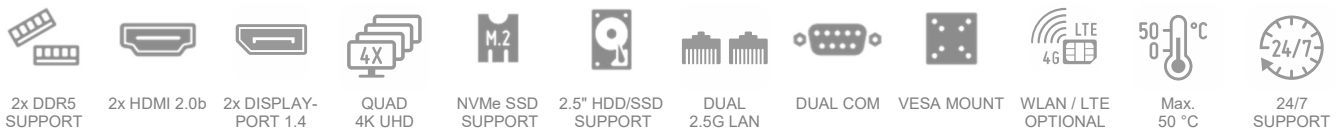


BAREBONE XPC slim DH770

ROBUST 1.3-LITRE SLIM PC SUPPORTS INTEL CORE PROCESSORS WITH SOCKET LGA1700 AND FOUR UHD DISPLAYS

The Shuttle XPC slim Barebone DH770 with H770 chipset houses the performance of Intel's 12th/13th/14th generation Core desktop processors (codenamed Alder Lake-S and Raptor Lake-S [Refresh]) for socket LGA1700 in a compact 1.3-litre format. The DH770 allows for four Ultra HD displays to be operated at the same time via 2x HDMI and 2x DisplayPort. It also offers Dual Intel 2.5G LAN, four USB 3.2 Gen 2 and COM ports. The slim metal chassis comes with a VESA mount included, provides versatile connectivity and reliable operation in environments with ambient temperatures of up to 50 °C. This platform is targeted at professional applications such as Digital Signage, POS, POI, gambling machines, office, healthcare and industry.



SLIM DESIGN

- Slim 1.35-litre metal chassis, black
- Dimensions: 190 x 165 x 43 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

- Socket LGA1700 supports Intel Core i9/i7/i5/i3, Pentium Gold und Celeron processors Gen. 12/13/14 ("Alder Lake-S" and "Raptor Lake-S [Refresh]"), max. 65W TDP
- Heatpipe cooling system
- 2x 70mm fans

GRAPHICS

- Integrated Intel HD graphics, 4K support (features depend on processor)
- Supports four independent UHD displays

CHIPSET

- Intel H770 Chipset

MEMORY SUPPORT

- 2x 262-pin SO-DIMM slot
- Supports DDR5-5600
- max. 2x 32 GB (max. 2x 48 GB with Gen13/14 "Raptor Lake" CPU)

STORAGE – SATA / M.2

- 1x 2.5" bay for SATA hard disk or SSD
- 1x M.2-2280M slot (supports PCIe 4.0 x4 NVMe or SATA)
- 1x M.2-2230E for optional WLAN module

CONNECTORS

- 2x HDMI 2.0b
- 2x DisplayPort 1.4
- optional VGA
- 2x audio (line out, mic)
- 4x USB 3.2 Gen2
- 4x USB 3.2 Gen1 (1x Type-C)
- 1x USB 2.0 internal
- 2x Intel 2.5G LAN (RJ45)
- 2x COM port (1x RS232/422/485)
- Connector for external power button
- "Always on" Jumper

POWER SUPPLY

- External 120W/19V power adapter with 5,5/2,5 mm DC plug

OPTIONAL ACCESSORIES

- WLAN kit with Wi-Fi 6 module and antennas (WLN-M1)
- Vertical Stand (PS02)
- VGA Port (PVG01)
- Rackmount kit (PRM01)
- Cable for external power button (CXP01)
- DIN-Rail mounting kit (DIR01)
- LTE-kit (WWN03)

MODELS OF THE DH6xx/DH7xx SERIES (1.3L, LGA1700)

Product	Chip	HDMI	DP	Displays	Memory (RAM)	Intel LAN	M.2-2280 Slot	COM	Card reader	DC-In	VESA Mount	UPC Bar Code
DH610S	H610	1	1	max. 2 *)	2x DDR4-3200	1G	PCIe v3.0 X4	—	—	19V	—	887993005126
DH610	H610	1	2	max. 3	2x DDR4-3200	1G+2.5G	PCIe v3.0 X4	2	—	12V+19V	included	887993005119
DH670	H670	2	2	max. 4	2x DDR4-3200	2x 1G	PCIe v4.0 X4	2	Yes	19V	included	887993004983
DH670V2	H670	2	2	max. 4	2x DDR4-3200	2x 2.5G	PCIe v4.0 X4	2	—	19V	included	887993005942
DH770	H770	2	2	max. 4	2x DDR5-5600	2x 2.5G	PCIe v4.0 X4	2	—	19V	included	887993006918

*) max. 3 displays with optional VGA port (accessory PVG01)



PRODUCT FEATURES



Robust, stylish and particularly small

You should have held it in your own hands to see how small it actually is. At barely a volume of 1.35 litres, its steel chassis gives it the appropriate stability required for professional applications such as digital signage. Despite its dimensions of 19 x 16.5 x 4.3 cm (LWH), the overall system performance is very high thanks to support of Intel Core desktop processors. The interior of the DH770 is very tidy too so that it won't take long to set up. Its sleek and stylish looks let it easily find a place in both home and office environments.



Low noise thanks to heatpipe cooling system

An efficient heatpipe cooling system with two 70 mm fans ensures whisper-quiet operation and system stability.



Supports extended temperature range and 24/7 operation

The Shuttle XPC slim Barebone DH770 is officially approved for 24/7 permanent operation. Thanks to its efficient cooling, this PC runs highly reliably 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 SSDs.



Supports Socket LGA1700 Intel® Core™ processors

"Alder Lake-S" / "Raptor Lake-S (Refresh)" is the codename for Intel's 12th/13th/14th Generation of Intel® Core™ Desktop Processors for socket LGA1700 introduced along with the 600/700-Series chipsets. The 12000/13000/14000 series 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.



