



Shuttle[®]

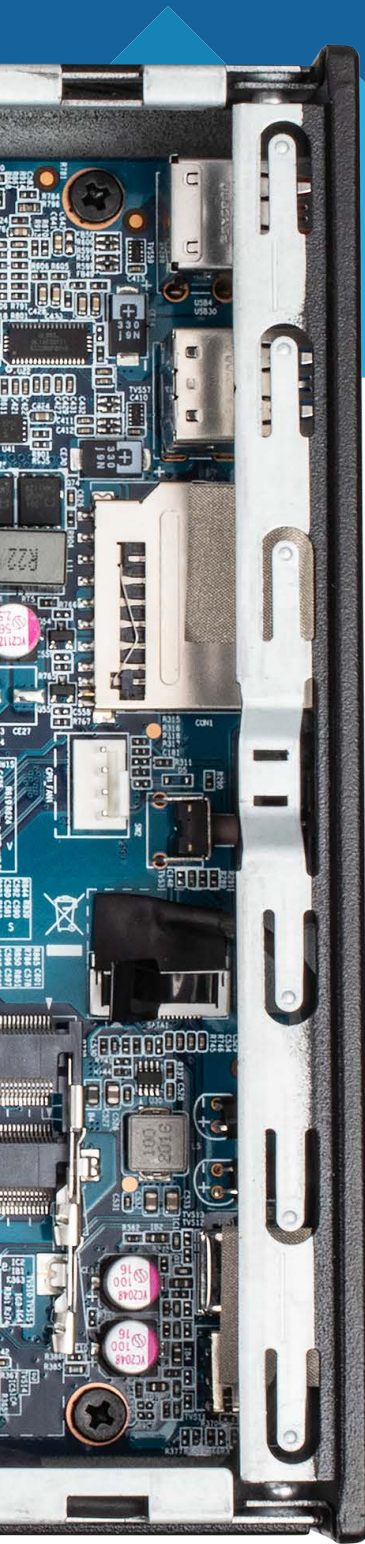
Q1 2024

AI & AUTOMATION PRODUCT GUIDE

Discover resilient, long-lasting, and trustworthy computing solutions designed to empower your future business. Our offerings span across diverse sectors, including factory automation, digital healthcare, smart retail, and IoT Edge applications.



ShuttleComputers.com
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Company Profile

Since its inception in 1983, **Shuttle** has been a trailblazer in the development of compact commercial and industrial computers, establishing a robust foundation in the technology landscape. Our proud legacy is rooted in the seamless combination of innovation, design prowess, and the manufacturing of cutting-edge computer products.

Among our impressive lineup are mini PCs, all-in-one PCs, edge computing solutions, embedded computers, and industrial and medical-grade Panel PCs. These sophisticated products find extensive applications in various domains such as automation control, intelligent self-service kiosks, digital signage, IP monitoring edge computing, machine vision, VR/AR, and more. As a result, we've garnered acclaim across diverse industries, including manufacturing, hospitality, retail, healthcare, and business.

As technology evolves at an unprecedented pace, embracing advancements like artificial intelligence and the Internet of Things, Shuttle remains at the forefront. Our commitment to continuous improvement is evident

in the strengthening of our research and development capabilities and the enhancement of our system integration expertise. This strategic approach ensures that we offer a high-quality, diverse, and competitive product portfolio.

Our dedication goes beyond providing cutting-edge solutions; it extends to empowering our customers to triumph in their projects. By delivering efficiency, productivity, and effectiveness, we contribute to the success of businesses navigating the dynamic landscape of advanced technologies. At **Shuttle**, we envision a future where our innovations redefine the possibilities of computing, and we're driven to make that vision a reality.



Artificial Intelligence



Automation / HMI



Digital Signage



Edge Computing



Kiosk / Smart Retail

Tech Innovations and Intergrated Solutions

Embark on a transformative journey with our comprehensive suite of solutions, seamlessly integrating cutting-edge technologies to elevate your business capabilities.

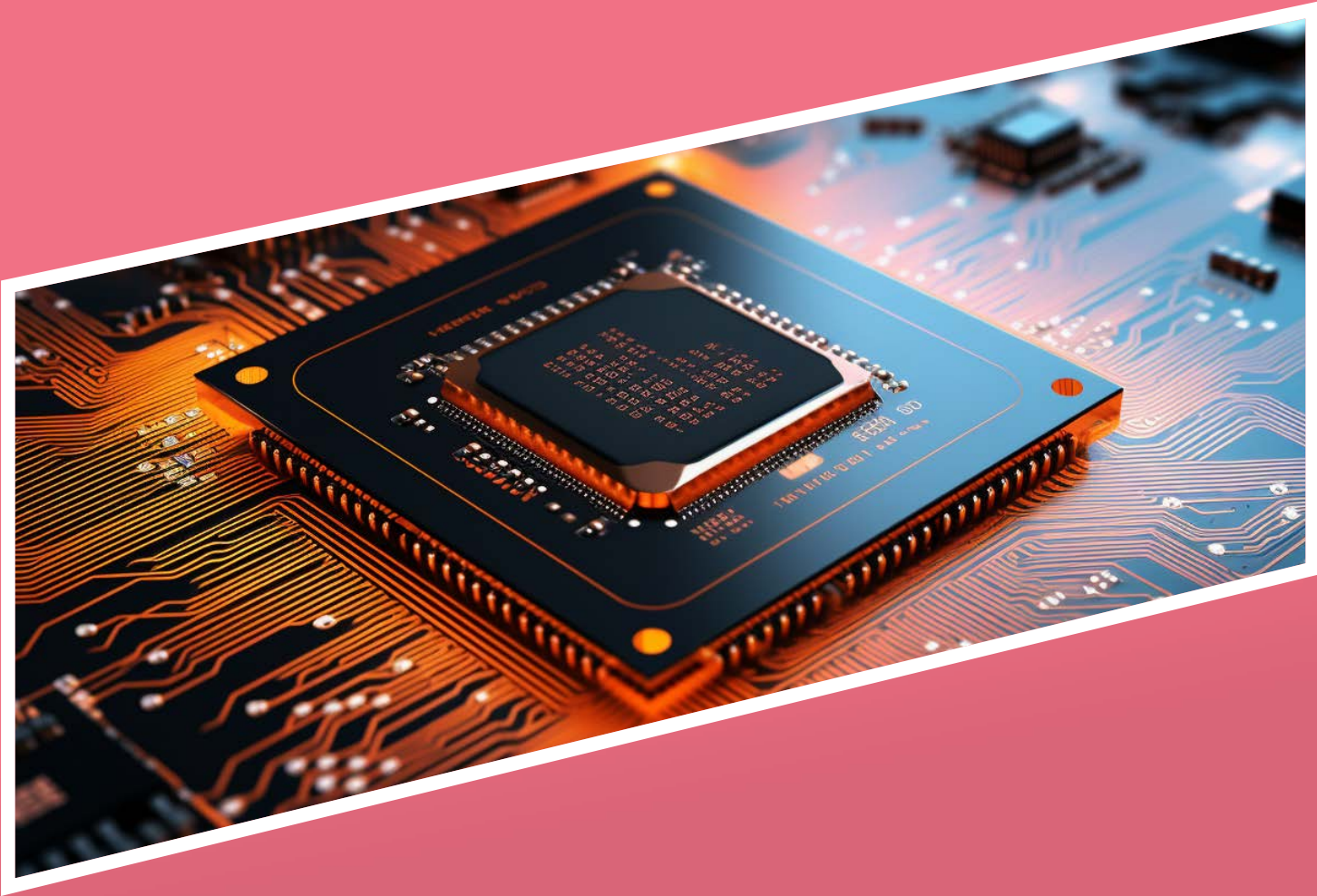
From interactive kiosk systems that redefine customer engagement to sophisticated Artificial Intelligence (AI) applications that augment decision-making processes, our offerings span a spectrum of innovative solutions.

Experience the future of automation and Human-Machine Interface (HMI) through our state-of-the-art solutions designed to optimize operations and enhance efficiency.

