

Taiwan

No. 30, Lane 76, Rui-Guang Rd., Nei-Hu Dist., Taipei City, Taiwan
https://global.shuttle.com/ **TEL :** +886-2-8792-6168 **FAX :** +886-2-2973-6286
SALES E-MAIL : sales@tw.shuttle.com **MEDIA CONTACT :** shuttlepr@tw.shuttle.com

USA

Shuttle Computer Group INC.

17068 Evergreen Place, City of Industry, CA 91745
TEL : +1-626-820-9000 **FAX :** +1-626-820-5060
https://us.shuttle.com/ **SALES E-MAIL :** sales@us.shuttle.com

Japan

Japan Shuttle Co., Ltd

2F REID-C Sumiyoshi Bldg., 1-16-13 Sumiyoshi Koto-Ku, Tokyo, 135-0002, Japan
TEL : +81-3-5625-1670 **FAX :** +81-3-5625-1673
https://shuttle-japan.jp/ **SALES E-MAIL :** sales@shuttle-japan.jp

Shuttle Headquarters

Germany

Shuttle Computer Handels GES. M.B.H.

Fritz-Strassmann Str. 5, D-25337 Elmshorn, Germany
TEL : +49-4121-476860 **FAX :** +49-4121-476900
https://www.shuttle.eu/ **SALES E-MAIL :** sales@shuttle.eu

China

Shuttle Commerce (Shenzhen) Ltd.

3B03, Baofa Building, Shenyang Road, Shatoujiao, Yantian District,
Shenzhen City, China
https://cn.shuttle.com/ **SALES E-MAIL :** salescn@cn.shuttle.com

INDUSTRIAL PC PRODUCT GUIDE

Robust, durable, and reliable computing solutions for your future business,
including factory automation, digital healthcare, smart retail, and IoT Edge-related applications

2H2025 Vol.01

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EXPLORE OUR SOLUTIONS

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ABOUT SHUTTLE

Founded in 1983, Shuttle is a leading provider of commercial mini-PCs and Industrial Computers. Backed by over four decades of hardware innovation, Shuttle delivers reliable, high-performance mini-PC and Embedded solutions for diverse vertical markets, such as Machine Vision, Artificial Intelligence (AI), Edge Computing, Industrial Automation and Smart Retail, etc.

Shuttle's product portfolio includes mini-PCs, Embedded Box PCs, Edge Computers, HMI/Touch Panel PCs, All-In-One PCs, and Kiosks — all purpose-built for AI and IoT applications like Digital Signage, Self-service Kiosks, Surveillance, Automation Control, Remote Monitoring and so on.

As AI and IoT technologies continue to evolve, Shuttle is committed to advancing its mini-PCs and Industrial PC solutions for Edge AI applications, with a focus on reliability, durability, and performance to meet the evolving needs of diverse industries.



APPLICATIONS

ENGINEERED BEYOND LIMITS COMPUTING WHERE IT MATTERS MOST

As the demands for real-time data processing and decentralized decision-making continue to rise, edge computing has emerged as a critical focus in both consumer and industrial domains. Industrial-grade PCs, serving as dedicated computing platforms for mission-critical applications, play a pivotal role in adapting to dynamic business environments.

■ Built Tough

- EMC and Safety Certifications ensure electromagnetic compatibility and operational safety
- Rugged aluminum chassis provides superior heat dissipation and protection
- Industrial-grade durability withstands harsh operating conditions; specialized compliance for medical, military, and transportation applications.

■ Extreme Ready

- Wide Temperature Range Support for demanding applications
- Flexible Voltage Range accommodates unstable power conditions
- Enhanced IP rating design protects against dust and water ingress

■ Nonstop Performance

- Industrial-grade products deliver stable and unstoppable operation
- Fanless models ensure lower maintenance and higher reliability
- Advanced thermal dissipation technology maintains optimal performance across extreme temperatures

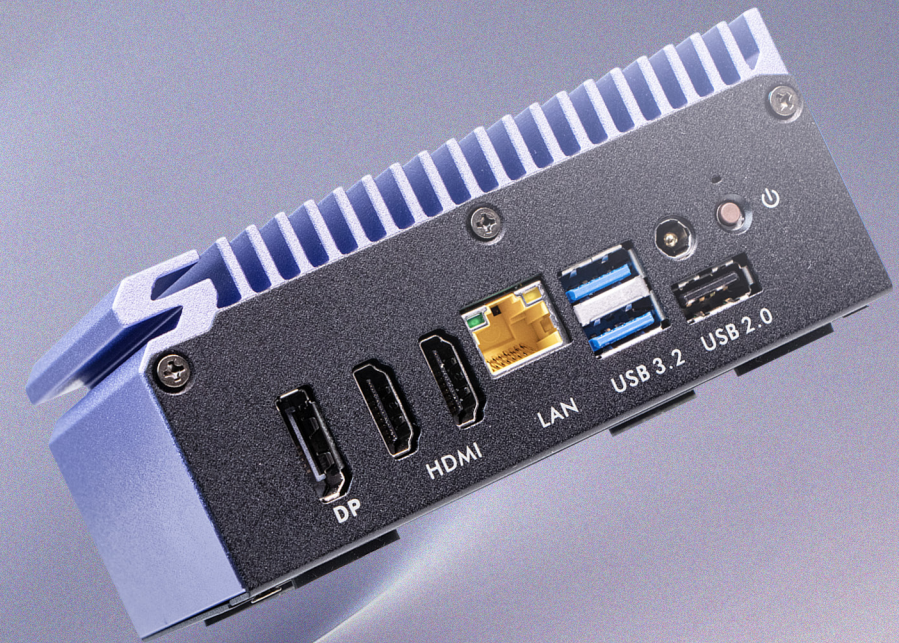
■ Ultimate Connectivity

- Customizable I/O Modular Design meets specific application requirements
- Multiple expansion options support legacy and modern interfaces
- Industrial protocol support for specialized equipment

SHUTTLE IPC

ULTRA-COMPACT REAL-TIME COMPUTING AT THE EDGE

The Shuttle IoT Edge PC series delivers reliable and optimized edge computing in a rugged design, engineered for mission-critical deployments. These industrial-grade devices feature wide temperature tolerance, versatile mounting options, and flexible I/O connectivity, all tailored for industrial environments. Currently offering models equipped with Intel platform and NVIDIA module options, this series enables real-time data analytics, computer vision, and autonomous decision-making for smart manufacturing, intelligent surveillance, automated retail, and digital signage.



IoT EDGE PC

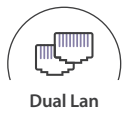
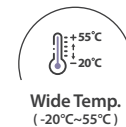
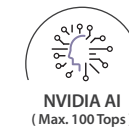


SPCNV13

HIGH-PERFORMANCE EDGE PC FOR DEMANDING AI/ML WORKLOADS

Up to 100 TOPs AI Power with NVIDIA® Jetson Orin NX

Shuttle SPCNV13 is a 0.45-litre, palm-sized high-end PC that delivers up to 100 TOPs of AI computing power through NVIDIA® Jetson Orin NX and Orin Nano Super module, featuring a 1024-core NVIDIA Ampere GPU with 32 Tensor Cores and up to 16GB LPDDR5 memory with 102.4GB/s bandwidth. The advanced active cooling system guarantees sustained high performance with low latency even during intensive workloads, enabling real-time decision-making at the edge for edge-scale AI training, model inference, real-time computer vision, advanced robotics, multi-sensor fusion applications, and autonomous systems.