Quad 4K Display support

The DH770 features four digital video outputs: two HDMI 2.0b and two DisplayPorts (DP 1.4) which all can run at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second. Furthermore, the DH770 supports an optional D-Sub/VGA port. The PC supports a maximum of four displays.



One M.2-Slot for SSD cards

The M.2-2280 slot supports one M.2 SSD storage card with NVMe PCIe 4.0 X4 or SATA interface. A heat sinks kit with thermal pads for efficient cooling are included.



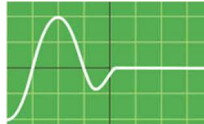
Dual Intel 2.5G LAN Network

The Shuttle XPC slim Barebone DH770 supports Dual 2.5G LAN with Intel i226LM network adapters, which are popular for their excellent performance and driver compatibility and are the preferred choice for professional environments.



VESA mount

The supplied 75/100mm VESA mount allows for installation on to walls or monitors which is particularly interesting for the industry segment, company buildings and public institutions. Other than this, the chassis bears numerous threaded holes (M3) enabling it to be fitted almost anywhere.



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 DH770 also comes with a hardware-based solution. By removing Jumper JP1 (see image) the system will start unconditionally once power is applied.



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 DH770 (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for external devices.

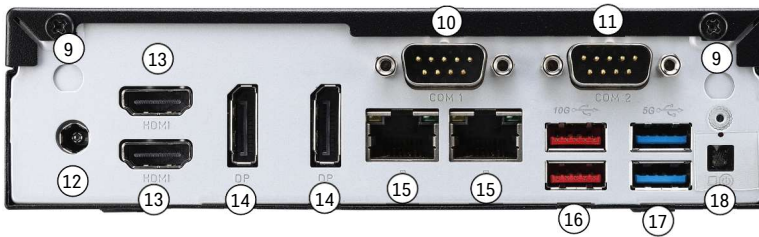
+5V voltage (2) (4) Power Button
Clear CMOS (1) (3) Ground

Front and Back Panel

Front panel



Back panel



Side view

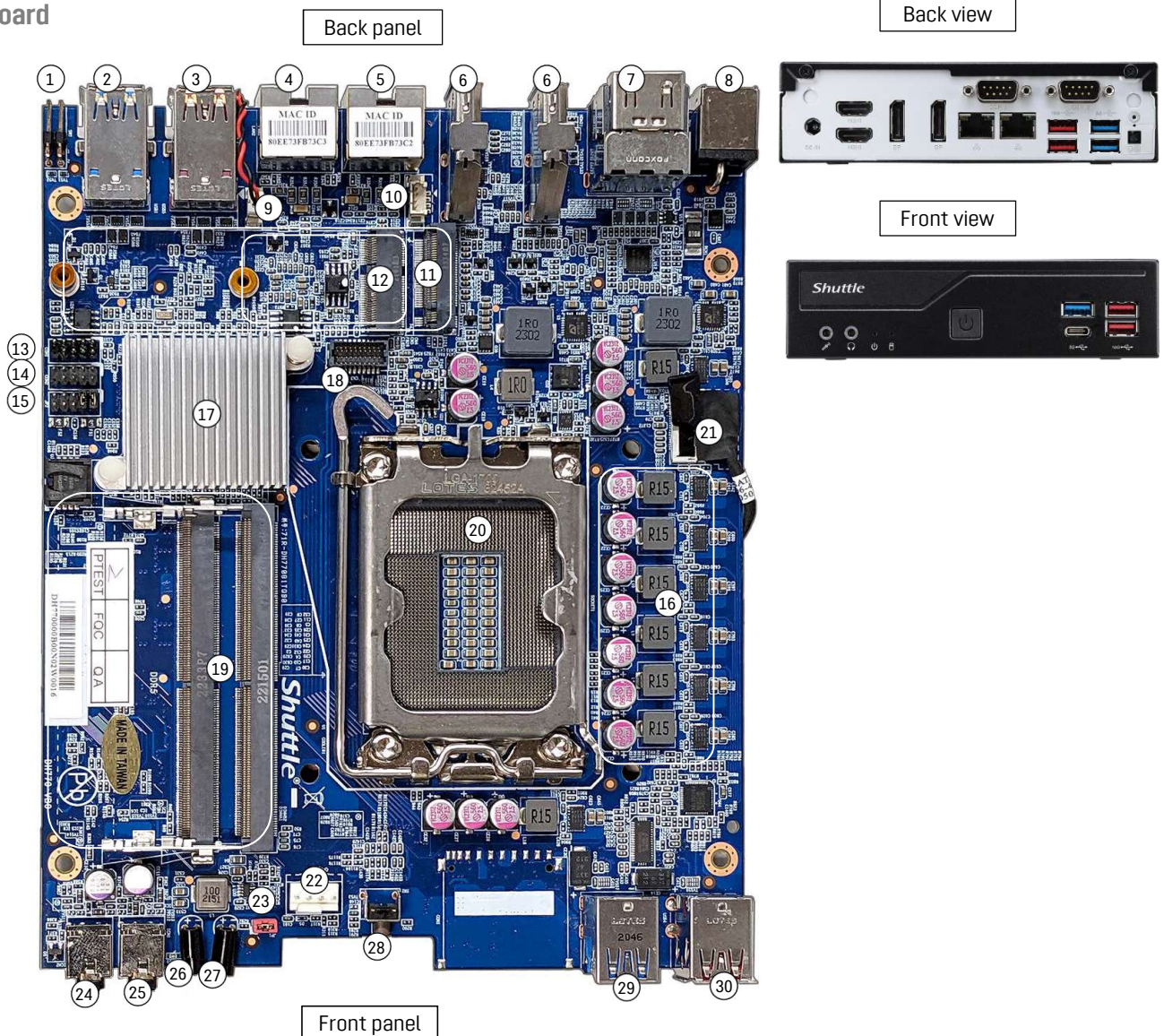


1. Microphone input
2. Headphones output
3. LED indicator for power state
4. LED indicator for storage activity
5. Power button
6. 2x USB 3.2 Gen 1 port (Type-C)
7. 2x USB 3.2 Gen 1 port (Type-A)
8. 2x USB 3.2 Gen 2 port (Type-A)
9. 2x WLAN perforation
10. COM 1 port supports RS232/RS422/RS485
11. COM 2 port supports RS232 (or optional VGA port for analog displays)
12. DC-in connector for power adapter
13. 2x HDMI 2.0b port
14. 2x DisplayPort 1.4
15. 2x RJ45 2.5G LAN port
16. 2x USB 3.2 Gen 2 port (Type-A)
17. 2x USB 3.2 Gen 1 port (Type-A)
18. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage

19. Threaded holes (M3)
20. 2x hole for Kensington Lock

21. VESA mount (two parts)

Mainboard



Back panel

Back view

Front view

Front panel

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage 2. 2x USB 3.2 Gen 1 port 3. 2x USB 3.2 Gen 2 port 4. RJ45 2.5G LAN port 5. RJ45 2.5G LAN port 6. 2x DisplayPort 1.2 7. HDMI 2.0a port 8. DC-in connector for power adapter 9. Connector for CMOS battery 10. Onboard USB 2.0 connector (4-pin) 11. M.2-2280M slot for SSD card 12. M2-2230E slot for WLAN card 13. Onboard COM 1 port supports RS232/RS422/RS485 14. Onboard COM 2 port supports RS232 15. Jumper for COM 1/2 auxiliary voltage setting (0/5/12 V) | <ol style="list-style-type: none"> 16. CPU Voltage Regulator 17. Intel H770 chipset with heat sink 18. Onboard VGA connector 19. 2x S0-DIMM slot for DDR5 memory 20. LGA1700 processor socket 21. SATA v3.0 connector 22. 4-pin connector for cooling fan 23. Always-Power-On jumper 24. Microphone input 25. Headphones output 26. LED indicator for power state 27. LED indicator for storage activity 28. Power button 29. 2x USB 3.2 Gen 1 port (1x Type-C) 30. 2x USB 3.2 Gen 2 port |
|--|--|

REQUIRED COMPONENTS

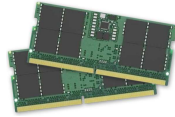
The following components need to be added to make it a fully-configured Mini PC

Shuttle XPC slim Barebone DH770



LGA1700 Processor

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



Memory Modules

Up to two DDR5-5600 (or higher) SO-DIMM memory modules max. 32 GB each (max. 2x 48 GB with Gen13/14 "Raptor Lake" CPU)



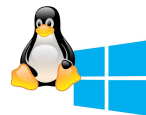
2.5" Storage Drive

SATA hard disk or Solid State Disk (SSD) (max. height: 12.5 mm)



M.2 SSD

M.2-2280 SSD storage (SATA or PCIe/NVMe)



Operating System

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

OPTIONAL ACCESSORIES FROM SHUTTLE



VGA port adapter PVG01

Installing PVG01 means one serial port (COM) less can be used on the backpanel.



Vertical Stand PS02

for vertical operation



WLAN-Accessory

WLN-M1

M.2-2230 card supports WLAN-ax (Wi-Fi 6) and Bluetooth. Including 2 antennas.



DIN-Rail Kit DIR01

This mounting kit allows the installation on a standard 35 mm DIN-Rail



LTE Adapter Kit WWN03

allows the installation of an M.2 LTE card and nano SIM card (occupies the 2.5" bay)



Rack Mount Kit PRM01

2U front plate to install two 1.3L Shuttle XPCs in a 19" cabinet.



Cable CXP01

Cable for external push button switch (without button)

Shuttle Product Comparison: DH6xx versus DH770

MODEL	DH610S	DH610	DH670	DH670V2	DH770
PROCESSOR SUPPORT	Intel Core, Socket LGA1700, TDP max. 65 W Codename "Alder Lake-S"/"Raptor Lake [Refresh]-S" – Gen 12/13/14				
CHIPSET	Intel H610	Intel H610	Intel H670	Intel H670	Intel H770
OS SUPPORT	Windows 10/11 and Linux (64-bit)				
MULTI-DISPLAY	max. 2 *)	max. 3	max. 4	max. 4	max. 4
RAM MEMORY	max. 2x 32 GB DDR4-3200/2666 SO-DIMM (260-pin)				max. 2x 32 GB **) DDR5-5600 SO-DIMM (262-pin)
2.5" BAY	1x 2.5" drive bay, SATA connector, max. height 12.5 mm				
M.2-2280 SSD SLOT	supports PCIe 3.0 x4 or SATA		supports PCIe 4.0 x4 or SATA		
WLAN SLOT	M.2-2230E				
BUTTONS / LEDS	Power-Button, Power LED, HDD LED				
SD CARD READER	No	No	Yes	No	No
GRAPHICS PORTS	HDMI 2.0b DP 1.4	HDMI 2.0b 2x DP 1.4	2x HDMI 2.0b 2x DP 1.4	2x HDMI 2.0b 2x DP 1.4	2x HDMI 2.0b 2x DP 1.4
USB 3.2 GEN. 2	—	—	4	4	4
USB 3.2 GEN. 1	4 (1x Type-C)	4 (1x Type-C)	4 (1x Type-C)	4 (1x Type-C)	4 (1x Type-C)
USB 2.0	4	4	—	—	—
COM PORTS	—	2	2	2	2
GIGABIT NETWORK	Single LAN Intel 219V/LM (1G)	Dual LAN Intel 225 (2.5G) Intel 219V/LM (1G)	Dual LAN Intel 210 (1G) Intel 211 (1G)	Dual LAN Intel 225 (2.5G) Intel 225 (2.5G)	Dual LAN Intel 226LM (2.5G) Intel 226LM (2.5G)
AUDIO	Mic-Input, Line-Out (Realtek ALC662/897/888S)				... ALC888S
OPTIONAL ACCESSORIES	WLAN Kit: WLN-M1 Vertical Stand: PS02 Rackmount Kit: PRM01 VGA Port: PVG01 Power Button Cable: CXP01 DIN-Rail Mount: DIR01 LTE-Kit: WWN03				
VESA MOUNT	optional PV04	supplied	supplied	supplied	supplied
POWER ADAPTER	120 W / 19 V				
DC-IN 12V SUPPORT	—	Yes	—	—	—

