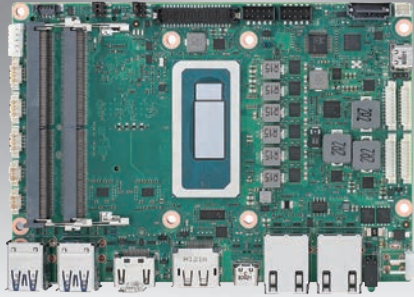


MIO-5377R

13th Gen. Intel® Core™ Processors (Code Name: Raptor Lake-P) 3.5" SBC with USB4 for MXM GPU

NEW



Features

- 13th Gen. Intel® Core™ Processor up to 14 Cores, TDP 28/15W
- Dual Channel DDR5-4800 up to 64GB, IB ECC support by SKU
- 4 simultaneous displays: LVDS/HDMI/DP/USB-C Alt. DP
- 2x LAN, 8x USB (incl. 1x USB4), 4x UART, 2x CANBus, 3x I²C
- 3 Expansions: M.2 E-Key, B-Key, M-Key (support NVMe)
- Supports Windows 10 LTSC & Ubuntu 22.04 LTS, embedded software APIs, DeviceOn

Software APIs:



Utilities:



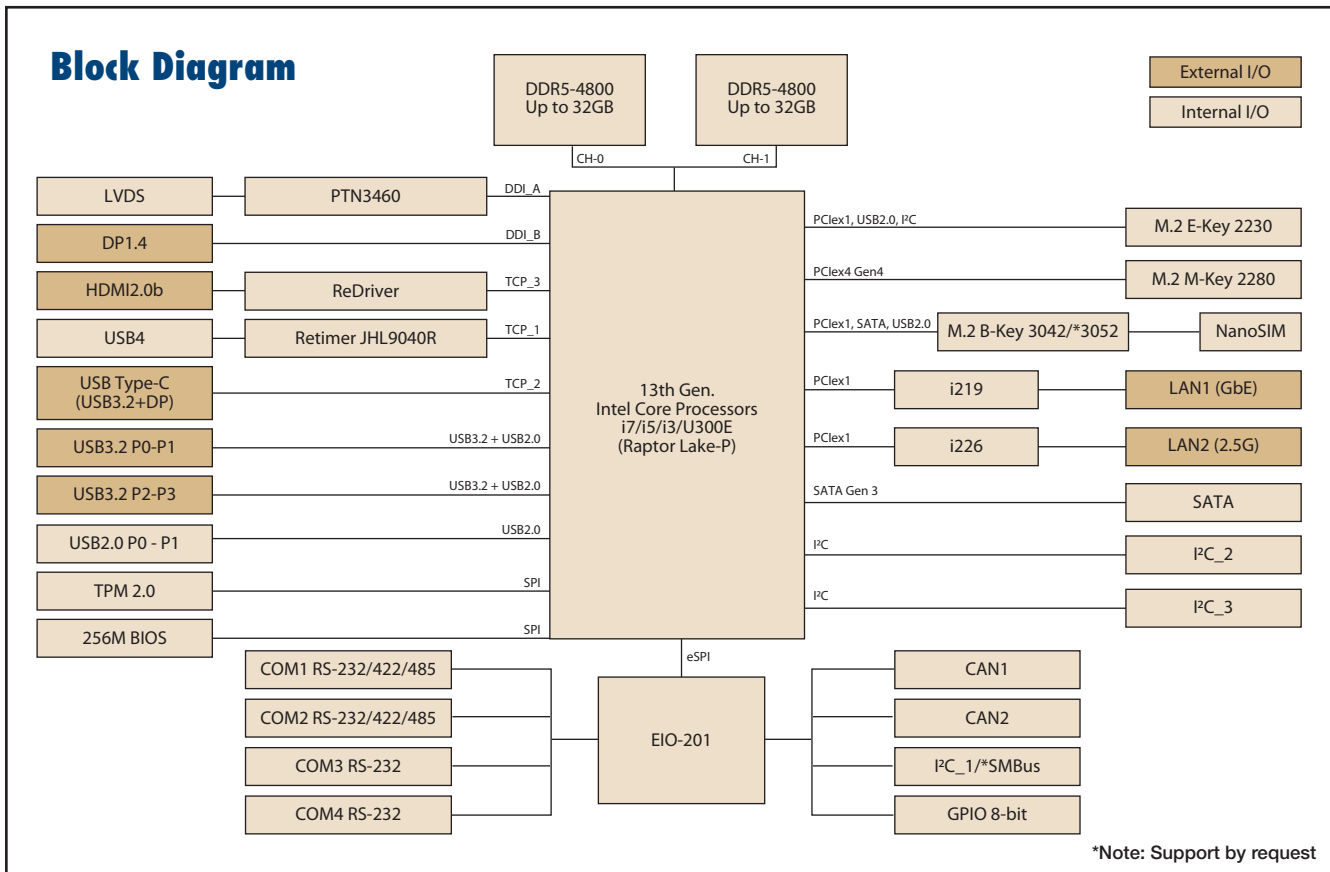
Specifications

	Processor	i7-1370PE	i7-1370PRE	i7-1365UE	i7-1365URE	i5-1345UE	i3-1315UE	U300E	
Platform	Max. Frequency (P-Core)	4.80 GHz	4.80 GHz	4.90 GHz	4.90 GHz	4.60 GHz	4.50 GHz	4.30 GHz	
	Base Frequency (P-Core)	1.90 GHz	1.90 GHz	1.70 GHz	1.70 GHz	1.40 GHz	1.20 GHz	1.10 GHz	
	Core/Thread	6P+8E / 20T	6P+8E / 20T	2P+8E / 12T	2P+8E / 12T	2P+8E / 12T	2P+4E / 8T	1P+4E / 6T	
	Intel® Smart Cache (L3)	24MB	24MB	12MB	12MB	12MB	10MB	8MB	
	CPU TDP	28W	28W	15W	15W	15W	15W	15W	
Chipset	On-package Intel 600 Series Chipset								
BIOS	AMI UEFI 256Mbit								
Memory	Technology	DDR5-4800							
	Max. Capacity	Up to 64GB							
	IB ECC	No	Yes	No	Yes	No	No	No	
Channel/Socket	Dual Channels / 2 sockets								
Graphics	Controller	Intel® Iris® Xe Graphics						Intel® UHD Graphics	
	Max. Frequency	1.40 GHz	1.40 GHz	1.30 GHz	1.30 GHz	1.25 GHz	1.20 GHz	1.10 GHz	
	Execution Units	96	96	96	96	80	64	48	
	3D/HW Acceleration	DX12.1, OGL4.6, OCL3.0, HW Encode: H.265/HEVC, H.264, MPEG2, HW Decode: H.265							
Display I/F	LCD	1 x LVDS: Dual Channel 18/24-bit, up to 1920 x 1200							
	HDMI/DP	1 x HDMI 2.0b, up to 4096 x 2160 x 24bpp@60Hz 1 x DP1.4, up to 4096 x 2304 x 36bpp@60Hz							
	Multiple Display	4 simultaneous displays via LVDS + HDMI + DP + USB Type-C Alt. Mode							
Ethernet	Controller	LAN1: Intel i219 ; LAN2: Intel i226							