Features

- NVIDIA® Jetson Orin NX 8GB / NX 16GB options with up to 100 TOPs
- Extensive I/O including HDMI, USB 3.2, RS-232/422/485, and digital I/O
- 1024-core NVIDIA Ampere GPU with 32 Tensor Cores
- Fan cooling system with an operating temperature range from -20°C to 55°C
- VESA, DIN-Rail, and Ear mount support for industrial environments
- Dual LAN ports (Intel® 2.5G + Realtek 1.0G)



SPCNV03



FANLESS EDGE AI PC WITH NVIDIA® JETSON ORIN NANO

Compact, Reliable, and Optimized for Industrial Deployments

Shuttle's SPCNV03 is an Edge PC with NVIDIA® Jetson Orin Nano module, featuring a rugged aluminum design and fanless thermal management, versatile for dusty industrial environments. With a compact 450ml volume (120mm x 75mm x 51mm), it supports flexible deployment options, including VESA, DIN rail, and ear mounting for space-constrained settings. The SPCNV03 delivers up to 40 TOPs AI performance with its NVIDIA Ampere architecture GPU and 8GB LPDDR5 memory. Its comprehensive connectivity includes dual LAN, digital I/O, and RS-232/422/485, making it perfect for energy-efficient AI deployments, such as computer vision, smart retail, intelligent surveillance, and IoT gateway applications.

Features

- NVIDIA® Jetson Orin Nano module options: 4GB (20 TOPs) and 8GB (40 TOPs) with NVIDIA® Ampere architecture GPU
- M.2 M-key 2280 slot with 128GB PCIe SSD (PCIe only)
- Comprehensive I/O with HDMI 1.4b, USB 3.2, RS-232/422/485, and Digital I/O
- Dual LAN with Intel® 2.5G and Realtek 1.0G, featuring Wake on LAN support
- Ultra-compact 120mm x 75mm x 51mm form factor weighing just 0.7kg
- Rugged aluminum chassis compliant with international safety standards



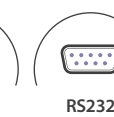
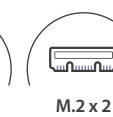
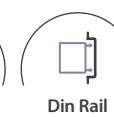
SPCEL02 / SPCEL03



EMPOWER YOUR IOT EDGE SOLUTIONS

Compact, Efficient, and Connected for Optimal Performance

Shuttle's SPCEL02/03 redefines compact computing with its exquisite metal design, durable performance, fanless operation, and wide temperature support. With a miniature volume of 450ml, this device offers flexible installation options such as DIN rail and VESA mounting, facilitating deployment in constrained spaces. The SPCEL02/03 integrates the Intel® Elkhart Lake processor optimized for IoT applications and supports DDR4-3200 RAM, M.2 SSD cards, and WLAN. Its compact housing provides a range of connections, including dual LAN, a second LAN with optional PoE PD function, COM, and Digital I/O. It is well-suited for applications like edge computing (IoT Gateway), automation, control systems, and video surveillance.



Features

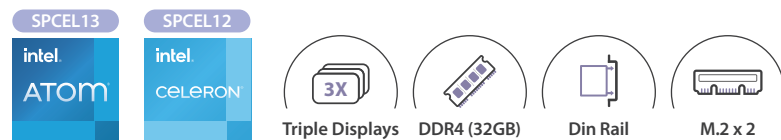
- Intel® Elkhart Lake CPU options with integrated UHD Graphics:
Intel® Celeron® J6412 Processor (SPCEL02), and Atom® x6413E Processor (SPCEL03)
- M.2 M key expansion for SATA / SSD and E Key for additional WLAN module
- Multiple connections of USB 3.2 Gen2, COM, Digital I/O
- 4K / UHD supports with 1 x HDMI 2.0b
- Fanless operating temperature :
0°C~40°C (SPCEL02) / -20°C~60°C (SPCEL03)
- In compliance with EN50155 and MIL-STD-810G standards
- Up to 2.5 GbE Dual LAN support, featuring BIOS Wake on LAN

SPCEL12 SPCEL13

ELEVATE YOUR SPACE-SAVING SIGNAGE EXPERIENCE

Triple Display, Empowering Connectivity, Limitless Possibilities

Shuttle's SPCEL12 / 13 combines ultra-compact design with robust performance for digital signage applications. Powered by Intel® Elkhart Lake processors and featuring triple-display capability via dual HDMI and DisplayPort, it excels at real-time content processing and seamless delivery across retail, transportation, and corporate environments. The SPCEL13 model further supports wide temperature operations (-20°C to 60°C), enabling effortless deployment even in harsh commercial environments.



Departures

Features

- Intel® Elkhart Lake CPU options with integrated UHD Graphics: Intel® Celeron® J6412 Processor (SPCEL12), and Atom® x6413E Processor (SPCEL13)
- 4K / UHD triple display support with 2 x HDMI 2.0b and 1 x DP 1.4
- Up to 2.5 GbE Dual LAN support, featuring BIOS Wake on LAN
- Multiple installation support: DIN-rail, VESA, Ear Mount
- In compliance with EN50155 and MIL-STD-810G standards
- M.2 M key / B Key expansion for SATA/SSD/4G/LTE card and E Key for additional WLAN module
- Fanless operating temperature: 0°C-40°C (SPCEL12) / -20°C-60°C (SPCEL13)

