

Fanless Slim PC with a Kaby-Lake-U processor in industrial design

The DS77U7 is a fanless slim PC with a robust 1.3 litre metal chassis and exceptional connectivity: 2x HDMI, DisplayPort, Dual Intel LAN, USB 3.0/2.0, serial ports, audio, card reader and integrated W-LAN. Installation of components goes straight forward, as there is plenty of interior space for two memory modules, a 2.5" drive and an M.2-2280 SSD card. The built-in Dual Core Intel "Kaby-Lake-U" processor with integrated graphics provides ample performance for playback of 4K content. Thanks to its re-designed passive cooling architecture, the system is virtually maintenance-free and is approved for 24/7 nonstop operation. It is big on performance, yet extremely energy-efficient. The Shuttle XPC slim Barebone DS77U7 is an ideal platform for professional applications such as digital signage, POS, Kiosk, Thin Client, Cloud Computing, Office PC and Multimedia.

XPC slim Barebone DS77U7

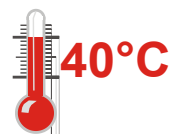


Feature Highlights

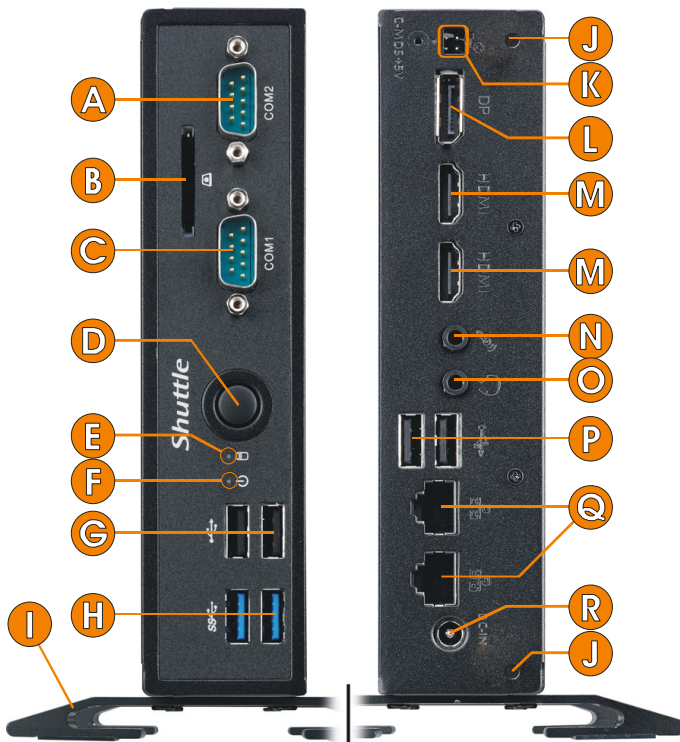
Slim Design	<ul style="list-style-type: none"> • Slim 1.3 litre metal chassis, black • Dimensions: 20 x 16.5 x 3.95 cm (LWH) • Incl. Stand & VESA mount (75/100 mm)
Operating System	<ul style="list-style-type: none"> • The operating system is not included • Compatible with Windows 10, Linux (64-bit)
Processor	<ul style="list-style-type: none"> • Intel Core i7-7500U, Kaby Lake-U, 2.7~3.5GHz • Integrated Intel HD 620 graphics, DX12 • Fanless heatpipe cooling
Memory Slots	<ul style="list-style-type: none"> • 2x 260-pin SO-DIMM slots • Supports max 2x 16 GB DDR4-2133
Storage Bays	<ul style="list-style-type: none"> • Bay: 6.35cm/2.5" for hard disk or SSD • M.2 2280 slot (supports PCIe and SATA)
Connectors WLAN	<ul style="list-style-type: none"> • 2x HDMI 1.4b, DisplayPort 1.2 *) • 2x USB 3.0, 4x USB 2.0, SD card reader • 2x Intel Gigabit LAN, WLAN 802.11n (1T1R) • 2x Audio (Line out + mic) • 2x COM port (RS232 + RS232/RS422/RS485) • Connector for external power button
Power Supply	<ul style="list-style-type: none"> • External 65 W fanless power adapter
Applications	<ul style="list-style-type: none"> • Digital Signage, POS, control device, etc. • Approved for 24/7 permanent operation