Our Industrial/Edge computing solutions form the backbone of your technological infrastructure, providing robust support for critical processes.

Navigate the digital landscape with confidence using our advanced digital signage solutions. Whether you're aiming to captivate audiences with dynamic displays or streamline information dissemination, our digital signage technologies offer versatility and impact.

This path of solutions isn't just a technological upgrade; it's a strategic investment in the future of your business. By seamlessly integrating kiosk, AI, automation/HMI, Industrial/Edge, and digital signage solutions, we empower you to stay ahead in a rapidly evolving digital era. Explore the possibilities, enhance your operational landscape, and pave the way for sustainable growth with our innovative suite of technologies.



Artificial Intelligence

Computers power AI, handling data, training models, and enabling applications in recognition, NLP, robotics, and beyond. They support simulations, modeling, and optimization across domains, reshaping industries. From the cloud to edge devices, computers drive AI's transformative potential.



SW580R8

BPCEL02/ BPCEL03/BPCEL07

Intel Elkhart Lake-Based Accelerate Your IoT Innovations with Powerful Computing

Shuttle BPCEL02/BPCEL03/BPCEL07 are powerful and versatile fanless embedded PCs designed with the Intel® Elkhart Lake platform, offering multiple processor options to meet different performance requirements. The series comes in a rich set of I/O and expansion interfaces, including dual Intel 2.5GbE, 4x USB 3.2 Gen 1, 4x USB 2.0, 3x RS232, M.2 2280 Type M, and M.2 2230 Type E. The modular design of this series allows for different I/O expansions and replacements to meet various customization needs. Moreover, the aluminum alloy housing design provides excellent heat dissipation and anti-interference capabilities, supporting a broad working temperature range of -30°C to +70°C. It is well-suited for several application fields, including industrial control, automation, IoT, edge computing, retail, and more.

Features

- CPU options of Intel® Elkhart Lake Pentium® J6426/ Celeron® J6412/ Atom® x6425E
- Dual independent display via HDMI (Support up to triple display through optional video output expansion kit)
- 4 x USB 3.2 Gen 1, 4 x USB 2.0, 3 x RS232, M.2 2280 Type M, and M.2 2230 Type E
- Dual Intel® 2.5G LAN supports Wake On LAN
- Dual DDR4 3200MHz memory, up to 32GB
- Multiple installation support : VESA, Ear Mount, DIN-rail

	BPCEL02	BPCEL03	BPCEL07
PROCESSOR	Pentium® J6426 Celeron® J6412 Atom® x6425E	Pentium® J6426 Celeron® J6412 Atom® x6425E	Atom® x6425E
OPERATING TEMPERATURE	0°C ~ 40°C	-20°C ~ 60°C	-30°C ~ 70°C
BUNDLED ADAPTER	19V/4.74A 90W external adapter	19V/7.89A 150W external adapter	19V/7.89A 150W external adapter



Wide Range
Voltage Support
(Optional)



Wide
Temperature



Dual 2.5G LAN



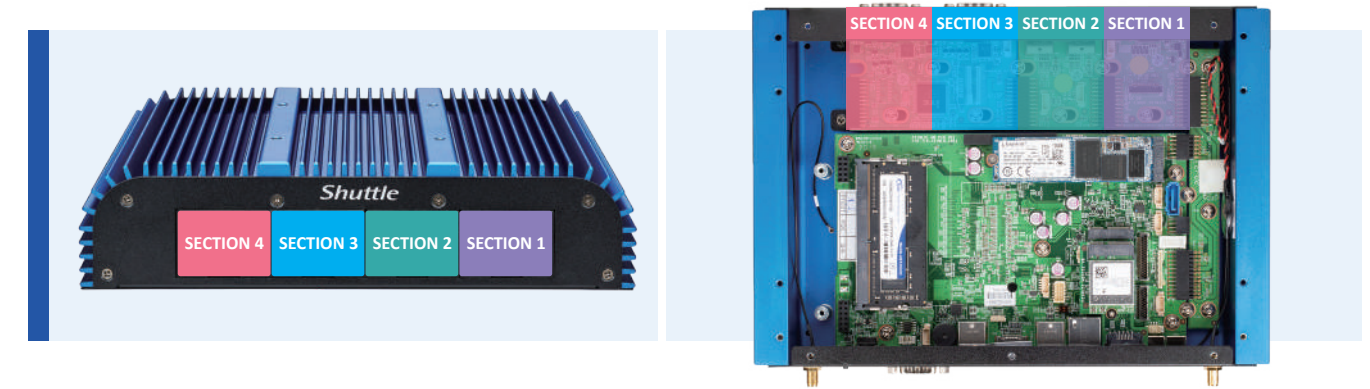
Fanless

		BPCWL02	BPCWL03
SYSTEM	Processor	8 th Gen. Intel® Whiskey Lake Core™ i3-8145UE (default) Optional : i5-8265U, i5-8365UE, i7-8565U, i7-8665UE, Celeron® 4305UE	
	Memory	2 x 260 pin SO-DIMM up to 64GB Dual Channel DDR4 2666MHz	
	BIOS	AMI UEFI 64 Mbit	
GRAPHICS	Chipset	Intel® UHD Graphics	
	Display Interface	2 x HDMI 1.4b : 4096 x 2160@30Hz	
	Display Output	Max: 3 independent or clone	
	Video Decoder	MPEG2, WMV9/VC1, AVC/H.264, JPEG/MPEG, HEVC/H.265, VP8, VP9	
STORAGE	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA)	
AUDIO	Audio Codec	Realtek ALC662 / ALC888S 2-channel	
NETWORK	Ethernet	2 x Intel® Gigabit LAN Support Wake On LAN	
	WLAN	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) External antenna (Dipole) x2 (Optional)	
I/O INTERFACE	Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (D B-9) (RS-232 with power supply: ring in/ 5V (standard) & 12V (with specific optional board))	
	USB	4 x USB3.2 Gen 1(Type A) 4 x USB2.0	
	Audio	1 x Line-out 1 x Mic-in	
POWER	Bundled Adapter	19V/4.74A 90W external adapter	19V/7.89A 150W external adapter
	Option	With option wide range board, MB support 9-36V DC-in	
WATCHDOG TIMER	Watchdog	Support watchdog	
OS SUPPORT	OS Support	Windows 10/11 64bit / Linux 64bit	
MECHANISM	Mounting	VESA Mount 75 x 75 mm / Ear Mount 256 x 100 mm / Din Rail	
	Dimension (L/W/H)	245 x 169 x 57	245 x 169 x 57
	Weight	2.85kg	2.85kg
ENVIRONMENT	Operating Temperature	0°C ~ 40°C	-20°C ~ 60°C
	Relative Humidity	20% - 80% RH (non-condensing)	
	EMC	CE, FCC, VCCI, BSMI, RCM	
	Safety	CB, CEC, cTUVus, BSMI, EAC	

Flexible I/O Customization with Expansion Kits

Shuttle's Embedded Box PCs offer flexible I/O design, making it easy to customize and optimize IoT applications for maximum efficiency.

The front panel is divided into four sections that support optional expansion kits with daughter boards, allowing for the addition of I/O ports. Expansion must begin with Section 1, with subsequent kits occupying Section 2, and so on.



Guidance for Video Output Port Customized Configuration

BACK PANEL		
	DEFAULT VIDEO OUTPUT	
FRONT PANEL		
	VIDEO OPTIONS (SECTION 1)	VIDEO OPTIONS (SECTION 2)

DH670 / DH670 V2



Compact 1-liter, Elite Performance, Future-Proof Agility

13th Gen Ready. AI-Enhancement and Four Displays

DH670 / DH670V2 supports Intel® Raptor Lake / Alder Lake hybrid architecture, combining high-performance and high-efficiency cores. Thanks to the new integrated Intel® UHD graphic processor, the model can deliver incredible clarity for 4K / 60P and bring more achievement to AI and computer vision applications. Quad-display is supported via two HDMI 2.0b and two DisplayPort. DH670 / DH670V2 offers multiple interfaces to deliver expandability and flexible connectivity, including four USB 3.2 Gen2, four USB 3.2 Gen1 (including one Type-C), two RS232 ports, and two M.2 expansion slots. It's suitable for various applications, such as digital signage and kiosk.