Product Images



*) The DH610S supports 3 displays, if equipped with VGA port (accessory PVG01)

**) DH770 supports max. 2x 48 GB DDR5 RAM in combination with a Gen13/14 "Raptor Lake" processor

SHUTTLE XPC SLIM BAREBONE DH770 – SPECIFICATIONS

CHASSIS	<p>Slim PC with black chassis made of metal</p> <p>Dimensions: 190 x 165 x 43 mm (LWH) = 1.35-litre</p> <p>Weight: 1.3 kg net and 2.1 kg gross</p> <p>Two holes for Kensington Locks and numerous threaded holes (M3) on both sides of the chassis</p>
POWER ADAPTER	<p>External 120 W power adapter (fanless)</p> <p>Input: 100~240 V AC, 50/60 Hz</p> <p>Output: 19 V DC, 6.32 A, max. 120 W</p> <p>DC Connector: 5.5/2.5 mm (outer/inner diameter)</p> <p>Remark: The DC-input of the computer supports an external power source with 19V±5%.</p> <p>AC mains cable: 3 pins, ca. 1.7 m length, with C5/C6 coupler (called "Mickey Mouse" or "Clover-leaf") for the power adapter and CEE-7/7 plug with earth-contact (type E+F) for the power outlet</p>
OPERATING SYSTEM	<p>This system comes without an operating system.</p> <p>It is compatible with Windows 10/11 and Linux (64-bit).</p>
PROCESSOR SUPPORT	<p>Processor Socket LGA1700</p> <p>Supports Intel Core i9 / i7 / i5 / i3, Pentium Gold and Celeron processors</p> <p>Supports the following generations of Intel Core processors:</p> <ul style="list-style-type: none"> - Gen 12 "Alder Lake-S" - Gen 13 "Raptor Lake-S" - Gen 14 "Raptor Lake-S Refresh" <p>in "Intel 7" process technology (previously Intel 10 nm Enhanced SuperFin)</p> <p>Supports processors with integrated graphics only [5]</p> <p>Maximum supported processor power consumption (TDP) = 65 W</p> <p>Does not support the unlock-function of Intel K-Series processors.</p> <p>The processor integrates PCI-Express, memory controller and the graphics engine on the same die.</p>
PROCESSOR COOLING	<p>Heatpipe processor cooling with two 70 mm fans on the upper side of the chassis</p>
MAINBOARD / CHIPSET	<p>Mainboard in a Shuttle form factor proprietary design for the XPC DH770</p> <p>Chipset/Southbridge: Intel® H770</p> <p>Passive chipset cooling with heat sink</p> <p>The Northbridge is integrated in the processor.</p> <p>Solid Capacitors for sensitive areas provide excellent heat resistance for enhanced system durability.</p>
BIOS	<p>AMI BIOS, SPI Interface, 32 MB Flash-EPROOM</p> <p>Supports Hardware Monitoring and watch dog functionality</p> <p>Supports Firmware-TPM (fTPM) v2.0 [9]</p> <p>Supports boot up from external USB flash memory</p> <p>Supports Unified Extensible Firmware Interface (UEFI)</p> <p>Supports power on after power failure [7]</p>
MEMORY SUPPORT	<p>2x SO-DIMM slot with 262 pins</p> <p>Supports DDR5-5600 (PC5-44800) SDRAM at 1.1 V</p> <p>Supports Dual Channel mode</p> <p>Supports a maximum of 32 GB per DIMM, maximum total size: 64 GB</p> <p>Note: In combination with an Intel Core Gen 13/14 "Raptor Lake" processor two 48 GB RAM modules are also supported.</p> <p>Supports two unbuffered DIMM modules (no ECC or registered)</p>
INTEGRATED GRAPHICS	<p>The features of the integrated Intel UHD graphics function depend on the processor type used. [5]</p> <p>The PC features four video outputs which support 1080p/60 and 2160p/60:</p> <ul style="list-style-type: none"> - 2x HDMI v2.0b - 2x DisplayPort v1.4 <p>Supports displays with 4K Ultra HD resolution at 3840 x 2160</p> <p>Supports four independent displays with the integrated graphics function</p> <p>DisplayPort and HDMI support multi-channel digital audio over the same cable.</p> <p>Optional analog D-Sub/VGA video output [4]</p>
DRIVE BAY	<p>1x 6.35 cm / 2.5" storage bay supports one hard disk or SSD drive with SATA connector</p> <p>Device height: 12.5 mm (max.)</p>