Shuttle Product	Processor Model	Cores / Threads	Clock / Turbo	L3-Cache	Intel Graphics
DS77U	Celeron 3865U	2 / 2	1.8 / - GHz	2 MB	HD 610
DS77U3	Core i3-7100U	2 / 4	2.4 / - GHz	3 MB	HD 620
DS77U5	Core i5-7200U	2 / 4	2.5 / 3.1 GHz	3 MB	HD 620
DS77U7	Core i7-7500U	2 / 4	2.7 / 3.5 GHz	4 MB	HD 620

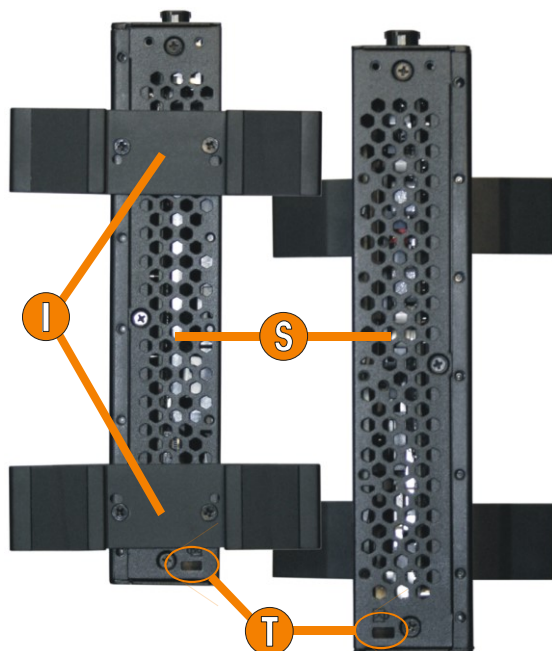
Images for illustration purposes only. This product does not include memory, storage and operating system.
*) the DisplayPort does not support audio output [2]