	Speed	LAN1: GbE ; LAN2: 2.5GbE							
	TSN support	No	Yes (LAN2 only)	No	Yes (LAN2 only)	No	No	No	
External I/O	Ethernet	2 x RJ-45							
	HDMI/DP	1 x HDMI, 1 x DP							
	USB Type-C	1 x USB3.2 Gen2x1 10Gbps, support DisplayPort1.4 Alt. Mode							
	USB Type-A	4 x USB3.2 Gen2x1 10Gbps							
	LED	Power status, SATA R/W							
	Power DC-Jack	Optional							
	SATA	1 x SATA GenIII 6.0Gbps							
Internal I/O	USB4	1 USB4 with USB Type-C, Bandwidth min. 20Gbps, max. 40Gbps, with USB3.2, Display & PCIe							
	USB2.0	2							
	COM Port	2 x RS-232/422/485, 2 x RS-232 (4-wire), max. 1Mbps							
	CAN Bus	2 x CAN2.0							
	Serial Bus	3 x I ² C (CN6 is BOM option to 1 x SMBus by request; First priority is to use CN6; On Windows, CN7 & CN8 are supported by custom BIOS)							
	Audio	Realtek ALC886s, Line-in/Line-out/MIC							
	GPIO	8-bit general purpose input output I/O							
	Inverter	12V/5V/3.3V selectable							
	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 (*fTPM support by request)							
Expansion	iManager 3.0	SW API for Hardware Monitor, Smart Fan Control, Brightness Control, FC, GPIO, WDT							
	M.2 E-Key	1 x E-Key 2230 (PCIex1, USB2.0) for WiFi/BT module							
	M.2 B-Key	1 x B-Key 3042 (PCIex1, SATA, USB2.0) for storage and 4G/LTE module w/ Nano SIM (Default with 3042. **Support 3052 for 5G module by request.)							
	M.2 M-Key	1 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, optional DC-Jack, or ATX 2x2 pin 180D							
	Power Management	AT, ATX							
	Max. Consumption (*Ref. data with Burn-In Test. Please contact FAE for adapter selection.)	12V: 46.7W 24V: 48.5W	12V: 46.7W 24V: 48.5W	12V: 29.5W 24V: 29.7W	12V: 29.5W 24V: 29.7W	12V: 25.6W 24V: 27.5W	12V: 24.5W 24V: 25.1W	12V: 24.0W 24V: 26.3W	
Idle Consumption	12V: 23.4W 24V: 24.3W	12V: 23.4W 24V: 24.3W	12V: 18.8W 24V: 19.8W	12V: 18.8W 24V: 19.8W	12V: 17.6W 24V: 19.3W	12V: 15.8W 24V: 17.0W	12V: 15.7W 24V: 19.7W		
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

