it may fail after short power failures. This is why the XH610G2 also comes with a hardware-based solution. By removing Jumper JP1 (located in a corner of the mainboard near the fan connector) the system will start unconditionally once power is supplied.

[2] High ambient temperature: Ambient temperatures of up to 50 °C are permitted, but for high ambient temperature over 40 °C we strongly recommend to use SSDs instead of hard disk drives.

[3] Power connector for SATA drives
The supplied power cable for a SATA drive provides a voltage of 5 V. In very rare cases a 2.5" hard disk also requires a 12 V line. This is not supported.

[4] Optional VGA or COM port
At the back panel is a perforation for optional installation of a D-Sub connection - either an analog VGA port (adapter PVG01) or a serial RS232 port (adapter PCP11). The required adapter is not included in the scope of delivery and can be purchased as a Shuttle accessory item. Note: With the installation of a VGA connector, four monitor ports are available, but only three of them can be used simultaneously.

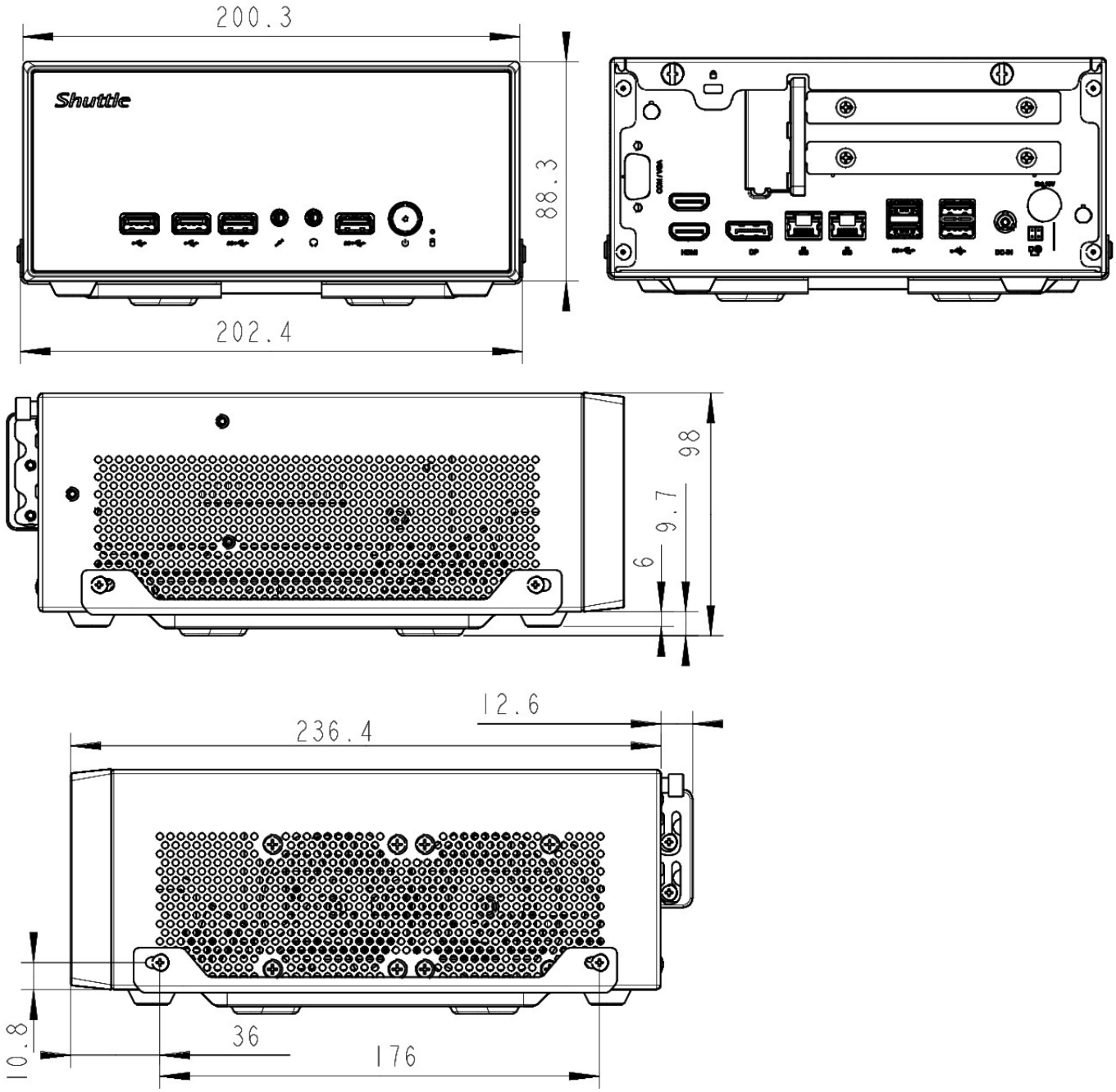
[5] TPM Function: This product features Firmware-TPM (fTPM) v2.0. Besides, it is prepared for a hardware TPM chip Infineon SLB 9670VQ2.0 which can be fitted by factory on request.