Feature

- Support 13th/12th Gen Intel® Core™, Pentium®, Celeron® 65W LGA 1700 processors
- Four independent displays via two HDMI 2.0b and two DisplayPort
- DH670 V2** : Dual Intel® 2.5 Gigabit LAN
DH670 : Dual Intel® Gigabit LAN
- Support up to 64GB DDR4-3200 memory
- Flexible connectivity** : 4 x USB 3.2 Gen2, 4 x USB 3.2 Gen1 (including one Type-C), 2 x RS232, 1 x M.2 2280 M Key (PCIe 4.0 x4/SATA), 1 x M.2 2230 E Key



DH610



13th Gen Power, Connectivity, 3-Display Efficiency in 1-liter Form

DH610 supports 13th/ 12th Gen Intel® Core™ i3/i5/i7/i9 processors. With Intel® new performance hybrid architecture and UHD graphics integrated, it computes performance for powering AI deployment. Support up to three displays via one HDMI 2.0 and two DisplayPort for display productivity and flexibility. Moreover, the model provides comprehensive connectivity with multiple ports, including four USB 3.2 Gen1 (Including one Type-C), four USB 2.0, two RS232, Intel® 2.5GbE + Intel® 1GbE LAN, and two M.2 expansion slots. DH610 can perform a reliable operation suitable for Office, Digital Signage, and other Multi-platform AI deployment.

intel CORE i7 intel CORE i9 intel CORE i5 intel CORE i3
Triple Display 3X USB 3.2 Gen1 2.5G LAN 24/7

Feature

- Support 13th/12th Gen Intel® Core™, Pentium®, Celeron® 65W LGA 1700 processors
- Intel® 2.5GbE + Intel® 1GbE LAN
- 24/7 operations in 0-50°C environments
- Three independent displays via one HDMI 2.0b and two DisplayPort
- 4 x USB 3.2 Gen1 (including one Type-C), 4 x USB 2.0, 2 x RS232, 1 x M.2 2280 M Key (PCIe 3.0 x4/SATA), 1 x M.2 2230 E Key



DH670/DH670 V2

Cooling system	Smart fan
Processor	Intel® 13 th /12 th Gen LGA1700 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H670
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	4 Independent Displays
Video Decoder	WMV9, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 12.5 mm) / 1 x SD card (only DH670)
RAID	0, 1
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	2
DisplayPort	2
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2(Include Type C x 1) / Gen2 : 2
USB 3.2 (Rear)	Gen1 : 2 / Gen2 : 2
USB 2.0 (Front)	-
USB 2.0 (Rear)	-
COM Port	1 x RS232 / 1 x RS232/422/485, Support 5V/12V
Line out / Mic in	1 / 1
Network	LAN : 2 x Intel® 1G LAN (DH670) / 2 x Intel® 2.5G LAN (DH670 V2) WLAN : Optional
VESA	Bracket included
Dimension	L : 190 x W: 165 x H : 43 mm
Weight	NW (kg) : 1.3 / GW (kg) : 2.05
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19V/6.32A 120W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	WLN-M, PVG01, PS02, WWN03

* BIOS v2.05 and up to version support Raptor Lake (13th) CPU



DH610

Cooling system	Smart fan
Processor	Intel® 13 th /12 th Gen LGA1700 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H610
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	3 Independent Displays
Video Decoder	WMV9, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 12.5 mm)
RAID	-
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	1
DisplayPort	2
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2(Include Type C x 1)
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	1 x RS232 / 1 x RS232/422/485, Support 5V/12V
Line out / Mic in	1 / 1
Network	LAN : 1 x Intel® 1G LAN / 1 x Intel® 2.5G LAN WLAN : Optional
VESA	Bracket included
Dimension	L : 190 x W: 165 x H : 43 mm
Weight	NW (kg) : 1.3 / GW (kg) : 2.05
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 12V or 19V DC in Bundled Adapter : 19V/6.32A 120W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	WLN-M, PVG01, PS02, WWN03

* BIOS v2.02 and up to version support Raptor Lake (13th) CPU



DH610S

Cooling system	Smart fan
Processor	Intel® 13 th /12 th Gen LGA1700 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H610
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	2 Independent Displays
Video Decoder	WMV9, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 12.5 mm)
RAID	-
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	1
DisplayPort	1
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2(Include Type C x 1)
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	-
Line out / Mic in	1 / 1
Network	LAN : 1 x Intel® 1G LAN WLAN: Optional
VESA	Optional
Dimension	L : 190 x W: 165 x H : 43 mm
Weight	NW (kg) : 1.3 / GW (kg) : 2.05
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19V/6.32A 120W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	WLN-M, PVG01, PS02, WWN03, PV04

* BIOS v2.01 and up to version support Raptor Lake (13th) CPU



DH470

Cooling system	Smart fan
Processor	Intel® 10 th Gen LGA1200 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H470
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	3 Independent Displays
Video Decoder	MPEG2, WMV9 / VC1, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP8, VP9, AV1
Memory	2 x DDR4 2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 12.5 mm) / 1 x SD card(Optional)
RAID	0, 1
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	1
DisplayPort	2
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2(Include Type C x 1) / Gen2 : 2
USB 3.2 (Rear)	Gen1 : 2 / Gen2 : 2
USB 2.0 (Front)	-
USB 2.0 (Rear)	-
COM Port	1 x RS232 / 1 x RS232/422/485, Support 5V/12V
Line out / Mic in	1 / 1
Network	LAN : 2 x Intel® 1G LAN WLAN: Optional
VESA	Bracket included
Dimension	L : 190 x W: 165 x H : 43 mm
Weight	NW (kg) : 1.2 / GW (kg) : 2
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19V/4.74A 90W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	WLN-M, PVG01, PS02, WWN03



EN01E

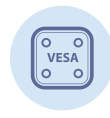
Entering A New Era of IoT

Intelligent Platform for Data-Intensive Edge Applications

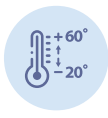
The EN01E is Shuttle's smallest full-featured PC, designed for visual signage and intelligent edge applications. Powered by an Intel® Atom™ x5-E3940 processor, the EN01E offers optimized cost and the best application performance, all within a palm-sized dimension of just 0.4L. With its rugged, fanless design, it can withstand a wide range of temperatures from -20 to 60°C and serves as an intelligent platform for IoT edge applications. Ideal for use in the industrial automation, transportation, and communications sectors.



Fanless



Vesa Mount



Wide Temperature



Din Rail

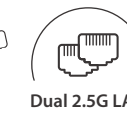
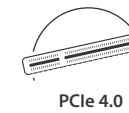
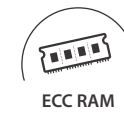
Features

- Ultra-small industrial-grade PC : 92 x 54 x 90 mm
- Equipped with Intel® Atom® x5-E3940 processor
- Built-in Gigabit LAN and support optional 4G/LTE network extension kit
- 2 x USB 3.2 Gen1, 1 x micro USB, 1 x HDMI, M.2 3042, and Micro SD card reader
- Optional PoE function (PSE01/PD01) for simplified on-site installation
- Designed for Extreme Environments : -20~60°C wide temperatures range and fanless architecture