SATA CONNECTORS	1x Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth With Serial-ATA power connector (onboard)
M.2-2280M SSD SLOT	The M.2 2280M slot provides the following interfaces: - PCI-Express Gen. 4.0 X4, supports NVMe - SATA v3.0 (max. 6 Gbps) It supports M.2 cards with a width of 22 mm and a length of 80 mm (type 2280) Supports M.2 SSDs with SATA or PCI-Express interface
M.2-2230E SLOT FOR WLAN CARDS	Interfaces: PCI-Express Gen. 2.0 X1 und USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN expansion cards (optional Shuttle accessory: WLN-M1)
AUDIO	Audio Realtek® ALC888S High-Definition Audio Two analog audio connectors (3.5 mm) on the front panel: 1) 2-channel line-out (headphones) 2) microphone input Digital multi-channel audio output: by HDMI and DisplayPort
DUAL 2.5G LAN CONTROLLER	Dual network with two RJ45 ports with two status LEDs each Used network chips: 2x Intel i226LM Ethernet Controller (MAC, PHY) PCIe interface Supports Windows 10/11 Desktop OS and Windows Server OS Supports 100 / 1.000 / 2.500 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)
FRONT PANEL CONNECTORS	Microphone input Audio Line-out (headphones) 2x USB 3.2 Gen 2 Type A (red) 1x USB 3.2 Gen 1 Type A (blue) 1x USB 3.2 Gen 1 Type C Power button Power LED (blue) HDD LED (yellow)
BACK PANEL CONNECTORS	2x HDMI 2.0b connector [1] 2x DisplayPort 1.4 connector (DP) [2] Optional: 1x D-Sub VGA connector (Accessory PVG01 [4]) 2x USB 3.2 Gen 2 Type A (red) 2x USB 3.2 Gen 1 Type A (blue) 2x 2.5G LAN (RJ45, Intel i225) 2x RS232 serial port, 9-pin D-Sub (5/12V, 1x RS422/RS485) [3] 1x DC-input connector for external power adapter (supports 19V±5%) 1x 4-pin connector (2.54 mm pitch) supports: - external power on button - Clear CMOS function - +5V DC voltage for external components 2x perforation for optional Wireless LAN antennas 2x hole for Kensington Lock
OTHER ONBOARD CONNECTORS	1x jumper for power-on-after-power-fail (hardware solution) [7] 1x analog VGA graphics output CN6 (2x 10-pin, 1 mm pitch) [4] 2x serial interface (COM) occupied by back panel connectors 1x USB 2.0 (4-pin) for optional accessory WWN03 (LTE kit) 1x fan connector (4-pin) occupied by the cooling system 1x connector for CMOS battery (occupied)

SUPPLIED ACCESSORIES	Multi-language user guide (EN, DE, FR, ES, JP, KR, SC, TC) VESA mount for 75/100 mm standard (two metal brackets) 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) Four screws M3 x 4 mm (to mount a 2.5" storage device into the bay) Two screws M3 x 5 mm (silver colour, to mount two M.2 cards) M.2-2280 SSD Heatsink Kit with four screws and three thermal pads Driver DVD (Windows 64-bit) Serial ATA cable for 2.5" drive including power cable External 120 W power adapter with power cord Protection cap for CPU socket (do not use if heatpipe or fan is mounted) Heatsink compound
OPTIONAL ACCESSORIES	PVG01: optional D-Sub VGA video output [4] WLN-M1: WLAN module in M.2-2230 format supports WLAN-ax and Bluetooth with two external antennas. WWN03: LTE adapter kit with antennas, but without LTE card [8] PS02: Stand for vertical operation CXP01: adapter cable for external power button PRM01: 2U rack mount front plate for two Shuttle XPC slim PCs DIR01: DIN-Rail mounting kit
ENVIRONMENTAL SPECIFICATIONS	Operating temperature range: 0~50 °C [6] Relative humidity, non-condensing: 10~90 %
CERTIFICATIONS / COMPLIANCE	EMI: FCC, CE, BSMI, RCM, VCCI Safety: ETL, CB, BSMI Other: RoHS, Energy Star, ErP
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 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)

[1] HDMI output supports DVI-D with optional adapter

[2] How to convert DisplayPort into HDMI/DVI

The DisplayPort output can be converted to HDMI or DVI by an additional, passive adapter cable. For example:

DELOCK 82590: 1 m, DisplayPort (male, 20p) to HDMI-A (male, 19p)

DELOCK 82435: 5 m, DisplayPort (male, 20p) to DVI-D (male, 24p)

The integrated graphics automatically detects the connected display and puts out the appropriate electric signal - either through 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] Serial Ports

This PC features two serial RS232 ports with 9-pin D-Sub connectors at the back panel. The left COM port (COM1) can also be configured as RS422 and RS485 in BIOS.

Pin 9 of the D-Sub COM-Port is a multi-functional signal. Based on the Jumper JP2 configuration on the mainboard, it can be configured as Ring Indicator (RI) or external power supply with a voltage level of either 5 V or 12 V. Each COM port can be configured separately. The maximum current is 500 mA per connector.

[4] Optional D-Sub/VGA connector

The mainboard features one analog graphics port CN6 on the mainboard. This signal can be lead to the outside as a 15-pin D-Sub VGA connector on the backpanel by using the optional adapter PVG01. However doing so means one serial port (COM) less can be used on the backpanel. The integrated graphics supports a maximum of four displays simultaneously.

[5] Intel processors without integrated graphics (ID ends with "F", e.g. Core i7-12700F) are not compatible.

[6] Operating temperature

For high ambient temperatures over 40 °C we strongly recommend to use SSDs (supporting at least 70 °C) and rugged SO-DIMM memory modules with a temperature range of up to 95 °C.

[7] 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. As a matter of the nature of this function, it may fail after short power failures. This is why the DH770 also comes with a hardware-based solution. By removing Jumper JP1 (on the mainboard next to the power button) the system will start unconditionally once power is supplied.

