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Powerful 3-litre PC offers space for four 2.5" drives plus M.2-SSD

The ultra-compact Shuttle XPC slim Barebone XH270 comes in a robust metal chassis and can be used in many ways. With three concurrently usable graphics ports and numerous USB ports, it is highly flexible for office and media applications and supports a huge range of processors too. Its COM port and the practical "always-on-jumper" also makes it interesting for industrial environments. Special highlights include support for up to four 2.5" drive bays and one M.2-2280 slot for NVMe drives. This can make it a mini server PC with RAID 10 support. Plus, there are two Intel network ports that support teaming mode. The XH270 is the perfect basis for a power-efficient and reliable system for a wide range of applications. The built-in heatpipe cooling ensures the system runs quietly at maximum stability.

Feature Highlights • Slim 3.5-litre chassis, black Slim-Design Dimensions: 24 x 20 x 7.2 cm (L/W/H) • Max. operating temperature: 0~50 °C • Supports LGA 1151 Skylake or Kaby Lake processors up to a max. TDP of 65 W [11] **Processor** Supports Core i7 / i5 / i3, Pentium, Celeron Includes heatpipe cooling system · No operating system supplied Operating Supports Windows 7 / 8.1 / 10, Linux (64-bit) System Win 7 / 8.1 only supported with Skylake CPU Chipset • Intel H270 Chipset • 2x 260-pin SO-DIMM slot Memory • Supports DDR4-2133/2400, max. 2x 16 GB • Integrated Intel HD graphics supports Ultra **Graphics** HD 4K resolution at 60 fps over DisplayPort • Supports three independent displays • 4x 6.35cm/2.5" bay for hard disks or SSDs Serial ATA ports support RAID 0, 1, 5, 10 Storage M.2-2280 slot supports PCIe X4 and SATA • HDMI + DisplayPort + D-Sub/VGA video out • 5.1 HD Audio (digital audio via HDMI/DP) 4x USB 3.0, 4x USB 2.0 (each 2 front, 2 rear) Connectors • Dual Intel Gigabit LAN (RJ45), COM (RS232) • M.2-2230 slot for optional WLAN module • Vertical stand (PS01), VESA mount (PV02) **Optional** Accessories WLAN kit (WLN-M) **Power Supply** • External 120W / 19V fanless power adapter **Applications** · Home, office, vertical market

Images for illustration purposes only.

XPC slim Barebone





























Connectors and Slots



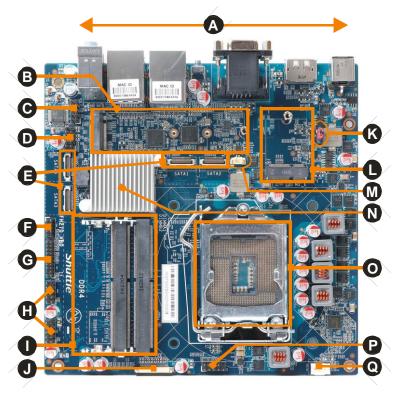
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Front Panel

- A 2x USB 3.0 port
- B 2x USB 2.0 port
- C Microphone input
- **D** Headphone output
- E Power on button with LED
- F LED indicator for hard disk activity

Back Panel

- G 2x perforation for optional WLAN antenna
- H 2x thumbscrew
- I Hole for Kensington Lock
- J 2x Gigabit network (RJ45)
- K RS232 serial interface (COM port)
- L DC-Input connector for power adapter
- M DisplayPort Video/Audio output
- N D-Sub/VGA Video output
- O HDMI Video/Audio output
- P Clear CMOS button
- **Q** 2x USB 3.0
- R 2x USB 2.0
- S Microphone input
- T Headphones / line-out
- U Audio line-in



Mainboard

- A Back panel
- **B** M.2 2280 Slot
- C Front Audio Header
- D 2x USB 2.0 Header
- E 4x Serial ATA 6G
- F RS232 COM Port
- **G** LPC Header
- **H** 4x USB 2.0 Header
- I 2x SO-DIMM Slot
- J Connector for Front USB 3.0 Port
- K Always-On-Jumper
- L M.2 2230 Slot
- M CMOS Battery Connector
- N Intel H270 Chipset
- O LGA 1151 CPU Socket
- P Connector for Front Buttons/LEDs
- **Q** Fan Connector

