

# ARK-1251

## Intel® Core Ultra U series processor with Din-Rail Fanless Box PC



### Features

- Intel® Core Ultra 5/Ultra 7 Processor
- DDR5-5600 SO-DIMM memory support up 96GB
- M.2 E Key, B Key and M Key for storage and wireless module installation
- Up to 3 x GbE, 4 x serial ports, 8-bit DIO, optional CANBus
- TPM on board for system security
- Dual displays with 1 x 8K HDMI + 1 x 8K DP
- 2 x USB 3.2 and 4 x USB 2.0
- 12V ~ 28V wide range power input
- -20 ~ 60 °C extended operating temperature
- DIN-Rail system with essential I/O ports on front-side bezel
- Support EdgeBMC OOB, DeviceOn, Edge AI SDK



WISE-DeviceOn SUSI API



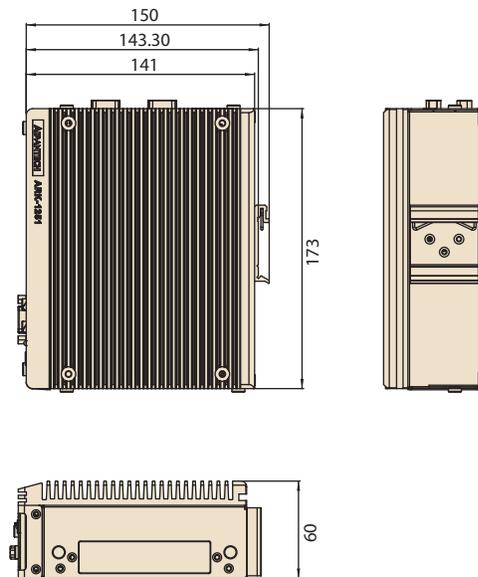
### Specifications

Model Name	ARK-1251		
Processor System	CPU	Core Ultra 7-155U	Core Ultra 5-125U
	Frequency	1.7GHz	1.3GHz
	Core Number	12, 2P+8E+2LE	12, 2P+8E+2LE
	BIOS	AMI EFI 256 Mbit	
	AI Capability	22 TOPS (INT8)	21 TOPS (INT8)
Memory	Technology	DDR5 5600 MHz	
	Max capacity	Up to 96 GB with 2 x slots	
	Socket	2 x Channel DDR5 5600 MHz 262 pin SO-DIMM (no support ECC)	
Graphics	Chipset	Intel® Graphics	
	HDMI	Up to 4096 x 2160@60Hz	
	DP	Up to 4096 x 2160@60Hz	
	Dual Display	HDMI + DP	
Ethernet	LAN1	10/100/1000/2500 Mbps Intel i226-LM GbE, support Wake On LAN	
	LAN2	10/100/1000/2500 Mbps Intel i226-LM GbE, support Wake On LAN	
	LAN3	10/100/1000 Mbps Intel i210 GbE, support Wake On LAN	
Audio	Interface	Realtek ALC888S, Mic-in and Line-out	
I/O Interface	Serial Ports	2 x RS-232/422/485, with auto flow control 2 x RS-422/485, with auto flow control	
	USB Ports	2 x USB3.2, 4 x USB2.0	
	GPIO	8-bit Programmable DIO	
	CANBus	Optional (replacing GPIO)	
Expansion	M.2	1x M.2 2230 E key (NVMe, PCIe x2), 1x M.2 2280 B key with nano SIM holder (NVMe, PCIe x2/ SATA), 1x M.2 2280 M key (NVMe, PCIe x4)	
Storage	NVMe/SATA	1x M.2 2280 M key (NVMe, PCIe x4) (default) 1x M.2 2280 B key with nano SIM holder (NVMe, PCIe x2/ SATA)	
Other	WatchDog Timer	255 levels timer interval, setup by software	
	TPM 2.0	NPCT764AABYX FW7.2.3.1	
Software Support	Microsoft Windows	Windows 10 Enterprise, Windows 11 Enterprise	
	Linux	Ubuntu 24.04	
Power Requirement	Power Type	ATX/AT	
	Power Input Voltage	12-28 V <sub>DC</sub>	
Power Consumption	Typical (OS idle mode)	18.19W	17.83W
	Max. (Full loading)	61.74W	59.44W
Mechanical	Construction	Aluminum housing	
	Mounting	DIN-rail/Wall Mount	
	Dimensions (W x H x D)	173 x 60 x 141 mm (6.73 x 2.36 x 5.55 in)	
	Weight	1.5KG	
Environment	Operating Temperature	With extended temp. peripherals: -20 ~ 60° C with 0.7m/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, UKCA, BSMI	
	Safety	UL, CB, CCC, UKCA	

