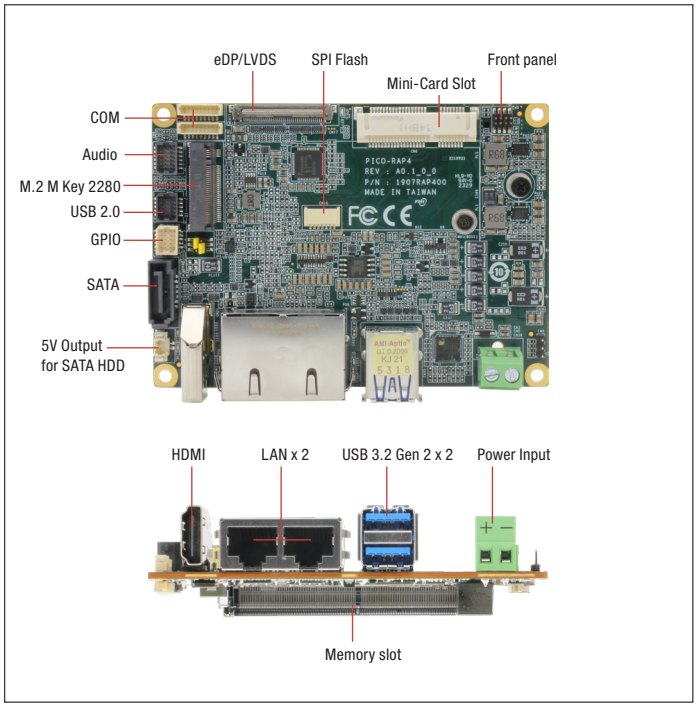
PICO-RAP4

Pico-ITX Board with 13th Gen Intel® Core™ i7/i5/i3 Processor



Features

- 13th Gen Intel® Core™ i7/i5/i3 Processor SoC
- DDR5 SODIMM, Max. 32GB
- Intel® Ethernet Controller I226, 2.5GbE + Intel® Ethernet Connection I219, 1GbE
- HDMI 1.4 + eDP 1.4/LVDS, 18/24-bit Dual-Channel
- Half-size mPCIe/mSATA x 1, M.2 2280 M-Key x 1
- USB 3.2 Gen 2 x 2, USB 2.0 x 2, RS-232/422/485 x 2
- TPM 2.0, SATA 6Gb/s x 1, SMBus/I2C x 1, GPIO 8-bit
- MIPI-CSI 4-lane x 2
- Line-in/Line-out/Mic (Optional)

2.5GbE USB 2.0 USB 3.2 Gen 2 PCIe PCI Express CE FC

Specifications

System	
Form Factor	PICO-ITX
CPU	13th Generation Intel® Core™/U series Processors: Intel® Core™ i7-1360P (4P+8E/16T, 2.20 GHz, 28W) Intel® Core™ i7-1370PE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i7-1370PRE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4P+8E/16T, 1.80 GHz, 28W) Intel® Core™ i3-1320PE (4P+4E/12T, 1.70 GHz, 28W) Intel® Processor U300E (1P+4E/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 5200, SODIMM x 1, Non-ECC (Max. 32GB)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM2.0
RTC Battery	Lithium Battery 3V/240mAh
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lb (0.08 kg)
OS Support	Windows 10/11 (64 bit) Ubuntu 22.04.2 (eDP is verified on Ubuntu 23.10.1)
Power	
Power Requirement	12V only
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (Optional)
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB, 4.51A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB, 7.46A@ +12V (MAX)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC256 (Optional)
Audio Interface	Line-in/Line-out/Mic (Optional, Audio function not available for WiTAS SKU)
Speaker	—
External I/O	
Ethernet	Intel® Ethernet Controller I226, 2.5GbE RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232/422/485, supports 5V/12V/RI)
Video	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, Audio function not available for WiTAS SKU)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/ I2C x 1 (Default: SMBus)
Fan	4-pin Smart Fan x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Half-size mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4])
Others	MIPI-CSI via 61-Pin FPC Connector
Environment & Certification	
Operating Temp	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	1,087,053
EMC	CE/FCC Class A