Shuttle XPC slim Barebone DS77U7 – Product Views



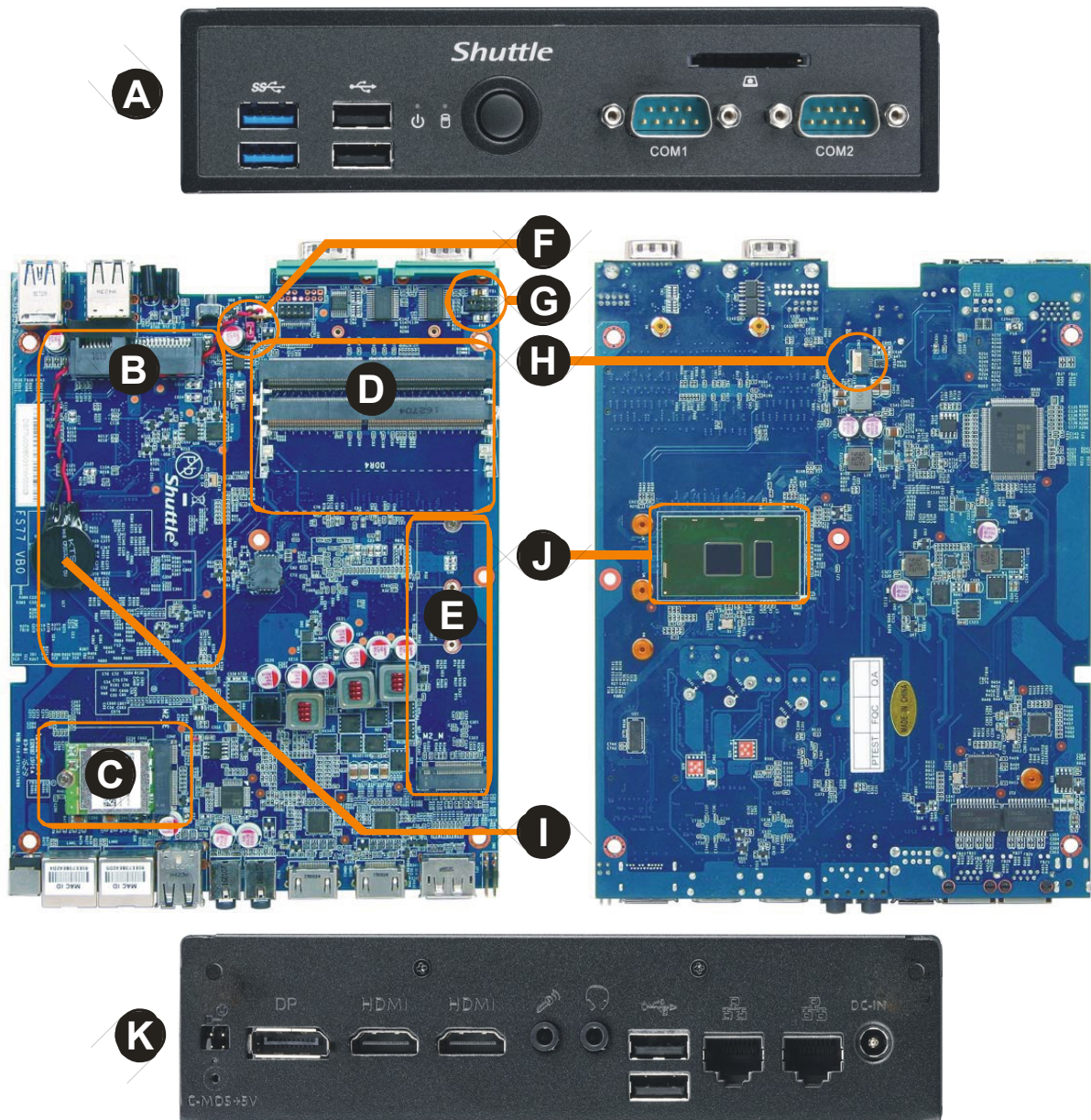
- A COM 2: RS-232
- B SD card reader
- C COM 1: RS-232/422/485
- D On/Off power button
- E Hard disk LED indicator
- F Power LED indicator
- G 2x USB 2.0
- H 2x USB 3.0
- I Stand with screws
- J 2x Perforation for optional WLAN antennas
- K Pin connector for external power button or CMOS button or 5 V DC voltage supply (please also see Shuttle Accessory CXP01)
- L DisplayPort Video output **)
- M 2x HDMI Audio/Video output
- N Microphone input
- O Headphones output
- P 2x USB 2.0
- Q 2x RJ45 Gigabit LAN
- R DC connector for external power adapter
- S Ventilation holes
- T Hole for Kensington lock
- U M.2-2280 slot for an SSD card with PCIe or SATA interface *)
- V M.2-2230 slot with WLAN card *)
- W 2x SO-DIMM slot for DDR4 memory modules
- X Bay for 2.5" storage (HDD or SSD) *)



*) A WLAN card is included. The other components such as a 2.5" storage drive (hard disk or SSD), memory modules, or an M.2 SSD card are not.

***) Note: the DisplayPort of DS77U7 does not support audio output

Shuttle XPC slim Barebone DS77U7 – Mainboard



- A Front Panel
- B Connector for 2.5" SATA storage
- C M2-2230 Slot with WLAN module
- D 2x SO-DIMM slot for DDR4 memory
- E M2-2280 slot for SSD cards
- F Jumper for „Always Power On“ setting
- G COM port configuration (Pin-9 voltage setting)
- H Cardreader Connector
- I CMOS Battery
- J BGA Processor (soldered)
- K Back Panel

Optional Accessories

CXP01

Adapter cable for external power button (without button)



DIR01

DIN-Rail Mounting Kit (for standard 35 mm DIN-Rail)



PRM01

2U rack mount kit for two Shuttle XPC slim



Shuttle XPC slim Barebone DS77U7 – Product Features



Robust, Stylish and Extremely Small

You should have held it in your own hands to experience how small it actually is. Barely 1.35 litre in volume, its rigid steel chassis design meets the high standards towards quality and stability that are essential for professional applications like digital signage. Despite its diminutive size, the processing power inside the DS77U7 is sufficient to meet the needs of the most demanding multimedia and computational workloads. The well-designed interior of the DS77U7 makes installations and upgrades effortless. Its sleek and stylish look blends seamlessly in both home and office environments.

What does Barebone mean?