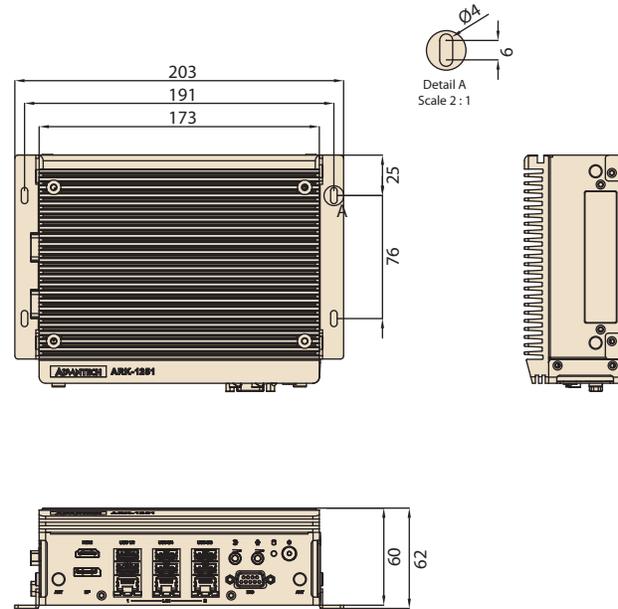
## Dimensions

Unit: mm

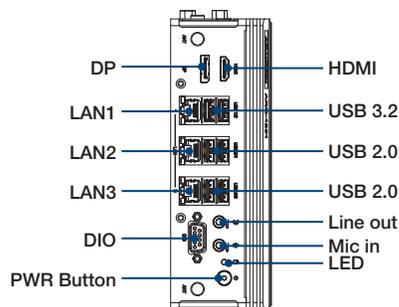
### DIN Rail



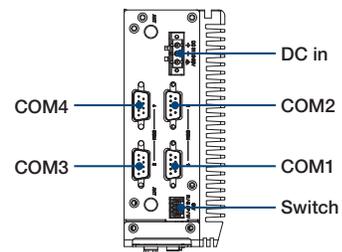
### Wall Mount



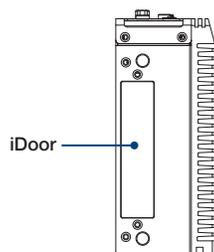
### Front Panel External I/O Mechanical Layout/Drawing



### Top Panel External I/O Mechanical Layout/Drawing



### Bottom View External I/O Mechanical Layout/Drawing



## Ordering Information

Part No.	CPU	RAM	HDMI	DP	LAN	COM	USB	M.2 B	M.2 E	M.2 M	Audio	SIM
ARK-1251-S3A1	Core Ultra 5 125U	2 socket (up to 96G)	1	1	3	4	2 x USB 3.2 4 x USB 2.0	1	1	1	Mic in and Line out	1
ARK-1251-S7A1	Core Ultra 7 155U	2 socket (up to 96G)	1	1	3	4	2 x USB 3.2 4 x USB 2.0	1	1	1	Mic in and Line out	1
ARK-1251-S3A1U*	Core Ultra 5 125U	2 socket (up to 96G)	1	1	3	4	2 x USB 3.2 4 x USB 2.0	1	1	1	Mic in and Line out	1
ARK-1251-S7A1U*	Core Ultra 7 155U	2 socket (up to 96G)	1	1	3	4	2 x USB 3.2 4 x USB 2.0	1	1	1	Mic in and Line out	1

\* P/N with alphabet "U" as suffix are Made in TW

## Packing List

Part Number	Description
-	1 x ARK-1251 Unit
-	1 x User Manual (Simplified Chinese)
-	Wrench for top cover
-	WISE DeviceOn Quick Start Guide
-	1 x M.2 PCIe 2280 SSD thermal kit
-	1 x RAM thermal pad 59x13x1.0mm
-	1 x RAM thermal pad 59x23x1.5mm
-	1 x CPU thermal pad 25x20x0.21mm
1950016395T101	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
20706U24DS0016	Ubuntu 24.04
20706WX1HS0129	Win 10 21HL 64b 21H2 ENU for Ultra 7 CPU
20706WX1VS0129	Win 10 21VL 64b 21H2 ENU for Ultra 5 CPU
20706WLH1S0062	Win 11 24HL 64b 24H2 ENU for Ultra 7 CPU
20706WLV1S0062	Win 11 24HL 64b 24H2 ENU for Ultra 5 CPU

## Optional Items

Part Number	Description
96PSA-A120W24T2-4	AC to DC adaptor, 24V/120W
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
1700030518-01	CANBus Cable (replacing GPIO)
1960103315N010	M.2 3052 Extend Bracket
AMK-W006	Wall mount kit
AMK-V023E	VESA mount kit

Note: Please note that the AMK-V023E needs to be used in conjunction with the AMK-W006.

## Optional MOS modules for iDoor

Part Number	Description
MOS-2120-Z1101E	Giga LAN Ethernet module, 1-Ch, PCIe I/F,
MOS-1130Y-0202	Isolated CANBus, 2-Ch, DB9, PCIe I/F
MOS-1110Y-0101E	Isolated 16 DI/8 DO, 1-Ch, DB37, PCIe I/F
MOS-2120-Z1201	Dual Intel I210 GbE LAN iDoor, 2-Ch, PCIe I/F
MOS-1120Y-0202E	Isolated RS-232, 2-Ports, DB9, PCIe I/F
MOS-1120Y-1402E	Non-Isolated RS-232, 4-Ports, DB37, PCIe I/F
MOS-2110Z-1201E	USB module, 2-Ch, PCIe I/F
AMO-I032	Expansion kit M.2 B key for mPCIe iDoor
PCM-34D4R2-AE	Non-Isolated RS-232, DB37x1, M.2 B key(2242,USB)
PCM-34D2R2-AE	Isolated RS-232, DB9 x2, M.2 Bkey(2242, USB)
PCM-37D24DI-AE	24ch Isolation Digital I/O, 16DI/ 8DO, DB37 x1
PCM-34R1TP-AE	Intel I225, 2.5Gb/s, IEEE 1588, TSN, RJ45*1, M.2

Note

- Need to order AMO-I032 together with MOS modules
- M.2 E Key cannot be used when adding any MOS module due to mechanical interference