Packing List

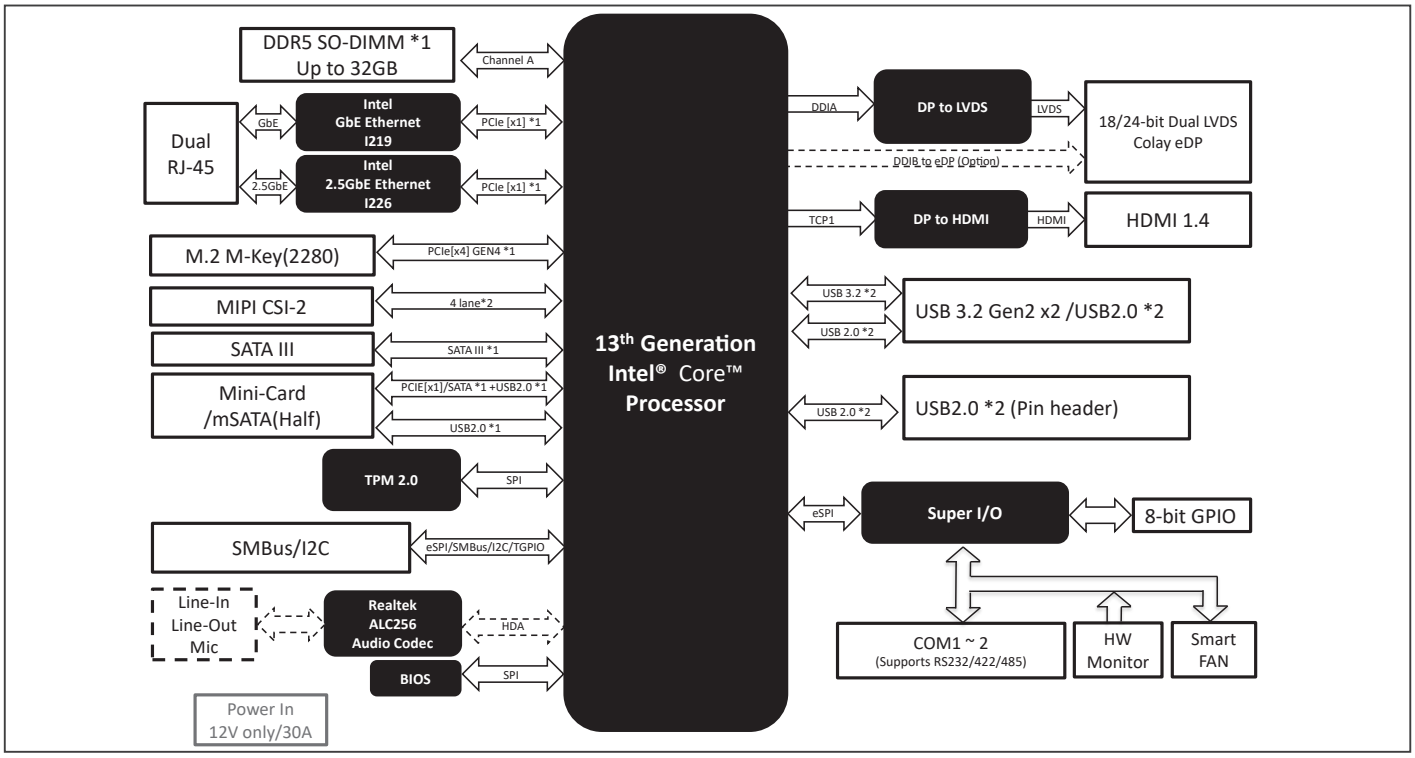
- PICO-RAP4

Optional Accessories

Part Number	Description	Qty.
1709100108	Front Panel cable.10cm	1
1701090122	COM cable.1 port .12cm	2
170010010D	USB2.0 cable.2 ports .10cm	1
1709070500	SATA cable.50cm	1
170X000322	SATA power cable.6cm	1
170X000156	Audio cable.Line in /Line out/ Mic.25cm	1
1702030200	Power cable (Phoenix type to DC Jack).20cm	1
PICO-RAP4-HSP01	Heat Spreader.AL.100*72*10.8mm	1
PICO-RAP4-FAN01	Cooler.100*72*24.3mm.for PICO-RAP4	1
PER-P30D-A11-0001	120W, DC-DC Converter, 9~36V input, 12V output, Rev A1.1, 30 x 72mm	1

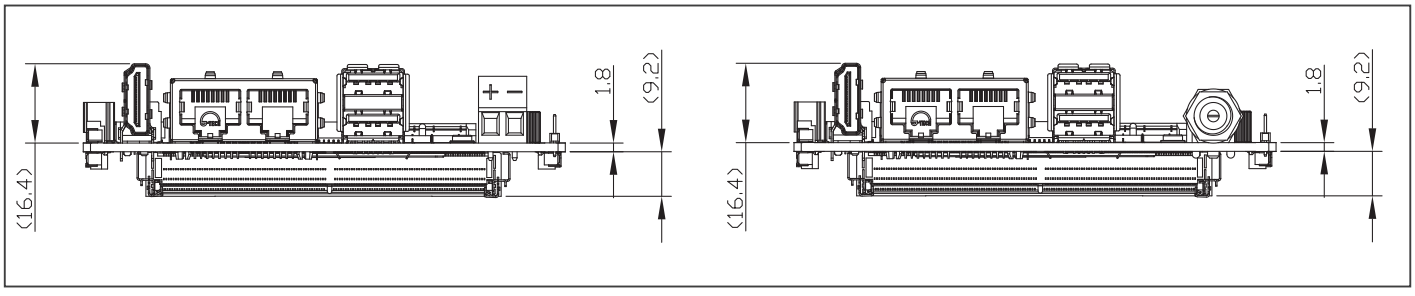
Note: All specifications are subject to change without notice.

Block Diagram



Dimension

Unit: mm



Ordering Information

Part number	CPU	Memory	Display	Storage	LAN	USB	COM	Expansion slot	Power	Operating Temp	Audio	Others
PICO-RAP4-A10-0001	Intel® Processor U300E	DDR5 SODIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0002	Intel® Core™ i3-1320PE	DDR5 SODIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0003	Intel® Core™ i5-1340PE	DDR5 SODIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4-A10-0004	Intel® Core™ i7-1370PE	DDR5 SODIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	0°C ~ 60°C	—	GPIO, SMBUS, TPM, MIPI-CSI
PICO-RAP4W2-A10-0005	Intel® Core™ i7-1370PRE	DDR5 SODIMM	HDMI x 1 LVDS x 1	SATA 6Gb/s x 1	GbE x 1 2.5GbE x 1	USB 2.0 x 2 USB3.2 Gen 2 x 2	2	M.2 2280 M-Key x 1 miniCard (Half) x 1	+12V (Terminal block)	-40°C ~ 85°C	—	GPIO, SMBUS, TPM, MIPI-CSI