The Shuttle XPC slim Barebone DS77U7 consists of a stylish metal case with pre-installed mainboard including processor, cooling system and external power adapter. Despite its small form factor it offers outstanding connectivity, functionality and performance. For a complete Mini-PC system, a few components still need to be added. The Mini-PC can be customised by installing the following components i.e. peripherals:



- up to two DDR4 SO-DIMM memory modules (max. 2x 16 GB DDR4-2133)
- one 2.5" storage drive (hard disk or SSD)
- one SSD card in M.2-2280 form factor (PCIe or SATA)
- keyboard, mouse and operating system

Once the desired operation system is installed, the DS77U7 is ready to use.



Ease of installation thanks to bay covers

The Shuttle XPC slim Barebone DS77U7 features two practical bay covers at the bottom of the chassis which makes the installation or upgrade of hardware components a breeze. No cable is required and no cooling system needs to be installed - setup is quickly completed.

24/7 nonstop operation and 0~40 °C temperature range

The Shuttle XPC slim Barebone DS77U7 is officially approved for 24/7 permanent operation. Thanks to its low power consumption and completely passive cooling, this PC runs highly reliably making it perfectly suitable for digital signage and POI/POS applications – even at ambient temperatures of up to 40 °C. [5]



Conditions for permanent use:

- Free circulation of air amongst the PC must be guaranteed
- Ventilation holes must stay clear
- If a hard disk is installed, this must also be approved for permanent operation by its manufacturer
- For high ambient temperatures higher than 35 °C we strongly recommend to use an SSD instead of an HDD.



No fan noise

A large heatsink is concealed behind a plastic cover and cools down the processor in a passive way without any fan. Using an SSD drive instead of a hard disk makes the system virtually noiseless and hence perfectly suitable for noise-sensitive environments like e.g. a library, living room, music studio or even a bedroom.



Energy-saving

Power consumption mainly depends on system load. Equipped with a 2.5" SSD drive, the system consumes about 7-8 W in idle mode. If the device is running 5 days a week for eight hours a day in idle mode, the annual consumption would amount to less than 17 kWh which would mean just 4~5 Euros on the power bill (25 Euro ct/kWh) - way less than a conventional desktop PC draws.



Energy-efficient Intel® Kaby Lake-U Processor

The Shuttle XPC slim Barebone DS77U7 is equipped with an Intel® Dual Core processor of the Kaby Lake-U series which is soldered to mainboard and passively cooled by a large heatsink. This ultra low voltage (ULV) processor belongs to Intel's seventh-generation Intel Core processor family (codename: "Kaby Lake") manufactured in a new energy-efficient 14 nm architecture. As a result of further integration, it comes as a system-on-a-chip (SoC) without the need of an extra chipset. The integrated Intel HD-Graphics-610/620 engine supports DirectX 12 and Ultra HD / 4K resolution via DisplayPort 1.2 or HDMI 1.4a.



Great Connectivity

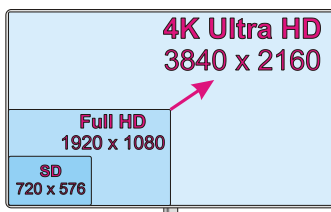
Despite its small size, the Shuttle XPC slim Barebone DS77U7 sports a wide range of I/O connectors. Besides an SD card reader, it comes with a couple of USB 3.0, USB 2.0, Gigabit-LAN, digital video, audio and serial ports.



Triple Display with 2x HDMI and DisplayPort

The DS77U7 features three digital video outputs: 2x HDMI and DisplayPort. This multi-monitoring technology offers multiple display support on up to three separate monitors. This helps improve on productivity by allowing for spreading multiple windows across three monitors while working with them simultaneously.

Note: the DisplayPort of DS77U7 does not support audio output



Supports 4K Ultra HD at 60Hz

The Shuttle XPC slim Barebone DS77U7 supports displays running at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second when connected to its DisplayPort video output. Being the successor to the Full HD standard, Ultra HD delivers a four times higher resolution with a wider colour space and colour depth.



Dual Intel Gigabit LAN Network

Today's media-rich communications across the internet and within enterprises create new demands for clients in Local Area Networks. For that reason, Shuttle applies Gigabit LAN performance to this Mini-PC and the Shuttle XPC slim Barebone DS77U7 even supports two such interfaces. Intel network adapters are popular for their excellent performance and driver compatibility and are the preferred choice for professional environments.



