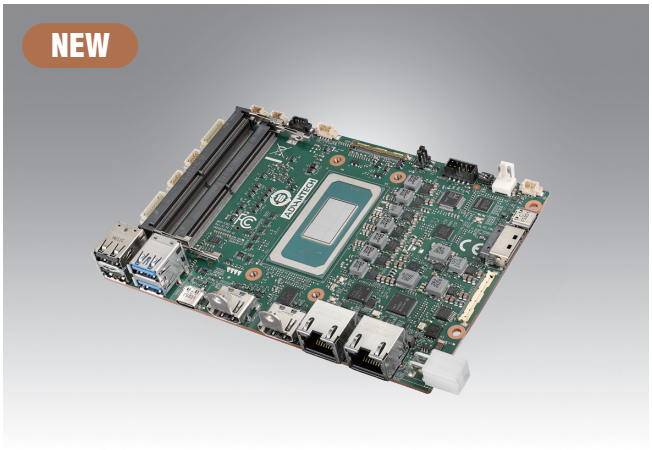
MIO-5381

Intel Core Ultra Processors Panther Lake on 3.5" SBC



Features

- Intel® Core™ Ultra X7/7/5 Processors, up to 16 Cores, TDP 25W/15W
- Dual Channel DDR5-7200 up to 128GB, with IBECC
- 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: 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

Ubuntu Windows 11 DeviceOn EdgeBMC CE FC

Specifications

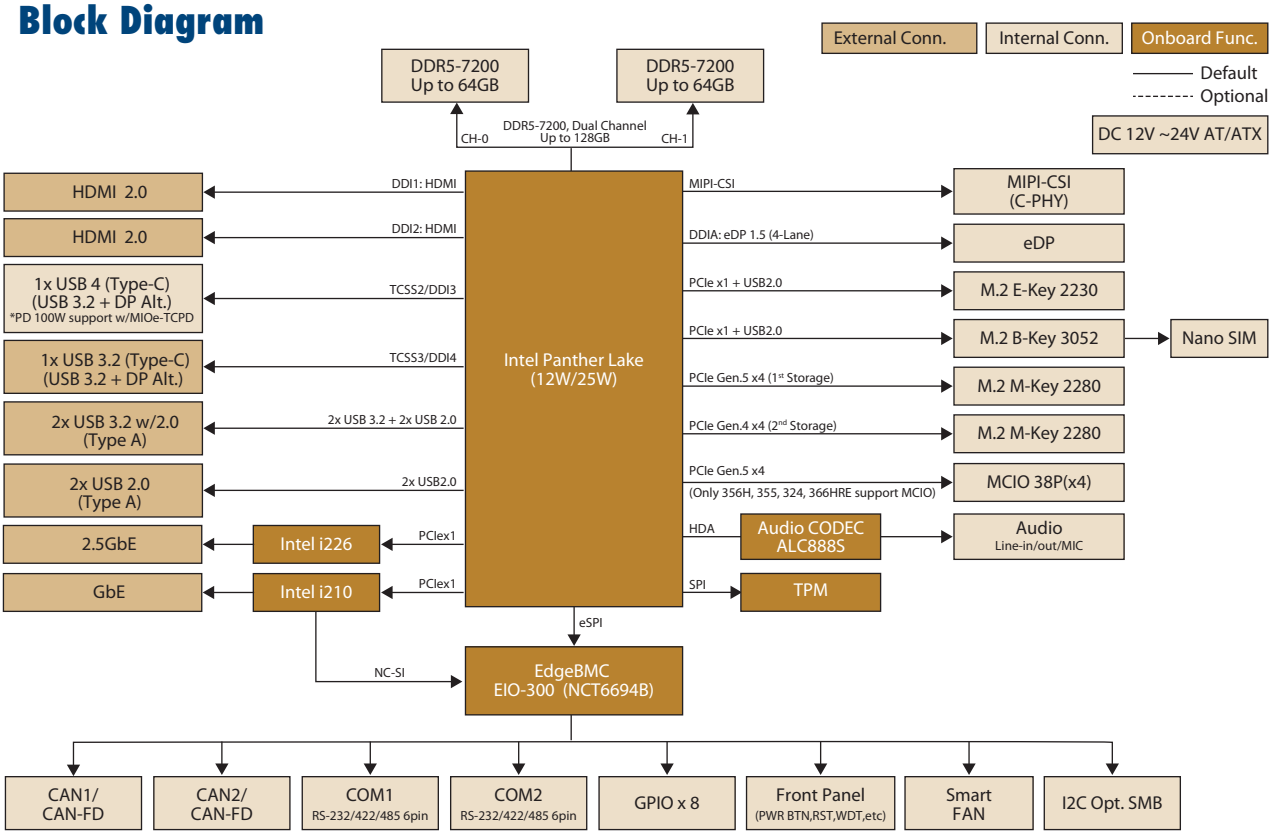
Platform	Processor	Core Ultra X7, 358H	Core Ultra 7, 356H	Core Ultra 7, 355	Core Ultra 5, 325	Core Ultra7 366HRE*
	Max. Frequency	4.8 GHz	4.7 GHz	4.7 GHz	4.4 GHz	4.8 GHz
	Base Frequency	1.9 GHz	1.9 GHz	2.3 GHz	2.1GHz	2.0GHz
	Core/Tread	16	16	12	8	16
	LLC	18MB	18MB	12MB	12MB	12MB
	CPU TDP	25W	25W	12W	12W	25W
	BIOS	AMI UEFI 256Mbit				
Memory	Technology	DDR5-7200				
	Max. Capacity	Up to 128GB				
	Channel/Socket	Dual Channels / 2 sockets				
	IBECC	Supported				
Integrated GPU	Controller	Intel® ArcB390	Intel® Graphics	Intel® Graphics	Intel® Graphics	Intel® Graphics
	Max. Frequency	2.5 GHz	2.45 GHz	2.45 GHz	2.45 GHz	2.45 GHz
	3D/HW Acceleration	HW Encode: Supports AVC/H264, JPEG, H265 and AV1. HW Decode: Supports MPEG2, AVC/H264, JPEG/MJPEG, H265, VP9, AV1 and VVC/H266				
Integrated NPU	PTOPS	50TOPS	50TOPS	49TOPS	47TOPS	50TOPS
Display I/F	LCD	eDP up to 4K@ 60Hz, 36bpp				
	HDMI/DP	2x HDMI up to 4K@ 48-60Hz, 24 bpp				
	Multiple Display	4 simultaneous displays: eDP/HDMI/USB				
Ethernet	Controller	LAN1: Intel i210AT/IT; LAN2: Intel i226LM/IT				
	Speed	LAN1: 10M / 100M / 1GbE; LAN2: 10M / 100M / 1000M / 2.5GbE				
External I/O	Ethernet	2				
	VGA/HDMI/DP	-/2/-				
	USB Type-A	2 x USB 3.2 (10Gbps); 2 x USB 2.0 (10Gbps)				
	USB Type-C	1 x USB4 Type-C (up to 40Gbps, backward compatible USB 3.2 Gen2 x1 (10Gbps), DisplayPort 1.4 Alt. Mode, PCIe Tunneling)				
	Power DC-Jack	Optional				
Internal I/O	Serial Bus	SMBus default, I2C optional				
	COM Port	2 x RS-232/422/485				
	GPIO	8-bit general purpose input output I/O				
	Audio	Realtek ALC888, Line-in/Line-out/MIC				
	CAN Bus	2x CAN FD				
	Fan	1x Smart FAN				
	Front Panel Control	Power-on, Reset, Buzzer				
	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)				
	MIPI-CSI	2x C-PHY				
Board Feature	Watchdog Timer	65536 level, 0~65535 sec				
	TPM	TPM2.0				
	EdgeBMC OOB	Support EdgeBMC Out-of-Band (OOB) remote control				
Expansion	M.2	1x E-Key 2230 (PCIe, USB 2.0) 1x B-Key 3052 (PCIe, USB 2.0) w/ Nano-SIM 1x M-Key 2280 (PCIe x4/x2/x1 compatible, Gen5) 1x M-Key 2280 (PCIe x4/x2/x1 compatible, Gen4)				
	MCIO	PCIe x4 Gen5 (only 356H, 355, 324, 366HRE support MCIO)				
Power	Supply Voltage	Vin: DC 12V~24V +/- 10%; RTC Battery: Lithium 3V/210mAH				
	Connector	ATX 2x2 pin 90D, optional DC-Jack or ATX 2x2 pin 180D				
	Power Management	AT, ATX				
	Max. Consumption	75W	TBD	TBD	TBD	TBD
	Idle Consumption	11.7W	TBD	TBD	TBD	TBD
Environment	Temperature	Operating: Standard: 0 ~ 60° C (32 ~ 140° F), Extended: -40~85℃(-40 ~ 185° F) for 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				
Mechanical	Dimensions	146 x 102 mm (5.7" x 4")				

