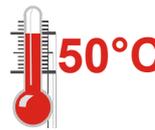


Robust Slim PC for powerful Skylake processors

The Shuttle XPC slim Barebone DH110SE is a robust 1.3l Barebone PC with H110 chipset for Intel LGA 1151 desktop processors, codenamed "Skylake". It allows for two digital displays to be operated at the same time and supports up to 32 GB SO-DIMM memory. Its slim metal chassis 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.

XPC slim Barebone **DH110SE**



Feature Highlights

| | |
|-------------------------|--|
| Slim Design | <ul style="list-style-type: none"> • Slim 1.3 litre metal chassis, black • 190 x 165 x 43 mm (LWH) • Operating temperature: 0~50 °C |
| Operating System | <ul style="list-style-type: none"> • The operating system is not included • Supports Windows 7 / 8.1 / 10, Linux 64-bit |
| Processor | <ul style="list-style-type: none"> • Supports LGA 1151 "Skylake" processors up to a max. TDP of 65 W • Supports Core i7 / i5 / i3, Pentium, Celeron • Heatpipe cooling system with two fans |
| Chipset | <ul style="list-style-type: none"> • Intel H110 Chipset |
| Memory | <ul style="list-style-type: none"> • 2x 260-pin SO-DIMM slots • Supports DDR4-2133 (1.2 V), max. 2x 16 GB |
| Graphics | <ul style="list-style-type: none"> • Integrated Intel HD graphics, 4K support (features depend on processor) • HDMI, DisplayPort • Supports two independent displays |
| Storage | <ul style="list-style-type: none"> • 1x 2.5" bay for SATA hard disk or SSD |
| M.2 slots | <ul style="list-style-type: none"> • 1x M.2 2260 M slot (SATA) • 1x M.2 2230 AE for optional WLAN (WLN-M) |
| Other Connectors | <ul style="list-style-type: none"> • SD card reader, 2x audio (line out, mic) • 2x USB 3.0, 4x USB 2.0 • Gigabit LAN (RJ45), supports WOL • Connector for external power button • "Always on" Jumper, DC-input 19 V • Optional WLAN module (Accessory WLN-M) |
| Power Supply | <ul style="list-style-type: none"> • External 90 W / 19 V fanless power adapter |
| Applications | <ul style="list-style-type: none"> • Digital Signage, POS, control device, etc. |



Images for illustration only.
Processor, memory, storage and operating system not included.



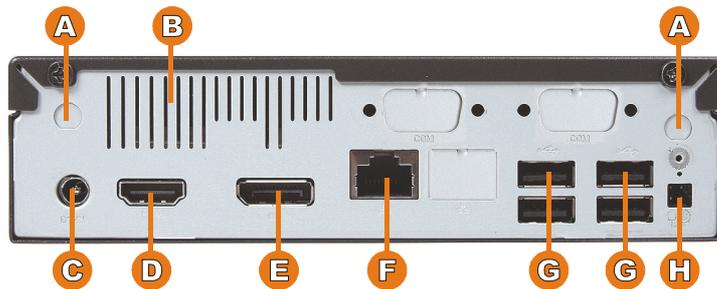
Shuttle XPC slim Barebone DH110SE – Front and Back Panel

Front view



- 1 Microphone input
- 2 Headphone output
- 3 Power LED
- 4 Hard disk LED
- 5 Power Button
- 6 SD Card Reader
- 7 2x USB 3.0
- 8 2x USB 2.0

Rear view



- A 2x WLAN perforation
- B Ventilation grille
- C DC power input
- D HDMI video output
- E DisplayPort (DP) video outputs
- F RJ45 Gigabit LAN
- G 4x USB 2.0
- H Connector for external power button, Clear CMOS and 5V DC voltage (4-pin, 2.54 mm pitch)
- I 2x hole for Kensington Lock
- J VESA mount (two parts)