[6] Intel processors without integrated graphics can be identified by their model name ending on "F", e.g. Core i7-12700F. When using this CPU, a graphics card is required.

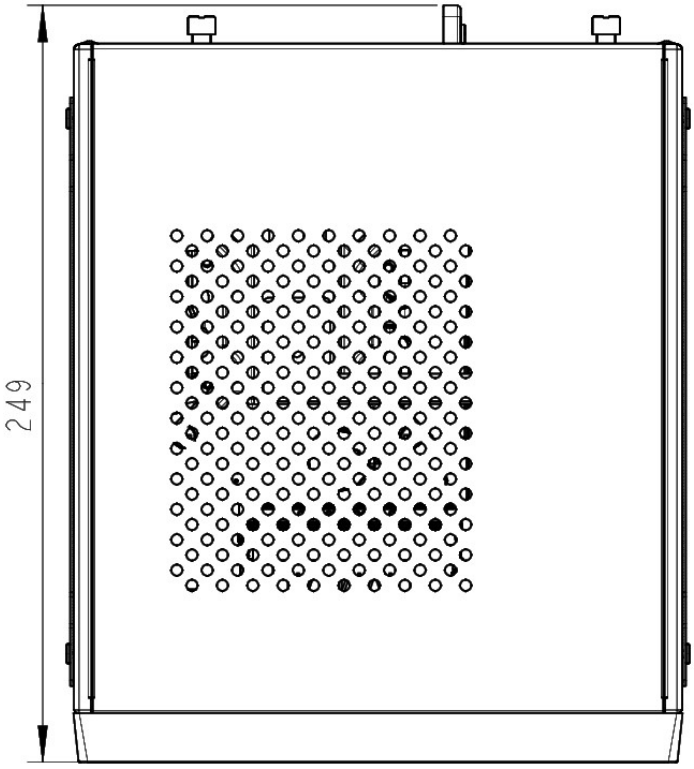
[7] Optional Accessory WWN03 (LTE kit)
The Shuttle XPC accessory WWN03 allows this PC to be upgraded with an LTE/4G function for mobile network. The adapter board of WWN03 is screwed to the XH610G2 chassis from the inside and connected to an onboard USB header. The required LTE/4G card in M.2-3042 format and an activated Nano SIM card is not included in the scope of delivery.

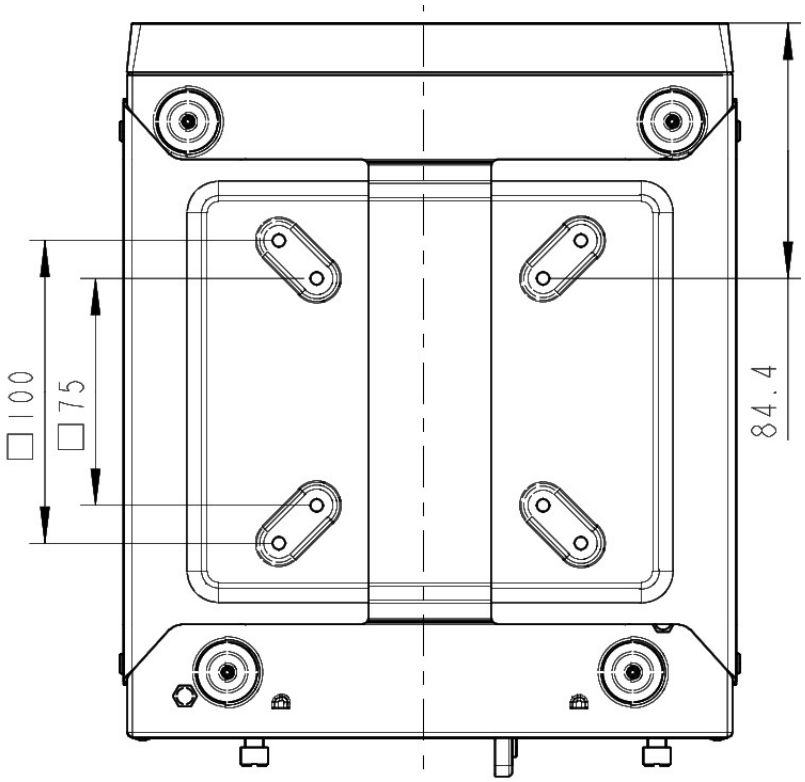
[8] Expansion Kit PRC01
With the Shuttle XPC accessory PRC01 you can equip this PC with a second DC input to connect a second power adapter. This allows the use of even more powerful graphics cards. Graphics cards with 75W power dissipation are supported as standard. With an additional 90W or 180W power supply unit, this value increases to 150W or 225W.