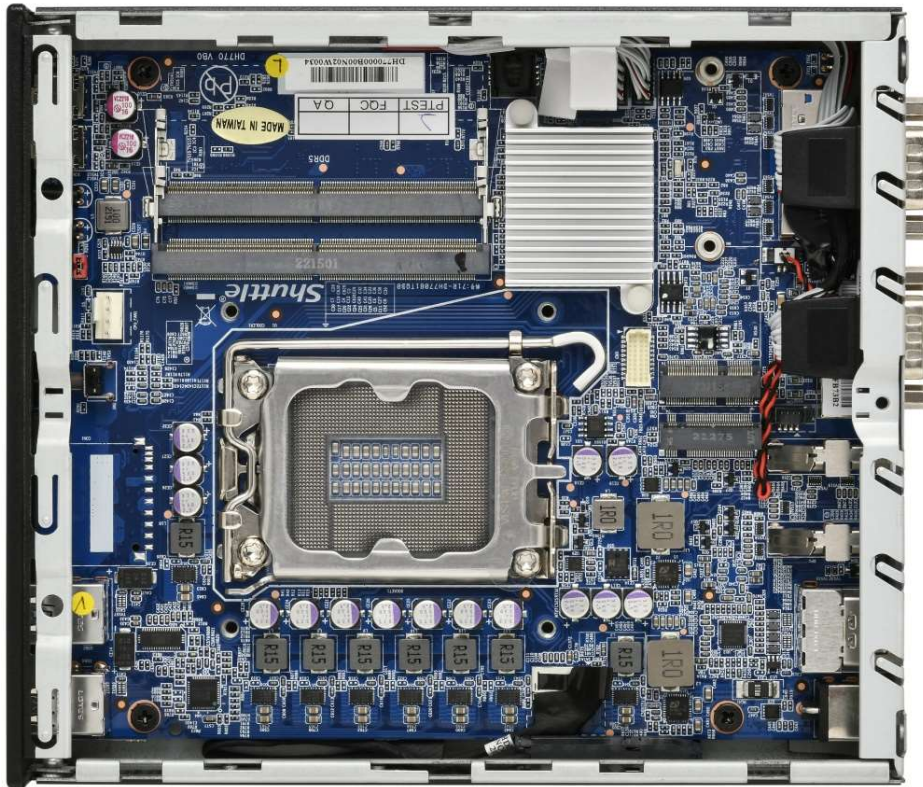
[8] Optional Accessory WWN03 (LTE kit)

The Shuttle XPC accessory WWN03 allows this PC to be upgraded with an LTE/4G function for mobile network. The LTE card will occupy the 2.5" bay, so you will have to use an M.2 SSD as a mass storage device. The required LTE/4G card in M.2-3042 format and an activated Nano SIM card is not included in the scope of delivery.

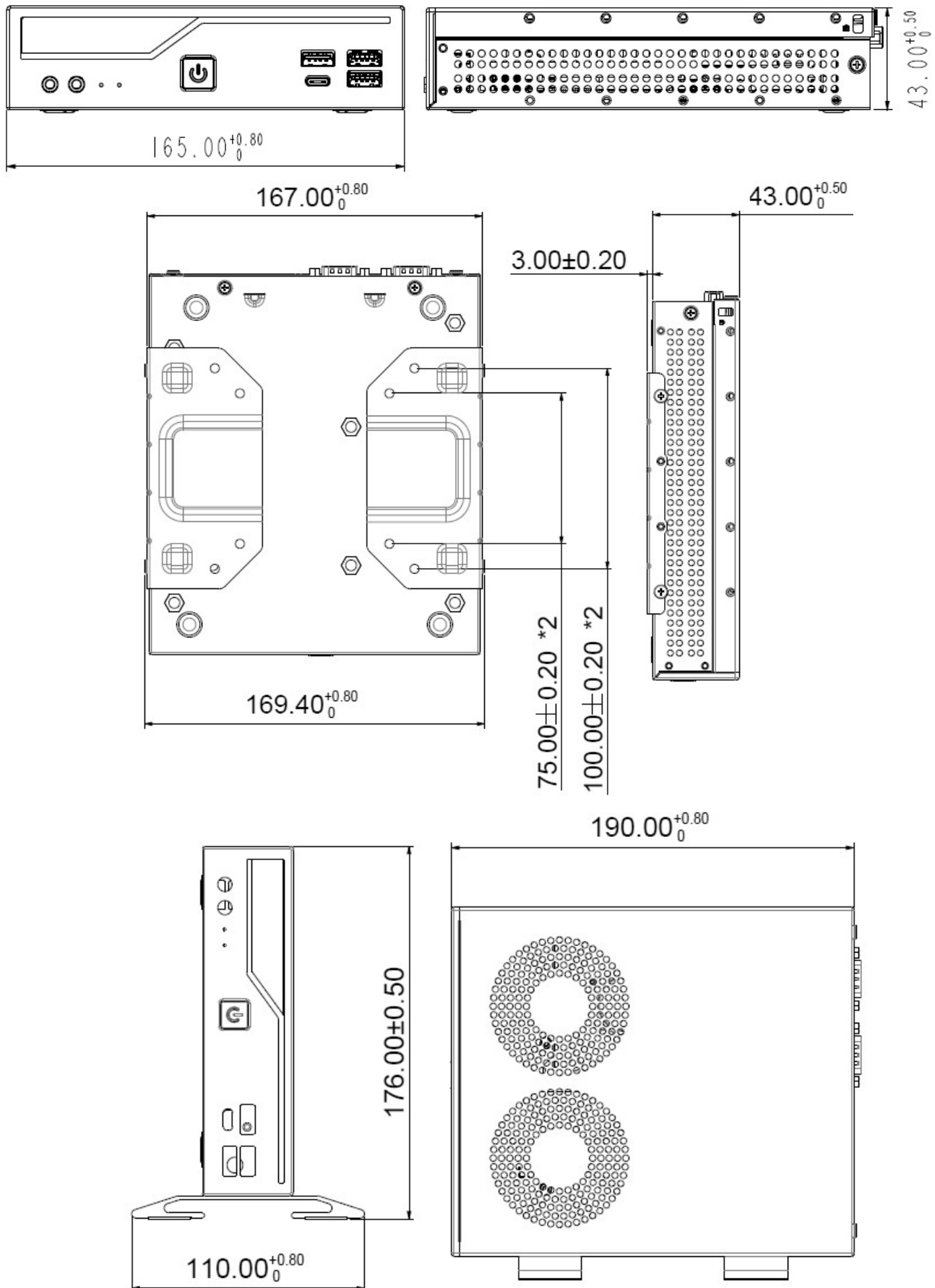
[9] TPM Function

This product features Firmware-TPM (fTPM) v2.0. Besides this, it is prepared for a hardware TPM chip which can be fitted by factory on request, if required.