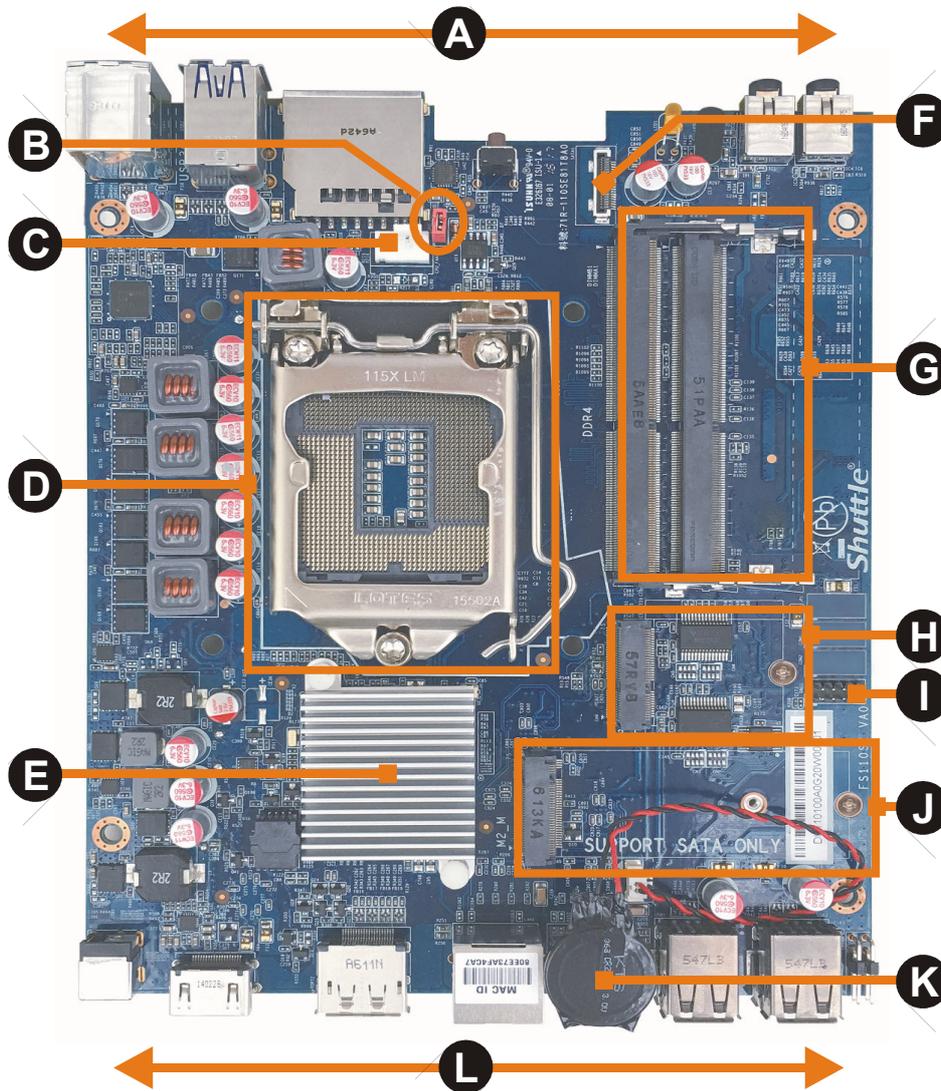
Right side



Left side



Shuttle XPC slim Barebone DH110SE – Mainboard



| | | | |
|----------|-----------------------------|----------|---|
| A | Front Panel | G | SO-DIMM Socket for DDR4-2133 Memory |
| B | Always Power-On Jumper | H | M.2-2230 Slot for an optional WLAN module (WLN-M) |
| C | Fan Connector | I | Debug Interface |
| D | LGA 1151 Processor Socket | J | M.2-2260 M-key Slot for SSDs |
| E | Intel H110 Chipset | K | CMOS Battery |
| F | SATA 3.0 (6 Gbps) Connector | L | Back Panel |

Shuttle XPC slim Barebone DH110SE – Required Components

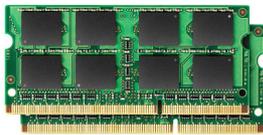
The following components need to be added to make it a fully-configured Mini PC

LGA 1151 processor “Skylake”
 TDP max. 65 W
 Core i7 / i5 / i3, Pentium
 or Celeron



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

Windows / Linux
 Operating System



Up to two DDR4-2133
 SO-DIMM memory modules
 max. 16 GB each

Optional:
 M.2 2230 WLAN-Card (WLN-M)



Optional:
 M.2 2260 SSD storage
 (SATA)