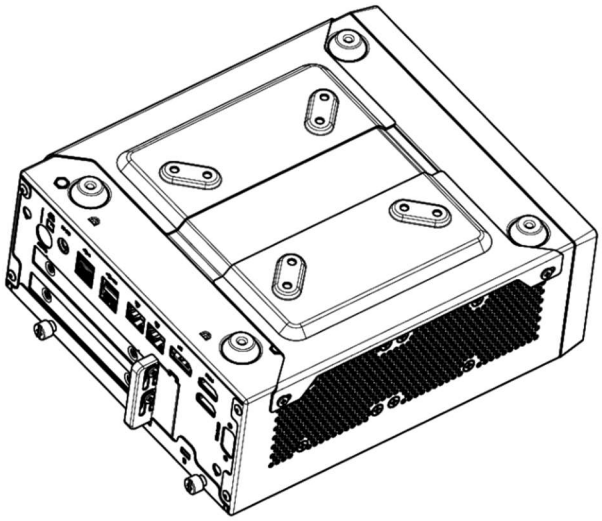
XH610G2 Chassis Drawing (1)



XH610G2 Chassis Drawing (2)







12TH GENERATION INTEL CORE DESKTOP PROCESSOR FAMILY

Socket LGA1700 10 nm "Alder Lake S" processor overview
Processors with a TDP of more than 65W and processors are not supported (marked in red).
Processors which name ends with "F" come without integrated graphics and you need to use a discrete graphics (marked in red).