COM ports with plastic caps

Two serial ports

Many PCs do not have these legacy ports any longer, since they have been superseded and replaced by USB for most consumer applications, but they are still commonly used for applications such as industrial automation systems, scientific analysis, POS systems and other such fields of application. The Shuttle XPC slim Barebone DS77U7 features two serial RS-232 ports which also support both 5 and 12 V auxiliary voltage. The left COM port (COM 1) also supports the RS422 and RS485 standard. The COM ports are protected by black plastic caps.



RS-232 RS-232
RS-422
RS-485

COM port Pin 9 Configuration

Pin 9 of the COM-Port is a multi-functional signal (see red circle on the photo). Based on the Jumper JP1 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).



USB 3.0

The Shuttle XPC slim Barebone DS77U7 has six USB ports, two of which are USB 3.0. USB 3.0 "SuperSpeed" provides a significant performance increase over previous USB generations making it the ideal interface solution for demanding, external peripherals. USB 3.0 supports up to 5Gb/s full duplex which means an up to 10 times greater performance than USB 2.0.



M.2-2280-Slot for SSD cards

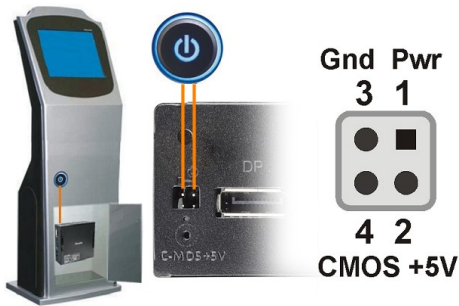
The M.2-2280 slot supports M.2 SSD storage cards with SATA or with the more advanced PCIe interface with NVMe support.

Type 2280 means, it supports the usual M.2 cards with a width of 22 mm and a length of 80mm, but also 2242 and 2260 standard cards are supported.



SD Card Reader

The built-in SD card reader at the front side makes file transfer from and to a digital camera easy. It takes SD, SDHC and SDXC memory flash cards in standard size format and also supports booting from bootable SD cards.



External power button by separate remote line

If space is an object (e.g. in case of a fixed installation) and the machine cannot be switched on by pressing the front power button, it can be powered on by a separate remote line (also see Shuttle Accessory CXP01). An appropriate four-pin-connector "SW2" can be found at the back panel of the Shuttle XPC slim Barebone DS77U (pitch 2.54 mm). In addition, this connector also provides the Clear CMOS function and an external 5 V DC voltage supply.

Pin 1-3	Connect external power button (use a temporary switch)
Pin 3-4	Close these pins for 3 seconds to perform a Clear CMOS
Pin 2-3	External + 5 V DC voltage (Pin 3 = Ground).



Location of Jumper J9

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 or (4) PowerOn by LAN. As a matter of the nature of this function, it may fail after short power failures. This is why the DS77U7 also comes with a hardware-based solution. By removing Jumper J9 (see quick guide) the system will start unconditionally once power is applied.



Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. The Shuttle XPC slim Barebone DS77U7 provides an appropriate hole on both sides of its chassis. The lock-and-cable is not included.



VESA mount

The supplied 75/100mm VESA mount allows the Shuttle XPC slim Barebone DS77U7 to be wall-mounted or just to be affixed on the rear side of a monitor which is particularly interesting for the industry segment, company buildings and public institutions. Besides, the chassis of the Shuttle XPC slim Barebone DS77U7 provides numerous threaded holes (M3) enabling it to be fitted almost anywhere.

