



OUR GLOBAL
COMPETENCE
CENTRES

 APOLLO DISPLAY
TECHNOLOGIES



FORTEC
INTEGRATED



FORTEC
UNITED KINGDOM



Datasheet

Advantech

MIO-5377R

3.5" SBC 13th Gen. Intel® Core™ Processors Raptor Lake-P

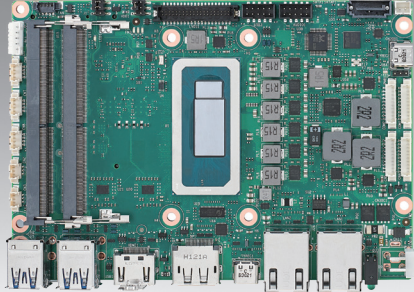


The information contained in this document has been carefully researched and is, to the best of our knowledge, accurate. However, we assume no liability for any product failures or damages, immediate or consequential, resulting from the use of the information provided herein. Our products are not intended for use in systems in which failures of product could result in personal injury. All trademarks mentioned herein are property of their respective owners. All specifications are subject to change without notice.

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:



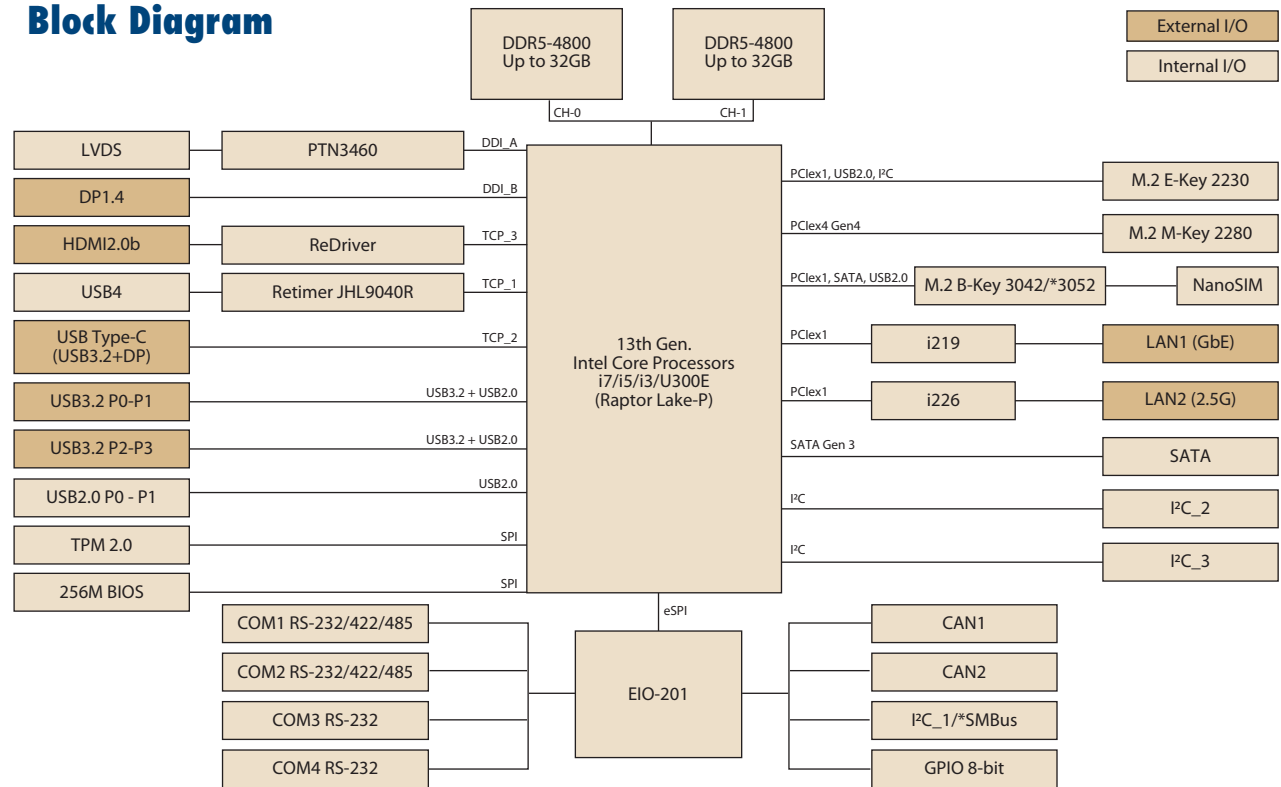
Specifications

	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
Memory	Technology	DDR5-4800						
	Max. Capacity	Up to 64GB						
Graphics	IB ECC	No	Yes	No	Yes	No	No	No
	Channel/Socket	Dual Channels / 2 sockets						
	Controller	Intel® Iris® Xe Graphics						Intel® UHD Graphics
Display I/F	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						
Ethernet	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						
External I/O	Multiple Display	4 simultaneous displays via LVDS + HDMI + DP + USB Type-C Alt. Mode						
	Controller	LAN1: Intel i219 ; LAN2: Intel i226						
	Speed	LAN1: GbE ; LAN2: 2.5GbE						
Internal I/O	TSN support	No	Yes (LAN2 only)	No	Yes (LAN2 only)	No	No	No
	Ethernet	2 x RJ-45						
	HDMI/DP	1 x HDMI, 1 x DP						
Power	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						
	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)						
Board Feature	Audio	Realtek ALC888s, Line-in/Line-out/MIC						
	GPIO	8-bit general purpose input output I/O						
	Inverter	12V/5V/3.3V selectable						
Expansion	Fan	12V, 1A (4-wire)						
	Front Panel Control	Power-on, Reset, Buzzer, SATA LED, CaseOpen						
	Watchdog Timer	65536 level, 0-65535 sec						
Power	TPM	Discrete TPM2.0 IC (*iTPM support by request)						
	iManager 3.0	SW API for Hardware Monitor, Smart Fan Control, Brightness Control, I ² C, GPIO, WDT						