Appropriate Components

The Shuttle XPC slim Barebone XH270 consists of a stylish case with pre-installed mainboard, 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:

1~2 SO-DIMM Memory Modules DDR4-2133/2400 max. 2x 16 GB



LGA 1151 Processor max. 65 W "Skylake" or "Kaby Lake"



M.2 2280/2260/2242 SSD Card SATA or PCIe x4 Interface





Four 2.5" SATA Drives Hard Disks or SSDs Max. height: 9.5 mm



Optional Accessories





Vertical Stand (PS01)

The Shuttle XPC slim Barebone XH270 is to be used in horizontal operation by default. The optional stand PS01 allows it to be used in upright position as well.



VESA 75/100 mount (PV02)

The optional VESA mount allows it to be installed on to walls or to be attached to the rear side of a monitor.



WLAN-Kit (WLN-M)

Wireless LAN adapter (M.2-2230 card) with two external antennas supports IEEE 802.11ac and Bluetooth 4.0



Comparison of the 3-litre XPC slim Barebones

Barebone Modell	XH110 / XH110V	XH170V	XH110G	XH270					
Available since	March 2016	September 2015	August 2017	December 2017					
Processor Support	6 th /7 th Gen. Intel Core Processors, LGA 1151 "Skylake" & "Kaby Lake", TDP max. 65 W								
Operating System	Windows 7, 8.1, 10 & Linux (64-bit) "Kaby Lake" CPU does not support Windows 7/8.1								
Chipset	Intel H110	Intel H170	Intel H110	Intel H270					
RAM (max.)		DR3L-1600 I (204-pin)	2x 16 GB DDR4-2133/2400 SO-DIMM (260-pin)						
Multi Monitoring	max. 2 Displays	max. 3 Displays	max. 2 Displays	max. 3 Displays					
PCIe Slot	-	-	PCI-Express X16 Slot	-					
Storage Bays	1x Slimline DVD/Blu-ray 2x 2,5" drive	1x Slimline DVD/Blu-ray 2x 2,5" drive	1x 2,5" or 3,5" drive Internal USB-2.0-Stick	4x 2,5" drive					
Mini Slots	M.2-2280 (PCIe, SATA) M.2-2230 (for WLAN)	M.2-2280 (SATA) Mini-PCle (for WLAN)	M.2-2280 (PCIe, SATA) M.2-2230 (for WLAN)	M.2-2280 (PCIe, SATA) M.2-2230 (for WLAN)					
Front Panel	Power-Bu	utton, Power-LED, HDD-LE	D, 2x USB 2.0, 2x USB 3.0	, 2x Audio					
	1x HDMI 1.4 1x DisplayPort 1.2	1x HDMI 1.4 2x DisplayPort 1.2	1x HDMI 1.4 1x D-Sub/VGA	1x HDMI 1.4 1x DisplayPort 1.2 1x D-Sub/VGA					
Back Panel	2x USB 3.0, 2x USB 2.0	SB 3.0, 2x USB 2x USB 3.0, 2x USB 2.0		2x USB 3.0, 2x USB 2.0					
Connectors	2x GigaBit Intel LAN	1x GigaBit Intel LAN	1x GigaBit Intel LAN	2x GigaBit Intel LAN					
	2x COM (RS232)	1x COM (RS232)	-	1x COM (RS232)					
	3x Audio	3x Audio	-	3x Audio					
	PS/2 Port (Combo)	1x eSATA (3G)	-	-					
	Clear CMOS Button	Clear CMOS Button	Clear CMOS Button	Clear CMOS Button					
2x WLAN Antenna 1x Kensington Lock 1x VGA Adapter		2x WLAN Antenna 1x Kensington Lock	2x WLAN Antenna 1x Kensington Lock	2x WLAN Antenna 1x Kensington Lock					
	Vertical Stand (PS01)	Vertical Stand (PS01)	Vertical Stand (PS01)	Vertical Stand (PS01)					
Optional	VESA Mount (PV02)	VESA Mount (PV02)	VESA mount included	VESA Mount (PV02)					
	WLAN Kit (WLN-M)	WLAN Kit (WLN-S/-P)	WLAN Kit (WLN-M)	WLAN Kit (WLN-M)					
Accessories Note: PVG01 and H-	3.5" HDD Rack (PHD4)	3.5" HDD Rack (PHD4)	-	-					
RS232 cannot be used simultaneously.	ODD bay cover (MY01) (for XH110V only)	Cover/Mylar for the slimline bay (MY01)	-	-					
	1x COM Port (H-RS232)	1x COM Port (H-RS232)	-	-					
	VGA Adapter (PVG01)	-	-	-					