		EN01E
COOLING SYSTEM		Fanless
PROCESSOR		Intel® Atom® x5-E3940 9.5W processor
CHIPSET		Integrated in CPU
GRAPHICS		Intel® HD Graphics 500
DISPLAY RESOLUTION MAX.		HDMI 3840 x 2160@30Hz
DISPLAY OUTPUT		1 Display
VIDEO DECODER		MPEG2, WMV9, VC1, H.264, JPEG/MPEG, MVC, HEVC/H.265, VP8, VP9
MEMORY		8GB / LPDDR4 2400 MHz
STORAGE		64GB eMMC 1 x micro SD card slot
EXPANSION SLOTS		1 x M.2 3042, B Key
VIDEO OUTPUT	HDMI Port	1 x HDMI 1.4
I/O PORT	USB 3.2 Gen1	2
	USB 2.0 (Micro A/B) SIM slot	1 1 x Nano SIM slot
NETWORK	LAN	1 x Gigabit LAN 1 x POE-PD or POE-PSE (Optional)
	WLAN	Optional (LN007 + WLN-M)
VESA		Bracket included
DIMENSION (L/W/H) mm		92.4 x 54.4 x 90
WEIGHT	NW (kg)	0.48
	GW (kg)	1.03
CERTIFICATION		CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
OPERATING TEMPERATURE (°C)		-20~60
CHASSIS		Metal
POWER SUPPLY	Power Input	12V~19V DC in
	Power Adapter	40W/65W 19V adapter (Optional)
OPERATING SYSTEM		Windows 10 64bit, Linux
OPTIONAL ACCESSORIES		PLA01, PSE01, PD01



SW580R8



Xeon-Powered Mini-Workstation

Built for Complex Computing and Visualization

Shuttle XPC cube SW580R8 supports Intel® Xeon® W-1000 series processors that deliver outstanding performance, security, and reliability along with up to 128GB of DDR4-3200 ECC memory, which provides stable computing to reduce the numbers of the errors rate effectively. It comes with robust scalability that can accommodate up to 8 x 2.5-inch SSD, PCI-E 4.0 x16 expansion slot, dual 2.5GbE, and dual 1GbE, plus 12 USB interfaces. SW580R8 is designed for a wide range of creative professionals and enterprises to apply it as a high workloads workstation, business server, and more.

Feature

- Support Intel® Xeon® W-1000 series processors and 10th/11th Gen Intel® Core™ processors
- Support DDR4-3200 ECC/Non-ECC memory up to 128GB
- Support Intel vPro® that helps minimize the risks associated with security threats
- Dual 2.5 Gigabit LAN and dual Intel® Gigabit Lan support for Wake on Lan
- Equipped with one PCIe 4.0 x16, one PCIe 3.0 x4, and two M.2 2280 M key
- Built-in 4 x USB 3.2 Gen2, 4 x USB 3.2 Gen1 (includes a Type-C), and 4 x USB 2.0



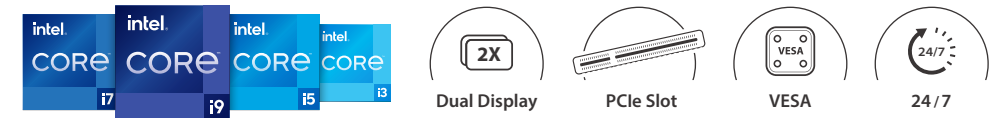


Versatile 3-liter PC for Expanded Possibilities

Single PCIe Slot for Multi-Application Expansion

Shuttle XH510G has a PCIe expansion slot that provides installing add-on cards to meet diverse circumstances. Equipped with Intel® H510 chipset and compatible with Intel® 10th/ 11th Gen Rocket-Lake platform, it supports up to 8 cores and 16 threads for high-performance computing and 4K UHD content. Multiple I/O ports, including 4 x USB 3.2 Gen 1, 4 x USB 2.0, a SATA connector, 3 x M.2, and an Intel® Gigabit LAN. XH510G can be attached to a wall mount or a monitor mount for space-constrained applications, a standout performance for Data Acquisition System (DAQ), Digital Motion Control, Surveillance, and Kiosk.

XH510G

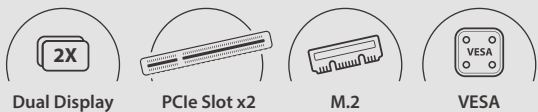


Feature

- Support 10th/11th Gen Intel® Core™, Pentium®, Celeron® 65W LGA 1200 processors
- Dual display productivity via one HDMI 2.0 and one DisplayPort 1.4
- 24/7 Certified, operable in 0-50°C
- Built-in a PCI-e x 16 expansion slot for various card installation (maximum size 208.5 x 120 x 30mm)
- Rich connectivity** : 4 x USB 3.2 Gen 1, 4 x USB 2.0, 3 x M.2 slot, SATA connector, Intel® i219LM Gigabit LAN



XH510G2



Discover Dynamic Potential With The Flexible 4.75-liter PC

Dual PCIe for Expansive Add-on Card Options

Equips with Intel® H510 chipset, Shuttle XPC slim XH510G2 supports 10th/11th Gen Intel® Core™ processors delivering high-performance computing for high-speed processing applications. Despite its 4.75-liter compact chassis, XH510G2 provides two PCI-E slots to install an extra graphics card, capture card, or more to meet diverse application requirements. Furthermore, it offers multiple interfaces to connect peripherals, including 4 x USB 3.2 Gen1, 4 x USB 2.0, an HDMI 2.0, a DisplayPort 1.4, M.2 slots, and Intel® Gigabit LAN. As a result, it is perfect for video walls, data modeling and analytics, surveillance, visualization projects, and a functional kiosk that requires port-intensive.



Feature

- Support 10th/11th Gen Intel® Core™, Pentium®, Celeron® 65W LGA 1200 processors
- Dual display productivity via one HDMI 2.0 and one DisplayPort 1.4
- 24/7 Certified, operable in 0-50°C
- Integrated Dual PCI-E Slots for various card installations : one PCI-E x16 and one PCI-E x1
- Rich connectivity** : 4 x USB 3.2 Gen 1, 4 x USB 2.0, 3 x M.2 slot, SATA connector, Intel® Gigabit LAN

* PCIe card size Max 205 x 120 x 45mm



XH610/XH610V

Cooling system	Smart fan
Processor	Intel® 13 th /12 th Gen LGA1700 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H610
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz VGA : 1920 x 1080@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	3 Independent Displays
Video Decoder	WMV9, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	2 x 2.5" HDD/SSD + 1 x slim ODD or 3 x 2.5" HDD /SSD
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	1
DisplayPort	1
VGA Port	1
USB 3.2 (Front)	Gen1 : 2
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	1 x RS232 (Max. 4) / 1 x RS232/422/485, Support 5V/12V
Line in/Line out/Mic in	1 / 2 / 2
Network	LAN : 1 x Intel® 1G LAN / 1 x Intel® 2.5G LAN WLAN: Optional
VESA	Optional (PV02)
Dimension	L : 241 x W: 200 x H : 72 mm
Weight	NW (kg) : 2.2 / GW (kg) : 3.5
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 12V or 19V DC in Bundled Adapter : 19V/6.32A 120W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	PS01, PV02, PHD4, WLN-M, PCM31

* BIOS v2.03 and up to version support Raptor Lake (13th) CPU



XH510G2

Cooling system	Smart fan
Processor	Intel® 11 th /10 th Gen LGA1200 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H510
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	2 Independent Displays
Video Decoder	MPEG2, WMV9 / VC1, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP8, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 9.5 mm)
Expansion Slot	2 x M.2 2280, M Key / 1 x M.2 2230, E Key 1 x PCIe Gen3 x 16 / 1 x PCIe Gen3 x 1 (PCIe card size Max 205 x 120 x 45mm)
HDMI Port	1
DisplayPort	1
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	RS232 x 1 (Optional)
Line in/Line out/Mic in	- / 1 / 1
Network	LAN : 1 x Intel® 1G LAN WLAN: Optional
VESA	Bracket included
Dimension	L : 250 x W: 200 x H : 95 mm
Weight	NW (kg) : 2.98 / GW (kg) : 3.49
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, VCCI, RoHS
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19.5V/9.23A 180W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	PVG01, PRC01, WLN-M, WWN03