		SPCNV03	SPCNV13	SPCEL02	SPCEL03	SPCEL12	SPCEL13
COOLING SYSTEM		Fanless	Smart Fan	Fanless	Fanless	Fanless	Fanless
PROCESSOR		- JETSON Orin™ Nano 8GB - JETSON Orin™ Nano 4GB	- JETSON Orin™ NX 16GB - JETSON Orin™ NX 8GB	Intel® Celeron® J6412	Intel® Atom® x6413E	Intel® Celeron® J6412	Intel® Atom® x6413E
CHIPSET		Integrated in SoC	Integrated in SoC	Integrated in CPU	Integrated in CPU	Integrated in CPU	Integrated in CPU
GRAPHICS		1024-core NVIDIA® Ampere architecture GPU (8GB) 512-core NVIDIA® Ampere architecture GPU (4GB)	1024-core NVIDIA® Ampere architecture GPU with 32 Tensor Cores	Intel® UHD Graphics for 10 th Gen Intel® Processors	Intel® UHD Graphics for 10 th Gen Intel® Processors	Intel® UHD Graphics for 10 th Gen Intel® Processors	Intel® UHD Graphics for 10 th Gen Intel® Processors
DISPLAY RESOLUTION MAX.		HDMI 1920 x 1080@60Hz	HDMI 1920 x 1080@60Hz	HDMI 4096 x 2160@60Hz	HDMI 4096 x 2160@60Hz	HDMI 4096 x 2160@60Hz	HDMI 4096 x 2160@60Hz
DISPLAY OUTPUT		1 Display	1 Display	1 Display	1 Display	3 Displays	3 Displays
VIDEO DECODER		H.265 (HEVC), H.264, VP9, VP8, AV1, MPEG-4, MPEG-2, and VC-1		H.265 / HEVC, VP9, H.264, VP8, WMV9 / VC1, MPEG-2, VC-1, JPEG / MJPEG		H.265 / HEVC, VP9, H.264, VP8, WMV9 / VC1, MPEG-2, VC-1, JPEG / MJPEG	
MEMORY		8GB 64-bit LPDDR5 @2133 MHZ, 34 GB/s 4GB 64-bit LPDDR5 @2133 MHZ, 34 GB/s	16GB 128-bit LPDDR5 @2133 MHZ, 102.4 GB/s 8GB 128-bit LPDDR5 @2133 MHZ, 102.4GB/s	1 x DDR4 up to 3200 MHz, Max. 32GB - RAM socket x 1	1 x DDR4 up to 3200 MHz, Max. 32GB - RAM socket x 1	1 x DDR4 up to 3200 MHz, Max. 32GB - RAM socket x 1	1 x DDR4 up to 3200 MHz, Max. 32GB - RAM socket x 1
STORAGE		1 x PCIE (M.2 M 2280)	1 x PCIE (M.2 M 2280)	1 x SATA I/F (2242/2280) With M.2 E-Key WLAN sku, only 2242 can support		1 x SATA I/F (2242/2280) With M.2 E-Key WLAN sku , only 2242 can support	1 x micro SD card slot
EXPANSION SLOTS		- M.2 2280, M Key - M.2 2230, E Key	- M.2 2280, M Key - M.2 2230, E Key	- M.2 2242/2280, M Key - M.2 2230, E Key	- M.2 2242/2280, M Key - M.2 2230, E Key	- M.2 2242/2280, M Key - M.2 2230, E Key - M.2 3042, B Key	
VIDEO OUTPUT	HDMI Port	1 x HDMI 1.4	1 x HDMI 1.4	1 x HDMI 2.0	1 x HDMI 2.0	2 x HDMI 2.0	2 x HDMI 2.0
	DisplayPort	-	-	-	-	1 x DP 1.4	1 x DP 1.4
I/O PORT	USB	1 x USB 3.2 Gen2 1 x USB OTG 3.2 Gen2	1 x USB 3.2 Gen2 1 x USB OTG 3.2 Gen2	2 x USB 3.2 Gen2 / 1 x USB 2.0	2 x USB 3.2 Gen2 / 1 x USB 2.0	2 x USB 3.2 Gen2 / 1 x USB 2.0	2 x USB 3.2 Gen2 / 1 x USB 2.0
	Serial Ports	1 x RS232/422/485 (DB-9) / 1 x DI/DO	1 x RS232/422/485 (DB-9) / 1 x DI/DO	1 x RS232/422/485 (DB-9) / 1 x DI/DO	1 x RS232/422/485 (DB-9) / 1 x DI/DO	-	-
NETWORK	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	1 x Line-out / 1 x Mic-in
	SIM slot	-	-	-	-	1 x SIM Card	1 x SIM Card
NETWORK	LAN	1 x RJ-45 (Realtek 1.0G Lan) 1 x RJ-45 (Intel® 2.5G Lan)	1 x RJ-45 (Realtek 1.0G Lan) 1 x RJ-45 (Intel® 2.5G Lan)	2 x RJ-45 (Intel® 2.5G Lan)	2 x RJ-45 (Intel® 2.5G Lan)	2 x RJ-45 (Intel® 2.5G Lan)	2 x RJ-45 (Intel® 2.5G Lan)
	WLAN	- External antenna (Dipole) 1 x M.2 2230 E key - Realtek RTL8821CE (802.11 a/b/g/n/ac) + BT 5.0	- External antenna (Dipole) 1 x M.2 2230 E key - Realtek RTL8821CE (802.11 a/b/g/n/ac) + BT 5.0	- External antenna (Dipole) - Intel® WiFi Module (802.11 a/b/g/n/ac) + BT 5.0 - Realtek RTL8821CE (802.11 a/b/g/n/ac) + BT 5.0 (Optional)	1 x M.2 2230 E key	- External antenna (Dipole) - Intel® WiFi Module (802.11 a/b/g/n/ac) + BT 5.0 - Realtek RTL8821CE (802.11 a/b/g/n/ac) + BT 5.0 (Optional)	1 x M.2 2230 E key
MOUNTING		VESA 100 x 100 mm / Din Rail Mount 50 x 50 mm / Din Rail clip / Ear Mount(Optional)		VESA 100 x 100 mm / Din Rail Mount 50 x 50 mm / Din Rail / Ear Mount(Optional)		VESA 100 x 100 mm / Din Rail Mount 50 x 50 mm / Din Rail / Ear Mount(Optional)	
DIMENSION (L/W/H) mm		120 x 75 x 51	120 x 75 x 51	120 x 75 x 51	120 x 75 x 51	120 x 75 x 51	120 x 75 x 51
WEIGHT	NW (kg)	0.7	0.7	0.7	0.7	0.7	0.7
	GW (kg)	1.2	1.2	1.2	1.2	1.6	1.6
CERTIFICATION		- Safety: CB, cTUVus, BSMI, UKCA - EMC: FCC Class A, CE Mark, VCCI, BSMI, RCM, UKCA, EAC		- Safety: CB, cTUVus, BSMI, UKCA - EMC: FCC Class A, CE Mark, VCCI, BSMI, RCM, UKCA, EAC		- Safety: CB, cTUVus, BSMI, UKCA - EMC: FCC Class A, CE Mark, VCCI, BSMI, RCM, UKCA, EAC	
OPERATING TEMPERATURE (°C)		-20°C~55°C (with 0.7m/s airflow) -20°C~50°C (no airflow)	-20°C ~ 55°C	0°C ~ 40°C	-20°C ~ 60°C	0°C ~ 40°C	-20°C ~ 60°C
CHASSIS		Rugged aluminum chassis	Rugged aluminum chassis	Rugged aluminum chassis	Rugged aluminum chassis	Rugged aluminum chassis	Rugged aluminum chassis
POWER SUPPLY	Power Input	DC 12~24V, 3-pin terminal block	DC 12~24V, 3-pin terminal block	DC 12~24V, 3-pin terminal block	DC 12~24V, 3-pin terminal block	DC 12-20V	DC 12-20V
	Power Adapter	19V / 65W adapter (optional)	19V / 65W adapter (optional)	19V / 65W adapter (optional)	19V / 65W adapter (optional)	19V / 65W adapter	19V / 65W adapter
OPERATING SYSTEM		Linux Ubuntu 20.04	Linux Ubuntu 20.04	Windows 11 IoT Enterprise 64bit O.S / Linux	Windows 11 IoT Enterprise 64bit O.S / Linux	Windows 11 IoT Enterprise 64bit O.S / Linux	Windows 11 IoT Enterprise 64bit O.S / Linux

EMBEDDED BOX PC



FANLESS, CUSTOMIZABLE, POWERFUL IPC BOOSTS DIVERSE TASKS

Embedded Box PCs combine fanless thermal design with a robust aluminum heat sink enclosure to remain reliable in operation in harsh operating conditions. With a customizable modular design and multiple interfaces, these IPCs are ready to tackle specific tasks.

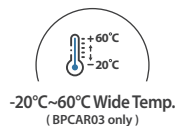


BPCAR02 BPCAR03

DRIVEN BY INTEL® ARROW LAKE

AI-Ready, Modular Flexibility, and Industrial-Grade Tough

Shuttle BPCAR02/03, powered by Core™ Ultra 200U series processors on Arrow Lake architecture, offers enhanced AI acceleration, improved energy efficiency, and advanced graphics performance, all housed in a durable aluminum chassis. Available in standard temperature (BPCAR02) and extended temperature (BPCAR03) variants, these systems provide comprehensive I/O expansion options through a flexible modular design. With support for up to 64GB of DDR5 memory, triple-display capabilities, and extensive connectivity, this series is engineered for demanding industrial applications, automation systems, and edge AI computing environments that require reliable 24/7 operation.



Features

- Intel® Core™ Ultra 5 / Ultra 7 processors (200U Series, Arrow Lake architecture)
- Up to quad displays via default / optional HDMI 2.0b ports
- Modularity for I/O configurations to meet diverse application needs
- Operating Temperature: BPCAR02: 0°C to 40°C with 90W adapter / BPCAR03: -20°C to 60°C with 150W adapter
- Rich connectivity including dual Intel® 2.5G LAN, multiple USB 3.2 Gen2, and serial ports
- Multiple installation support: VESA, Ear Mount, DIN-rail

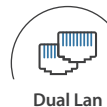
BPCAL02 / BPCAL03

BUILT ON INTEL® ALDER LAKE PLATFORM

Reliable and Scalable Computing for Industrial IoT



Shuttle's BPCAL02 and BPCAL03 are advanced embedded Box PCs powered by 12th Gen Intel® Alder Lake processors. Featuring Intel® Iris® Xe graphics and dual-channel DDR5-4800 memory support, these models deliver enhanced computing and improved loading efficiency, providing reliable solutions for IoT Edge applications, machine learning inference, industrial process monitoring, data analysis, and image recognition tasks. Moreover, these devices offer rich connectivity options, support up to 4 displays, and feature modular designs for flexible expansions, while the BPCAL03 is further capable of operating within a wide temperature range, -20°C to +60°C.



