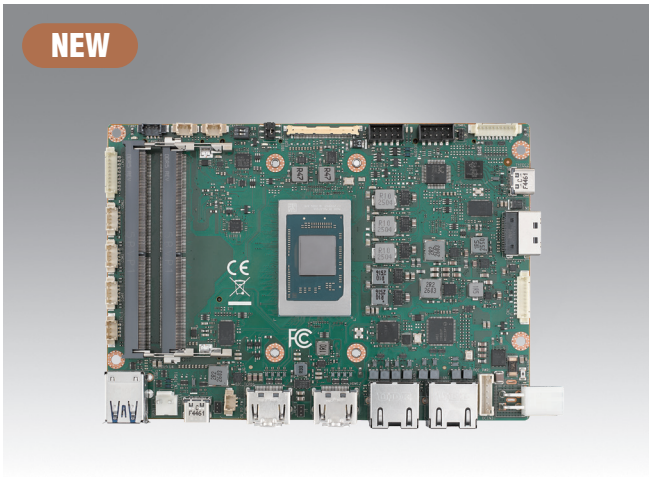
MIO-5380

AMD Ryzen™ AI Embedded P100 Series on 3.5" SBC



Features

- AMD Ryzen™ AI Embedded P100 Series and Extend Temp. Support
- Dual Channel DDR5-5600 up to 128GB, with Sideband ECC
- 4x Independent displays: eDP + 2x HDMI + 2x USB Type-C (DP Alt. Mode)
- 2x LAN, 6x USB (incl. 1x USB4), 4x COM, 2x CAN-FD, DC-in 12~24V
- 4x standalone M.2 slot: E-Key 2230, B-Key 3052 & 2x M-Key 2280, and 1x MCIO (Support by Selected SKU)
- Supports EdgeBMC (for OOB control) & Software APIs, DeviceOn

Software APIs: GPIO, SMBus/I²C, Watch Dog Timer, Backlight On/Off, Brightness, CAN bus

Utilities: Hardware Monitor, System Throttling, Thermal Protection, Smart Fan, Data Security, System Info

