BAREBONE
XPC slim
DA320

ROBUST 1.3-LITRE SLIM PC FOR AMD RYZEN PROCESSORS WITH SOCKET AM4

The Shuttle XPC slim Barebone DA320 is a robust 1.35-litre Barebone PC with Socket AM4 for AMD desktop processors with integrated graphics up to 65W. It allows for up to three* Ultra HD displays to be operated at the same time via HDMI 2.0 and DisplayPort and offers dual Gigabit-LAN, eight USB ports and two COM ports. Its slim metal chassis comes with a VESA mount included, provides versatile connectivity and reliable operation in environments with ambient temperatures of up to 50 °C. The DA320 is targeted at professional applications such as Digital Signage, POS, POI, gambling machines, office, healthcare and industry.

*) Note: AMD Athlon supports Dual Display only.

HDMI 2.0 · 2x DISPLAY-PORT · TRIPLE 4K UHD · NVMe SSD SUPPORT · 2.5" HDD/SSD SUPPORT · DUAL LAN · 2x 16 GB SUPPORT · DUAL COM · VESA MOUNT · WLAN / LTE OPTIONAL · Max. 50 °C · 24/7 SUPPORT

SLIM DESIGN

■ Slim 1.35-litre metal chassis, black ■ Dimensions: 190 x 165 x 43 mm (LWH) ■ Including VESA mount (75/100 mm) ■ Supports 24/7 Nonstop Operation ■ Operating temperature: 0~50 °C (non-condensing)

OPERATING SYSTEM

■ An operating system is not included.
■ Supports Windows 10 and Linux (64-bit)

PROCESSOR SUPPORT

■ Socket AM4 supports AMD Ryzen 2000/3000 APUs and AMD Athlon 2000 APU, max. 65W TDP (see last page of this PDF) ■ Includes heatpipe cooling system

GRAPHICS

■ Integrated Radeon Vega graphics, 4K support (features depending on processor) ■ Supports up to three independent displays (two with Athlon CPU)

CHIPSET

■ AMD A320 Chipset

MEMORY SUPPORT

■ 2x 260-pin SO-DIMM slot ■ Supports DDR4-2933 (Athlon: DDR4-2666) ■ max. 2x 16 GB

STORAGE – SATA / M.2

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

CONNECTORS

■ HDMI 2.0a ■ 2x DisplayPort 1.2 ■ optional VGA ■ SD card reader ■ 2x audio (line out, mic) ■ 6x USB 3.2 Gen1 ■ 2x USB 2.0 ■ 2x Gigabit LAN (RJ45) ■ 2x RS232 COM port ■ Connector for external power button ■ "Always on" Jumper

POWER SUPPLY

■ External 120W/19V power adapter

OPTIONAL ACCESSORIES

■ WLAN Module (WLN-M) ■ Vertical Stand (PS02) ■ VGA Port (PVG01) ■ Rackmount kit (PRM01) ■ Cable for external power button (CXP01) ■ DIN-Rail mounting kit (DIR01) ■ LTE-kit (WWN03)

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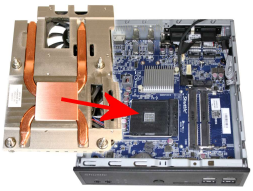
MODELS BASED ON THE DA320 BAREBONE:

Product	Type	Processor	Storage	RAM	OS	Bar Code
DA320	Barebone	–	–	–	–	UPC: 887993002767
DA3200XA	System	AMD Ryzen 5 3400G	250 GB SSD (2.5", SATA)	8 GB DDR4	–	EAN: 4046047103614
DA320P	System	AMD Ryzen 5 3400G	250 GB SSD (2.5", SATA)	8 GB DDR4	Windows 10 IoT	EAN: 4046047103607

PRODUCT FEATURES

Robust, stylish and particularly small

You should have held it in your own hands to see how small it actually is. At barely a volume of 1.35 litres, its steel chassis gives it the appropriate stability required for professional applications such as digital signage. Despite its dimensions of 19 x 16.5 x 4.3 cm (LWH), the overall system performance is very high thanks to support of AMD Ryzen and Athlon desktop processors. The interior of the DA320 is very tidy too so setup won't take long. Its sleek and stylish looks let it easily find a place in both home and office environments.

