

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

The DS77U 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 DS77U is an ideal platform for professional applications such as digital signage, POS, Kiosk, Thin Client, Cloud Computing, Office PC and Multimedia.

**XPC slim Barebone DS77U**



**Feature Highlights**

<b>Slim Design</b>	<ul style="list-style-type: none"> <li>• Slim 1.3 litre metal chassis, black</li> <li>• Dimensions: 20 x 16.5 x 3.95 cm (LWH)</li> <li>• Incl. Stand &amp; VESA mount (75/100 mm)</li> </ul>
<b>Operating System</b>	<ul style="list-style-type: none"> <li>• The operating system is not included</li> <li>• Compatible with Windows 10, Linux (64-bit)</li> </ul>
<b>Processor</b>	<ul style="list-style-type: none"> <li>• Intel Celeron 3865U "Kaby Lake-U", 1.8GHz</li> <li>• Integrated Intel HD 610 graphics, DX12</li> <li>• Fanless heatpipe cooling</li> </ul>
<b>Memory Slots</b>	<ul style="list-style-type: none"> <li>• 2x 260-pin SO-DIMM slots</li> <li>• Supports max 2x 16 GB DDR4-2133</li> </ul>
<b>Storage Bays</b>	<ul style="list-style-type: none"> <li>• Bay: 6.35cm/2.5" for hard disk or SSD</li> <li>• M.2 2280 slot (supports PCIe and SATA)</li> </ul>
<b>Connectors WLAN</b>	<ul style="list-style-type: none"> <li>• 2x HDMI 1.4b, DisplayPort 1.2 *)</li> <li>• 2x USB 3.0, 4x USB 2.0, SD card reader</li> <li>• 2x Intel Gigabit LAN, WLAN 802.11n (1T1R)</li> <li>• 2x Audio (Line out + mic)</li> <li>• 2x COM port (RS232 + RS232/RS422/RS485)</li> <li>• Connector for external power button</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• External 65 W fanless power adapter</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Digital Signage, POS, control device, etc.</li> <li>• Approved for 24/7 permanent operation</li> </ul>

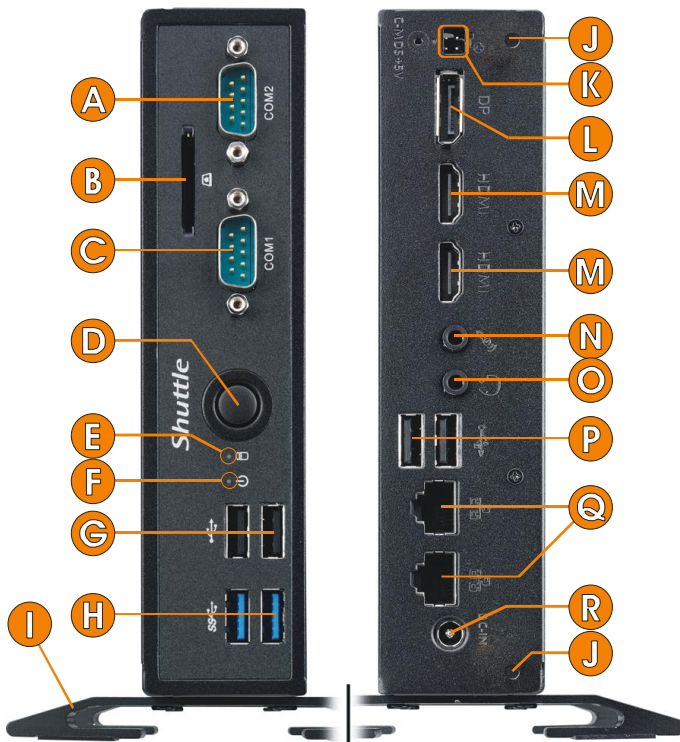
Shuttle Product	Processor Model	Cores / Threads	Clock / Turbo	L3-Cache	Intel Graphics
DS77U	Celeron 3865U	2 / 2	1.8 / - GHz	2 MB	HD 610
DS77U3	Core i3-7100U	2 / 4	2.4 / - GHz	3 MB	HD 620
DS77U5	Core i5-7200U	2 / 4	2.5 / 3.1 GHz	3 MB	HD 620
DS77U7	Core i7-7500U	2 / 4	2.7 / 3.5 GHz	4 MB	HD 620

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

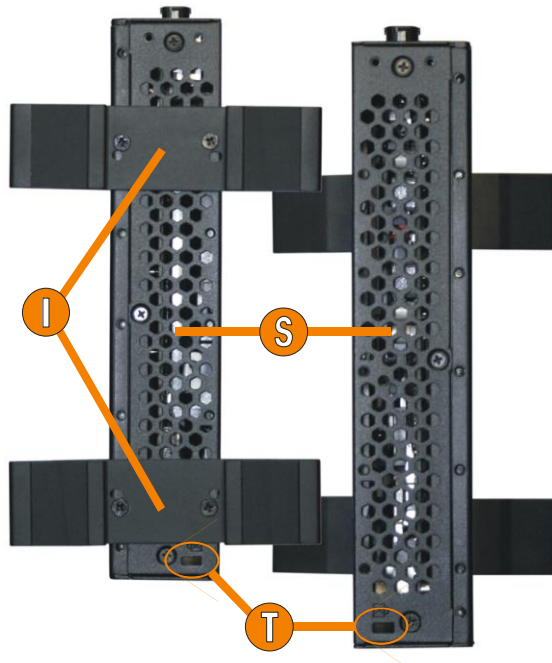


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Shuttle XPC slim Barebone DS77U – Product Views