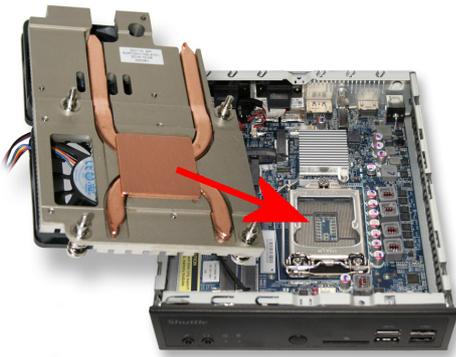


Shuttle XPC slim Barebone DH110SE – Product Features



Robust, stylish and particularly small

You should have held it in your own hands to see how small it actually is. Barely measuring a volume of 1.35 litre, its steel chassis gives it the appropriate stability required for professional applications in 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 of the Skylake generation. The interior of the DH110SE is very tidy too so that it won't take long to set it 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 active dual-fan heatpipe cooling system ensures whisper-quiet operation and system stability.



Extended temperature range and reliability

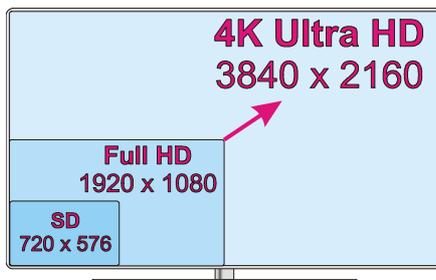
The DH110SE is outstandingly robust thanks to its rugged chassis. With an ambient temperature range from 0-50 °C it is suitable for use in the most demanding environments. Solely designed with all solid capacitors, the DH110SE is guaranteed to deliver maximum stability, reliability and longer system lifetime for long-term applications like digital signage.

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



Dual Display with HDMI and DisplayPort

The DH110SE features two digital video outputs: HDMI and DisplayPort (DP). Dual View technology offers multiple display support on up to two separate monitors. This helps improve on productivity by allowing for spreading multiple windows across two monitors while working with them simultaneously.



Supports 4K Ultra HD at 60 Hz

The DH110SE supports displays running at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second when connected to its DisplayPort video outputs. Being the successor to the Full HD standard, Ultra HD delivers a four times higher resolution with a wider colour space and colour depth.



M.2 2260 Slot for SSD cards

The M.2 2260 M slot supports M.2 SSD storage cards with SATA interface. Type 2260 means, it supports the usual M.2 cards with a width of 22 mm and a length of 60 mm, but also 2242 standard cards are supported. Cards with 80 mm in length (2280) are not supported.



M.2 2230 Slot for optional WLAN

The M.2 2230 AE slot is intended for Wireless LAN (Wifi), Bluetooth, GSM/UMTS cards and others. Shuttle offers the optional accessory „WLN-M“ (see picture), which provides WLAN 802.11ac and Bluetooth 4.0 functionality and can be installed into your Shuttle XPC slim Barebone DH110SE.



Kensington Lock

This is a small, metal-reinforced hole as part of an anti-theft system. The DH110SE provides an appropriate hole on both side of its chassis. The lock and cable are not included.



External power button by separate remote line

If because of space constraints (e.g. in case of a 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 DH110SE (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for external devices.

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

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 DH110SE also comes with a hardware-based solution. By removing Jumper JP2 (see image) the system will start unconditionally once power is applied.