	M.2 E-Key	1 x E-Key 2230 (PCIe1x1, USB2.0) for WiFi/BT module						
Environment	M.2 B-Key	1 x B-Key 3042 (PCIe1x1, 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 Gen4 x4) for NVMe SSD						
Certification	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						
Mechanical	Max. Consumption	12V: 46.7W	12V: 46.7W	12V: 29.5W	12V: 29.5W	12V: 25.6W	12V: 24.5W	12V: 24.0W
	(*Ref. data with Burn-In Test. Please contact FAE for adapter selection.)	24V: 48.5W	24V: 48.5W	24V: 29.7W	24V: 29.7W	24V: 27.5W	24V: 25.1W	24V: 26.3W
	Idle Consumption	12V: 23.4W	12V: 23.4W	12V: 18.8W	12V: 18.8W	12V: 17.6W	12V: 15.8W	12V: 15.7W
Mechanical	24V: 24.3W	24V: 24.3W	24V: 19.8W	24V: 19.8W	24V: 19.3W	24V: 17.0W	24V: 19.7W	
	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						
Mechanical	Vibration Resistance	3.5 Grms						
	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 IBCC	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

Rear I/O View



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

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, the UK and the USA. For more information please contact:

Headquarters

Germany



FORTEC
GROUP

FORTEC Elektronik AG
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894450-0
E-Mail: info@fortecag.de
Internet: www.fortecag.de

Fortec Group Members

Austria



FORTEC
INTEGRATED

Distec GmbH Office Vienna
Nuschinggasse 12
1230 Wien

Phone: +43 1 8673492-0
E-Mail: info@distec.de
Internet: www.distec.de

Germany



FORTEC
INTEGRATED

Distec GmbH
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894363-0
E-Mail: info@distec.de
Internet: www.distec.de

Switzerland



ALTRAC
A FORTEC GROUP MEMBER

ALTRAC AG
Bahnhofstraße 3
5436 Würenlos

Phone: +41 44 7446111
E-Mail: info@altrac.ch
Internet: www.altrac.ch

United Kingdom



FORTEC
UNITED KINGDOM

Display Technology Ltd.
Osprey House, 1 Osprey Court
Hinchingbrooke Business Park
Huntingdon, Cambridgeshire, PE29 6FN

Phone: +44 1480 411600
E-Mail: info@displaytechnology.co.uk
Internet: www.displaytechnology.co.uk

USA



 **APOLLO DISPLAY**
TECHNOLOGIES
A FORTEC GROUP MEMBER

Apollo Display Technologies, Corp.
87 Raynor Avenue, Unit 1
Ronkonkoma, NY 11779

Phone: +1 631 5804360
E-Mail: info@apolloDisplays.com
Internet: www.apolloDisplays.com