Shuttle DH770 Inside Views



Technical Drawings DH770



12TH GENERATION INTEL CORE DESKTOP PROCESSOR FAMILY

Socket LGA1700 10 nm "Alder Lake S" processor overview (Date: January 2022)

Processors with a TDP of more than 65W and processors without graphics function (ID ends with "F") are **not supported (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	DDR5-5600	UHD 770 (1.55 GHz)
	12900KF	8 / 16	3.2 – 5.1 GHz	8	2.4 – 3.9 GHz	30 MB	125 W	DDR5-5600	None
	12900	8 / 16	2.4 – 5.0 GHz	8	1.8 – 3.8 GHz	30 MB	65 W	DDR5-5600	UHD 770 (1.55 GHz)
	12900F	8 / 16	2.4 – 5.0 GHz	8	1.8 – 3.8 GHz	30 MB	65 W	DDR5-5600	None
	12900T	8 / 16	1.4 – 4.8 GHz	8	1.0 – 3.6 GHz	30 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.50 GHz)
	12700KF	8 / 16	3.6 – 4.9 GHz	4	2.7 – 3.8 GHz	25 MB	125 W	DDR5-5600	None
	12700	8 / 16	2.1 – 4.9 GHz	4	1.6 – 3.6 GHz	25 MB	65 W	DDR5-5600	UHD 770 (1.50 GHz)
	12700F	8 / 16	2.1 – 4.9 GHz	4	1.6 – 3.6 GHz	25 MB	65 W	DDR5-5600	None
	12700T	8 / 16	1.4 – 4.6 GHz	4	1.0 – 3.4 GHz	25 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.45 GHz)
	12600KF	6 / 12	3.7 – 4.9 GHz	4	2.8 – 3.6 GHz	20 MB	125 W	DDR5-5600	None
	12600	6 / 12	3.3 – 4.8 GHz	-	-	18 MB	65 W	DDR5-5600	UHD 770 (1.45 GHz)
	12600T	6 / 12	2.1 – 4.6 GHz	-	-	18 MB	35 W	DDR5-5600	UHD 770 (1.45 GHz)
	12500	6 / 12	3.0 – 4.6 GHz	-	-	18 MB	65 W	DDR5-5600	UHD 770 (1.45 GHz)
	12500T	6 / 12	2.0 – 4.4 GHz	-	-	18 MB	35 W	DDR5-5600	UHD 770 (1.45 GHz)
	12400	6 / 12	2.5 – 4.4 GHz	-	-	18 MB	65 W	DDR5-5600	UHD 730 (1.45 GHz)
	12400F	6 / 12	2.5 – 4.4 GHz	-	-	18 MB	65 W	DDR5-5600	None
	12400T	6 / 12	1.8 – 4.2 GHz	-	-	18 MB	35 W	DDR5-5600	UHD 730 (1.45 GHz)
Core™ i3	12300	4 / 8	3.5 – 4.4 GHz	-	-	12 MB	60 W	DDR5-5600	UHD 730 (1.45 GHz)
	12300T	4 / 8	2.3 – 4.2 GHz	-	-	12 MB	35 W	DDR5-5600	UHD 730 (1.45 GHz)
	12100	4 / 8	3.3 – 4.3 GHz	-	-	12 MB	60 W	DDR5-5600	UHD 730 (1.45 GHz)
	12100F	4 / 8	3.3 – 4.3 GHz	-	-	12 MB	58 W	DDR5-5600	None
	12100T	4 / 8	2.2 – 4.1 GHz	-	-	12 MB	35 W	DDR5-5600	UHD 730 (1.40 GHz)
Pentium® Gold	G7400	2 / 4	3.7 GHz	-	-	6 MB	46 W	DDR5-5600	UHD 710 (1.35 GHz)
	G7400T	2 / 4	3.1 GHz	-	-	6 MB	35 W	DDR5-5600	UHD 710 (1.35 GHz)
Celeron®	G6900	2 / 2	3.4 GHz	-	-	4 MB	46 W	DDR5-5600	UHD 710 (1.30 GHz)
	G6900T	2 / 2	2.8 GHz	-	-	4 MB	35 W	DDR5-5600	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 DH770 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 Frequency 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 (Date: January 2023)