* Graphics and PCIe specifications may vary depending on CPU support



XH510G

Cooling system	Smart fan
Processor	Intel® 11 th /10 th Gen LGA1200 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H5 10
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz DisplayPort : 4096 x 2160@60Hz
Display Output	2 Independent Displays
Video Decoder	MPEG2, WMV9 / VC1, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP8, VP9, AV1
Memory	2 x DDR4 3200/2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 9.5 mm)
Expansion Slot	2 x M.2 2280, M Key / 1 x M.2 2230, E Key 1 x PCIe Gen3 x 16 (PCIe card size Max 208.5 x 120 x 30mm)
HDMI Port	1
DisplayPort	1
VGA Port	Optional
USB 3.2 (Front)	Gen1 : 2
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	RS232 x 1 (Optional)
Line in/Line out/Mic in	- / 1 / 1
Network	LAN : 1 x Intel® 1G LAN WLAN: Optional
VESA	Bracket included
Dimension	L : 250 x W: 200 x H : 78.5 mm
Weight	NW (kg) : 1.9 / GW (kg) : 3.2
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, VCCI, RoHS
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19.5V/9.23A 180W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	PVG01, WLN-M, PS01



XH410G

Cooling system	Smart fan
Processor	Intel® 10 th Gen LGA1200 socket Core i3/i5/i7/i9, Pentium, Celeron 65W processor
Chipset	Intel® H410
Graphics	Intel® UHD Graphics series
Display Resolution Max.	HDMI : 4096 x 2160@60Hz VGA : 1920 x 1080@60Hz
Display Output	2 Independent Displays
Video Decoder	MPEG2, WMV9 / VC1, AVC / H.264, JPEG / MPEG, HEVC / H.265, VP8, VP9, AV1
Memory	2 x DDR4 2933/2666 MHz, Max. 64GB
Storage	1 x 2.5" HDD/SSD (max. 9.5 mm)
Expansion Slot	1 x M.2 2280, M Key / 1 x M.2 2230, E Key 1 x PCIe Gen3 x 16 (PCIe card size Max 208 x 120 x 30mm)
HDMI Port	1
DisplayPort	-
VGA Port	1
USB 3.2 (Front)	Gen1 : 2
USB 3.2 (Rear)	Gen1 : 2
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	RS232 x 1 (Optional)
Line in/Line out/Mic in	- / 1 / 1
Network	LAN : 1 x Intel® 1G LAN WLAN: Optional
VESA	Bracket included
Dimension	L : 250 x W: 200 x H : 78.5 mm
Weight	NW (kg) : 1.9 / GW (kg) : 3.2
Certification	CB, CE, BSMI, cTUVus, FCC, RCM, VCCI, RoHS
Operating Temperature (°C)	0~50
Chassis	Metal
Power Supply	Power Input : 19V DC in Bundled Adapter : 19.5V/9.23A 180W external adapter
Operating System	Windows 10/11 64bit, Linux
Optional Accessories	WLN-M, PS01



XC60J

Cooling system	Fanless
Processor	Intel® Celeron J3355
Chipset	Integrated in CPU
Graphics	Intel® HD Graphics 500
Display Resolution Max.	HDMI : 3840 x 2160@30Hz VGA : 1920 x 1080@60Hz
Display Output	2 Independent Displays
Video Decoder	MPEG2, WMV9, VC1, H.264, JPEG / MPEG, MVC, HEVC / H.265, VP8, VP9
Memory	2 x DDR3L 1866 MHz, Max. 8GB
Storage	1 x 3.5" / 2.5" HDD/SSD
Expansion Slot	1 x M.2 2280, M Key 1 x M.2 2230, E Key
HDMI Port	1 x HDMI 1.4
DisplayPort	-
VGA Port	1
USB 3.2 (Front)	Gen1 : 2
USB 3.2 (Rear)	-
USB 2.0 (Front)	2
USB 2.0 (Rear)	2
COM Port	7 x RS232 / 1 x RS232/422/485, Support 5V/12V
Line in/Line out/Mic in	- / 1 / 1
Network	LAN : 1 x Intel® 1G LAN WLAN: Optional
VESA	Optional (PV02)
Dimension	L : 238 x W: 200 x H : 72 mm
Weight	NW (kg) : 2.2 / GW (kg) : 3.5
Certification	CB, CE, BSMI, ETL, FCC, RCM, VCCI, RoHS
Operating Temperature (°C)	0~40
Chassis	Metal
Power Supply	Power Input : 12V or 19V DC in Bundled Adapter : 19V/3.42A 65W external adapter
Operating System	Windows 10 64bit, Linux
Optional Accessories	WLN-M, PS01, PV02



Edge Computing

Edge computing processes data closer to its source, not just in centralized data centers or the cloud. It's done on devices like IoT sensors, reducing latency, enhancing real-time capabilities, privacy, and security, and lowering bandwidth use. Ideal for applications like autonomous vehicles and industrial automation.



BPCEL02/ BPCEL03/BPCEL07

Intel Elkhart Lake-Based Accelerate Your IoT Innovations with Powerful Computing

Shuttle BPCEL02/BPCEL03/BPCEL07 are powerful and versatile fanless embedded PCs designed with the Intel® Elkhart Lake platform, offering multiple processor options to meet different performance requirements. The series comes in a rich set of I/O and expansion interfaces, including dual Intel 2.5GbE, 4x USB 3.2 Gen 1, 4x USB 2.0, 3x RS232, M.2 2280 Type M, and M.2 2230 Type E. The modular design of this series allows for different I/O expansions and replacements to meet various customization needs. Moreover, the aluminum alloy housing design provides excellent heat dissipation and anti-interference capabilities, supporting a broad working temperature range of -30°C to +70°C. It is well-suited for several application fields, including industrial control, automation, IoT, edge computing, retail, and more.

Features

- CPU options of Intel® Elkhart Lake Pentium® J6426/ Celeron® J6412/ Atom® x6425E
- Dual independent display via HDMI (Support up to triple display through optional video output expansion kit)
- 4 x USB 3.2 Gen 1, 4 x USB 2.0, 3 x RS232, M.2 2280 Type M, and M.2 2230 Type E
- Dual Intel® 2.5G LAN supports Wake On LAN
- Dual DDR4 3200MHz memory, up to 32GB
- Multiple installation support : VESA, Ear Mount, DIN-rail

	BPCEL02	BPCEL03	BPCEL07
PROCESSOR	Pentium® J6426 Celeron® J6412 Atom® x6425E	Pentium® J6426 Celeron® J6412 Atom® x6425E	Atom® x6425E
OPERATING TEMPERATURE	0°C ~ 40°C	-20°C ~ 60°C	-30°C ~ 70°C
BUNDLED ADAPTER	19V/4.74A 90W external adapter	19V/7.89A 150W external adapter	19V/7.89A 150W external adapter



Wide Range
Voltage Support
(Optional)