- 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
- 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) \*)



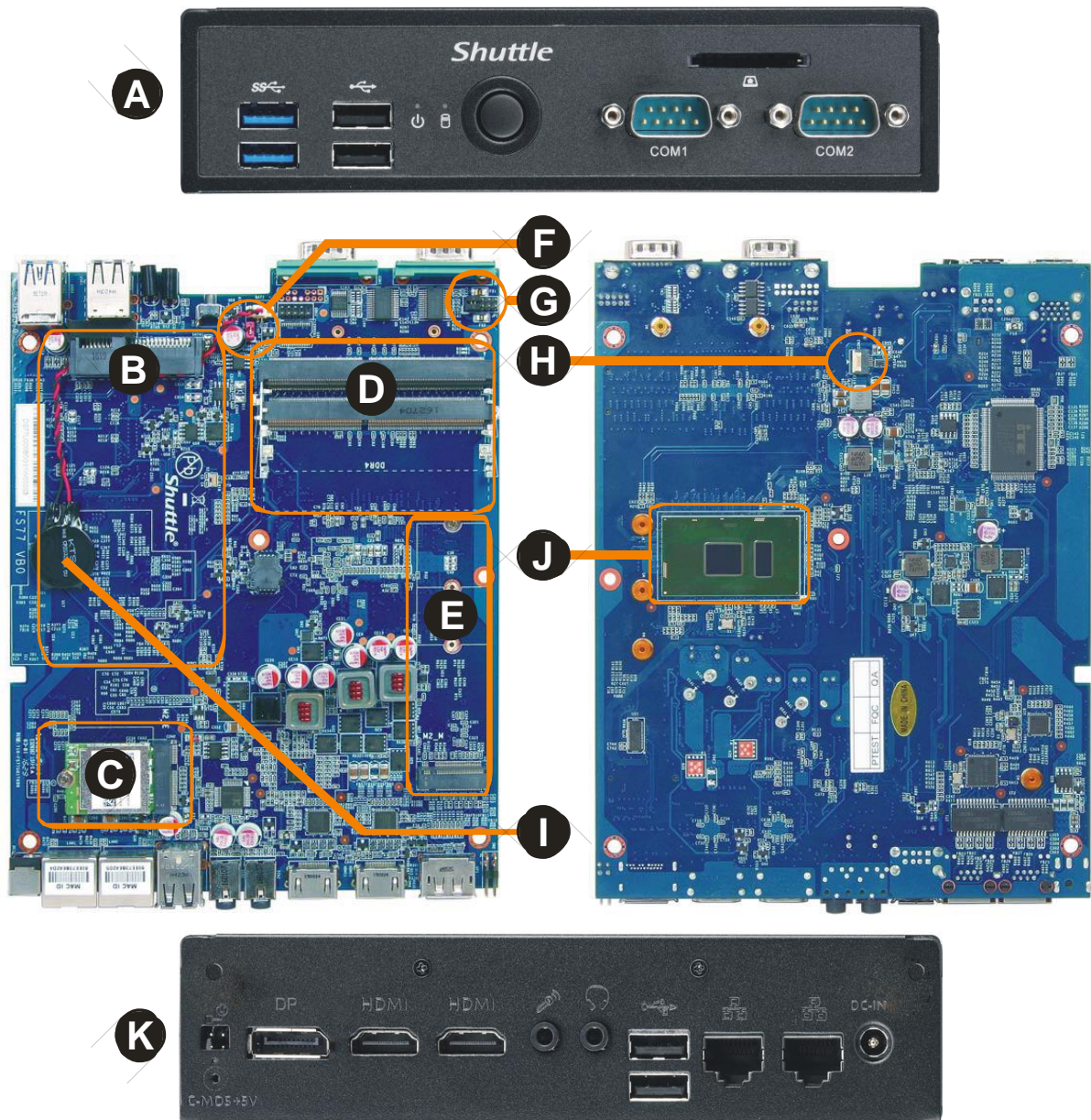
\*) A WLAN card is included. The other components such as a 2.5" storage drive (hard disk or SSD), memory modules, or an M.2 SSD card are not.

\*\*\*) Note: the DisplayPort of DS77U does not support audio output

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Shuttle XPC slim Barebone DS77U – 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 M2-2242 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

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## Shuttle XPC slim Barebone DS77U – 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 DS77U is sufficient to meet the needs of the most demanding multimedia and computational workloads. The well-designed interior of the DS77U 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 DS77U 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 DS77U is ready to use.



