MIO-5380

AMD Ryzen™ AI Embedded P100 Series on 3.5" SBC

Preliminary

Features

- AMD Ryzen Embedded P100 Series Processors 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, 4x COM, 2x CAN-FD, I2C/SMBus, DC-in 12~24V
- Expansion: 1x MCIO and 4x standalone M.2 slot: E-Key 2230, B-Key 3052 & 2x M-Key 2280
- 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 Ubuntu DeviceOn EdgeBMC CE FC

Specifications

		P185	P185i	P174	P164	P132	P121
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					
	IBECC	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
	Compute Units	16	16	12	8	6	4
	3D/HW Acceleration	TBD					
Display I/F	LCD	1 x eDP					
	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 Alt. Mode					
Ethernet	Controller	LAN1: Intel i210; LAN2: Intel i226					
	Speed	LAN1: GbE ; 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 USB3.2 Gen2x1 10Gbps, support DisplayPort1.4 Alt. Mode (*Optional support Power Delivery up to 100W with MIOe-TCPD)					
	USB Type-A	2 x USB3.2 Gen2x1 10Gbps					
Internal I/O	MCIO	1 x 38p MCIO (PCIe Gen4 x4)					
	USB4	1 USB4 with USB Type-C, Bandwidth min. 20Gbps, max. 40Gbps, with USB3.2, Display & PCIe					
	USB2.0	2					
	COM Port	1 x RS-232/422/485, 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 (4-wire)					
	Front Panel Control	Power-on, Reset, Buzzer, SATA LED, CaseOpen					
Board Feature	Watchdog Timer	65536 level, 0~65535 sec					
	TPM	Discrete TPM2.0 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 (PCIex1, USB2.0) for WiFi/BT module					
	M.2 B-Key	1 x B-Key 3052 (PCIex1, USB2.0) for 4G/LTE module w/ Nano SIM (*Support 3042 module with bracket)					
	M.2 M-Key	2 x M-Key 2280 (PCIe Gen.4 x4) for NVMe SSD					
Power	Supply Voltage	Vin: DC 12V~24V ± 10%; RTC Battery: Lithium 3V/220mAH (*200mAH for Extend Temp. SKU)					
	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); *Extend: -40 ~ 85 °C (-40 ~ 185 °F), support with selected 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

ADVANTECH | **MI/O Extension SBCs, Modules and Chassis**

All product specifications are subject to change without notice.

Block Diagram

| External Conn. | Internal Conn. | Onboard Func. |

——— Default
------- Optional

DC 12V ~24V AT/ATX

DDR5-5600 Up to 64GB

DDR5-5600 Up to 64GB

DDR5-5600, Dual Channel Up to 128GB

CH-0   CH-1

AMD Ryzen AI Embedded P100 Series Processors (28W / cTDP 15W)

DP1: HDMI → HDMI 2.0

USBC2/DP4: HDMI → HDMI 2.0

USBC0 + DP2 → 1x USB 4 (Type C) (USB 3.2 + DP Alt.)

USBC1 + DP3 → 1x USB 3.2 (Type C) (USB 3.2 + DP Alt.) *PD 100W support w/MIOe-TCPD

PCIe x1 → 2x USB 3.2 (Type A)

PCIe x1 → Intel i226 → 2.5GbE *PoE support w/MIOe-PSE

PCIe x1 → Intel i210 → GbE *PoE support w/MIOe-PSE

DP0: eDP (4 Lane) → eDP

2x USB2.0 → 2x USB 2.0

PCIe x1 + 1x USB2.0 → M.2 E-Key 2230

PCIe x1 + 1x USB2.0 → M.2 B-Key 3052 → Nano SIM

PCIe Gen.4 x4 → M.2 M-Key 2280

PCIe Gen.4 x4 → M.2 M-Key 2280

PCIe Gen.4 x4 → MCIO 38P(x4)

HDA → Audio CODEC ALC888s → Audio Line-in/out/MIC

eSPI / SPI → TPM

EdgeBMC EIO-300 (NCT6694B)

CAN1/ CAN-FD

CAN2/ CAN-FD

1x COM RS-232/422/485 8wire

3x COM RS-232/422/485 8wire

GPIO 8bit

Front Panel

Smart FAN

I2C (Opt. SMBus)

Packing List

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

Optional Accessories

Part No.	Description
TBD	MIO-5380 Heatspreader

Embedded OS/API

OS	Part No.	Description
Windows 11 LTSC	TBD	Win11 IoT Ent. 2021 LTSC 64bit, High End
	TBD	Win11 IoT Ent. 2021 LTSC 64bit, Value
	TBD	Win11 IoT Ent. 2021 LTSC 64bit, Entry
Ubuntu 24.04 LTS	TBD	Ubuntu Desktop 24.04 LTS 64-bit
Software API	Website Download	SUSI v4.0
Yocto BSP	Support by Request	Yocto BSP and Test Image