Wide
Temperature



Dual 2.5G LAN



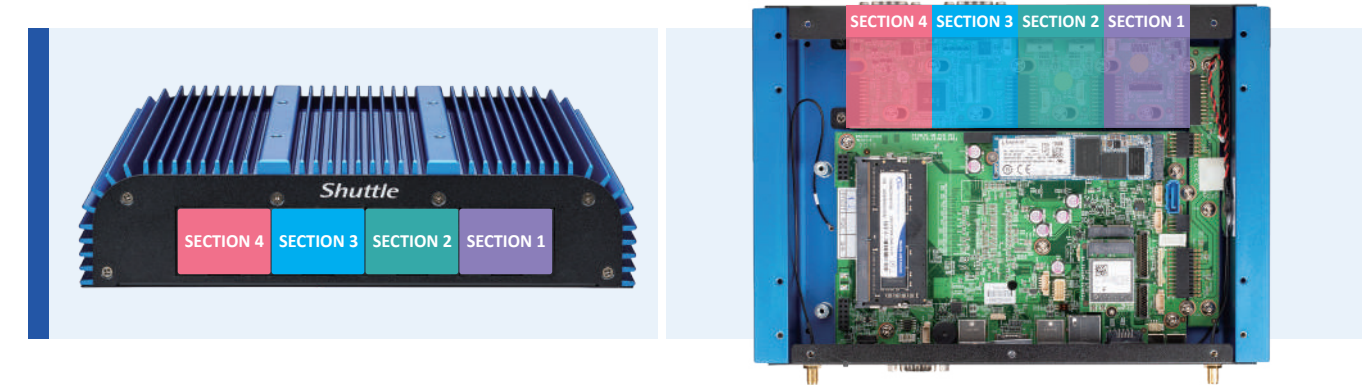
Fanless

		BPCWL02	BPCWL03
SYSTEM	Processor	8 th Gen. Intel® Whiskey Lake Core™ i3-8145UE (default) Optional : i5-8265U, i5-8365UE, i7-8565U, i7-8665UE, Celeron® 4305UE	
	Memory	2 x 260 pin SO-DIMM up to 64GB Dual Channel DDR4 2666MHz	
	BIOS	AMI UEFI 64 Mbit	
GRAPHICS	Chipset	Intel® UHD Graphics	
	Display Interface	2 x HDMI 1.4b : 4096 x 2160@30Hz	
	Display Output	Max: 3 independent or clone	
	Video Decoder	MPEG2, WMV9/VC1, AVC/H.264, JPEG/MPEG, HEVC/H.265, VP8, VP9	
STORAGE	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA)	
AUDIO	Audio Codec	Realtek ALC662 / ALC888S 2-channel	
NETWORK	Ethernet	2 x Intel® Gigabit LAN Support Wake On LAN	
	WLAN	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) External antenna (Dipole) x2 (Optional)	
I/O INTERFACE	Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (D B-9) (RS-232 with power supply: ring in/ 5V (standard) & 12V (with specific optional board))	
	USB	4 x USB3.2 Gen 1(Type A) 4 x USB2.0	
	Audio	1 x Line-out 1 x Mic-in	
POWER	Bundled Adapter	19V/4.74A 90W external adapter	19V/7.89A 150W external adapter
	Option	With option wide range board, MB support 9-36V DC-in	
WATCHDOG TIMER	Watchdog	Support watchdog	
OS SUPPORT	OS Support	Windows 10/11 64bit / Linux 64bit	
MECHANISM	Mounting	VESA Mount 75 x 75 mm / Ear Mount 256 x 100 mm / Din Rail	
	Dimension (L/W/H)	245 x 169 x 57	245 x 169 x 57
	Weight	2.85kg	2.85kg
ENVIRONMENT	Operating Temperature	0°C ~ 40°C	-20°C ~ 60°C
	Relative Humidity	20% - 80% RH (non-condensing)	
	EMC	CE, FCC, VCCI, BSMI, RCM	
	Safety	CB, CEC, cTUVus, BSMI, EAC	

Flexible I/O Customization with Expansion Kits

Shuttle's Embedded Box PCs offer flexible I/O design, making it easy to customize and optimize IoT applications for maximum efficiency.

The front panel is divided into four sections that support optional expansion kits with daughter boards, allowing for the addition of I/O ports. Expansion must begin with Section 1, with subsequent kits occupying Section 2, and so on.



Guidance for Video Output Port Customized Configuration

BACK PANEL		
	DEFAULT VIDEO OUTPUT	
FRONT PANEL		
	VIDEO OPTIONS (SECTION 1)	VIDEO OPTIONS (SECTION 2)



EN01E

Entering A New Era of IoT

Intelligent Platform for Data-Intensive Edge Applications

The EN01E is Shuttle's smallest full-featured PC, designed for visual signage and intelligent edge applications. Powered by an Intel® Atom™ x5-E3940 processor, the EN01E offers optimized cost and the best application performance, all within a palm-sized dimension of just 0.4L. With its rugged, fanless design, it can withstand a wide range of temperatures from -20 to 60°C and serves as an intelligent platform for IoT edge applications. Ideal for use in the industrial automation, transportation, and communications sectors.



Features

- Ultra-small industrial-grade PC : 92 x 54 x 90 mm
- Equipped with Intel® Atom® x5-E3940 processor
- Built-in Gigabit LAN and support optional 4G/LTE network extension kit
- 2 x USB 3.2 Gen1, 1 x micro USB, 1 x HDMI, M.2 3042, and Micro SD card reader
- Optional PoE function (PSE01/PD01) for simplified on-site installation
- Designed for Extreme Environments : -20~60°C wide temperatures range and fanless architecture

		EN01E
COOLING SYSTEM		Fanless
PROCESSOR		Intel® Atom® x5-E3940 9.5W processor
CHIPSET		Integrated in CPU
GRAPHICS		Intel® HD Graphics 500
DISPLAY RESOLUTION MAX.		HDMI 3840 x 2160@30Hz
DISPLAY OUTPUT		1 Display
VIDEO DECODER		MPEG2, WMV9, VC1, H.264, JPEG/MPEG, MVC, HEVC/H.265, VP8, VP9
MEMORY		8GB / LPDDR4 2400 MHz
STORAGE		64GB eMMC 1 x micro SD card slot
EXPANSION SLOTS		1 x M.2 3042, B Key
VIDEO OUTPUT	HDMI Port	1 x HDMI 1.4
I/O PORT	USB 3.2 Gen1	2
	USB 2.0 (Micro A/B) SIM slot	1 1 x Nano SIM slot
NETWORK	LAN	1 x Gigabit LAN 1 x POE-PD or POE-PSE (Optional)
	WLAN	Optional (LN007 + WLN-M)
VESA		Bracket included
DIMENSION (L/W/H) mm		92.4 x 54.4 x 90
WEIGHT	NW (kg)	0.48
	GW (kg)	1.03
CERTIFICATION		CB, CE, BSMI, cTUVus, FCC, RCM, RoHS, VCCI
OPERATING TEMPERATURE (°C)		-20~60
CHASSIS		Metal
POWER SUPPLY	Power Input	12V~19V DC in
	Power Adapter	40W/65W 19V adapter (Optional)
OPERATING SYSTEM		Windows 10 64bit, Linux
OPTIONAL ACCESSORIES		PLA01, PSE01, PD01

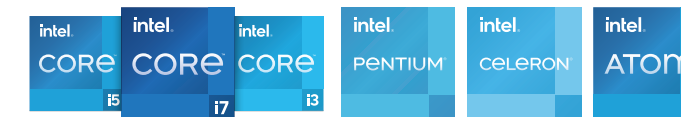


P15AL01/P15EL01

15.6" Multi-Touch Panel PC

The Perfect HMI Replacement for Industrial Automation

Shuttle P15AL01/P15EL01 integrates a 15.6-inch FHD TFT LCD panel and features an IP65-certified front bezel panel. They feature Intel® Alder Lake and Elkhart Lake processors, which deliver outstanding performance, efficiency, and connectivity for a wide range of IoT applications. Rich I/O interfaces include USB 3.2, RS232, HDMI 2.0, M.2 2280 M key, Intel® LAN, and IEEE 802.11ac WiFi + Bluetooth 5.0. Moreover, the series offers customized I/O configurations to integrate with industrial production architecture. Equipped with high-performance computing capability, it is suitable for human-machine interface (HMI), process control, infotainment, and kiosk.



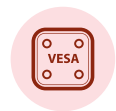
IP65



15.6" Multi-Touch



Fanless



Vesa Mount

Features

- 15.6-inch 10-point capacitive multi-touch
- IP65 front panel waterproof protection
- 1 x HDMI 2.0, 4 x USB 3.2, 1 x RS232, 1 x M.2 2280 M key (Supports PCIe x 4 / SATA storage interface)
- Network connectivity : Intel® LAN, WiFi 802.11 a/b/g/n/ac + Bluetooth 5.0
- Customized I/O options : DVI-I, VGA, RS232, USB 2.0, POAG, M.2 2280, wide voltage range board, external antenna, etc.

