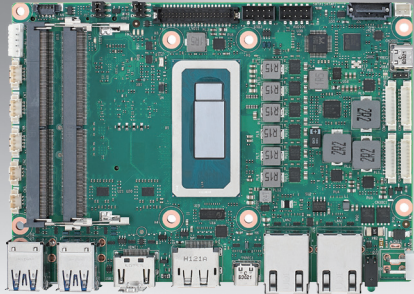


MIO-5377R

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:



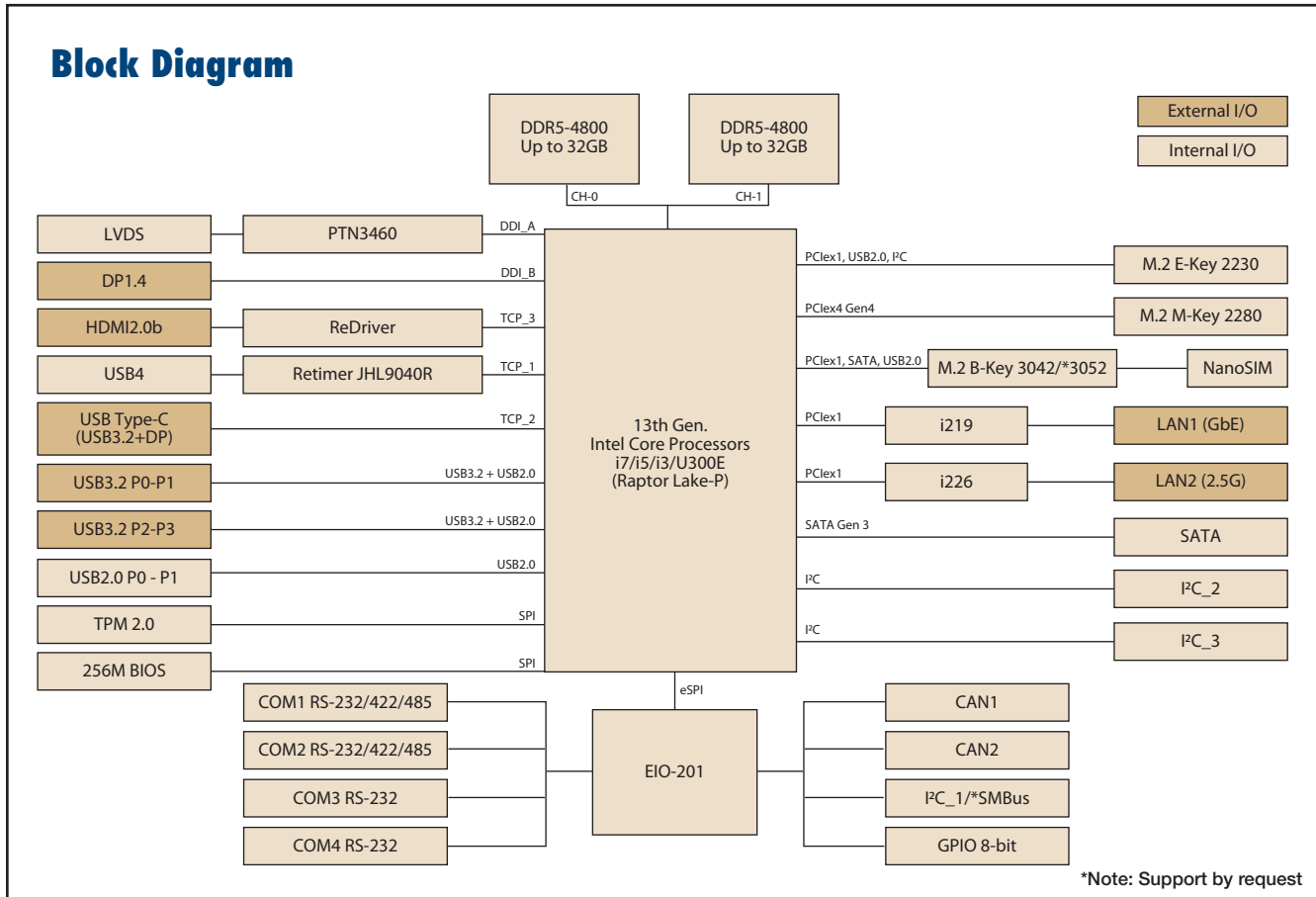
Specifications

| | 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 / 8T | |
| | Intel® Smart Cache (L3) | 24MB | 24MB | 12MB | 12MB | 12MB | 10MB | 10MB | |
| | CPU TDP | 28W | 28W | 15W | 15W | 15W | 15W | 15W | |
| | Chipset | On-package Intel 600 Series Chipset | | | | | | | |
| Memory | BIOS | AMI UEFI 256Mbit | | | | | | | |
| | Technology | DDR5-4800 | | | | | | | |
| | Max. Capacity | Up to 64GB | | | | | | | |
| | IB ECC | No | Yes | No | Yes | No | No | No | |
| Graphics | Channel/Socket | Dual Channels / 2 sockets | | | | | | | |
| | Controller | Intel® Iris® Xe 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 | |
| Display I/F | 3D/HW Acceleration | DX12.1, OGL4.6, OCL3.0, HW Encode: H.265/HEVC, H.264, MPEG2, HW Decode: H.265 | | | | | | | |
| | LCD | 1 x LVDS: Dual Channel 18/24-bit, up to 1920 x 1200 | | | | | | | |
| Ethernet | HDMI/DP | 1 x HDMI 2.0b, up to 4096 x 2160 x 24bpp@60Hz 1 x DP1.4a, up to 4096 x 2304 x 36bpp@60Hz | | | | | | | |
| | Multiple Display | 4 simultaneous displays via LVDS + HDMI + DP + USB Type-C Alt. Mode | | | | | | | |
| External I/O | 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 | |
| Internal I/O | Ethernet | 2 x RJ-45 | | | | | | | |
| | HDMI/DP | 1/1 | | | | | | | |
| | USB Type-C | 1 x USB3.2 Gen2x1 10Gbps, support DisplayPort1.4a 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 | | | | | | | |
| Board Feature | 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 (BOM Default, I ² C_1 is optional to 1 x *SMBus by request) | | | | | | | |
| | Audio | Realtek ALC888s, Line-in/Line-out/MIC | | | | | | | |
| | GPIO | 8-bit general purpose input output I/O | | | | | | | |