Windows 11 Ubuntu DeviceOn EdgeBMC CE FC

Specifications

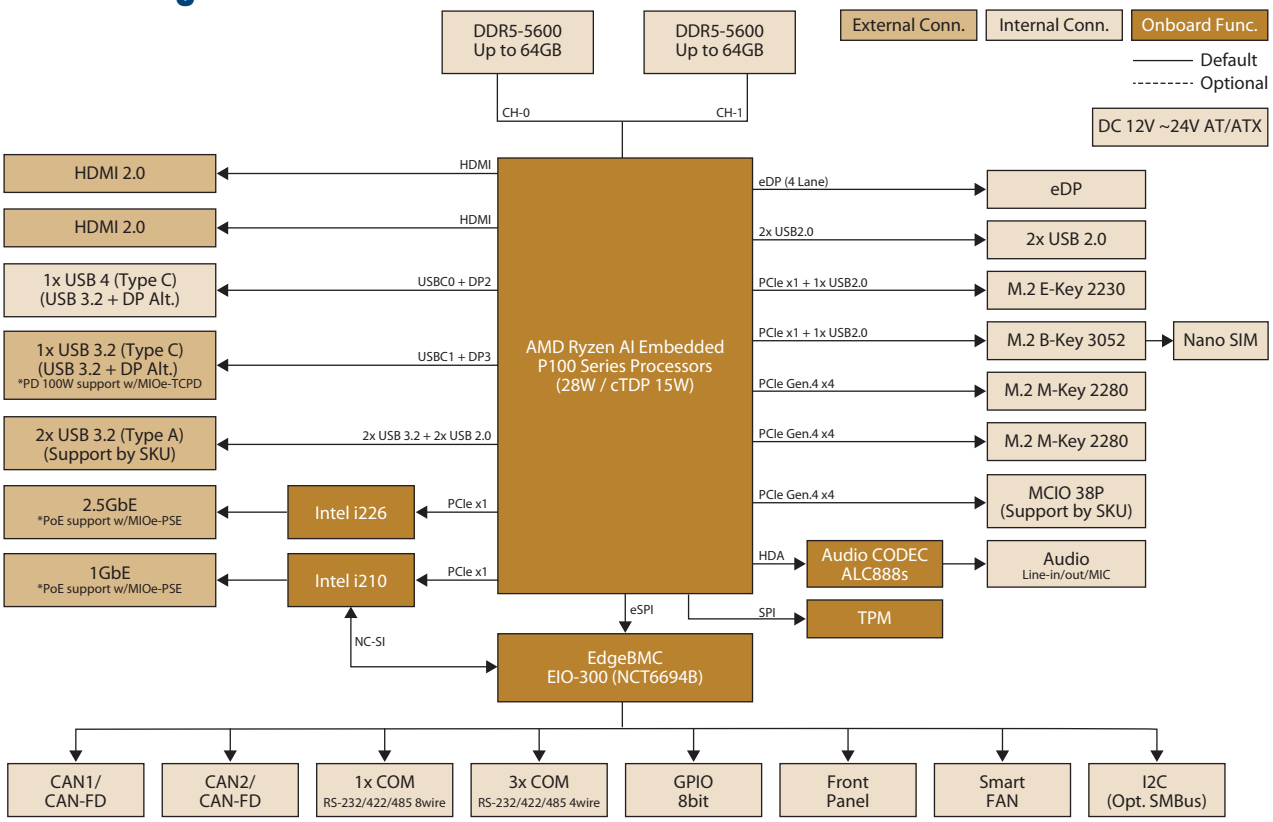
Platform	Processor	P185	P185i	P174	P164	P132	P121
	Max. Frequency	5.1 GHz	5.1 GHz	5 GHz	5 GHz	4.5 GHz	4.4 GHz
	Core/Thread	12 / 24	12 / 24	10 / 20	8 / 16	6 / 12	4 / 8
	Cache	24MB	24MB	24MB	16MB	8MB	8MB
	CPU TDP	28W	28W	28W	28W	28W	28W
	BIOS	AMI UEFI 256Mbit					
Memory	Technology	DDR5-5600					
	Max. Capacity	Up to 128GB					
	Sideband ECC	Yes	Yes	Yes	Yes	Yes	Yes
	Channel/Socket	Dual Channels / 2 sockets					
Graphics	Controller	AMD Radeon™ Graphics					
	Max. Frequency	2.9 GHz	2.9 GHz	2.8 GHz	2.8 GHz	2.8 GHz	2.7 GHz
	Work Group Processors	8	8	6	6	2	1
	3D/HW Acceleration	HW Decode: Up to 8K30, H.265, VP9, AV1 ; HW Encode: Up to 8K30, H.265, AV1					
AI Engine	NPU	50 TOPs	50 TOPs	50 TOPs	50 TOPs	50 TOPs	30 TOPs
Display I/F	LCD	1 x eDP 1.4					
	HDMI/DP	2 x HDMI 2.0b, up to 4096 x 2160 x 24bpp@60Hz					
	Multiple Display	4 simultaneous displays via eDP + 2x HDMI + 2x USB Type-C with DP Alt. Mode					
Ethernet	Controller	LAN1: Intel i210; LAN2: Intel i226					
	Speed	LAN1: 1GbE; LAN2: 2.5GbE					
	PoE support	*Optional support with MIOe-PSE					
External I/O	Ethernet	2 x RJ-45 (*Optional support Power Over Ethernet with MIOe-PSE)					
	HDMI/DP	2 x HDMI					
	USB Type-C	1 x USB 3.2 Gen2 x1 (10Gbps), support DisplayPort 1.4 Alt. Mode (*Optional support Power Delivery up to 100W with MIOe-TCPD)					
	USB Type-A	2 x USB 3.2 Gen2 x1 (10Gbps) (CPU SKU: P185 / P174 / P164)) ; 1 x USB 3.2 Gen2 x1 (10Gbps) + 1 x USB 2.0 (CPU SKU: P132 / P121)					
Internal I/O	MCIO	1 x 38p MCIO (PCIe Gen4 x4) *Support by Selected CPU SKU: P185 / P174 / P164					
	USB4	1 x USB4 Type-C (up to 40Gbps, backward compatible USB 3.2 Gen2 x1 (10Gbps), DisplayPort 1.4 Alt. Mode, PCIe Tunneling)					
	USB2.0	2					
	COM Port	1 x RS-232/422/485 (8-wire), 3 x RS-232 (4-wire), max. 1Mbps					
	CAN Bus	2 x CAN-FD, 2M/4M/8M bit/s or CAN 2.0, 1M bit/s					
	Serial Bus	1 x I2C (*BOM option to SMBus by request)					
	Audio	Realtek ALC888s, Line-in/Line-out/MIC					
	GPIO	8-bit general purpose input output I/O					
	Fan	12V, 1A					
	Front Panel Control	Power-on, Reset, Buzzer, SATA LED, CaseOpen					
Board Feature	Watchdog Timer	65536 level, 0~65535 sec					
	TPM	Discrete TPM 2.0 IC					
	iManager 3.0	SW API for Hardware Monitor, Smart Fan Control, Brightness Control, I²C, GPIO, WDT					
Expansion	M.2 E-Key	1 x E-Key 2230 (PCIe x1, USB 2.0) for WiFi/BT module					
	M.2 B-Key	1 x B-Key 3052 (PCIe x1, USB 2.0) for 4G/LTE module w/ Nano SIM (*Support 2242/3042 module with optional bracket)					
	M.2 M-Key	2 x M-Key 2280 (PCIe Gen.4 x4) for NVMe SSD (Support RAID 0/1 with custom BIOS & dedicated Driver)					
Power	Supply Voltage	Vin: DC 12V~24V ± 10%; RTC Battery: Lithium 3V/220mAH					
	Connector	ATX 2x2 pin 90D (*BOM option to DC-Jack or ATX 2x2 pin 180D by request)					
	Power Management	AT(Default), ATX					
	Max. Consumption (*Ref. data with Burn-In Test. Please contact FAE for adapter selection.)	TBD	TBD	TBD	TBD	TBD	TBD
	Idle Consumption	TBD	TBD	TBD	TBD	TBD	TBD
Environment	Temperature	Operating: Standard: 0 ~ 60 °C (32 ~ 140 °F) with 0.7m/s airflow; Extend: -40 ~ 85 °C (-40 ~ 185 °F) with 0.7m/s airflow (*Support with Industrial SKU) Storage: -40 ~ 85 °C (-40 ~ 185 °F)					
	Humidity	Operating: 40 °C @ 95% relative humidity, non-condensing Storage: 60 °C @ 95%relative humidity, non-condensing					
	Vibration Resistance	3.5 Grms					
Certification	EMC	CE, FCC Class B					
Mechanical	Dimensions	146 x 102 mm (5.7" x 4")					