Supplied accessory: VESA mount with screws



Shuttle XPC slim Barebone DS77U7 - Specifications

<i>Fanless and Silent</i>	<p>Fanless and Silent</p> <p>Passive cooling, no fan noise at all</p> <p>Perfect to be used in noise-sensitive environments</p> <p>Fanless, dust-free and thus virtually maintenance-free</p>
<i>Low Power Consumption</i>	<p>Power consumption in idle mode under Windows 10: ca. 7~8 W only</p>
<i>24/7 Nonstop Operation</i>	<p>This device is approved for 24/7 permanent operation.</p> <p>Requirements:</p> <ul style="list-style-type: none"> - Free circulation of air amongst the PC must be guaranteed. - Ventilation holes must stay clear. - If a hard disk is installed, this must also be approved for permanent operation by its manufacturer
<i>Chassis</i>	<p>Slim-PC (Nettop) with black chassis made of steel</p> <p>Without cooling fan, passive cooling only</p> <p>The bays for memory, 2.5" drive and M.2 card can be easily accessed by removing two cover plates.</p> <p>Dimensions: 200 x 165 x 39.5 mm (LWH) = 1.3 litres</p> <p>Weight: 1.43 kg net and 2.13 kg gross</p> <p>Two holes for Kensington Lock and numerous threaded holes (M3) at both sides of the chassis</p>
<i>Operation Position</i>	<p>1) Vertical: Usually operated in vertical position with the supplied feet (DisplayPort output facing up).</p> <p>2) VESA-mounted: The device can also be mounted behind an appropriate monitor using the supplied VESA mount kit.</p> <p>Note: From a thermal point of view horizontal operation is permitted, however, there are no rubber feet on the device. The maximum operating temperature is 35 °C then.</p>
<i>Operation System</i>	<p>This barebone system comes without operating system.</p> <p>It is compatible with Windows 10 (64-bit) and Linux (64-bit).</p>
<i>Processor</i>	<p>Model: Intel Core i7-7500U (ULV)</p> <p>System-on-a-chip architecture (SoC): no chipset required</p> <p>BGA1356 package - directly soldered onto the mainboard</p> <p>Code name: Kaby Lake-U (7th Generation Intel Core)</p> <p>Cores / Threads: 2 / 4, Clock rate: 2.7~3.5 GHz</p> <p>L1/L2/L3 Cache: 128 kB / 512 kB / 4096 kB</p> <p>Memory controller: DDR4-2133 Dual Channel (1.2 V)</p> <p>TDP wattage: 15 W maximum</p> <p>Manufacturing process: 14 nm</p> <p>Maximum Tjunction Temperature: 100 °C</p> <p>Supports Hyper-Threading (HT), 64-bit, VT-x (EPT), VT-d, Enhanced SpeedStep, NX bit, AES-NI, SSE 4.1/4.2</p> <p>Integrated graphics engine</p>

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<p><i>Integrated Graphics</i></p>	<p>Intel HD graphics 620 GPU clock frequency: 300~1050 MHz Execution Units (EUs): 24 Three digital audio/video ports support three independent screens: Supports Ultra HD / 4K resolution at 3840 x 2160 Pixels 1) DisplayPort 1.2 [2] supports Ultra HD @ 60 Hz 2) 2x HDMI 1.4b supports Ultra HD @ 30 Hz Note: the DisplayPort of DS77U7 does not support audio output</p>
<p><i>Mainboard BIOS</i></p>	<p>Shuttle Mainboard FS77 All capacitors are high quality solid capacitors Supports resume after power failure [6] Supports Wake on LAN (WOL) Supports Power on by RTC Alarm Supports boot from M.2 SSD cards, USB devices and SD card reader AMI BIOS in 8 MByte EEPROM with SPI interface Supports hardware monitoring and watch dog function Supports Unified Extensible Firmware Interface (UEFI) Supports Firmware-TPM (fTPM) Version 2.0</p>
<p><i>Power Adapter</i></p>	<p>External 65 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz, max. 1.6 A Output: 19 V DC, max. 3.42 A, max. 65 W</p>
<p><i>DC-Eingang</i></p>	<p>DC-Stecker: 5,5 / 2,5 mm (Außen/Innen-Durchmesser) Der DC-Eingang des Computers unterstützt eine externe Spannungsversorgung mit 12V±5% und 19V±5%.</p>
<p><i>Memory Support</i></p>	<p>2x SO-DIMM slots with 260 pins Supports DDR4-2133 (PC4-17000) SDRAM at 1.2 V, Supports Dual Channel mode Supports a maximum of 16 GB per DIMM, maximum total size: 32 GB Supports two unbuffered DIMM modules (no ECC or registered)</p>
<p><i>Audio</i></p>	<p>Audio Realtek® ALC 662 High-Definition Audio Two analog audio connectors (3.5 mm) at the back panel: 1) 2 channel line out (headphones), 2) microphone input Digital multi-channel audio output: via HDMI and DisplayPort</p>
<p><i>Dual Intel Gigabit LAN</i></p>	<p>Dual network with two RJ45 ports Used network chips: 1) Intel i211 Ethernet Controller with MAC, PHY and PCIe interface 2) Intel i219LM PHY connected to the MAC of the processor Supports 10 / 100 / 1.000 MBit/s operation, Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE) Supports Teaming mode [3]</p>
<p><i>Wireless Network (WLAN)</i></p>	<p>Built-in M.2-2230-A/E WLAN card and internal antenna Single-Chip 1T1R WLAN Controller Realtek RTL8188EE Supports IEEE 802.11b/g/n, max. 150 Mbps up-/downstream Security: WPA/WPA2(-PSK), WEP 64/128 bit, IEEE 802.11x/i</p>