PROCESSOR	MODEL	P-CORES/ THREADS	P-CORES CLOCK/Turbo	E-CORES	E-CORES CLOCK/Turbo	SMART CACHE	BASE TDP	MEMORY SUPPORT	GRAPHICS ENGINE (MAX. CLOCK)
Core™ i9	12900K	8 / 16	3.2 – 5.1 GHz	8	2.4 – 3.9 GHz	30 MB	125 W	DDR4-3200	UHD 770 (1.55 GHz)
	12900KF	8 / 16	3.2 – 5.1 GHz	8	2.4 – 3.9 GHz	30 MB	125 W	DDR4-3200	None
	12900	8 / 16	2.4 – 5.0 GHz	8	1.8 – 3.8 GHz	30 MB	65 W	DDR4-3200	UHD 770 (1.55 GHz)
	12900F	8 / 16	2.4 – 5.0 GHz	8	1.8 – 3.8 GHz	30 MB	65 W	DDR4-3200	None
	12900T	8 / 16	1.4 – 4.8 GHz	8	1.0 – 3.6 GHz	30 MB	35 W	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	125 W	DDR4-3200	UHD 770 (1.50 GHz)
	12700KF	8 / 16	3.6 – 4.9 GHz	4	2.7 – 3.8 GHz	25 MB	125 W	DDR4-3200	None
	12700	8 / 16	2.1 – 4.9 GHz	4	1.6 – 3.6 GHz	25 MB	65 W	DDR4-3200	UHD 770 (1.50 GHz)
	12700F	8 / 16	2.1 – 4.9 GHz	4	1.6 – 3.6 GHz	25 MB	65 W	DDR4-3200	None
	12700T	8 / 16	1.4 – 4.6 GHz	4	1.0 – 3.4 GHz	25 MB	35 W	DDR4-3200	UHD 770 (1.50 GHz)
Core™ i5	12600K	6 / 12	3.7 – 4.9 GHz	4	2.8 – 3.6 GHz	20 MB	125 W	DDR4-3200	UHD 770 (1.45 GHz)
	12600KF	6 / 12	3.7 – 4.9 GHz	4	2.8 – 3.6 GHz	20 MB	125 W	DDR4-3200	None
	12600	6 / 12	3.3 – 4.8 GHz	–	–	18 MB	65 W	DDR4-3200	UHD 770 (1.45 GHz)
	12600T	6 / 12	2.1 – 4.6 GHz	–	–	18 MB	35 W	DDR4-3200	UHD 770 (1.45 GHz)
	12500	6 / 12	3.0 – 4.6 GHz	–	–	18 MB	65 W	DDR4-3200	UHD 770 (1.45 GHz)
	12500T	6 / 12	2.0 – 4.4 GHz	–	–	18 MB	35 W	DDR4-3200	UHD 770 (1.45 GHz)
	12400	6 / 12	2.5 – 4.4 GHz	–	–	18 MB	65 W	DDR4-3200	UHD 730 (1.45 GHz)
	12400F	6 / 12	2.5 – 4.4 GHz	–	–	18 MB	65 W	DDR4-3200	None
	12400T	6 / 12	1.8 – 4.2 GHz	–	–	18 MB	35 W	DDR4-3200	UHD 730 (1.45 GHz)
Core™ i3	12300	4 / 8	3.5 – 4.4 GHz	–	–	12 MB	60 W	DDR4-3200	UHD 730 (1.45 GHz)
	12300T	4 / 8	2.3 – 4.2 GHz	–	–	12 MB	35 W	DDR4-3200	UHD 730 (1.45 GHz)
	12100	4 / 8	3.3 – 4.3 GHz	–	–	12 MB	60 W	DDR4-3200	UHD 730 (1.45 GHz)
	12100F	4 / 8	3.3 – 4.3 GHz	–	–	12 MB	58 W	DDR4-3200	None
	12100T	4 / 8	2.2 – 4.1 GHz	–	–	12 MB	35 W	DDR4-3200	UHD 730 (1.40 GHz)
Pentium® Gold	G7400	2 / 4	3.7 GHz	–	–	6 MB	46 W	DDR4-3200	UHD 710 (1.35 GHz)
	G7400T	2 / 4	3.1 GHz	–	–	6 MB	35 W	DDR4-3200	UHD 710 (1.35 GHz)
Celeron®	G6900	2 / 2	3.4 GHz	–	–	4 MB	46 W	DDR4-3200	UHD 710 (1.30 GHz)
	G6900T	2 / 2	2.8 GHz	–	–	4 MB	35 W	DDR4-3200	UHD 710 (1.30 GHz)

K = unlocked, T = Power optimized lifestyle, F = without integrated graphics, Base TDP = Base Thermal Design Power (max. Base Power Consumption).

Note: The Shuttle XPC slim Barebone XH610G2 does not support the Unlock-function of Intel K-Series processors.
P-Cores: Performance-Cores, E-Cores: Efficient-Cores
Core Clock: the listed core frequency ranges from Base Frequncy to Turbo Frequency (Turbo Boost 3.0 Frequency is not mentioned here)
Base TDF: Processor Base Power dissipation that the processor is validated to not exceed at Base Frequency (Max. Turbo Power is not mentioned here)
Please refer to the support list for detailed processor support information at global.shuttle.com.

13TH GENERATION INTEL CORE DESKTOP PROCESSOR FAMILY

Socket LGA1700, Intel 7 / 10 nm, "Raptor Lake S" processor overview
Processors with a TDP of more than 65W and processors are not supported (marked in red).
Processors which name ends with "F" come without integrated graphics and you need to use a discrete graphics (marked in red).