XH110V (Front doors)



XH110, XH110V



\leftarrow Front Views \rightarrow

XH110 (with ODD bay)



← Rear Views → XH170V



XH110G, XH270 (w/o ODD)



XH270





Shu	ttle XPC slim Barebone XH270 - Specifications
Chassis	Slim 3-litre chassis, colour: black Dimensions: 240 x 200 x 72 mm (LWH) = 3.5-litre Weight: 2.2 kg net, 3.5 kg gross Open front - without covers for front panel connectors Hole for Kensington Lock on the back panel Operation position horizontal or even vertical with the optional stand PS01
Operation System	This system comes without operating system. It is compatible with Windows 10 / 8.1 / 7 and Linux (64-bit). Note: Windows 7 and 8.1 is only supported in combination with 6th generation Intel Core processors "Skylake". For an additional note on Windows 7, see [3]
Mainboard Chipset BIOS	Mainboard FH270, Mini-ITX form factor 17 x 17 cm Chipset: Intel® H270 Chipset (code name "Union 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 [1] Supports Firmware-TPM (fTPM) Version 2.0
Power Adapter	External 120 W power adapter (fanless) Input: 100~240 V AC, 50/60 Hz Output: 19 V DC, max. 6.32 A, max. 120 W output wattage AC Connector with protective-earth contacts, cable length: 1.7 m DC Connector: 5.5 / 2.5 mm (outer/inner diameter)
Processor Support	Socket LGA 1151 (H4) supports Intel Core i7 / i5 / i3, Pentium and Celeron processors - 6th generation, code name "Skylake" - 7th generation, code name "Kaby Lake" [4] Maximum supported processor power consumption (TDP) = 65 W 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.
Heatpipe Cooling	Processor cooling with heatpipe technology and two fans (6 cm)



Storage Bays & RAID Support	This system features four drive bays - Supports hard disks or SSDs in 2.5" / 6.35 cm form factor - Maximum height of the drives: 9.5 mm - Interface: SATA III (max. 6 Gbps) - Included: four combo cables for data and power [8] - Supports RAID modes 0, 1, 5, 10
Memory Support	2x SO-DIMM slot with 260 pins Supports DDR4-2133/2400 (PC4-17066/19200) SDRAM at 1.2 V Supports maximum total size of 32 GB (max. 16 GB per module) Supports Dual Channel mode Supports two unbuffered DIMM modules (no ECC)
Integrated Graphics	The features of the integrated graphics function depend on the processor used. Three video outputs: support three independent displays simultaneously (1) DisplayPort 1.2 - supports 1080p/60Hz and 2160p/60Hz (2) HDMI 1.4 - supports 1080p/60Hz and 2160p/30Hz (3) D-Sub/VGA The digital video ports (DisplayPort and HDMI) support Blu-ray (BD) playback with HDCP. These ports transmit HD video plus multi-channel digital audio via a single cable.
Audio	Audio Realtek® ALC 662 5.1-channel High-Definition Audio Three analog audio connectors (3.5 mm) at the back panel: (1) Front line-out (headphones) (2) Rear Surround line-out (shared with microphone input) (3) Center line-out (shared with line-in) Digital audio output is provided by HDMI and DisplayPort
Dual LAN Controller	Dual network with two RJ45 ports Used network chips: 2x Intel i211 Ethernet Controller with MAC, PHY and PCIe interface Supports 10 / 100 / 1.000 MBit/s operation Supports WAKE ON LAN (WOL) Supports network boot by Preboot eXecution Environment (PXE) Supports Teaming mode [5]
M.2-2280 Slot	The M.2 2280 BM slot provides the following interfaces: - PCI-Express Gen. 3.0 X4 (max. 32 Gbps), supports NVMe - 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 SSDs with SATA or PCI-Express interface
Intel® Optane™ Ready	The XH270 supports Intel® Optane™ Technology which accelerates the speed of one hard disk through data caching. This requires a 7th gen. Intel Core processor ("Kaby Lake") and an Optane-SSD with 3D-Xpoint memory (e.g. in M.2 format).