- Front Panel -



Product Comparison

| | DH110SE | DH110 | DH170 |
|--------------------------|---|--|---|
| Availability | from Q3'16 | from March '16 | from October '15 |
| Chassis | 1.35L, 19 x 16.5 x 4.3 cm | | |
| Processor Support | Socket LGA 1151, Skylake, TDP max. 65 W | | |
| Chipset | Intel H110 | Intel H110 | Intel H170 |
| Operating System Support | Windows 7, 8.1, 10 and Linux (64-bit only) | | |
| Multi-Display Support | 2 Displays | 2 Displays | 3 Displays |
| UHD Support | HDMI: 2160p/30 DisplayPort: 2160p/60 | | |
| Memory Support | 2x SO-DIMM (260-pin) max. 2x 16 GB DDR4-2133 | 2x SO-DIMM (204-pin) max. 2x 16 GB DDR3L-1600 | |
| Audio | Realtek ALC662 | | |
| Network | Single LAN Realtek RTL8111G | Dual LAN Intel i211 + Intel i219LM | Dual LAN Intel i211 + Intel i219LM |
| Drive Bays | 1x 2.5" / 12.5 mm SATA | | |
| Mini Slots | 1x M.2 2260 SATA 1x M.2 2230 supports WLAN | 1x M.2 2260 SATA/PCIe 1x M.2 2230 supports WLAN | 1x M.2 2260 SATA/PCIe 1x Mini-PCIe Half Size |
| Front Panel | Power button Power LED, HDD LED SD card reader Headphones, Microphone 2x USB 3.0, 2x USB 2.0 | Power button Power LED, HDD LED SD card reader Headphones, Microphone 2x USB 3.0, 2x USB 2.0 | Power button Power LED, HDD LED SD card reader Headphones, Microphone 2x USB 3.0, 2x USB 2.0 |
| Back Panel | HDMI, DisplayPort 4x USB 2.0 1x Gigabit LAN (Realtek) 2x Kensington Lock 2x WLAN antenna (opt.) External power button (opt.) | HDMI, DisplayPort 2x USB 3.0 1x USB2.0/eSATA Combo 1x PS/2 Combo 2x Gigabit LAN (Intel) RS232 + RS232/422/485 2x Kensington Lock 2x WLAN antenna (opt.) External power button (opt.) | HDMI, 2x DisplayPort 2x USB 3.0, 2x USB 2.0 2x Gigabit LAN (Intel) RS232 + RS232/422/485 2x Kensington Lock 2x WLAN antenna (opt.) External power button (opt.) |
| Accessories | -/- | VESA mount | VESA mount |
| Optional Accessories | WLAN kit (WLN-M) | WLAN kit (WLN-M) D-Sub VGA port (PVG01) | WLAN kit (WLN-S, WLN-P) D-Sub VGA port (PVG01) |
| Operation Temperature | max. 50 °C | max. 50 °C | max. 50 °C |
| Power Adapter | 90 W / 19 V | 90 W / 19 V (also supports 84 W / 12 V power adapters) | 90 W / 19 V |
| Front View |  |  |  |
| Rear View |  |  |  |

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Shuttle XPC slim Barebone DH110SE - Specifications

| | |
|-------------------------------|---|
| Chassis | <p>Nettop PC with black chassis made of steel Dimensions: 190 x 165 x 43 mm (LWH) = 1.35-litre Weight: 1.3 kg net and 2.1 kg gross Two holes for Kensington Locks and numerous threaded holes (M3) at both sides of the chassis</p> |
| Storage Bay | <p>1x 6.35 cm / 2.5" storage bay supports one hard disk or SSD drive Device height: 12.5 mm (max.)</p> |
| Operation System | <p>This system comes without operating system. It is compatible with Windows 7 / 8.1 / 10 and Linux – 64-bit only.</p> |
| Mainboard Chipset BIOS | <p>Chipset: Intel® H110 Chipset (Intel® DH82H110 PCH, code name "Sunrise Point") Platform Controller Hub (PCH) as Single-Chip-Solution AMI BIOS in 8 Mbit EEPROM with SPI interface All capacitors are high quality solid capacitors Supports hardware monitoring and watch dog functionality Supports Unified Extensible Firmware Interface (UEFI) Supports power on after power failure [3]</p> |
| Power Adapter | <p>External 90 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz, Output: 19 V DC, 4.74 A, max. 90 W DC Connector: 5.5 / 2.5 mm (outer / inner diameter)</p> |
| Processor Support | <p>Socket LGA 1151 (H4) supports the sixth generation of Intel Core i7 / i5 / i3, Pentium and Celeron processors Maximum supported processor power consumption (TDP) = 65 W Codename "Skylake", 14 nm process technology, up to 8 MB of L3 cache Not compatible with Intel Xeon E3 V5 processors for socket LGA 1151 and processors with the older Socket LGA 1150. Does not support the unlock-function of Intel K-Series processors. The processor integrates PCI-Express, memory controller and the graphics engine on the same die (performance features depending on processor type). Please refer to the support list for detailed processor support information at global.shuttle.com.</p> |
| Processor Cooling | <p>Heatpipe processor cooling with two 60 mm fans on the upper side of the chassis</p> |
| Memory Support | <p>2x 260-pin SO-DIMM slot Supports DDR4-2133 (PC4-17000) SDRAM memory at 1.2 V Supports Dual Channel mode Supports max. 16 GB per DIMM, maximum total size of 32 GB Supports two unbuffered DIMM modules (no ECC)</p> |