	P15AL01	P15EL01
PROCESSOR	Core™ i3-1215UE (default), i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	Pentium® J6426 Atom® x6425E Celeron® J6412

		P15AL01	P15EL01	P15WL01
SYSTEM	Processor	12 th Gen. Intel® Alder Lake Core™ i3-1215UE (default) Optional : i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	Intel® Elkhart Lake Celeron® J6412 (default) Optional : Pentium® J6426, Atom® x6425E	8 th Gen. Intel® Whiskey Lake Core™ i3-8145UE (default) Optional: i5-8265U, i5-8365UE, i7-8565U, i7-8665UE, Celeron® 4305UE
	Memory	2 x 262 pin SO-DIMM up to 64GB Dual Channel DDR5 4800MHz	2 x 260 pin SO-DIMM up to 32GB Dual Channel DDR4 3200MHz	2 x 260 pin SO-DIMM up to 64GB Dual Channel DDR4 2666MHz
	BIOS	AMI UEFI 64bit	AMI UEFI 64 bit	AMI UEFI 64bit
DISPLAY AND TOUCH SCREEN	Display	15.6" 1920 x 1080 Full HD LED with 10-Point Capacitive Multi-Touch	15.6" 1920 x 1080 Full HD LED with 10-Point Capacitive Multi-Touch	15.6" 1920 x 1080 Full HD LED with 10-Point Capacitive Multi-Touch
	Viewing Angle (H/V°)	85 (left), 85 (right), 85 (up), 85 (down)	85 (left), 85 (right), 85 (up), 85 (down)	85 (left), 85 (right), 85 (up), 85 (down)
	Brightness	450/350/250 cd/m2	450/350/250 cd/m2	450/350/250 cd/m2
GRAPHICS	Chipset	Intel® UHD or Iris® Xe Graphics	Intel® UHD Graphics	Intel® UHD Graphics
	Display Interface	Supports two independent displays 1 x HDMI 2.0 : 4096 x 2160@60Hz 1 x DVI-I (optional daughter board) 1 x VGA (optional daughter board)	Supports two independent displays 1 x HDMI 2.0 : 4096 x 2160@60Hz 1 x DVI-I (optional daughter board) 1 x VGA (optional daughter board)	Supports two independent displays 1 x HDMI 1.4b : 4096 x 2160@30Hz 1 x DVI-I (optional daughter board) 1 x VGA (optional daughter board)
	Video Decoder	WMV,AVC/ H264,JPEG/ MJPEG,HEVC/ H265,VP9,AV1	MPEG-2,WMV9/ VC1,H.264,JPEG/ MJPEG,H.265/ HEVC,VP8,VP9	MPEG2, WMV9/ VC1, AVC/ H.264, JPEG/ MPEG, HEVC/ H.265, VP8, VP9
STORAGE	Internal	1 x M.2 2280 M key (PCIe x4 or SATA, either one) Optional : 1 x M.2 M 2280 SSD, SATA I/F, slidable design 1 x M.2 M 2280 SSD, SATA I/F, fixed design (Either one of above)	1 x M.2 2280 M key (PCIe x4 or SATA, either one) Optional: 1 x M.2 M 2280 SSD, SATA I/F, slidable design 1 x M.2 M 2280 SSD, SATA I/F, fixed design (Either one of above)	1 x M.2 2280 M key (PCIe x4 or SATA, either one) Optional : 1 x M.2 M 2280 SSD, SATA I/F, slidable design 1 x M.2 M 2280 SSD, SATA I/F, fixed design (Either one of above)
		Audio Codec	Realtek ALC888S-VD 2-channel	Realtek ALC662/ALC888S 2-channel
AUDIO	Ethernet	1 x Intel® LAN / Support Wake On LAN	1 x Intel® 2.5 Gb LAN / Support Wake On LAN	1 x Intel® Gigabit LAN / Support Wake On LAN
	WLAN	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna (default)/external antenna (optional)	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna (default)/external antenna (optional)	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna (default)/external antenna (optional)
I/O INTERFACE	Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))
	USB	4 x USB3.2 Gen 2 (Type A)	4 x USB3.2 Gen 1 (Type A)	4 x USB3.2 Gen 1 (Type A)
	Audio	1 x Line-out / 1 x Mic-in	1 x Line-out / 1 x Mic-in	1 x Line-out / 1 x Mic-in
POWER	Bundled Adapter	19V/4.74A 90W external adapter	19V/4.74A 90W external adapter	19V/4.74A 90W external adapter
WATCHDOG TIMER	Watchdog	Support watchdog	Support watch dog	Support watchdog
OS SUPPORT	OS Support	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 10/11 64bit / Linux 64bit
MECHANISM	IP Rating	IP65 Front Panel Protection	IP65 Front Panel Protection	IP65 Front Panel Protection
	Mounting	VESA Mount 100 x 100 mm	VESA Mount 100 x 100 mm	VESA Mount 100 x 100 mm
ENVIRONMENT	Dimension (W/H/D) mm	394 x 256 x 48.9	394 x 256 x 48.9	394 x 256 x 48.9
	Weight	4.6kg	4.6kg	4.6kg
	Operating Temperature	0°C ~ 40°C	0°C ~ 40°C	0°C ~ 40°C
Storage Temperature	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C	
Relative Humidity	20% - 80% RH (non-condensing)	20% - 80% RH (non-condensing)	20% - 80% RH (non-condensing)	
EMC	CE, FCC, VCCI, BSMI, UKCA	CE, FCC, VCCI, BSMI, UKCA	CE, FCC, VCCI, BSMI, UKCA	
Safety	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC	
RF	EU, US, Taiwan	EU, US, Taiwan	EU, US, Taiwan	



P21AL01/P21EL01

21.5" Multi-Touch Panel PC

Perfect for various Industrial and Commercial Applications

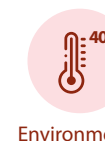
Shuttle's industrial-grade panel PCs come in a 21.5-inch size and offer multiple processor options suitable for IoT applications. The performance-oriented P21AL01 supports Intel® 12th Gen Alder Lake Core™ processors, supporting up to 64GB DDR5-4800 memory. Meanwhile, the P21EL01 offers CPU options of Intel® Elkhart Lake Atom®, Pentium®, and Celeron®, offering an excellent price-performance ratio. These panel PCs feature a rugged aluminum housing front bezel with IP65 dust and waterproof protection and a 10-point touch function. They offer four USB 3.2, three RS232, one HDMI, dual Intel® LAN, WiFi AC+Bluetooth 5.0, one M.2 2280 M key slot, and one SATA connector for flexible connectivity. These features make them ideal for industrial control, automation, and edge computing applications.



IP65



21.5" Multi-Touch



Environments



Easy Swap Storage

Features

- 21.5-inch 10-point capacitive multi-touch
- IP65 front panel waterproof protection
- 1 x HDMI 2.0, 4 x USB 3.2, 1 x RS232, 2 x RS232 /422 /485 [RS232 with power supply : ring in/ 5V (standard) &12V (with specific optional board)]
- Provide one swappable 2.5" SSD SATA drive bay
- Dual Intel® LAN and WiFi 802.11ac+BT 5.0

	P21AL01	P21EL01
PROCESSOR	Core™ i3-1215UE (default), i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	Pentium® J6426 Atom® x6425E Celeron® J6412

