

ARK-1221L

Intel Atom x6413E and Celeron J6412 Quad Core & Celeron N6210 Dual Core SoC with HDMI and DP/Dual LAN/Dual COM DIN-Rail Fanless Box PC

NEW



Features

- Intel Atom x6413E and Celeron J6412 Quad Core & Celeron N6210 Dual Core SoC
- DIN-Rail system with essential I/O ports on front-side bezel
- 2 x Intel GbE and 2 x RS-232/422/485
- Dual independent displays with one 4K HDMI and one 4K DP
- 1 x M.2 2280 B key with nano SIM holder and 1 x M.2 2230 E key
- 2 x USB 3.2 and 2 x USB 2.0
- 1 x full-size mPCIe (share with mSATA) and 1 x 2.5" SATA storage device
- 12V ~ 28V wide range power input
- 40 ~ 60 °C and -20 ~ 60 °C extended operating temperature
- Support Windows 10/11 IoT Enterprise LTSC, Ubuntu 20.04



WISE-DeviceOn SUSI API



Specifications

Model Name		ARK-1221L-S5A1	ARK-1221L-S2A1	ARK-1221L-U0A1
Processor System	CPU	Intel Atom x6413E Quad Core SoC	Intel Celeron N6210 Dual Core SoC	Intel Celeron J6412 Quad Core SoC
	Frequency	1.50 GHz, turbo burst up to 3.00 GHz	1.20 GHz, turbo burst up to 2.60 GHz	2.0 GHz, turbo burst up to 2.60 GHz
	Core Number	4	2	4
	BIOS	AMI EFI 256 Mbit		
Memory	Technology	DDR4 3200 MHz		
	Max capacity	32 GB		
	Socket	2 x 260-pin SO-DIMM, 2 x 16 GB or 1 x 32 GB memory		
Graphics	Chipset	Intel® UHD Graphics for 10th Gen Intel® Processors		
	HDMI	Up to 4096 x 2160 @ 60 Hz		
	DP	Up to 4096 x 2160 @ 60 Hz		
	Dual Display	HDMI + DP		
Ethernet	LAN1	Intel i225-LM, 2.5GbE, support Wake On LAN		
	LAN2	Intel i225-LM, 2.5GbE, support Wake On LAN		
I/O Interface	Interface	Realtek ALC888S, High Definition Audio, Mic-in, Line-out		
	Serial Ports	2 x RS-232/422/485 (default RS-232) with auto flow control		
	USB Ports	2 x USB3.2, 2 x USB2.0, 1 x internal USB2.0 for security dongle		
	GPIO	8-bit Programmable DIO		
Expansion	Optional CANbus	1 x CANBus 2.0 (DB9 connector)		
	Mini PCIe	1 x Full-size mPCIe		
Storage	M.2	1 x M.2 2230 E key and 1 x M.2 2280 B key with nano SIM holder #1		
	SSD/HDD	1 x 2.5" SATAIII Drive bay (compatible with 9.5mm height)		
Other	mSATA	1 x Full-size mSATA (*share with mPCIe slot)		
	WatchDog Timer	255 levels timer interval, setup by software		
Software Support	TPM	TPM 2.0 (project support by AMO-I029)		
	Microsoft Windows	Windows 10/11 Enterprise		
Power Requirement	Linux	Ubuntu 20.04		
	Power Type	ATX/AT		
	Power Input Voltage	12 ~ 28 V _{DC}		
Power Consumption	Power Adaptor	AC to DC, 60W (Optional)		
	Typical	9.6W (OS idle mode)	12.66W (OS idle mode)	12.97W (OS idle mode)
	Max.	18.96W (Full loading)	21.89W (Full loading)	26.46W (Full loading)
Mechanical	Construction	Aluminum housing		
	Mounting	DIN-rail/Wall Mount		
	Dimensions (W x H x D)	60 x 158 x 114 mm (2.34" x 6.22" x 4.49")		
	Weight	1.05 kg (2.31lb)		
Environment	Operating Temperature	With extended temp. peripherals: -40 ~ 60 °C (-40 ~ 140 °F) with 0.7 m/s air flow		
	Storage Temperature	-40 ~ 85 °C (-40 ~ 185°F)		
	Relative Humidity	95% @ 40 °C (non-condensing)		
	Vibration during Operation	With SSD: 3 Grms, IEC60068-2-64, random, 5-500 Hz, 1hr/axis (with Wall Mount)		
	Shock during Operation	With SSD: 30 G, IEC-60068-2-27, half sine, 11 ms duration (with Wall Mount)		
	EMC	CE/FCC Class B, CCC, BSMI, UKCA		
	Safety	UL, CB, CCC and BSMI, UKCA		

#1 SIM holder and M.2 slot are hardware interfaces for wireless communication integration only. System level RF certification is not available.

M.2 B key supports only PCIe x 2 and USB

M.2 B key requires additional mechanical parts to fix for sizes other than 2280.