Quad Displays

Dual Lan

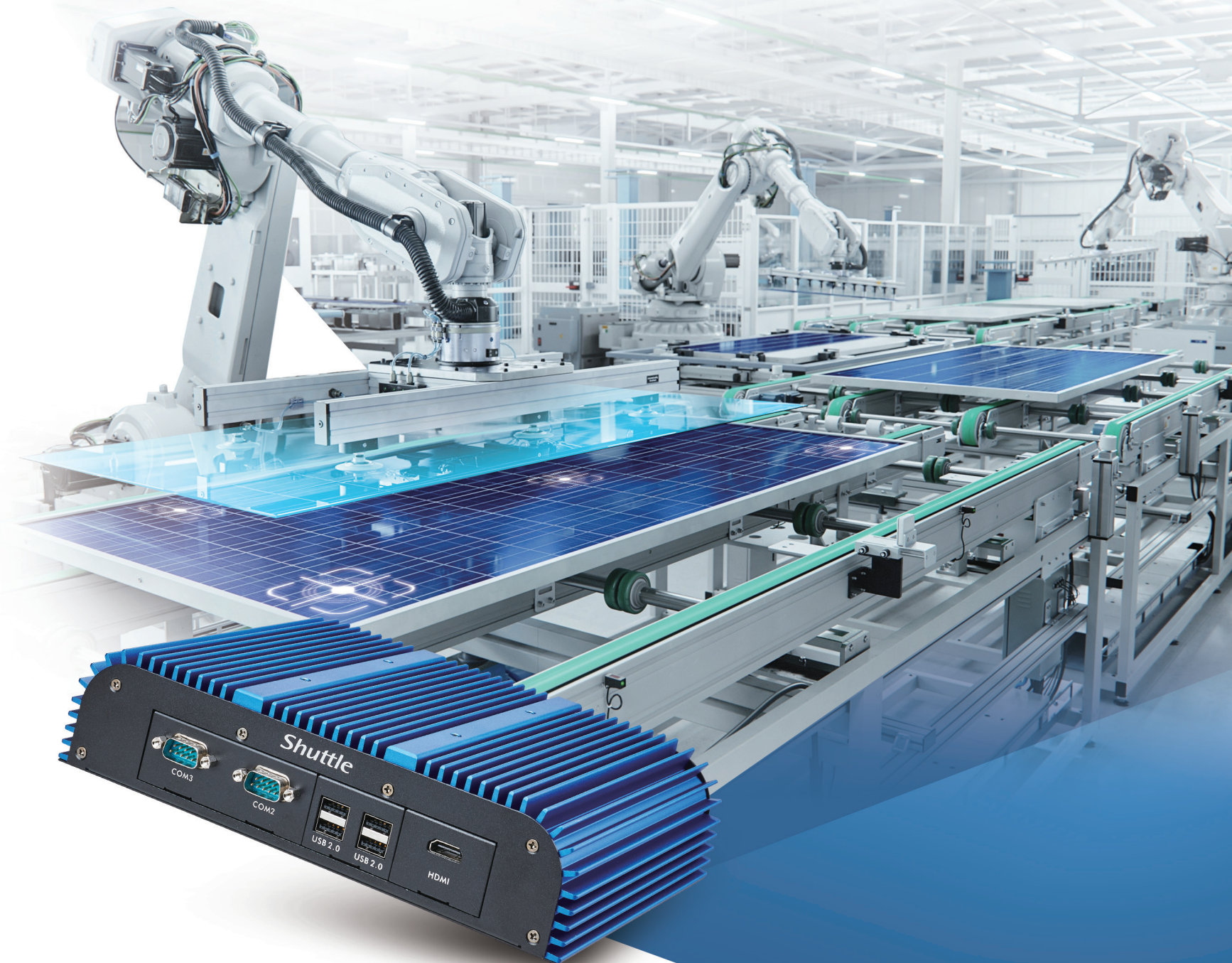
DDR5 (64GB)

Fanless

Features

- 12th Gen Intel® Alder Lake U-series Core™ and Celeron® processors (15W TDP)
- Multiple installation support: VESA, Ear Mount, DIN-rail
- Dual Intel® LAN, 4 x USB 3.2 Gen 2, 4 x USB 2.0, 3 x RS232, M.2 2280 Type M, and M.2 2230 Type E
- Max four independent displays via HDMI 2.0 and optional video output expansion kit
- Modularity for I/O configurations to meet diverse application needs
- Operating Temperature :
BPCAL02: 0°C~40°C / BPCAL03: -20°C~60°C

* Intel® Iris® Xe graphics for Core i5 / i7 model only



Flex Voltage Support
(Optional)-30°C~70°C Wide Temp.
(BPCEL07 only)

Dual 2.5G Lan



Fanless



BPCEL02 / BPCEL03 / BPCEL07

INTEL® ELKHART LAKE EMBEDDED POWER

Fanless, Modular, and Ready for Industrial Innovation

Shuttle's BPCEL02 / BPCEL03 and BPCEL07 are versatile fanless embedded Box PCs designed with the Intel® Elkhart Lake platform, offering multiple processor options to meet a range of performance needs. The series has a rich set of I/O and expansion interfaces, while its modular design supports various I/O expansions and replacements for enhanced customization flexibility. Moreover, the aluminum alloy housing design provides excellent heat dissipation and anti-electromagnetic interference capabilities, supporting a broad working temperature range from -30°C to +70°C. These systems are ideal for industrial control, automation, IoT, edge computing, retail, and more.

Features

- CPU options of Intel® Elkhart Lake Pentium® J6426 / Celeron® J6412 / Atom® x6425E
- 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 independent display via HDMI (Support up to triple display through optional video output expansion kit)
- Multiple installation support: VESA, Ear Mount, DIN-rail
- Dual DDR4 3200MHz memory, up to 32GB

		BPCAR02	BPCAR03
SYSTEM	Processor	- Intel® Arrow Lake Core™ Ultra 5 225U (default) - Optional : Ultra 5 235U, Ultra 7 255U, Ultra 7 265U	
	Memory	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max. 6400 MHz	
	BIOS	AMI UEFI 64 Mbit	
GRAPHICS	Chipset	Intel® UHD or Iris® Xe Graphics	
	Display Interface	1 x HDMI 2.1: 7680 x 4320@60Hz 1 x HDMI 2.0: 4096 x 2160@60Hz (Optional)	
	Display Output	Max: 4 independent or clone	
	Video Decoder	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	
STORAGE	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA)	
AUDIO	Audio Codec	Realtek ALC888S-VD 2-channel	
NETWORK	Ethernet	2 x Intel® 2.5Gb 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 (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 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 11 64bit / Linux 64bit	
MECHANISM	Mounting	VESA Mount 75 x 75 mm / Ear Mount 256 x 100 mm / Din Rail	
	Dimension (L/W/H) mm GW (kg)	245 x 169 x 57 2.85kg	245 x 169 x 57 2.85kg
ENVIRONMENT	Operating Temperature	0°C ~ 40°C	-20°C ~ 60°C
	Relative Humidity EMC Safety	20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC	20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC

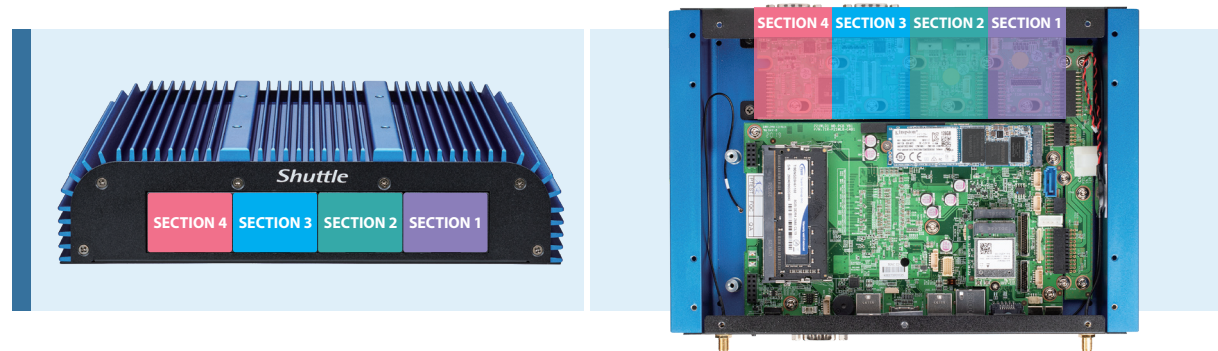
		BPCEL02	BPCEL03	BPCEL07
		- Intel® Elkhart Lake Pentium J6426 (default) - Optional: Atom® x6425E, Celeron® J6412		Intel® Elkhart Lake Atom® x6425E
		2 x 260 pin SO-DIMM up to 32GB - Dual Channel DDR4 3200MHz		
		AMI UEFI 64 Mbit		
		Intel® UHD Graphics		
		2 x HDMI 2.0b: 4096 x 2160@60Hz		
		Max: 3 independent or clone		
		MPEG-2, WMV9 / VC1, H.264, JPEG / MJPEG, H.265 / HEVC, VP8, VP9		
		1 x M.2 2280 M key (PCIe NVMe / SATA)		
		Realtek ALC888S-VD 2-channel		
		2 x Intel® 2.5Gb LAN - Support Wake On LAN		
		- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - External antenna (Dipole) x2 (Optional)		
		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)		
		4 x USB3.2 Gen 2 (Type A) 4 x USB2.0		
		1 x Line-out 1 x Mic-in		
		19V / 4.74A 90W external adapter	19V / 7.89A 150W external adapter	19V / 7.89A 150W external adapter
		With option wide range board, MB support 9-36V DC-in		
		Support watchdog		
		Windows 11 64bit / Linux 64bit		
		VESA Mount 75 x 75 mm / Ear Mount 256 x 100 mm / Din Rail		
		245 x 169 x 57 2.85kg	245 x 169 x 57 2.85kg	245 x 169 x 57 2.85kg
		0°C ~ 40°C 20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC	-20°C ~ 60°C 20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC	-30°C ~ 70°C 20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC

		BPCAL02	BPCAL03
SYSTEM	Processor	12th Gen. Intel® Alder Lake Core i3-1215UE (default) - Optional: i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	
	Memory	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 4800 MHz	
	BIOS	AMI UEFI 64 Mbit	
GRAPHICS	Chipset	Intel® UHD or Iris® Xe Graphics	
	Display Interface	2 x HDMI 2.0: 4096 x 2160@60Hz	
	Display Output	Max: 4 independent or clone	
	Video Decoder	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	
STORAGE	Internal	1 x M.2 2280 M key (PCIe NVMe / SATA)	
AUDIO	Audio Codec	Realtek ALC888S-VD 2-channel	
NETWORK	Ethernet	2 x Intel® 2.5Gb 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 (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 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 11 64bit / Linux 64bit	
MECHANISM	Mounting	VESA Mount 75 x 75 mm / Ear Mount 256 x 100 mm / Din Rail	
	Dimension (L/W/H) mm GW (kg)	245 x 169 x 57 2.85kg	245 x 169 x 57 2.85kg
ENVIRONMENT	Operating Temperature Relative Humidity EMC Safety	0°C ~ 40°C 20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC	-20°C ~ 60°C 20% - 80% RH (non-condensing) CE, FCC, VCCI, BSMI, RCM CB, CEC, cTUVus, BSMI, EAC

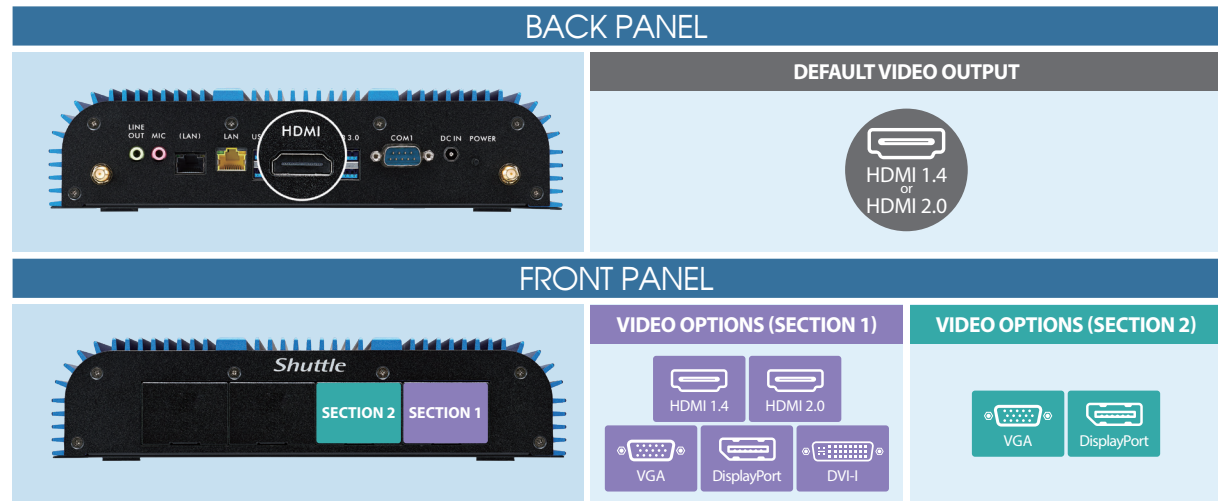
Flexible I/O Customization with Expansion Kits

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 4 sections, accommodating optional expansion kits equipped with daughterboards, 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



TOUCH PANEL PC



RUGGED FANLESS PANEL PC WITH FRONT IP65 PROTECTION

Shuttle's Industrial HMI/Panel PCs are built with a rugged aluminum housing and are available in 15.6 and 21.5 inches screen size. They feature durable IP65 front protection, multi-touch technology, and flexible computing options. Additionally, the I/O interfaces can be customized to meet specific customer requirements, ensuring seamless integration into industrial applications.

P21AR01 P15AR01



P21AR01



P15AR01

INTEL® ARROW LAKE-POWERED PANEL PC

Boosting Intelligent Industrial Operations

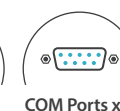
Shuttle P21AR01 and P15AR01 are a new series of Touch Panel PCs that deliver powerful computing performance. Engineered for advanced industrial environments that require premium processing capabilities, these robust fanless systems combine the Intel® Arrow Lake platform with Core™ Ultra 5/7 processors (up to 5.3GHz). Available in 15.6" (P15AR01) or 21.5" (P21AR01) FHD multi-touch displays featuring IP65-rated front panel protection, they offer comprehensive I/O options, including multiple USB 3.2 Gen2 ports, HDMI 2.1 (7680 × 4320@60Hz), and dual Intel® 2.5 Gigabit LAN. Supporting versatile mounting options and wide-range power input, these panels are ideal for factory equipment control, process monitoring automation, machine vision inspection, and industrial data analysis, ensuring reliable and continuous operation over extended periods.



DDR5 (64GB)



IP65



COM Ports x 2



M.2 + SATA

Wide DC Input
(9~36V)

Fanless

Features

- Intel® Arrow Lake Core™ Ultra 5/7 processors (225U, 235U vPro, 255U, 265U vPro) with 15W TDP
- Dual DDR5 memory slots supporting up to 64GB
- Connectivity: 4 x USB 3.2 Gen2 ports, customizable RS232/422/485 configurations, dual Intel® 2.5G LAN
- Robust design: fanless, IP65 front panel, aluminum chassis, hidden switch, 0-40°C operating range, and optional 9- 36V DC power input
- True-flat capacitive touchscreen displays with IP65 front panel protection
- Intel® vPro support for effortless remote management
- Versatile storage with both M.2 2280 PCIe / SATA and an additional 2.5" SATA (P21AR01)



P21RL01



P15RL01



P21RL01 P15RL01

INTEL® RAPTOR LAKE-BASED PANEL PC

Scalable Performance for Interactive Display and Automation

Shuttle P21RL01 and P15RL01 are durable industrial-grade Touch Panel PCs powered by the Intel® 13th Gen Raptor Lake platform. Featuring U-series processors (U300, Core™ i5-1335U, Core™ i7-1355U), they deliver scalable computing performance to meet the diverse needs of industrial applications. Featuring an IP65-rated front panel protecting the FHD multi-touch display, P21RL01 and P15RL01 excel in dusty and wet environments, and their comprehensive I/O including multiple USB 3.2 Gen2 ports, configurable RS232 serial connections, and dual Intel® 2.5G LAN, make them ideal for integration into industrial automation systems, interactive Kiosks, smart retail, and manufacturing control interfaces.