### Ease of installation thanks to bay covers

The Shuttle XPC slim Barebone DS77U 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 DS77U 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 DS77U 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**

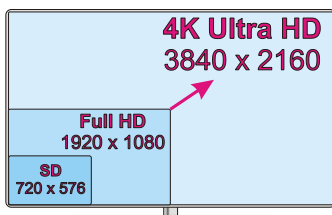
Despite its small size, the Shuttle XPC slim Barebone DS77U sports a wide range of I/O connectors. Besides an SD card reader, it comes with a couple of USB 3.0, USB 2.0, Gigabit-LAN, digital video, audio and serial ports.



**Triple Display with 2x HDMI and DisplayPort**

The DS77U 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 DS77U does not support audio output



**Supports 4K Ultra HD at 60Hz**

The Shuttle XPC slim Barebone DS77U 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.

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**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 DS77U 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 DS77U 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-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 DS77U 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**

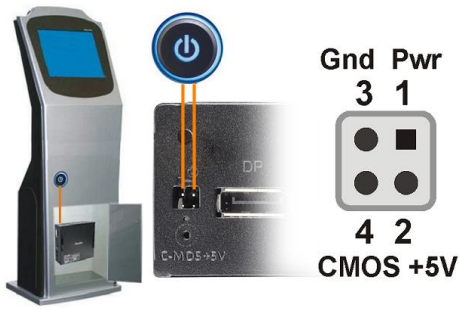
The M.2-2280 slot supports M.2 SSD storage cards with SATA or with the more advanced PCIe interface with NVMe support. Type 2280 means, it supports the usual M.2 cards with a width of 22 mm and a length of 80mm, but also 2242 and 2260 standard cards are supported.



**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.

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**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. 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 DS77U 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 DS77U 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 DS77U 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 DS77U provides numerous threaded holes (M3) enabling it to be fitted almost anywhere.

**Supplied accessory: VESA mount with screws**



## Shuttle XPC slim Barebone DS77U - 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"> <li>- Free circulation of air amongst the PC must be guaranteed.</li> <li>- Ventilation holes must stay clear.</li> <li>- If a hard disk is installed, this must also be approved for permanent operation by its manufacturer</li> </ul>
<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 Celeron 3865U (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 / 2</p> <p>Clock rate: 1.8 GHz</p> <p>L1/L2/L3 Cache: 128 kB / 512 kB / 2048 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 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 610            GPU clock frequency: 300~900 MHz            Execution Units (EUs): 12            Three digital audio/video ports support three independent screens:            Supports Ultra HD / 4K resolution at 3840 x 2160 Pixels            1) DisplayPort 1.2 [2,7] supports Ultra HD @ 60 Hz            2) 2x HDMI 1.4b supports Ultra HD @ 30 Hz            Note: the DisplayPort of DS77U 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)</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            DC Connector: 5.5/2.5 mm (outer/inner diameter)</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>
<p><i>Environmental Specifications</i></p>	<p>Operating temperature range: 0~40 °C [5]                  Relative humidity, non-condensing: 10~90%</p>

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### Conformity Certifications

EMI: FCC, CE, BSMI, C-Tick

Safety: ETL, CB, BSMI

Other: RoHS, Energy Star, 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),

(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] Note: the DisplayPort of DS77U does not support audio output.**

#### [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.

**[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 DS77U 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.

#### [7] 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: 1m, DisplayPort (male, 20p) to HDMI-A (male, 19p)

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

The integrated graphics automatically detects the connected display and puts out the appropriate electric signal - either DisplayPort (without an adapter) or HDMI/DVI (with an adapter).

However, a monitor with a DisplayPort connector cannot be connected to the HDMI port with a simple, passive adapter.



Shuttle DS77U 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 <b>DDR4-2133</b>	max. 2x 16 GB <b>DDR3L-1600</b>	
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	<b>M.2-2280 (SATA 6G/PCIe)</b>	<b>M.2-2242 (SATA 6G/PCIe)</b>	<b>M.2-2280 (SATA 6G/PCIe)</b>
WLAN	WLAN-n 1x internal antenna	<b>WLAN-ac &amp; BT 4.0</b> 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
<b>DS77U</b>	Celeron 3865U	2 / 2	1.8 / – GHz	2 MB	HD 610	12	300 / 900 MHz	15 W
<b>DS77U3</b>	Core i3-7100U	2 / 4	2.4 / – GHz	3 MB	HD 620	24	300 / 1000 MHz	15 W
<b>DS77U5</b>	Core i5-7200U	2 / 4	2.5 / 3.1 GHz	3 MB	HD 620	24	300 / 1000 MHz	15 W
<b>DS77U7</b>	Core i7-7500U	2 / 4	2.7 / 3.5 GHz	4 MB	HD 620	24	300 / 1050 MHz	15 W
<b>DS67U / DS68U</b>	Celeron 3855U	2 / 2	1.6 / – GHz	2 MB	HD 510	12	300 / 800 MHz	15 W
<b>DS67U3 / DS68U3*</b>	Core i3-6100U	2 / 4	2.3 / – GHz	3 MB	HD 520	24	300 / 1000 MHz	15 W
<b>DS67U5</b>	Core i5-6200U	2 / 4	2.3 / 2.8 GHz	3 MB	HD 520	24	300 / 1000 MHz	15 W
<b>DS67U7</b>	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