PROCESSOR	MODEL	P-CORES/ THREADS	P-CORES CLOCK/Turbo	E-CORES	E-CORES CLOCK/Turbo	SMART CACHE	BASE TDP	MEMORY SUPPORT	GRAPHICS ENGINE (MAX. CLOCK)
Core™ i9	13900KS	8 / 16	3.2 – 6.0 GHz	16	2.4 – 4.3 GHz	36 MB	150 W	DDR4-3200	UHD 770 (1.65 GHz)
	13900K	8 / 16	3.0 – 5.8 GHz	16	2.0 – 4.3 GHz	36 MB	125 W	DDR4-3200	UHD 770 (1.65 GHz)
	13900KF	8 / 16	3.0 – 5.8 GHz	16	2.0 – 4.3 GHz	36 MB	125 W	DDR4-3200	None
	13900	8 / 16	2.0 – 5.2 GHz	16	1.5 – 4.2 GHz	36 MB	65 W	DDR4-3200	UHD 770 (1.65 GHz)
	13900F	8 / 16	2.0 – 5.2 GHz	16	1.5 – 4.2 GHz	36 MB	65 W	DDR4-3200	None
	13900T	8 / 16	1.1 – 5.1 GHz	16	0.8 – 3.9 GHz	36 MB	35 W	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	125 W	DDR4-3200	UHD 770 (1.60 GHz)
	13700KF	8 / 16	3.4 – 5.4 GHz	8	2.5 – 4.2 GHz	30 MB	125 W	DDR4-3200	None
	13700	8 / 16	2.1 – 5.1 GHz	8	1.5 – 4.1 GHz	30 MB	65 W	DDR4-3200	UHD 770 (1.60 GHz)
	13700F	8 / 16	2.1 – 5.1 GHz	8	1.5 – 4.1 GHz	30 MB	65 W	DDR4-3200	None
	13700T	8 / 16	1.4 – 4.8 GHz	8	1.0 – 3.6 GHz	30 MB	35 W	DDR4-3200	UHD 770 (1.60 GHz)
Core™ i5	13600K	6 / 12	3.5 – 5.1 GHz	8	2.6 – 3.9 GHz	20 MB	125 W	DDR4-3200	UHD 770 (1.50 GHz)
	13600KF	6 / 12	3.5 – 5.1 GHz	8	2.6 – 3.9 GHz	20 MB	125 W	DDR4-3200	None
	13600	6 / 12	2.7 – 5.0 GHz	8	2.0 – 3.7 GHz	24 MB	65 W	DDR4-3200	UHD 770 (1.55 GHz)
	13600T	6 / 12	1.8 – 4.8 GHz	8	1.3 – 3.4 GHz	24 MB	35 W	DDR4-3200	UHD 770 (1.55 GHz)
	13500	6 / 12	2.5 – 4.8 GHz	8	1.8 – 3.5 GHz	24 MB	65 W	DDR4-3200	UHD 770 (1.55 GHz)
	13500T	6 / 12	1.6 – 4.6 GHz	8	1.2 – 3.2 GHz	24 MB	35 W	DDR4-3200	UHD 770 (1.55 GHz)
	13400	6 / 12	2.5 – 4.6 GHz	4	1.8 – 3.3 GHz	20 MB	65 W	DDR4-3200	UHD 730 (1.55 GHz)
	13400F	6 / 12	2.5 – 4.6 GHz	4	1.8 – 3.3 GHz	20 MB	65 W	DDR4-3200	None
	13400T	6 / 12	1.3 – 4.4 GHz	4	1.0 – 3.0 GHz	20 MB	35 W	DDR4-3200	UHD 730 (1.55 GHz)
Core™ i3	13100	4 / 8	3.4 – 4.5 GHz	–	–	12 MB	60 W	DDR4-3200	UHD 730 (1.50 GHz)
	13100F	4 / 8	3.4 – 4.5 GHz	–	–	12 MB	58 W	DDR4-3200	None
	13100T	4 / 8	2.5 – 4.2 GHz	–	–	12 MB	35 W	DDR4-3200	UHD 730 (1.50 GHz)

K = unlocked, T = Power optimized lifestyle, F = without integrated graphics, Base TDP = Base Thermal Design Power (max. Base Power Consumption).

Note: The Shuttle XPC slim Barebone XH610G2 does not support the Unlock-function of Intel K-Series processors.
P-Cores: Performance-Cores, E-Cores: Efficient-Cores
Core Clock: the listed core frequency ranges from Base Frequncy to Turbo Frequency (Turbo Boost 3.0 Frequency is not mentioned here)
Base TDF: Processor Base Power dissipation that the processor is validated to not exceed at Base Frequency (Max. Turbo Power is not mentioned here)
Please refer to the support list for detailed processor support information at global.shuttle.com.

14TH GENERATION INTEL CORE DESKTOP PROCESSOR FAMILY

Socket LGA1700, Intel 7 / 10 nm, "Raptor Lake S" processor overview
Processors with a TDP of more than 65W and processors are not supported (marked in red).
Processors which name ends with "F" come without integrated graphics and you need to use a discrete graphics (marked in red).