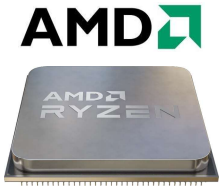


Low noise thanks to heatpipe cooling system

An active dual-fan heatpipe cooling system ensures whisper-quiet operation and system stability.

Extended temperature range and 24/7 operation

DA320 is officially approved for 24/7 permanent operation. Thanks to its efficient cooling, this PC runs highly reliably making it perfectly suitable for digital signage and POI/POS applications - even at ambient temperatures of up to 50 °C (non-condensing).
Caution: For high ambient temperatures over 40 °C we strongly recommend to use SSDs.



Supports AMD AM4 APUs

The DA320 supports different AMD APUs (see last page) with processor socket AM4. The term APU (Accelerated Processing Unit) means a central processing unit (CPU) with integrated graphics processing unit (GPU).

Triple 4K Display support

The DA320 features three digital video outputs: one HDMI 2.0 and 2x DisplayPort (DP 1.2) which all can run at 4K (3840 x 2160 / 2160p) high resolution at 60 Hz frames per second. Furthermore, the DA320 supports an optional D-Sub/VGA port. Note: Athlon APUs support dual display only.

Unigine Benchmark Graphics Performance

AMD Ryzen 5 3400G Rad. Vega11 Graphics	2304
Intel Core-i5 10400 UHD 630 Graphics	832

Config: 32GB RAM, M.2 SSD, Windows 10

High Graphics Performance

The integrated Vega 11 graphics in an AMD Ryzen 5 3400G processor is one of the fastest GPUs in a desktop processor. This allows mid-range gaming with FullHD and also professional applications with three UHD displays like digital signage.

One M.2-Slot for SSD cards

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

Dual LAN

Dual Gigabit LAN Network

The Shuttle XPC slim Barebone DA320 supports Dual Gigabit LAN with Realtek network adapters, offering excellent performance and driver compatibility.

VESA mount

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

Power on after Power fail

The BIOS setup provides a "Power-On after Power Fail" function that can be found under "Power Management Configuration". As the name indicates, this function determines the PC's behaviour after power failure: (1) unconditional power on, (2) restore former status (3) keep system turned off (4) Power-On by LAN or (5) Power-On by Real-Time-Clock. As a matter of the nature of this function, it may fail after short power failures. This is why the DA320 also comes with a hardware-based solution. By removing Jumper JP3, the system will start unconditionally once power is applied.

External power button by separate remote line

If, because of space constraints (e.g. in case of 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 on the back panel of the DA320 (pitch 2.54 mm). Furthermore, this connector provides a Clear CMOS function and +5V DC voltage supply for external devices.

REQUIRED COMPONENTS

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

Shuttle XPC slim Barebone DA320

AMD APU Processor with Socket AM4

AMD Ryzen 2000/3000 APUs
AMD Athlon 2000 APUs
TDP max. 65 W

Memory Modules

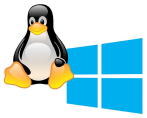
Up to two DDR4-2933/2666
SO-DIMM memory modules
max. 16 GB each
(AMD Athlon supports 2666 MHz)

2.5" Storage Drive

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

M.2 SSD (optional)

M.2-2280/2260/2242
SSD storage (SATA or PCIe/NVMe)



Operating System

Windows 10 or Linux (64-bit only)

OPTIONAL ACCESSORIES FROM SHUTTLE

VGA port adapter **PVG01**

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

WLAN-Accessory **WLN-M**

The M.2-2230 card supports IEEE 802.11 b/g/n/ac and includes two external antennas.