Features

- Intel® 13th-gen Raptor Lake processors (U300, i5-1335U, i7-1355U) with 15W TDP
- Dual DDR5 memory slots supporting up to 64GB
- Versatile storage with both M.2 2280 PCIe/SATA and an additional 2.5" SATA (P21RL01)
- True-flat capacitive touchscreen displays: 15.6" (P15RL01) or 21.5" (P21RL01) with IP65 front panel protection
- Connectivity: 4 x USB 3.2 Gen2, 2 x COM ports, dual Intel® 2.5G LAN
- Robust design: fanless, IP65 front panel, aluminum chassis, hidden switch, 0-40°C operating range, and optional 9- 36V DC power input

P21AL01 P15AL01



P21AL01



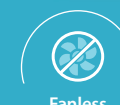
P15AL01



INTEL® ALDER LAKE PANEL PC

Rugged Performance for Dynamic Computing Tasks

The P21AL01 and P15AL01 are versatile industrial Panel PCs powered by Intel® 12th Gen Alder Lake-U/UE processors, featuring an innovative hybrid architecture that enables intelligent productivity and efficient multitasking. Equipped with Intel® Iris® Xe graphics (Core i5/i7 models), these panels excel in AI-accelerated workloads and enhanced visual processing tasks. The modular design incorporates IP65-rated front panels, DDR5-4800 MHz memory, comprehensive I/O options, and dual Intel® LAN configuration, making them optimized for factory automation, smart facility management, edge analytics devices, and patient infotainment terminals, all of which benefit from AI-accelerated performance.



Fanless



10-point multi-touch



IP65



Dual Lan



Easy swap storage

Features

- Featuring 12th Gen Intel® Alder Lake-U/UE Processors
- Enables triple-display setups with a built-in panel, external outputs via HDMI 2.0, and optional VGA / DVI-I
- Connectivity: 4 x USB 3.2 Gen 2 (Type-A), 2 x RS232, 1 x VGA, 4 x USB 2.0, 2 x Intel® 2.5G LAN, 1 x HDMI 2.0, 2 x M.2 slot for SSD and WLAN
- Robust design: fanless, IP65 front panel, aluminum chassis, hidden switch, 0-40°C operating range, and optional 9-36V DC power input
- 15.6 / 21.5-inch Full HD capacitive, 10-point multi-touch screen
- Versatile storage with both M.2 2280 PCIe / SATA and an additional 2.5" SSD (P21AL01)



P21EL01 , P15EL01

INTEL® ELKHART LAKE PANEL PC

Optimizing IoT and Industrial Efficiency

Shuttle P21EL01 and P15EL01 are sleek and fanless Panel PCs available in 21.5-inch and 15.6-inch sizes, designed to maximize the Intel® Elkhart Lake Processor's potential for IoT and Industrial computing tasks. With CPU options including Intel® Pentium® J6426, Intel® Atom® x6425E, and Intel® Celeron® J6412, they support dual-channel DDR4-3200 MHz memory up to 32GB. Featuring an IP65-rated front panel and customizable I/O configurations, these panel PCs ensure durability and flexibility in demanding environments. With HDMI 2.0 for 4K graphics and seamless connectivity via dual 2.5Gbp LAN ports, making them ideal for diverse applications such as self-service kiosks, information terminals, equipment control interfaces, and production monitoring systems, delivering reliable performance and efficiency in a wide range of industrial environments.



Features

- Intel® Elkhart Lake processors: Pentium® J6426 (default), Atom® x6425E, Celeron® J6412
- Support triple-display with a built-in panel, external outputs via HDMI 2.0, and optional VGA / DVI-I
- Versatile storage with both M.2 2280 PCIe/SATA and an additional 2.5" SSD (P21EL01)
- Robust design: fanless, IP65 front panel, aluminum chassis, hidden switch
- 15.6 / 21.5-inch Full HD capacitive, 10-point multi-touch screen
- Connections: 4 x USB 3.2 Gen 1 (Type-A), 2 x RS232, 2 x Intel® 2.5G LAN, 1 x HDMI 2.0, 2 x M.2 slot for SSD and WLAN
- Robust design: fanless, IP65 front panel, aluminum chassis, hidden switch, 0-40°C operating range, and optional 9-36V DC power input



P21EL01



P15EL01

		P21AR01	P21RL01	P21AL01	P21EL01
SYSTEM	Processor	15th Gen. Intel® Arrow Lake Ultra 5 225U (default) - Optional:Ultra 5 235U, Ultra 7 255U, Ultra 7 265U	13th Gen. Intel® Raptor lake Core™ i5-1335U (default) - Optional: U300, i7-1355U	12th Gen. Intel® Alder Lake Core™ i3-1215UE (default) - Optional: i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	- Intel® Elkhart Lake Pentium J6426 (default) - Optional: Atom® x6425E, Celeron® J6412
	Memory	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max to 6400 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 4800 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 4800 MHz	2 x 260 pin SO-DIMM up to 32GB - Dual Channel DDR4 3200 MHz
	BIOS	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit
DISPLAY AND TOUCH SCREEN	Display	21.5" 1920x1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch		21.5" 1920x1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch	
	Operating Temperature	89 (left), 89 (right), 89 (up), 89 (down)	89 (left), 89 (right), 89 (up), 89 (down)	89 (left), 89 (right), 89 (up), 89 (down)	89 (left), 89 (right), 89 (up), 89 (down)
	Relative Humidity	500/350 cd/m2	500/350 cd/m2	500/350 cd/m2	500/350 cd/m2
GRAPHICS	EMC	1000:1	1000:1	1000:1	1000:1
	Safety	30,000 hrs	30,000 hrs	30,000 hrs	30,000 hrs
	Chipset	Intel® UHD or Iris® Xe Graphics	Intel® UHD or Iris® Xe Graphics	Intel® UHD or Iris® Xe Graphics	Intel® UHD Graphics
	Display Interface	- Supports two independent displays 1 x HDMI 2.1: 7680 x 4320@60Hz 1 x DVI-I (optional board) 1 x VGA (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x DVI-I (optional board) 1 x VGA (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)
	Video Decoder	AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	MPEG-2, WMV9 / VC1, H.264, JPEG / MJPEG, H.265 / HEVC, VP8, VP9
STORAGE	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)
AUDIO	Audio Codec	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel
NETWORK	Ethernet	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN
	WLAN	- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (Optional)		- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (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) (optional board) 1 x RS-232 (DB-9) (optional board) 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) (optional board) 1 x RS-232 (DB-9) (optional board) 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 USB2.0 (optional board)	4 x USB3.2 Gen 2 (Type A) 4 x USB2.0 (optional board)	4 x USB3.2 Gen 2 (Type A) 4 x USB2.0 (optional board)	4 x USB3.2 Gen 1 (Type A) 4 x USB2.0 (optional board)
	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	1 x Line-out / 1 x Mic-in
POWER	Bundled Adapter	19V / 4.74A 90W external adapter	19V / 4.74A 90W external medical adapter	19V / 4.74A 90W external adapter	19V / 4.74A 90W external adapter
WATCHDOG TIMER	Watchdog	Support watchdog	Support watchdog	Support watchdog	Support watchdog
OS SUPPORT	OS Support	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit
MECHANISM	IP Rating	IP65 Front Panel Protection	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	VESA Mount 100 x 100 mm
	Dimension (L/W/H) mm	543 x 334 x 49.9	543 x 334 x 49.9	543 x 334 x 49.9	543 x 334 x 49.9
ENVIRONMENT	GW (kg)	7.6kg	7.6kg	7.6kg	7.6kg
	Operating Temperature	0°C ~ 40°C	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	-20°C ~ 60°C
	Relative Humidity	20% - 80% RH (non-condensing)	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	CE, FCC, VCCI, BSMI, UKCA
	Safety	CB, CEC, cTUVus, BSMI, EAC	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	US, EU, Taiwan