**Note: 5G module test with Fibocom FM350 (MediaTek)

Block Diagram



*Note: Support by request

Ordering Information

Part No.	CPU	Core	Max. Frequency	TDP	Memory IB ECC	GPU	GPU Max. Frequency	Execution Units	LAN2 with TSN support	Thermal Solution	Operating Temperature
MIO-5377RC7P-Q8A1	i7-1370PE	6P+8E	4.80 GHz	28W	No	Xe Graphics	1.40 GHz	96 EUs	No	Active Cooler	0 ~ 60 °C
MIO-5377RC7PX-Q8A1	i7-1370PRE	6P+8E	4.80 GHz	28W	Yes	Xe Graphics	1.40 GHz	96 EUs	Yes	Active Cooler	-40 ~ 85 °C
MIO-5377RC7-Q9A1	i7-1365UE	2P+8E	4.90 GHz	15W	No	Xe Graphics	1.30 GHz	96 EUs	No	Passive Heatsink	0 ~ 60 °C
MIO-5377RC7X-Q9A1	i7-1365URE	2P+8E	4.90 GHz	15W	Yes	Xe Graphics	1.30 GHz	96 EUs	Yes	Passive Heatsink	-40 ~ 85 °C
MIO-5377RC5-Q6A1	i5-1345UE	2P+8E	4.60 GHz	15W	No	Xe Graphics	1.25 GHz	80 EUs	No	Passive Heatsink	0 ~ 60 °C
MIO-5377RC3-Q5A1	i3-1315UE	2P+4E	4.50 GHz	15W	No	UHD Graphics	1.20 GHz	64 EUs	No	Passive Heatsink	0 ~ 60 °C
MIO-5377RU-Q3A1	U300E	1P+4E	4.30 GHz	15W	No	UHD Graphics	1.10 GHz	48 EUs	No	Passive Heatsink	0 ~ 60 °C

Packing List

Part No.	Description	Quantity
	MIO-5377 SBC	1
2046537701	Startup Manual	1
1700006291	SATA Cable, 30cm	1
1700031583-01	SATA Power Cable, 35cm	1
1700030406-01	USB 2.0 Cable, 20cm	1
1700030404-01	COM Port Cable: COM1/COM2, 20cm	2
1700031582-01	COM Port Cable: COM3/COM4, 20cm	2
1700019584-01	Audio Cable, 20cm	1
1970005548T001	MIO-5377 Heatsink (Passive for TDP 15W CPU)	1
1970005512T001	MIO-5377 QFCS (Active for TDP 28W CPU)	1

Optional Accessories

Part No.	Description
1970005615T001	MIO-5377 Heatspreader
MIOe-UMXM-FVA1	USB4 to MXM carrier card, ATX conn., 12V
MIOe-UMXM-WVA1	USB4 to MXM carrier card, Phoenix conn., 12-24V
1700034699-01	Thunderbolt3 cable (compatible to USB4), 20cm

Embedded OS/API

OS	Part No.	Description
Windows 10 LTSC	20706WX1HS0057	Win10 IoT Ent. 2021 LTSC 64bit, High End: Core i7
	20706WX1VS0057	Win10 IoT Ent. 2021 LTSC 64bit, Value: Core i5/i3
	20706WX1ES0057	Win10 IoT Ent. 2021 LTSC 64bit, Entry: U300E
Ubuntu 22.04 LTS	20706U22DS0022	Ubuntu Desktop 22.04 LTS 64-bit
ROS2 Suite	Download from ESS-WIKI	Advantech ROS2 Suite v1.3.0
Software API	Website Download	SUSI v4.0
Yocto BSP	Support by Request	Yocto BSP and Test Image

Rear I/O View