LTE Adapter Kit **WWN03**

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

Cable **CXP01**

Cable for external push button switch (without button)

Vertical Stand **PS02**

for vertical operation

DIN-Rail Kit **DIR01**

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

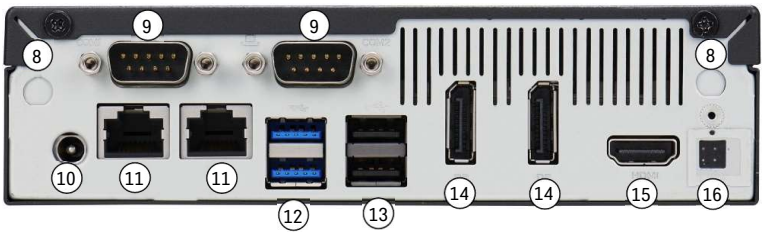
Rack Mount Kit **PRM01**

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

Front and Back Panel

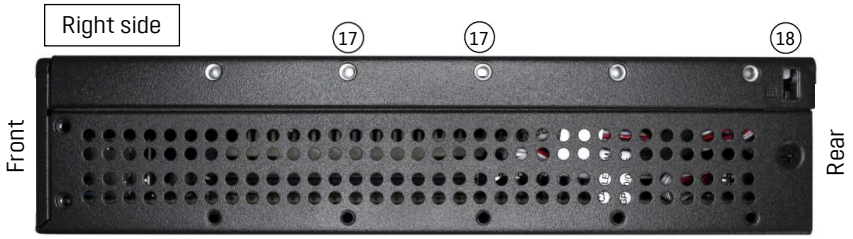
Front panel

Back panel



1. Microphone input
2. Headphones output
3. LED indicator for power state
4. LED indicator for storage activity
5. Power button
6. SD card reader
7. 4x USB 3.2 Gen 1 port
8. 2x WLAN perforation
9. 2x COM port supports RS232
10. DC-in connector for power adapter
11. 2x RJ45 Gigabit LAN port
12. 2x USB 3.2 Gen 1 port
13. 2x USB 2.0 port
14. 2x DisplayPort 1.2
15. HDMI 2.0 port
16. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage

Right side



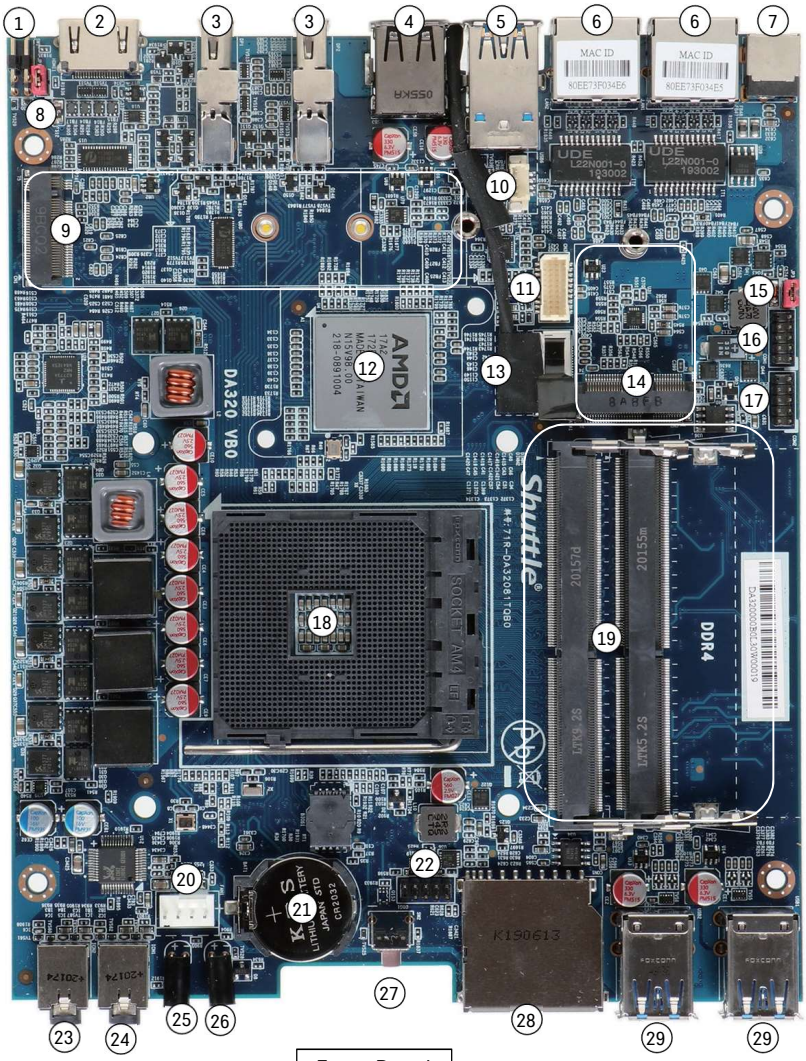
Left side

17. Threaded holes (M3)
18. 2x hole for Kensington Lock

19. VESA mount (two parts)

Mainboard

Back Panel



Front Panel

Back View

Front View

1. 4-pin connector (2.54 mm pitch) for external power button, Clear CMOS button and 5V DC voltage
2. HDMI 2.0 Port
3. 2x DisplayPort 1.2
4. 2x USB 2.0 Port
5. 2x USB 3.2 Gen 1 Port
6. 2x RJ45 Gigabit LAN Port
7. DC-in connector for power adapter
8. Jumper JP11 (to be opened, if a VGA port is added)
9. M.2-2280M slot for SSD card
10. Onboard USB 2.0 connector (4-pin)
11. Onboard VGA connector
12. AMD A320 chipset
13. SATA v3.0 connector
14. M.2-2230E slot for WLAN card
15. Always-Power-On jumper JP3
16. Onboard COM 1 Port supports RS232
17. Onboard COM 2 Port supports RS232
18. AMD AM4 processor socket
19. 2x SO-DIMM memory slot
20. 4-pin connector for cooling fan
21. CMOS battery
22. Debug header (reserved)
23. Microphone input
24. Headphones output
25. LED indicator for power state
26. LED indicator for storage activity
27. Power button
28. SD card reader
29. 4x USB 3.2 Gen 1 Port

SHUTTLE XPC SLIM BAREBONE DA320 — SPECIFICATIONS

CHASSIS	Slim PC with black chassis made of metal Dimensions: 190 x 165 x 43 mm (LWH) = 1.35-litre Weight: 1.13 kg net and 2.3 kg gross Two holes for Kensington Locks and numerous threaded holes (M3) on both sides of the chassis
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 DC Connector: 5.5 / 2.5 mm (outer/inner diameter) AC mains cable: 3 pins, ca. 1.8 m length, with C5/C6 coupler (called "Mickey Mouse" or "Clover-leaf") for the power adapter and CEE-7/7 plug with earth-contact (type E+F) for the power outlet Dimensions: 150 x 65 x 36 mm (LWH)
OPERATING SYSTEM	This system comes without an operating system. It is compatible with Windows 10 and Linux (64-bit)
PROCESSOR SUPPORT	Processor Socket AM4 Supports AMD Ryzen 2000/3000 series R5/R3 APUs Supports AMD Athlon 2000 series APUs Supports processors with integrated graphics only Maximum supported processor power consumption (TDP) = 65 W Please refer to the support list for detailed processor support information at global.shuttle.com.
PROCESSOR COOLING	Heatpipe processor cooling with two 60 mm fans on the upper side of the chassis
MAINBOARD / CHIPSET	Mainboard in a Shuttle form factor proprietary design for the XPC DA320 Chipset: AMD A320
BIOS	AMI BIOS, SPI Interface, 16 MB Flash-EPROOM Supports Hardware Monitoring and watch dog functionality Supports Firmware-TPM (fTPM) v2.0 Supports boot up from external USB flash memory Supports Unified Extensible Firmware Interface (UEFI) Supports power on after power failure
MEMORY SUPPORT	2x SO-DIMM slot with 260 pins Supports DDR4-2666/2933 (PC4-21300/23466) 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) Note: The memory clock speed depends on the processor model. AMD Ryzen APUs support DDR4-2933 memory speed, while the AMD Athlon APUs support DDR4-2666.
INTEGRATED GRAPHICS	The features of the integrated Radeon™ Vega graphics function depend on the processor type used. The PC features three digital video outputs which support 1080p/60 and 2160p/60: - 1x HDMI v2.0 - 2x DisplayPort v1.2 Supports displays with 4K Ultra HD resolution at 3840 x 2160 Supports three independent displays with the integrated graphics function DisplayPort and HDMI support multi-channel digital audio over the same cable. Optional analog D-Sub/VGA video output [1]
DRIVE BAY	1x 6.35 cm / 2.5" storage bay supports one hard disk or SSD drive with SATA connector Device height: 12.5 mm (max.)
SATA CONNECTORS	1x Serial-ATA III, 6 Gb/s (600 MB/s) bandwidth With Serial-ATA power connector (onboard)
M.2-2280M SSD SLOT	The M.2-2280M slot provides the following interfaces: - PCI-Express Gen. 3 X4, 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 the following M.2 SSDs: type SATA with B+M key and type PCI-Express/NVMe with M key.