PROCESSOR	MODEL	P-CORES/ THREADS	P-CORES CLOCK/Turbo	E-CORES	E-CORES CLOCK/Turbo	SMART CACHE	BASE TDP	MEMORY SUPPORT	GRAPHICS ENGINE (MAX. CLOCK)
Core™ i9	14900K	8 / 16	3.2 – 5.6 GHz	16	2.4 – 4.4 GHz	36 MB	125 W	DDR4-3200	UHD 770 (1.65 GHz)
	14900KF	8 / 16	3.2 – 5.6 GHz	16	2.4 – 4.4 GHz	36 MB	125 W	DDR4-3200	None
	14900	8 / 16	2.0 – 5.4 GHz	16	1.5 – 4.3 GHz	36 MB	65 W	DDR4-3200	UHD 770 (1.65 GHz)
	14900F	8 / 16	2.0 – 5.4 GHz	16	1.5 – 4.3 GHz	36 MB	65 W	DDR4-3200	None
	14900T	8 / 16	1.1 – 5.1 GHz	16	0.8 – 4.0 GHz	36 MB	35 W	DDR4-3200	UHD 770 (1.65 GHz)
Core™ i7	14700K	8 / 16	3.4 – 5.6 GHz	8	2.5 – 4.3 GHz	33 MB	125 W	DDR4-3200	UHD 770 (1.60 GHz)
	14700KF	8 / 16	3.4 – 5.6 GHz	8	2.5 – 4.3 GHz	33 MB	125 W	DDR4-3200	None
	14700	8 / 16	2.1 – 5.3 GHz	8	1.5 – 4.2 GHz	33 MB	65 W	DDR4-3200	UHD 770 (1.60 GHz)
	14700F	8 / 16	2.1 – 5.4 GHz	8	1.5 – 4.2 GHz	33 MB	65 W	DDR4-3200	None
	14700T	8 / 16	1.3 – 5.0 GHz	8	0.9 – 3.7 GHz	33 MB	35 W	DDR4-3200	UHD 770 (1.60 GHz)
Core™ i5	14600K	6 / 12	3.5 – 5.3 GHz	8	2.6 – 4.0 GHz	24 MB	125 W	DDR4-3200	UHD 770 (1.50 GHz)
	14600KF	6 / 12	3.5 – 5.3 GHz	8	2.6 – 4.0 GHz	24 MB	125 W	DDR4-3200	None
	14600	6 / 12	2.7 – 5.2 GHz	8	2.0 – 3.9 GHz	24 MB	65 W	DDR4-3200	UHD 770 (1.55 GHz)
	14600T	6 / 12	1.8 – 5.1 GHz	8	1.3 – 3.6 GHz	24 MB	35 W	DDR4-3200	UHD 770 (1.55 GHz)
	14500	6 / 12	2.6 – 5.0 GHz	8	1.9 – 3.7 GHz	24 MB	65 W	DDR4-3200	UHD 770 (1.55 GHz)
	14500T	6 / 12	1.7 – 4.8 GHz	8	1.2 – 3.4 GHz	24 MB	35 W	DDR4-3200	UHD 770 (1.55 GHz)
	14400	6 / 12	2.5 – 4.7 GHz	4	1.8 – 3.5 GHz	20 MB	65 W	DDR4-3200	UHD 730 (1.55 GHz)
	14400F	6 / 12	2.5 – 4.7 GHz	4	1.8 – 3.5 GHz	20 MB	65 W	DDR4-3200	None
	14400T	6 / 12	1.5 – 4.5 GHz	4	1.1 – 3.2 GHz	20 MB	35 W	DDR4-3200	UHD 730 (1.55 GHz)
Core™ i3	14100	4 / 8	3.5 – 4.7 GHz	–	–	12 MB	60 W	DDR4-3200	UHD 730 (1.50 GHz)
	14100F	4 / 8	3.5 – 4.7 GHz	–	–	12 MB	58 W	DDR4-3200	None
	14100T	4 / 8	2.7 – 4.4 GHz	–	–	12 MB	35 W	DDR4-3200	UHD 730 (1.50 GHz)

K = unlocked, T = Power optimized lifestyle, F = without integrated graphics, Base TDP = Base Thermal Design Power (max. Base Power Consumption).

Note: The Shuttle XPC slim Barebone XH610G2 does not support the Unlock-function of Intel K-Series processors.
P-Cores: Performance-Cores, E-Cores: Efficient-Cores
Core Clock: the listed core frequency ranges from Base Frequncy to Turbo Frequency (Turbo Boost 3.0 Frequency is not mentioned here)
Base TDF: Processor Base Power dissipation that the processor is validated to not exceed at Base Frequency (Max. Turbo Power is not mentioned here)
Please refer to the support list for detailed processor support information at global.shuttle.com.