| | Invertor | 12V/5V/3.3V selectable | | | | | | | |
| | Fan | 12V, 1A (4-wire) | | | | | | | |
| | Front Panel Control | Power-on, Reset, Buzzer, SATA LED, CaseOpen | | | | | | | |
| Expansion | Watchdog Timer | 65536 level, 0-65535 sec | | | | | | | |
| | 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 | | | | | | | |
| Power | 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 | | | | | | | |
| | Supply Voltage | Vin: DC 12V-24V ± 10%; RTC Battery: Lithium 3V/210MAH | | | | | | | |
| Environment | Connector | ATX 2x2 pin 90D, optional DC-Jack, or ATX 2x2 pin 180D | | | | | | | |
| | Power Management | AT, ATX | | | | | | | |
| | Max. Consumption | TBD | TBD | TBD | TBD | TBD | TBD | TBD | |
| Certification | Idle Consumption | TBD | TBD | TBD | TBD | TBD | TBD | TBD | |
| | Temperature | Operating: Standard: 0 ~ 60 °C (32 ~ 140 °F); *Extend: -40 ~ 85 °C (-40 ~ 185 °F), support with selected SKU | | | | | | | |
| | Humidity | Operating: 40 °C @ 95% relative humidity, non-condensing | | | | | | | |
| Mechanical | Vibration Resistance | Storage: -40 ~ 85 °C (-40 ~ 185 °F) | | | | | | | |
| | EMC | CE, FCC Class B | | | | | | | |
| | Dimensions | 146 x 102 mm (5.7" x 4") | | | | | | | |

*Note: Support by request

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

Block Diagram



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 |
| | 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 |

Embedded OS/API

| OS | Part No. | Description |
|------------------|--------------------|---------------------------------|
| Windows 10 LTSC | TBD | Win10 IoT Ent. 2021 LTSC 64bit |
| Ubuntu 22.04 LTS | TBD | Ubuntu Desktop 22.04 LTS 64-bit |
| Software API | Website Download | SUSI v4.0 |
| Yocto BSP | Support by Request | Yocto BSP and Test Image |

Rear I/O View