M.2-2230E SLOT FOR WLAN CARDS	Interfaces: PCI-Express Gen. 3.0 X1 und USB 2.0 Supports M.2 cards with a width of 22 mm and a length of 30 mm (type 2230) Supports WLAN expansion cards (optional Shuttle accessory: WLN-M)
AUDIO	Audio Realtek® ALC 662 5.1 channel High-Definition Audio Two analog audio connectors (3.5mm) on the front panel: 1) 2-channel line-out (head-phones) 2) microphone input Digital multi-channel audio output: by HDMI and DisplayPort
DUAL GIGABIT LAN CONTROLLER	Dual network with two RJ45 ports with two status LEDs each Used network chips: 2x Realtek RTL8111H Ethernet Controller (MAC, PHY) 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 [4]
CARD READER	Integrated card reader Supports SD, SDHC and SDXC up to v3.01 memory flash cards UHS-I interface supports up to 104 MB/s (SDR104) transfer speed Realtek RTS5227S chip with PCIe chipset interface Supports boot up from SD card.
FRONT PANEL CONNECTORS	Microphone input Audio Line-out (headphones) 4x USB 3.2 Gen 1 (max. 5 Gbps) SD card reader Power button Power LED (blue) HDD LED (yellow)
BACK PANEL CONNECTORS	1x HDMI 2.0 connector 2x DisplayPort 1.2 connector (DP) Optional: 1x D-Sub VGA connector (Accessory PVG01 [1]) 2x USB 3.2 Gen 1 (max. 5 Gbps) 2x USB 2.0 2x Gigabit LAN (RJ45) [4] 2x RS232 serial COM port, 9-pin D-Sub 1x DC-input connector for external power adapter 1x 4-pin connector (2.54 mm pitch) supports: - external power on button - Clear CMOS function - +5V DC voltage for external components 2x perforation for optional Wireless LAN antennas 2x hole for Kensington Lock
OTHER ONBOARD CONNECTORS	1x jumper for power-on-after-power-fail (hardware solution) [3] 1x analog VGA graphics output CN3 (2x 10-pin, 1 mm pitch) [1] 2x serial interface (COM) occupied by back panel connectors 1x USB 2.0 (4-pin) for optional accessory WWN03 (LTE kit) 1x fan connector (4-pin) occupied by the cooling system 1x Debug header (reserved)
SUPPLIED ACCESSORIES	Multi-language user guide (EN, DE, FR, ES, JP, KR, SC, TC) VESA mount for 75/100 mm standard (two metal brackets) Four screws M3 x 5 mm (screws together VESA mount and PC) Four screws M4 x 10 mm (to affix VESA mount on the PC) Four screws M3 x 4 mm (to mount a 2.5" storage device into the bay) Two screws M3 x 5 mm (silver colour, to mount two M.2 cards) Driver DVD (Windows 64-bit) Serial ATA cable for 2.5" drive including power cable External 120 W power adapter with power cord Protection cap for CPU socket (do not use if heatpipe or fan is mounted) Heatsink compound