		P15AR01	P15RL01	P15AL01	P15EL01
SYSTEM	Processor	15th Gen. Intel® Arrow Lake Ultra 5 225U (default) - Optional: Ultra 5 235U, Ultra 7 255U, Ultra 7 265U	13th Gen. Intel® Raptor lake Core™ i5-1335U (default) - Optional: U300, i7-1355U	12th Gen. Intel® Alder Lake Core™ i3-1215UE (default) - Optional: i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	- Intel® Elkhart Lake Pentium J6426 (default) - Optional: Atom® x6425E, Celeron® J6412
	Memory	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max to 6400 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 4800 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 4800 MHz	2 x 260 pin SO-DIMM up to 32GB - Dual Channel DDR4 3200 MHz
	BIOS	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit
DISPLAY AND TOUCH SCREEN	Display	15.6" 1920x1080 Full HD LED with 10-Point Capacitive Multi-Touch	15.6" 1920x1080 Full HD LED with 10-Point Capacitive Multi-Touch	15.6" 1920x1080 Full HD LED with 10-Point Capacitive Multi-Touch	15.6" 1920x1080 Full HD LED with 10-Point Capacitive Multi-Touch
	Operating Temperature	85 (left), 85 (right), 85 (up), 85 (down)	85 (left), 85 (right), 85 (up), 85 (down)	85 (left), 85 (right), 85 (up), 85 (down)	85 (left), 85 (right), 85 (up), 85 (down)
	Relative Humidity	350/250 cd/m2	350/250 cd/m2	350/250 cd/m2	350/250 cd/m2
	EMC	1000:1	1000:1	1000:1	1000:1
GRAPHICS	Safety	50,000/15,000 hrs	50,000/15,000 hrs	50,000/15,000 hrs	50,000/15,000 hrs
	Chipset	Intel® UHD or Iris® Xe Graphics	Intel® UHD or Iris® Xe Graphics	Intel® UHD or Iris® Xe Graphics	Intel® UHD Graphics
	Display Interface	- Supports two independent displays 1 x HDMI 2.1: 7680 x 4320@60Hz 1 x DVI-I (optional board) 1 x VGA (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x DVI-I (optional board) 1 x VGA (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)
STORAGE	Video Decoder	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	MPEG-2, WMV9 / VC1, H.264, JPEG / MJPEG, H.265 / HEVC, VP8, VP9
	Internal	1 x M.2 2280 M key (PCIe x4 or SATA, either one) - Optional: 1 x M.2 2280 M key SSD, SATA I/F, fixed design		1 x M.2 2280 M key (PCIe x4 or SATA, either one) - Optional: 1 x M.2 2280 M key SSD, SATA I/F, fixed design	
	Audio Codec	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel	Realtek ALC888S-VD 2-channel
NETWORK	Ethernet	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN	1 x Intel® 2.5GbE LAN / 1 x 2nd Lan (optional) - Support Wake On LAN
	WLAN	- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (Optional)		- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (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) (optional board) 4 x USB3.2 Gen 2 (Type A) 4 x USB2.0 (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) (optional board) 4 x USB3.2 Gen 1 (Type A) 4 x USB2.0 (optional board)
	USB				
	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	1 x Line-out / 1 x Mic-in
POWER	Bundled Adapter	19V / 4.74A 90W external adapter	19V / 4.74A 90W external medical adapter	19V / 4.74A 90W external adapter	19V / 4.74A 90W external adapter
WATCHDOG TIMER	Watchdog	Support watchdog	Support watchdog	Support watchdog	Support watchdog
OS SUPPORT	OS Support	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit	Windows 11 64bit / Linux 64bit
MECHANISM	IP Rating	IP65 Front Panel Protection	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	VESA Mount 100 x 100 mm
	Dimension (L/W/H) mm	394 x 256 x 48.9	394 x 256 x 48.9	394 x 256 x 48.9	394 x 256 x 48.9
ENVIRONMENT	GW (kg)	4.6kg	4.6kg	4.6kg	4.6kg
	Operating Temperature	0°C ~ 40°C	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	-20°C ~ 60°C
ENVIRONMENT	Relative Humidity	20% - 80% RH (non-condensing)	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	CE, FCC, VCCI, BSMI, UKCA
	Safety	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC	CB, CEC, cTUVus, BSMI, EAC
ENVIRONMENT	RF	US, EU, Taiwan	US, EU, Taiwan	US, EU, Taiwan	US, EU, Taiwan

COMPLIANT WITH MEDICAL SAFETY STANDARDS

Shuttle's medical-grade panel PCs feature a rugged aluminum chassis with an antibacterial coating and an IP65-rated front panel that aids in hygiene and infection control. The series is well-suited for any healthcare center and has safety IEC/EN 60601-1, CE, and FCC Class-B medical certificates. It also boasts a customizable modular design to enhance system versatility.

MEDICAL PANEL PC





M21RL01



M15RL01



M21RL01
M15RL01



Medical Certification



Antibacterial



IP65



POAG Grounding



Fanless



DDR5 (64GB)

POWERED BY INTEL® RAPTOR LAKE

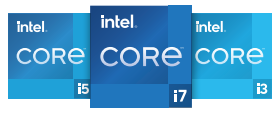
Built for the Demands of Healthcare Environments

Shuttle M21RL01 and M15RL01 are medical-grade Touch Panel PCs powered by the Intel® 13th-Gen Raptor Lake platform. Engineered for medical imaging and clinical data applications, these models deliver exceptional performance through advanced U-series processors, supporting efficient image analysis and diagnostic data processing. The white antimicrobial housing with an IP65-rated front panel ensures hygiene and durability in clinical environments. With enhanced connectivity options, including USB 3.2 Gen2 ports, configurable serial connections, and dual 2.5GbE LAN support, they could seamlessly integrate with advanced imaging devices, PACS systems, and diagnostic equipment, making them well-suited for radiology departments, operating rooms, nursing stations, and diagnostic facilities.

Feature

- Intel® 13th-gen Raptor Lake processors (U300, i5-1335U, i7-1355U) with 15W TDP
- Dual DDR5 memory slots supporting up to 64GB
- Versatile storage with both M.2 2280 PCIe/SATA and an additional 2.5" SSD (M21RL01)
- Medical-grade antimicrobial white coating on true-flat capacitive touchscreen displays: 15.6" (M15RL01) or 21.5" (M21RL01)
- POAG grounding port for guaranteed electrical safety in sensitive medical settings
- IEC / EN 60601-1, CE, and FCC Class-B certified
- Triple display support via built-in screen, HDMI 2.1 (4096 x 2160@60Hz) and HDMI 2.0 / VGA

M21AL01 M15AL01



 Medical Certification

 Antibacterial

 IP65

 POAG Grounding

 Fanless

 DDR5 (64GB)

FEATURING INTEL® ALDER LAKE

Effortless Touch Interface for Enhanced Healthcare Workflow

The Shuttle M21AL01 and M15AL01 medical-grade Touch Panel PCs are designed to enhance daily healthcare workflows through intuitive operation and versatile functionality. Powered by Intel® 12th Gen Alder Lake processors, these panels feature specialized glove-touch capabilities that allow medical staff to interact with the system while wearing protective equipment. The user-friendly interface, antimicrobial coating, and IP65 protection make these panels ideal for nurse stations, patient monitoring, electronic medical record (EMR) access, and medication management systems. With comprehensive connectivity options and customizable I/O configurations, these models seamlessly integrate into existing healthcare IT infrastructure, providing medical staff with reliable access to critical patient information at the point of care.