M.2-2230 Slot	M.2-2230 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 extension cards (optional Shuttle accessory WLN-M [7])
Front Panel Connectors	Front Panel connectors Microphone input Audio Line-out (headphones) 2x USB 3.0 2x USB 2.0 Power button Power LED (blue) HDD LED (yellow)
Back Panel Connectors	1x DisplayPort 1.2 - digital Audio/Video output 1x HDMI 1.4 - digital Audio/Video output 1x D-Sub/VGA - analog Video output 2x USB 3.0 2x USB 2.0 2x GigaBit LAN (RJ45) 1x Serial COM port (RS232) Audio Line-in Audio Line-out Audio Mic-in Clear CMOS Button Perforation for Wireless LAN antennas (2 holes) Hole for Kensington Lock
Other Onboard Connectors	Power-on-after-power-fail (hardware solution, Jumper 4) [1] Front connectors for power button, LEDs, USBs, audio ports Three headers 2x 5-pin for dual USB 2.0 (one occupied) One 4-pin fan connector (occupied by the CPU cooling system) LPC interface (2x 10-pin header, 2 mm pitch)
Supplied Accessories	Multi-language installation guide (EN, DE, FR, ES, JP, KR, SC, TC) Driver DVD 4x Combo SATA/power cable for 2.5" drives External power adapter with 1.7 m AC power cord (with protective-earth contacts) Protector cap for the CPU socket (do not use, if heatpipe or fan is mounted) CPU heatpipe cooling system with heatsink compound Bag with screws
Optional Accessories	(1) Vertical stand (PS01) (2) VESA mount (PV02) (3) WLAN module (WLN-M) [7]
Environmental Specifications	Operating temperature range: $0\sim50~^{\circ}\text{C}$ [6] Relative humidity range: $10\sim90~\%$ (non-condensing)



Conformity

and

Certifications

EMI: FCC, CE, BSMI, C-Tick Safety: CB, BSMI, ETL

Others: RoHS, Energy Star V5.0, EuP Lot 6

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-guidelines:

- EMV-guideline 89/336/EWG electromagnetic tolerance
- LVD-guideline 73/23/EWG use of electric devices

within certain voltage-limits

Notes:

[1] Power-on-after-power-fail:

The BIOS setup provides a "Power-on-after-power-fail" function that can be found under "Power Management Configuration". As the name 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 XH270 also comes with a hardware-based solution. By removing Jumper 4 (on the mainboard near the "Shuttle" printing), the system will start unconditionally once power is supplied.

[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 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] Installation of Windows 7

Intel® 100 chipset series has been removed support for the Enhanced Host Controller Interface (EHCI) which is the driver software for the USB 2.0 ports. The new chipset only supports the updated Extensible Host Controller Interface (xHCI for USB 3.0) which is not supported by the original Windows 7 installation disk. This means, that peripheral devices connected over USB (like keyboard, mouse and external optical drive) do not work during Windows 7 installation. Therefore please add the required USB 3.0 drivers to the Windows 7 installation files manually. This procedure is explained in the Shuttle FAQ section at fag.shuttle.eu.

[4] Use of Kaby Lake processor

If a Kaby Lake processor is used, this XPC will only support Windows 10 and Linux operating systems. Windows 7 and 8.1 will no longer be supported.

[5] Teaming Mode

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

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

[6] High ambient temperature

For high ambient temperatures over 40 °C we strongly recommend to use SSDs instead of hard disk drives.

[7] Optional Wireless LAN module:

This Shuttle XPC slim Barebone supports the optional Shuttle XPC Accessory WLN-M which consists of a M.2-2230 card with IEEE 802.11ac and BT4.0 functionality and two external antennas with appropriate antenna cables.