*Note: 366HRE information base on 366H, reference only

All product specifications are subject to change without notice.

Last updated: 23-Nov-2026

Block Diagram



Ordering Information

Part Number	CPU	Core	Max. Frenquency	TDP	Thermal Solution	Operation Temp.
MIO-5381C7P-R0A1	Intel® Core™ Ultra X7 358H	16 4P+8E+4LPE	4.8 GHz	25	Active	0 ~ 60° C
MIO-5381C7P-Q7A1	Intel® Core™ Ultra 7 356H	16 4P+8E+4LPE	4.7 GHz	25	Active	0 ~ 60° C
MIO-5381C7-Q7A1	Intel® Core™ Ultra 7 355	8 4P+0E+4LPE	4.7 GHz	12	Passive	0 ~ 60° C
MIO-5381C5-Q4A1	Intel® Core™ Ultra 5 325	8 4P+0E+4LPE	4.4 GHz	12	Passive	0 ~ 60° C
MIO-5381C7PW-Q8A1	Intel® Core™ Ultra 7 366HRE	16 4P+8E+4LPE	4.8 GHz	25	Active	-40 ~ 85° C

Packing List

Part No.	Description	Quantity
1700019584-01	Audio cable	1
1700031582-01	COM cable RS-232	2
1970005512T001	QFCS (Active Cooler)	1
1970005973T001	Heatsink (Passive)	1

Optional Accessories

Part No.	Description	Suggest Quantity
1702002600	Power cable 3-pin 183cm, USA type	1
1702002605	Power cable 3-pin 183cm, EU type	1
1702031801-11	Power cable 3-pin 183cm, UK type	1
1700000596-11	Power cable, 3-Pin 183cm, China/ Australia type	1

Embedded OS/API

OS/API	Part No.	Description
Windows 11 LTSC	TBD	Win11 IoT Ent. LTSC 2024 64bit
Ubuntu 26.04 LTS	TBD	Ubuntu Desktop 24.04 LTS 64-bit
Software API	Website Download	TBD