Features

- 12th Gen Intel® Alder Lake-U/UE Processors
- IEC / EN 60601-1, CE, and FCC Class-B certified
- Medical-grade antimicrobial white coating on true-flat capacitive touchscreen displays: 15.6" (M15AL01) or 21.5" (M21AL01)
- POAG grounding port for guaranteed electrical safety in sensitive medical settings
- Versatile storage with both M.2 2280 PCIe / SATA and an additional 2.5" SSD (M21AL01)
- 4 x USB 3.2 Gen2 ports, and RS232/422/485 COM ports for medical devices, dual Intel® 2.5G LAN
- Triple displays via built-in screen, HDMI 2.0 (4096 x 2160@60Hz), with and optional VGA / DVI-I

		M21RL01	M21AL01	M15RL01	M15AL01
SYSTEM	Processor	13th Gen. Intel® Raptor lake Core™ i5-1335U (default) - Optional: U300, i7-1355U	12 th Gen. Intel® Alder Lake - Default: Intel® Core i3-1215UE - Optional: i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E	13th Gen. Intel® Raptor lake Core™ i5-1335U (default) - Optional: U300, i7-1355U	12 th Gen. Intel® Alder Lake - Default: Intel® Core i3-1215UE - Optional: i5-1235U, i5-1245UE, i7-1255U, i7-1265UE, Celeron® 7305E
	Memory	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max. 4800 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max. 4800 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max. 4800 MHz	2 x 262 pin SO-DIMM up to 64GB - Dual Channel DDR5 Max. 4800 MHz
	BIOS	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit	AMI UEFI 64bit
DISPLAY AND TOUCH SCREEN	Display	21.5” 1920x1080 Full HD TFT LED with 10-Point Projected Capacitive Multi-Touch		15.6” 1920x1080 Full HD LED with 10-Point Capacitive Multi-Touch	
	Operating Temperature	89 (left), 89 (right), 89 (up), 89 (down)		85 (left), 85 (right), 85 (up), 85 (down)	
	Relative Humidity	500/350 cd/m2		350/250 cd/m2	
GRAPHICS	EMC	1000:1		1000:1	
	Safety	30,000 hrs		50,000/15,000 hrs	
	Chipset	Intel® UHD or Iris® Xe Graphics		Intel® UHD or Iris® Xe Graphics	
STORAGE	Display Interface	- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)		- Supports two independent displays 1 x HDMI 2.0: 4096 x 2160@60Hz 1 x VGA (optional board) 1 x DVI-I (optional board)	
	Video Decoder	WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1		WMV, AVC / H264, JPEG / MJPEG, HEVC / H265, VP9, AV1	
	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 x4 or SATA, either one) - Optional: 1 x M.2 2280 M key SSD, SATA I/F, fixed design (Either one of above)	
AUDIO	Audio Codec	Realtek ALC888S-VD 2-channel		Realtek ALC888S-VD 2-channel	
NETWORK	Ethernet	1 x Intel®2.5 GbE LAN 1 x 2nd Lan (optional) - Support Wake On LAN		1 x Intel®2.5 GbE LAN 1 x 2nd Lan (optional) - Support Wake On LAN	
	WLAN	- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (Optional)		- Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 5.0 WLAN card M.2 2230 E key (Optional) - Internal antenna x2 (default) - External antenna (Dipole) x2 (Optional)	
	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) (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) (optional board)	
I/O INTERFACE	USB	4 x USB3.2 Gen 2 (Type A) 4 x USB2.0 (optional board)		4 x USB3.2 Gen 2 (Type A) 4 x USB2.0 (optional board)	
	Audio	1 x Line-out / 1 x Mic-in		1 x Line-out / 1 x Mic-in	
	POAG	1 x POAG		1 x POAG	
POWER	Bundled Adapter	19V / 4.74A 90W external adapter		19V / 4.74A 90W external adapter	
WATCHDOG TIMER	Watchdog	Support watchdog		Support watchdog	
OS SUPPORT	OS Support	Windows 11 64bit / Linux 64bit		Windows 11 64bit / Linux 64bit	
MECHANISM	IP Rating	IP65 Front Panel Protection		IP65 Front Panel Protection	
	Mounting	VESA Mount 100 x 100 mm		VESA Mount 100 x 100 mm	
	Dimension (L/W/H) mm	543 x 334 x 49.9		394 x 256 x 48.9	
ENVIRONMENT	GW (kg)	7.6kg		4.6kg	
	Operating Temperature	0°C ~ 40°C		0°C ~ 40°C	
	Storage Temperature	-20°C ~ 60°C		-20°C ~ 60°C	
ENVIRONMENT	Relative Humidity	20% - 80% RH (non-condensing)		20% - 80% RH (non-condensing)	
	EMC	CE, FCC, VCCI, BSMI, UKCA		CE, FCC, VCCI, BSMI, UKCA	
	Safety	CB, CEC, cTUVus, BSMI, EAC		CB, CEC, cTUVus, BSMI, EAC	
ENVIRONMENT	RF	US, EU, Taiwan		EU, US, Taiwan	
		US, EU, Taiwan		EU, US, Taiwan	
		US, EU, Taiwan		EU, US, Taiwan	

OPTIONAL EXPANSION KIT

MAIN EXTENSION KIT			EDGE IOT PC						EMBEDDED BOX PC						TOUCH PANEL PC						MEDICAL PANEL PC							
		Occupied Sections (Brackets)	SPCNCV03	SPCNCV13	SPCELO2	SPCELO3	SPCEL12	SPCEL13	BPCAR02	BPCAR03	BPCAL02	BPCAL03	BPCELO2	BPCELO3	BPCELO7	P21AR01	P21RL01	P21AL01	P21EL01	P15AR01	P15RL01	P15AL01	P15EL01	M21RL01	M21AL01	M15RL01	M15AL01	
VIDEO OUTPUT	1 x HDMI 1.4	1	●	●																								1 x HDMI 1.4
	1 x HDMI 2.0	1			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1 x HDMI 2.0
	1 x DisplayPort	1						●	●	●	●	●	●	●	●													1 x DisplayPort
	1 x DVI-I	1							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1 x DVI-I
	1 x VGA	1							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1 x VGA
I/O INTERFACE	1 x COM (RS232)	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1 x COM (RS232)
	1 x COM (RS232/RS422/RS485)	1																										1 x COM (RS232/RS422/RS485)
	2 x COM (RS232/RS422/RS485)	2							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2 x COM (RS232/RS422/RS485)
	4 x COM (RS232/RS422/RS485)	2							●	●	●	●	●	●	●	●												4 x COM (RS232/RS422/RS485)
	6 x COM (4 x RS232 + 2 x RS232/RS422/RS485)	3							●	●	●	●	●	●	●	●												6 x COM (4 x RS232 + 2 x RS232/RS422/RS485)
	4 x USB 2.0	1							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	4 x USB 2.0
	2 x USB 3.2	2	●	●	●	●	●	●																				2 x USB 3.2
	1x USB 2.0	1			●	●	●	●																				1x USB 2.0
	1 x DIO	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1 x DIO
	2nd LAN module	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	2nd LAN module
Dual LAN module (M.2)	1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Dual LAN module (M.2)	
NETWORK	WiFi module kit (RTL8821CE)	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	WiFi module kit (RTL8821CE)
	WiFi antenna set	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	WiFi antenna set
	4G/LTE connection module (M.2)	2	●	●	●	●	●	●	●	●	●	●	●	●	●	●												4G/LTE connection module (M.2)
BOARD	Wide voltage range board (9~36V)	-							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Wide voltage range board (9~36V)
	SATA port + M.2 2280 daughter board	-															●	●	●	●					●	●		SATA port + M.2 2280 daughter board
MOUNT KIT	VESA monut	-	●	●	●	●	●	●	●	●	●	●	●	●	●									●	●	●	●	VESA monut
	Ear mount	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●												Ear mount
	Din rail	-	●	●	●	●	●	●	●	●	●	●	●	●	●	●												Din rail
	Stand	-															●	●	●	●	●	●	●	●	●	●	●	Stand
OTHERS	Dummy bracket	1							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Dummy bracket
	150W power adapter (Wide temp.)	-								●		●		●	●													150W power adapter (Wide temp.)
	65W power adapter	-						●																				65W power adapter
	65W power adapter (Wide temp.)	-																										65W power adapter (Wide temp.)
	eDP cable (for 3rd video output)	-							●	●	●	●	●	●	●	●												eDP cable (for 3rd video output)
	External antenna back cover	-															●	●	●	●	●	●	●	●	●	●	●	External antenna back cover
	POAG	-															●	●	●	●	●	●	●	●	●	●	●	POAG