Processors with a TDP of more than 65W and processors without graphics function (ID ends with "F") are not supported (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	DDR5-5600	UHD 770 (1.65 GHz)
	13900K	8 / 16	3.0 – 5.8 GHz	16	2.0 – 4.3 GHz	36 MB	125 W	DDR5-5600	UHD 770 (1.65 GHz)
	13900KF	8 / 16	3.0 – 5.8 GHz	16	2.0 – 4.3 GHz	36 MB	125 W	DDR5-5600	None
	13900	8 / 16	2.0 – 5.2 GHz	16	1.5 – 4.2 GHz	36 MB	65 W	DDR5-5600	UHD 770 (1.65 GHz)
	13900F	8 / 16	2.0 – 5.2 GHz	16	1.5 – 4.2 GHz	36 MB	65 W	DDR5-5600	None
	13900T	8 / 16	1.1 – 5.1 GHz	16	0.8 – 3.9 GHz	36 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.60 GHz)
	13700KF	8 / 16	3.4 – 5.4 GHz	8	2.5 – 4.2 GHz	30 MB	125 W	DDR5-5600	None
	13700	8 / 16	2.1 – 5.1 GHz	8	1.5 – 4.1 GHz	30 MB	65 W	DDR5-5600	UHD 770 (1.60 GHz)
	13700F	8 / 16	2.1 – 5.1 GHz	8	1.5 – 4.1 GHz	30 MB	65 W	DDR5-5600	None
	13700T	8 / 16	1.4 – 4.8 GHz	8	1.0 – 3.6 GHz	30 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.50 GHz)
	13600KF	6 / 12	3.5 – 5.1 GHz	8	2.6 – 3.9 GHz	20 MB	125 W	DDR5-5600	None
	13600	6 / 12	2.7 – 5.0 GHz	8	2.0 – 3.7 GHz	24 MB	65 W	DDR5-5600	UHD 770 (1.55 GHz)
	13600T	6 / 12	1.8 – 4.8 GHz	8	1.3 – 3.4 GHz	24 MB	35 W	DDR5-5600	UHD 770 (1.55 GHz)
	13500	6 / 12	2.5 – 4.8 GHz	8	1.8 – 3.5 GHz	24 MB	65 W	DDR5-5600	UHD 770 (1.55 GHz)
	13500T	6 / 12	1.6 – 4.6 GHz	8	1.2 – 3.2 GHz	24 MB	35 W	DDR5-5600	UHD 770 (1.55 GHz)
	13400	6 / 12	2.5 – 4.6 GHz	4	1.8 – 3.3 GHz	20 MB	65 W	DDR5-5600	UHD 730 (1.55 GHz)
	13400F	6 / 12	2.5 – 4.6 GHz	4	1.8 – 3.3 GHz	20 MB	65 W	DDR5-5600	None
	13400T	6 / 12	1.3 – 4.4 GHz	4	1.0 – 3.0 GHz	20 MB	35 W	DDR5-5600	UHD 730 (1.55 GHz)
Core™ i3	13100	4 / 8	3.4 – 4.5 GHz	-	-	12 MB	60 W	DDR5-5600	UHD 730 (1.50 GHz)
	13100F	4 / 8	3.4 – 4.5 GHz	-	-	12 MB	58 W	DDR5-5600	None
	13100T	4 / 8	2.5 – 4.2 GHz	-	-	12 MB	35 W	DDR5-5600	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 DH770 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 Frequency 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 Refresh" processor overview (Date: January 2024)

Processors with a TDP of more than 65W and processors without graphics function (ID ends with "F") are not supported (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	DDR5-5600	UHD 770 (1.65 GHz)
	14900KF	8 / 16	3.2 – 5.6 GHz	16	2.4 – 4.4 GHz	36 MB	125 W	DDR5-5600	None
	14900	8 / 16	2.0 – 5.4 GHz	16	1.5 – 4.3 GHz	36 MB	65 W	DDR5-5600	UHD 770 (1.65 GHz)
	14900F	8 / 16	2.0 – 5.4 GHz	16	1.5 – 4.3 GHz	36 MB	65 W	DDR5-5600	None
	14900T	8 / 16	1.1 – 5.1 GHz	16	0.8 – 4.0 GHz	36 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.60 GHz)
	14700KF	8 / 16	3.4 – 5.6 GHz	8	2.5 – 4.3 GHz	33 MB	125 W	DDR5-5600	None
	14700	8 / 16	2.1 – 5.3 GHz	8	1.5 – 4.2 GHz	33 MB	65 W	DDR5-5600	UHD 770 (1.60 GHz)
	14700F	8 / 16	2.1 – 5.4 GHz	8	1.5 – 4.2 GHz	33 MB	65 W	DDR5-5600	None
	14700T	8 / 16	1.3 – 5.0 GHz	8	0.9 – 3.7 GHz	33 MB	35 W	DDR5-5600	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	DDR5-5600	UHD 770 (1.50 GHz)
	14600KF	6 / 12	3.5 – 5.3 GHz	8	2.6 – 4.0 GHz	24 MB	125 W	DDR5-5600	None
	14600	6 / 12	2.7 – 5.2 GHz	8	2.0 – 3.9 GHz	24 MB	65 W	DDR5-5600	UHD 770 (1.55 GHz)
	14600T	6 / 12	1.8 – 5.1 GHz	8	1.3 – 3.6 GHz	24 MB	35 W	DDR5-5600	UHD 770 (1.55 GHz)
	14500	6 / 12	2.6 – 5.0 GHz	8	1.9 – 3.7 GHz	24 MB	65 W	DDR5-5600	UHD 770 (1.55 GHz)
	14500T	6 / 12	1.7 – 4.8 GHz	8	1.2 – 3.4 GHz	24 MB	35 W	DDR5-5600	UHD 770 (1.55 GHz)
	14400	6 / 12	2.5 – 4.7 GHz	4	1.8 – 3.5 GHz	20 MB	65 W	DDR5-5600	UHD 730 (1.55 GHz)
	14400F	6 / 12	2.5 – 4.7 GHz	4	1.8 – 3.5 GHz	20 MB	65 W	DDR5-5600	None
	14400T	6 / 12	1.5 – 4.5 GHz	4	1.1 – 3.2 GHz	20 MB	35 W	DDR5-5600	UHD 730 (1.55 GHz)
Core™ i3	14100	4 / 8	3.5 – 4.7 GHz	–	–	12 MB	60 W	DDR5-5600	UHD 730 (1.50 GHz)
	14100F	4 / 8	3.5 – 4.7 GHz	–	–	12 MB	58 W	DDR5-5600	None
	14100T	4 / 8	2.7 – 4.4 GHz	–	–	12 MB	35 W	DDR5-5600	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 DH770 does not support the Unlock-function of Intel K-Series processors.

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