[8] Power connector for SATA drives

The supplied power cables for SATA drives provide a voltage of 5 V. In very rare cases a 2.5" hard disk also requires a 12 V line, which is not supported (e.g. Seagate Constellation® series).



6th Generation Intel Core Desktop Processor Family

Socket LGA 1151 14 nm "Skylake-S" processor overview Processors with a TDP>65 W are <u>not</u> supported (<u>marked in red</u>)

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
	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
Core i5	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
	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
Core i3	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
	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
Pentium	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
	G4400T	2/2	2.9 GHz	-	3 MB	35 W	HD 530	350~1100 MHz
Celeron	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 clock multiplier, T = Power optimized lifestyle, TDP = Thermal Design Power (max. power consumption) Note: The Shuttle XPC slim Barebone XH270 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.



7th Generation Intel Core Desktop Processor Family

Socket LGA 1151 14 nm "Kaby Lake-S" processor overview Processors with a TDP>65 W are <u>not</u> supported (<u>marked in red</u>)

Name	Model	Cores/ Threads	CPU Clock	Turbo Clock	Cache	TDP	Graphics Engine	Graphics Clock
Core i7	7700K	4/8	4.2 GHz	4.5 GHz	8 MB	91 W	HD 630	350~1150 MHz
	7700	4/8	3.6 GHz	4.2 GHz	8 MB	65 W	HD 630	350~1150 MHz
	7700T	4/8	2.9 GHz	3.8 GHz	8 MB	35 W	HD 630	350~1150 MHz
	7600K	4/4	3.8 GHz	4.2 GHz	6 MB	91 W	HD 630	350~1150 MHz
	7600	4/4	3.5 GHz	4.1 GHz	6 MB	65 W	HD 630	350~1150 MHz
	7600T	4/4	2.8 GHz	3.7 GHz	6 MB	35 W	HD 630	350~1100 MHz
Core i5	7500	4/4	3.4 GHz	3.8 GHz	6 MB	65 W	HD 630	350~1100 MHz
	7500T	4/4	2.7 GHz	3.3 GHz	6 MB	35 W	HD 630	350~1100 MHz
	7400	4/4	3.0 GHz	3.5 GHz	6 MB	65 W	HD 630	350~1000 MHz
	7400T	4/4	2.4 GHz	3.0 GHz	6 MB	35 W	HD 630	350~1000 MHz
	7350K	2/4	4.2 GHz	_	4 MB	60 W	HD 630	350~1050 MHz
	7320	2/4	4.1 GHz	_	4 MB	51 W	HD 630	350~1050 MHz
	7300	2/4	4.0 GHz	_	4 MB	51 W	HD 630	350~1050 MHz
Core i3	7300T	2/4	3.5 GHz	_	4 MB	35 W	HD 630	350~1100 MHz
Core is	7101E	2/4	3.9 GHz	_	3 MB	54 W	HD 610	350~1100 MHz
	7101TE	2/4	3.4 GHz	_	3 MB	35 W	HD 610	350~1100 MHz
	7100	2/4	3.9 GHz	_	3 MB	51 W	HD 630	350~1100 MHz
	7100T	2/4	3.4 GHz	_	3 MB	35 W	HD 630	350~1100 MHz
	G4620	2/4	3.7 GHz	_	3 MB	51 W	HD 630	350~1100 MHz
	G4600	2/4	3.6 GHz	_	3 MB	51 W	HD 630	350~1100 MHz
Pentium	G4600T	2/4	3.0 GHz	_	3 MB	35 W	HD 630	350~1050 MHz
	G4560	2/4	3.5 GHz	_	3 MB	54 W	HD 610	350~1050 MHz
	G4560T	2/4	2.9 GHz	_	3 MB	35 W	HD 610	350~1050 MHz
Celeron	G3950	2/2	3.0 GHz	_	2 MB	51 W	HD 610	350~1050 MHz
	G3930	2/2	2.9 GHz	_	2 MB	51 W	HD 610	350~1050 MHz
	G3930T	2/2	2.7 GHz	_	2 MB	35 W	HD 610	350~1000 MHz

K = unlocked clock multiplier, T = Power optimized lifestyle, TDP = Thermal Design Power (max. power consumption)
 Note: The Shuttle XPC slim Barebone XH270 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.