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<p><i>M.2 Slot for SSDs</i></p>	<p>The M.2 2280 BM slot provides the following interfaces: - PCI-Express Gen. 3.0 X4 with up to 32 Gbps Data Transfer Speed - SATA v3.0 (max. 6 Gbps) It supports M.2 cards with a width of 22 mm and a length of 42, 60 or 80 mm (type 2242, 2260, 2280). Supports M.2 SATA SSDs (with B+M key) and M.2 PCIe SSDs (with M key)</p>
<p><i>2.5" Drive Bay with SATA connector</i></p>	<p>Supports one Serial ATA hard disk or one SATA SSD drive in 6.35 cm / 2.5" format Device height: max. 12.5 mm Supports Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth Supports Unified Extensible Firmware Interface (UEFI) Note: no Serial ATA cable is required</p>
<p><i>Card Reader</i></p>	<p>Integrated SD card reader Supports SD, SDHC and SDXC memory flash cards Supports booting from SD card</p>
<p><i>Front Panel Connectors</i></p>	<p>2x USB 3.0 2x USB 2.0 2x RS232 serial ports (5 V / 12 V, 1x switchable to RS422 / RS485) [1] covered with black plastic caps SD card reader (supports SD, SDHC, SDXC) Power button Power LED (blue) HDD LED (yellow)</p>
<p><i>Back Panel Connectors</i></p>	<p>DisplayPort 1.2 [2,7] 2x HDMI 1.4b 2x USB 2.0 2x Intel Gigabit LAN (RJ45) Microphone input Audio Line-out (headphones) DC-input connector for external power adapter 4-pin connector "SW2" (2.54 mm pitch) for power button, Clear CMOS and 5 V DC [4]</p>
<p><i>Always-On-Jumper</i></p>	<p>By removing Jumper J9 (please refer to the quick user guide) the system will start unconditionally once power is applied. [6]</p>
<p><i>Scope of Delivery</i></p>	<p>Multi-language user guide Two metal feet with four screws M3 x 7 VESA mount for 75/100mm standard (two metal brackets) Four thumbscrews M3 x 5 mm (screws together VESA mount and PC) Four screws M4 x 10 mm (to fix the VESA mount to the external surface) Rack (to mount a 2.5" storage in the bay) with two screws M3 x 4 mm Driver DVD for Windows 10 (64-bit) External power adapter with power cord</p>

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Optional Accessories	<ul style="list-style-type: none"> - 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	<p>Operating temperature range: 0~40 °C [5] Relative humidity, non-condensing: 10~90%</p>
Conformity Certifications	<p>EMI: FCC, CE, BSMI, C-Tick Safety: ETL, CB, BSMI Other: RoHS, Energy Star, ErP</p> <p>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:</p> <ul style="list-style-type: none"> (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), (4) 1999/5/EC related to Radio and Telecommunications Terminal Equipment (R&TTE)

Footnote:**[1] Jumper for COM port configuration**

Pin 9 of the COM-Port is a multi-functional signal. Based on the Jumper JP1 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 operating mode of COM 1 can be set to RS232, RS422 or RS485 in the BIOS. COM 2 supports RS232 mode only.

[2] Limitations of the DisplayPort

Due to the design of the Intel chipset, the DisplayPort output of the DS77 Series is based on the Embedded DisplayPort (eDP) interface. Please be aware of the following restrictions when setting up your monitor.

- 1) The DisplayPort (DP) has no audio function. Please use HDMI for displays/TVs with integrated speakers.
- 2) Intel Collage Mode in Multi-Stream Transport (MST) mode is not available. Please use a native 4K display. Older monitors using Collage Mode are not supported.
- 3) PASSIVE adapters/cables cannot be used (e.g. DP-to-HDMI or DP-to-DVI). Please use a native DP connection or an ACTIVE adapter.
- 4) HotPlug is not supported. Please restart the system for the display to be detected.