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| | |
|--------------------------------------|---|
| <p><i>Integrated Graphics</i></p> | <p>The features of the integrated graphics function depend on the processor type used.</p> <p><u>Two digital video outputs:</u> DisplayPort 1.2 and HDMI 1.4</p> <ul style="list-style-type: none"> - supports two independent Full HD displays simultaneously [3] - supports Full HD resolution at 1920 x 1200 (1080p / 60 Hz) - supports 4K UHD resolution at 3840 x 2160 (max. 2160p / 60 Hz on DP or max. 30 Hz on HDMI) [4] - supports Blu-ray (BD) playback with HDCP - supports HD video plus multi-channel digital audio via a single cable. |
| <p><i>M.2 2260 Slot</i></p> | <p>The M.2 2260 M slot supports M.2 SSD cards with SATA interface It supports M.2 cards with a width of 22 mm and a length of 42 or 60 mm (type 2242, 2260). Cards with 80mm length (2280) are not supported.</p> |
| <p><i>M.2 2230 AE Slot</i></p> | <p>The M.2 2230 AE slot provides the following interfaces:</p> <ul style="list-style-type: none"> - PCI-Express v2.0 X1 - USB 2.0 <p>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), Bluetooth, GSM/UMTS cards and others. A SATA interface for SSD cards is not available here.</p> |
| <p><i>Audio</i></p> | <p>Audio Realtek® ALC 662 5.1 channel High-Definition Audio Two analog audio connectors (3.5 mm) at the front panel:</p> <ol style="list-style-type: none"> 1) 2-channel line out (headphones) 2) microphone input <p>Digital multi-channel audio output: by HDMI and DisplayPort</p> |
| <p><i>Gigabit LAN Controller</i></p> | <p>Realtek 8111G Ethernet network controller (Gigabit) Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE)</p> |
| <p><i>Drive Connectors</i></p> | <p>1x Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth With Serial-ATA power connector (onboard)</p> |
| <p><i>Card Reader</i></p> | <p>Integrated card reader supports SD, SDHC and SDXC memory flash cards Supports boot up from SD card</p> |
| <p><i>Front Panel Connectors</i></p> | <p>Microphone input Audio Line-out (headphones) 2x USB 3.0 2x USB 2.0 SD card reader Power button Power LED (blue) HDD LED (yellow)</p> |

| | |
|--|---|
| <p><i>Back Panel Connectors</i></p> | <p>1x HDMI connector [1] 1x DisplayPort connector (DP) [2] 4x USB 2.0 1x Gigabit LAN (RJ45) DC-input connector for external power adapter 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 Locks</p> |
| <p><i>Other Onboard Connectors</i></p> | <p>1x jumper for power on after power fail (hardware solution) [3] 1x fan connector (4-pin) occupied by the cooling system 1x connector for CMOS battery (occupied)</p> |
| <p><i>Supplied Accessories</i></p> | <p>Multi-language user guide (EN, DE, FR, ES, JP, KR, SC, TC) Four screws M3 x 4 mm (to mount a 2.5" storage device into the bay) Driver DVD (Windows 64-bit) Serial ATA cable for 2.5" drive including power cable External 90 W power adapter with power cord Protection cap for CPU socket (do not use if heatpipe or fan is mounted) Heatsink compound</p> |
| <p><i>Optional Accessory</i></p> | <p>WLN-M WLAN module in M.2 2230 format supports IEEE 802.11ac and Bluetooth 4.0</p> |
| <p><i>Environmental Specifications</i></p> | <p>Ambient temperature range: 0~50 °C [5] Relative humidity, non-condensing: 10~90%</p> |
| <p><i>Conformity Certifications</i></p> | <p>EMI: FCC, CE, BSMI, C-Tick Safety: ETL, CB, BSMI Other: RoHS, Energy Star 5.0, 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)</p> |

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Footnotes:

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

[2] How to convert DisplayPort into HDMI/DVI

The DisplayPort outputs 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] 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 DH110SE also comes with a hardware-based solution. By removing Jumper JP2 (on the mainboard behind the power button) the system will start unconditionally once power is supplied.

[4] 4K Ultra-HD resolution - A 4K-display with Ultra-HD resolution (3840 x 2160) should only be connected via DisplayPort, as only this port supports a higher refresh rate of 60 Hz. Certain displays (e.g. Dell UP2414Q) however require MST mode (Multi-Stream Transport) to be enabled which sends two separate images at half resolution each to the display. These two images are then combined and put in correct order by the Intel graphics driver when in Collage mode. Please note that HBR2-mode (High Bit Rate 2) must be supported by each display to have more than one of them run at 4K resolution.