OPTIONAL ACCESSORIES	**PVG01:** optional D-Sub VGA video output [1] **WLN-M:** WLAN module in M.2-2230 format supports IEEE 802.11ac and Bluetooth 4.0 with two external antennas. **WWN03:** LTE adapter kit with antennas, but without LTE card [2] **PS02:** Stand for vertical operation **CXP01:** adapter cable for external power button **PRM01:** 2U rack mount front plate for two Shuttle XPC slim PCs **DIR01:** DIN-Rail mounting kit
ENVIRONMENTAL SPECIFICATIONS	Operating temperature range: 0~50 °C [5] Relative humidity, non-condensing: 10~90 %
CERTIFICATIONS / COMPLIANCE	EMI: FCC, CE, BSMI, RCM, VCCI Safety: ETL, CB, BSMI Other: RoHS, Energy Star, ErP
CONFORMITY	This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office. The CE-mark approves the conformity by the EU directives: (1) 2004/108/EC relating to electromagnetic compatibility (EMC), (2) 2006/95/EC relating to Electrical Equipment designed for use within certain voltage limits (LVD), (3) 2009/125/EC relating to ecodesign requirements for energy-related products (ErP)

[1] Optional D-Sub/VGA connector
The mainboard features one analog graphics port CN3 on the mainboard. This signal can be lead to the outside as a 15-pin D-Sub VGA connector on the backpanel by using the optional adapter PVG01. You have to open Jumper JP11 then. However doing so means two ports less can be used on the backpanel: one serial port (COM) connector will be replaced by the VGA port and the right DisplayPort will be disabled.

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

[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 DA320 also comes with a hardware-based solution. By removing Jumper JP3 (on the mainboard behind the power button) the system will start unconditionally once power is supplied.

[4] 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.

[5] 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.

AMD Socket AM4 Processors for Shuttle DA320

PROCESSOR	MODEL	CORES/ THREADS	CPU CLOCK	TURBO CLOCK	L2 / L3 CACHE	TDP	MEMORY SUPPORT	GPU	Shader	GPU Clock	Displays
Ryzen 5	3400G Pro 3400G	4 / 8	3.7 GHz	4.2 GHz	2 / 4 MB	65 W	DDR4-2933	Vega 11	704	1.4 GHz	3
	2400GE	4 / 8	3.2 GHz	3.8 GHz	2 / 4 MB	35 W	DDR4-2933	Vega 11	704	1.25 GHz	3
	2400G	4 / 8	3.6 GHz	3.9 GHz	2 / 4 MB	65 W	DDR4-2933	Vega 11	704	1.25 GHz	3
Ryzen 3	3200G	4 / 4	3.6 GHz	4.0 GHz	2 / 4 MB	65 W	DDR4-2933	Vega 8	512	1.25 GHz	3
	2200GE	4 / 4	3.2 GHz	3.6 GHz	2 / 4 MB	35 W	DDR4-2933	Vega 8	512	1.1 GHz	3
	2200G	4 / 4	3.5 GHz	3.7 GHz	2 / 4 MB	65 W	DDR4-2933	Vega 8	512	1.1 GHz	3
Athlon	320GE	2 / 4	3.5 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.1 GHz	2
	Pro 300GE	2 / 4	3.4 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.1 GHz	2
	300GE	2 / 4	3.4 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.1 GHz	2
	240GE	2 / 4	3.5 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.0 GHz	2
	220GE	2 / 4	3.4 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.0 GHz	2
	200GE	2 / 4	3.2 GHz	-	1 / 4 MB	35 W	DDR4-2666	Vega 3	192	1.0 GHz	2

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