ADVANTECH

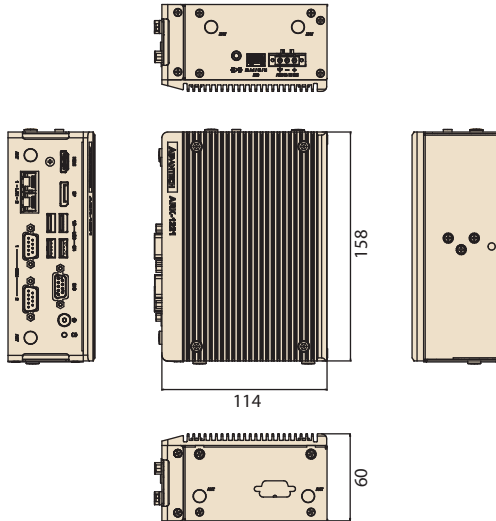
Fanless Embedded Box PCs

All product specifications are subject to change without notice.

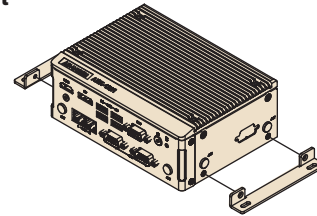
Last updated: 20-Jun-2025

Dimensions

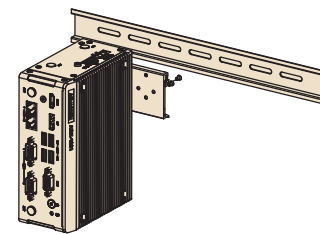
Unit: mm



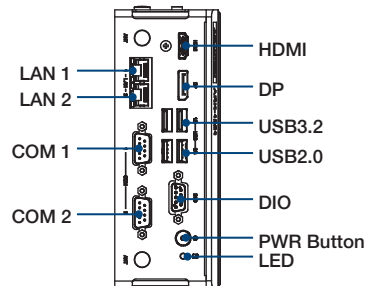
Wall Mount



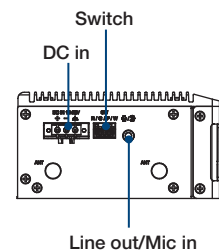
DIN Rail



Front Panel External I/O Mechanical Layout/Drawing



Top Panel External I/O Mechanical Layout/Drawing



Ordering Information

Part No.	CPU	RAM	HDMI	DP	GbE	USB 3.2	USB 2.0	RS-232/422/485	Audio	Full-size MiniPCIe	SIM	M.2	2.5" SATA III HDD Bay	mSATA	Power Input	Operating Temp.
ARK-1221L-S5A1	Intel Atom x6413E 1.50 GHz SoC	Up to 32 GB	1	1	2	2	2	2	Mic in or Line out	1	1	2	1	1 (shared with mPCIe)	12-28 Vdc	-40 ~ 60° C
ARK-1221L-S5A1U	Intel Atom x6413E 1.50 GHz SoC	Up to 32 GB	1	1	2	2	2	2	Mic in or Line out	1	1	2	1	1 (shared with mPCIe)	12-28 Vdc	-40 ~ 60° C
ARK-1221L-S2A1	Intel Celeron N6210 Dual Core SoC	Up to 32 GB	1	1	2	2	2	2	Mic in or Line out	1	1	2	1	1 (shared with mPCIe)	12-28 Vdc	-20 ~ 60° C
ARK-1221L-U0A1	Intel Celeron J6412 Quad Core SoC	Up to 32 GB	1	1	2	2	2	2	Mic in or Line out	1	1	2	1	1 (shared with mPCIe)	12-28 Vdc	-20 ~ 60° C

Note: P/N with alphabet "U" as suffix are Made in Taiwan. Memory, storage and operating system bundled by request.

Packing List

Part Number	Description
-	1 x ARK-1221L Unit
-	1 x User Manual (Simplified Chinese)
-	1 x Wrench for top cover
1950016395T10C	1 x DIN-rail bracket
1652004519	1 x 3-pin plug-in block for power in
1652007880-01	1 x 4-pin terminal block for switch

Embedded OS

Part Number	Description
20706WX9ES0168	Win10 IoT Ent 2019 LTSC 64bit, English
20706U20DS0041	img Ubuntu20.4 ARK-1221L 64b 2004 ENU
20706WX1ES0117	Win10 IoT Ent 21H2 LTSC 64bit, English
20706WLE1S0058	Win11 IoT Ent 24H2 LTSC 64bit, English

Optional Items

Part Number	Description
96PSA-A60W24T2-3	AC to DC Adaptor, 24V/2.5A 60W
1702002600	Power cable 3-pin 183cm, USA type
1702002605	Power cable 3-pin 183cm, EU type
1702031801	Power cable 3-pin 183cm, UK type
1700000237	Power cable 3-pin 183cm, PSE type
1700023855-01	1M lockable HDMI cable
1700023856-01	3M lockable HDMI cable
AMK-W004	ARK-1220F wall mount kit
AMK-V023E	ARK-12XX VESA mount (must be used with AMK-W004)
AMK-A0052	Thermal kit of ARK-1221 for Hailo AI E Key
1700030518-01	CANBus Cable

Note
Please update BIOS to Advantech part number 1420056720 when using the optional CANBus cable 1700030518-01.