*Note: Support by request

All product specifications are subject to change without notice.

Last updated: 23-Nov-2026

Block Diagram



Ordering Information

Part No.	CPU	Core Count	CPU Max. Frequency	TDP	GPU	GPU Max. Frequency	GPU Work Group Count	NPU	Thermal Solution	Operating Temperature
MIO-5380P8P-R1A1	P185	12	5.1 GHz	28W	AMD Radeon™ Graphics	2.9 GHz	8	50 TOPS	Active Cooler	0 ~ 60 °C
MIO-5380P7P-R0A1	P174	10	5.0 GHz	28W	AMD Radeon™ Graphics	2.8 GHz	6	50 TOPS	Active Cooler	0 ~ 60 °C
MIO-5380P6P-R0A1	P164	8	5.0 GHz	28W	AMD Radeon™ Graphics	2.8 GHz	6	50 TOPS	Active Cooler	0 ~ 60 °C
MIO-5380P3-Q5A1	P132	6	4.5 GHz	15W	AMD Radeon™ Graphics	2.8 GHz	2	50 TOPS	Passive Heatsink	0 ~ 60 °C
MIO-5380P2-Q4A1	P121	4	4.4 GHz	15W	AMD Radeon™ Graphics	2.7 GHz	1	30 TOPS	Passive Heatsink	0 ~ 60 °C

Packing List

Part No.	Description	Quantity
	MIO-5380 SBC	1
1700030406-01	USB 2.0 Cable, 20cm	1
1700030404-01	COM1 Cable, 20cm	1
1700031582-01	COM2/COM3/COM4 Cable, 20cm	3
1700019584-01	Audio Cable, 20cm	1
1970005973T011	MIO-5380 Passive Heatsink (Only for cTDP 15W)	1
1970005512T001	MIO-5380 Active QFCS Cooler (Only for TDP 28W)	1

Optional Accessories

Part No.	Description
Support by Request	MIO-5380 Heat Spreader
1960110006N000	M.2 3052 to M.2 2242/3042 extension bracket
1960103315N020	M.2 2280 to M.2 2242/3052 extension bracket
MIOe-PSE-DPA1	Dual Port 15.4W PoE PSE power module
MIOe-M2LAN-DPA1	M.2 3052 to Dual 2.5GbE LAN port I/O expansion module
MIOe-TCPD-P1A1	USB Power Delivery 100W power module

Rear I/O View



Embedded OS/API

OS	Part No.	Description
Windows 11 LTSC	20706WLH1S0158	Win11 IoT Ent. 2021 LTSC 64bit, High End
	20706WLV1S0158	Win11 IoT Ent. 2021 LTSC 64bit, Value
	20706WLE1S0159	Win11 IoT Ent. 2021 LTSC 64bit, Entry
Ubuntu 26.04 LTS	TBD	Ubuntu Desktop 26.04 LTS 64-bit
Software API	Website Download	SUSI v4.0
Yocto BSP	Support by Request	Yocto BSP and Test Image