		P21AL01	P21EL01	P21WL01
SYSTEM	Processor	12 th Gen. Intel® Alder Lake Core™ i3-1215UE (default) Optional : i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	Intel® Elkhart Lake Celeron® J6412 (default) Optional : Pentium® J6426, Atom® x6425E	8 th Gen. Intel® Whiskey Lake Core™ i3-8145UE (default) Optional : i5-8265U, i5-8365UE, i7-8565U, i7-8665UE, Celeron® 4305UE
	Memory	2 x 262 pin SO-DIMM up to 64GB Dual Channel DDR5 4800MHz	2 x 260 pin SO-DIMM up to 32GB Dual Channel DDR4 3200MHz	2 x 260 pin SO-DIMM up to 64GB Dual Channel DDR4 2666MHz
	BIOS	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit
DISPLAY AND TOUCH SCREEN	Display	21.5" 1920 x 1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch	21.5" 1920 x 1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch	21.5" 1920 x 1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch
	Viewing Angle (H/V°)	89 (left), 89 (right), 89 (up), 89 (down)	89 (left), 89 (right), 89 (up), 89 (down)	89 (left), 89 (right), 89 (up), 89 (down)
	Brightness	500 cd/m2	500 cd/m2	500 cd/m2
	Contrast	1000 : 1	1000 : 1	1000 : 1
GRAPHICS	Backlight Lifetime	30,000 hrs	30,000 hrs	30,000 hrs
	Chipset	Intel® UHD or Iris® Xe Graphics	Intel® UHD Graphics	Intel® UHD Graphics
	Display Interface	Supports two independent displays 1 x HDMI 2.0 : 4096 x 2160@60Hz 1 x DVI : 1920 x 1080@60Hz	Supports two independent displays 1 x HDMI 2.0 : 4096 x 2160@60Hz 1 x DVI : 1920 x 1080@60Hz	Supports two independent displays 1 x HDMI 1.4b : 4096 x 2160@30Hz 1 x DVI-I : 1920 x 1080@60Hz
STORAGE	Video Decoder	WMV,AVC/ H264,JPEG/ MJPEG,HEVC/ H265,VP9,AV1	MPEG-2,WMV9 / VC1,H.264,JPEG/ MJPEG,H.265/ HEVC,VP8,VP9	MPEG-2,WMV9/ VC1,H.264,JPEG/ MJPEG,H.265/ HEVC,VP8,VP9
	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA) 1 x Swappable 2.5" SSD SATA 3.0 drive bay (compatible 7mm)	1 x M.2 2280 M key (PCIe NVMe / SATA) 1 x Swappable 2.5" SSD SATA 3.0 drive bay (compatible 7mm)	1 x M.2 2280 M key (PCIe NVMe / SATA) 1 x Swappable 2.5" SSD SATA 3.0 drive bay (compatible 7mm)
AUDIO	Audio Codec	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel	Realtek ALC662/ALC888S 2-channel
NETWORK	Ethernet	2 x Intel® LAN / Support Wake On LAN	2 x Intel® 2.5 Gb LAN / Support Wake On LAN	2 x Intel® Gigabit LAN / Support Wake On LAN
	WLAN	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna(default)/external antenna (optional)	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna(default)/external antenna (optional)	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna(default)/external antenna (optional)
I/O INTERFACE	Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply : Ring in/ 5V (standard) &12V (with specific optional board))
	USB	4 x USB3.2 Gen 2 (Type A)	4 x USB3.2 Gen 1 (Type A)	4 x USB3.2 Gen 1 (Type A)
	Audio	1 x Line-out / 1 x Mic-in	1 x Line-out / 1 x Mic-in	1 x Line-out / 1 x Mic-in
POWER	Bundled Adapter	19V/4.74A 90W external adapter	19V/4.74A 90W external adapter	19V/4.74A 90W external adapter
WATCHDOG TIMER	Watchdog	Support watchdog	Support watch dog	Support watchdog
OS SUPPORT	OS Support	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 10/11 64bit / Linux 64bit
MECHANISM	IP Rating	IP65 Front Panel Protection	IP65 Front Panel Protection	IP65 Front Panel Protection
	Mounting	VESA Mount 100 x 100 mm	VESA Mount 100 x 100 mm	VESA Mount 100 x 100 mm
	Dimension (W/H/D) mm	543 x 334 x 49.9	543 x 334 x 49.9	543 x 334 x 49.9
	Weight	7.6kg	7.6kg	7.6kg
ENVIRONMENT	Operating Temperature	0°C ~ 40°C	0°C ~ 40°C	0°C ~ 40°C
	Storage Temperature	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C
	Relative Humidity	20% - 80% RH (non-condensing)	20% - 80% RH (non-condensing)	20% - 80% RH (non-condensing)
	EMC	CE, FCC, VCCI, BSMI, UKCA	CE, FCC, VCCI, BSMI, UKCA	CE, FCC, VCCI, BSMI, UKCA
	Safety	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC
	RF	US, EU, Taiwan	US, EU, Taiwan	US, EU, Taiwan

M21WL01

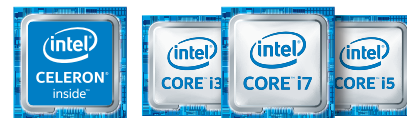
Medical-Grade Panel PC

Fanless, IP65 Front Bezel, Modularized Design

The M21WL01 is a medical-grade panel PC with safety IEC/EN 60601-1, CE, and FCC class-B medical certified, featuring a sizeable 21.5-inch FHD TFT LCD antibacterial touch housing that helps with infection control. Powered by Intel® Whiskey Lake-UE processor with a fanless design, M21WL01 delivers high-performance computing in durability and functionality. In terms of its flexible connectivity, the model includes four USB 3.2 Gen1, three RS232, dual Intel® Gigabit LAN, and WiFi 802.11ac+BT 5.0 and allows users to select different I/O ports to enhance system versatility. It is purpose-built for a medical application that complies with the requirement of medical electrical equipment and is suitable for the healthcare sector as an information terminal in the operating room, bedside, medical cart, and digital signage in hospital, etc.

Features

- Intel® Whiskey Lake-UE Celeron®, Core™ i3/i5/i7 processor
- Antibacterial substance throughout the front touch panel, rear and cable cover
- IP65 front panel waterproof protection
- I/O interfaces: 1x HDMI 1.4, 1x DVI-I, 4x USB 3.2 Gen1, 1x RS232, 2x RS232 /422 /485, RS232 with power supply: ring in/ 5V (standard) &12V (with specific optional board), 2x RJ-45, POAG
- Dual Intel Gigabit LAN and WiFi 802.11ac+BT 5.0
- Medical Certificate EMC & Safety: FCC Class-B, CE Mark Class-B, IEC/EN 60601-1



Environments



21.5" Multi-Touch



Fanless

M21WL01

SYSTEM	Processor	8 th Gen. Intel® Whiskey Lake Core™ i3-8145UE (default) Optional: i5-8265U, i5-8365UE, i7-8565U, i7-8665UE, Celeron® 4305UE
	Memory	2 x 260 pin SO-DIMM up to 64GB Dual Channel DDR4 2666MHz
	BIOS	AMI UEFI 64 bit
DISPLAY AND TOUCH SCREEN	Display	21.5" 1920 x 1080 Full HD TFT LED with Antibacterial 10-Point Projected Capacitive Multi-Touch
	Viewing Angle (H/V°)	89 (left), 89 (right), 89 (up), 89 (down)
	Brightness	500/350 cd/m2
	Contrast	1000 : 1
GRAPHICS	Chipset	Intel UHD Graphics
	Display Interface	Supports two independent displays 1 x HDMI 1.4b : 4096 x 2160@30Hz 1 x DVI-I : 1920 x 1080@60Hz
STORAGE	Video Decoder	MPEG2, WMV9/VC1, AVC/H.264, JPEG/MPEG, HEVC/H.265, VP8, VP9
	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA) 1 x Swappable 2.5" SSD SATA 3.0 drive bay (compatible 7mm)
AUDIO	Audio Codec	Realtek ALC662 / ALC888S 2-channel
NETWORK	Ethernet	2 x Intel® Gigabit LAN Support Wake On LAN
	WLAN	Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 (M.2 2230 E key) with 2 internal antenna(default)/external antenna (optional)
I/O INTERFACE	Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS-232 with power supply: ring in/ 5V (standard) & 12V (with specific optional board))
	USB	4 x USB3.2 Gen 1 (Type A)
	Audio	1 x Line-out 1 x Mic-in
	POAG	1 x POAG (standard)
POWER	Bundled Adapter	19V/4.74A 90W external medical adapter
WATCHDOG TIMER	Watchdog	Support watchdog
OS SUPPORT	OS Support	Windows 10/11 64bit / Linux 64bit
MECHANISM	IP Rating	IP65 Front Panel Protection
	Mounting	VESA Mount 100 x 100 mm
	Dimension (W/H/D) mm	543 x 334 x 49.9
	Weight	7.6kg
ENVIRONMENT	Operating Temperature	0°C ~ 40°C
	Storage Temperature	-20°C ~ 60°C
	Relative Humidity	20% - 80% RH (non-condensing)
	EMC	CE, FCC CLASS B
	Safety	cTUVus, CB (IEC/ EN 60601-1: 2005+A1: 2012)
	RF	US, EU