Note: In a 3-display setup, the DP output won't show picture while booting in BIOS mode. It will be activated once the OS has loaded the display driver.

[3] Teaming Mode

The teaming function allows you to group both available network adapters together to function as a single adapter. The benefit of this approach is that it enables load balancing and failover.

Driver download: <https://downloadcenter.intel.com/download/21642>

[4] Four-pin header at the back panel

This header allows for connecting an external power button. It also provides 5 V DC voltage for external devices and the Clear CMOS function. Optional accessory: the adapter cable CXP01.

[5] Caution: for high ambient temperatures higher than 35 °C we strongly recommend to use an SSD instead of an HDD

[6] Power on after power fail:

The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". This function determines the PC's behaviour after power failure. As a matter of the nature of this function, it may fail after short power failures. This is why the Shuttle XPC slim Barebone DS77U7 also comes with a hardware-based solution. By removing Jumper J9 (please refer to the quick user guide) the system will start unconditionally once power is applied.

Shuttle DS77U7 and DS67U/DS68U Series – Comparison

	DS77U Series	DS67U Series	DS68U Series
Intel Processor	Celeron, Core i3/i5/i7 Dual Core, 15 W TDP 14 nm “Kaby Lake-U”	Celeron, Core i3/i5/i7 Dual Core, 15 W TDP 14 nm “Skylake-U”	
Driver Supp.	Win 10 & Linux (64-bit)	Windows 7, 8.1, 10 & Linux (64-bit)	
Graphics	Gen. 9, DirectX 12	Gen. 9, DirectX 12	
SO-DIMM Memory	max. 2x 16 GB DDR4-2133	max. 2x 16 GB DDR3L-1600	
Front Panel	Card reader 2x USB 3.0, 2x USB 2.0 2x COM	Card reader 2x USB 3.0, 2x USB 2.0 2x COM	
Back Panel	2x HDMI + DisplayPort 2x Audio 2x USB 2.0 2x Gigabit LAN (Intel)	HDMI + DisplayPort 2x Audio 2x USB 2.0 2x Gigabit LAN (Intel)	HDMI + VGA 2x Audio 2x USB 2.0 2x Gigabit LAN (Intel)
Storage Bay	1x 2.5" (6.35 cm) max. 12.5 mm in height	1x 2.5" (6.35 cm) max. 12.5 mm in height	
SSD Slot	M.2-2280 (SATA 6G/PCIe)	M.2-2242 (SATA 6G/PCIe)	M.2-2280 (SATA 6G/PCIe)
WLAN	WLAN-n 1x internal antenna	WLAN-ac & BT 4.0 2x external antenna	WLAN-n 1x internal antenna
Front/Back View			

Product models and processor features:

Shuttle Product	Processor Model	Cores / Threads	Clock / Turbo	L3-Cache	Intel Graphics	EUs	GPU Clock	TDP
DS77U	Celeron 3865U	2 / 2	1.8 / – GHz	2 MB	HD 610	12	300 / 900 MHz	15 W
DS77U3	Core i3-7100U	2 / 4	2.4 / – GHz	3 MB	HD 620	24	300 / 1000 MHz	15 W
DS77U5	Core i5-7200U	2 / 4	2.5 / 3.1 GHz	3 MB	HD 620	24	300 / 1000 MHz	15 W
DS77U7	Core i7-7500U	2 / 4	2.7 / 3.5 GHz	4 MB	HD 620	24	300 / 1050 MHz	15 W
DS67U / DS68U	Celeron 3855U	2 / 2	1.6 / – GHz	2 MB	HD 510	12	300 / 800 MHz	15 W
DS67U3 / DS68U3*	Core i3-6100U	2 / 4	2.3 / – GHz	3 MB	HD 520	24	300 / 1000 MHz	15 W
DS67U5	Core i5-6200U	2 / 4	2.3 / 2.8 GHz	3 MB	HD 520	24	300 / 1000 MHz	15 W
DS67U7	Core i7-6500U	2 / 4	2.5 / 3.1 GHz	4 MB	HD 520	24	300 / 1050 MHz	15 W

*) DS68U3 only available upon request – delivery time 2~3 months