[5] Note- on 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.

6th Generation Intel Core Desktop Processor Family

Socket LGA 1151 14 nm "Skylake-S" processor overview (Date: September 2015)

Processors with a TDP > 65 W are **not** supported (marked in red)

| Name | Model | Cores/ Threads | CPU Clock | Turbo Clock | Cache | TDP | Graphics Engine | Graphics Clock |
|---------|--------|-------------------|--------------|----------------|-------|------|--------------------|-------------------|
| Core i7 | 6700K | 4 / 8 | 4.0 GHz | 4.2 GHz | 8 MB | 91 W | HD 530 | 350~1150 MHz |
| | 6700 | 4 / 8 | 3.4 GHz | 4.0 GHz | 8 MB | 65 W | HD 530 | 350~1150 MHz |
| | 6700T | 4 / 8 | 2.8 GHz | 3.6 GHz | 8 MB | 35 W | HD 530 | 350~1100 MHz |
| Core i5 | 6600K | 4 / 4 | 3.5 GHz | 3.9 GHz | 6 MB | 91 W | HD 530 | 350~1150 MHz |
| | 6600 | 4 / 4 | 3.3 GHz | 3.9 GHz | 6 MB | 65 W | HD 530 | 350~1150 MHz |
| | 6600T | 4 / 4 | 2.7 GHz | 3.5 GHz | 6 MB | 35 W | HD 530 | 350~1100 MHz |
| | 6500 | 4 / 4 | 3.2 GHz | 3.6 GHz | 6 MB | 65 W | HD 530 | 350~1150 MHz |
| | 6500T | 4 / 4 | 2.5 GHz | 3.1 GHz | 6 MB | 35 W | HD 530 | 350~1100 MHz |
| | 6400 | 4 / 4 | 2.7 GHz | 3.3 GHz | 6 MB | 65 W | HD 530 | 350~1150 MHz |
| Core i3 | 6400T | 4 / 4 | 2.2 GHz | 2.8 GHz | 6 MB | 35 W | HD 530 | 350~1100 MHz |
| | 6320 | 2 / 4 | 3.9 GHz | - | 4 MB | 65 W | HD 530 | 350~1150 MHz |
| | 6300 | 2 / 4 | 3.8 GHz | - | 4 MB | 65 W | HD 530 | 350~1150 MHz |
| | 6300T | 2 / 4 | 3.3 GHz | - | 4 MB | 35 W | HD 530 | 350~1100 MHz |
| | 6100 | 2 / 4 | 3.7 GHz | - | 4 MB | 65 W | HD 530 | 350~1150 MHz |
| Pentium | 6100T | 2 / 4 | 3.2 GHz | - | 4 MB | 35 W | HD 530 | 350~1100 MHz |
| | G4520 | 2 / 2 | 3.6 GHz | - | 3 MB | 51 W | HD 530 | 350~1150 MHz |
| | G4500 | 2 / 2 | 3.5 GHz | - | 3 MB | 51 W | HD 530 | 350~1150 MHz |
| | G4500T | 2 / 2 | 3.0 GHz | - | 3 MB | 35 W | HD 530 | 350~1100 MHz |
| | G4400 | 2 / 2 | 3.3 GHz | - | 3 MB | 51 W | HD 530 | 350~1150 MHz |
| Celeron | G4400T | 2 / 2 | 2.9 GHz | - | 3 MB | 35 W | HD 530 | 350~1100 MHz |
| | G3920 | 2 / 2 | 2.9 GHz | - | 2 MB | 51 W | HD 530 | 350~1050 MHz |
| | G3900 | 2 / 2 | 2.8 GHz | - | 2 MB | 51 W | HD 530 | 350~1050 MHz |
| | G3900T | 2 / 2 | 2.6 GHz | - | 2 MB | 35 W | HD 530 | 350~950 MHz |

K = unlocked, S = Performance optimized lifestyle, T = Power optimized lifestyle, HT = Hyper Threading (SMT).

Note: The Shuttle XPC slim Barebone DH110SE does not support the unlock-function of Intel K-Series processors.

Please refer to the support list for detailed processor support information at global.shuttle.com.