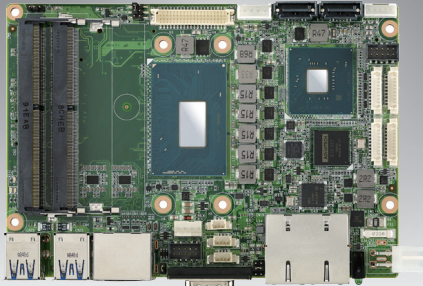


MIO-5393

9th/8th Gen. Intel® Xeon®/Core™ Processor, 3.5" SBC w/ MIOe

Preliminary



Features

- 9th/8th Gen. Intel® Xeon®/Core™ Processor, up to 6 cores, and TDP 45W/35W
- Dual channel DDR4-2400, up to 64GB, ECC for Xeon SKU
- Triple simultaneous displays with 48-bit LVDS+HDMI+DP
- USB 3.1 Gen2 (10 Gbps), TPM 2.0 & NVMe/PCIe Gen3x4 SSD
- Dual GbE, SATAIII, RS-232/422/485, CANBus, SMBus, I2C
- M.2 B-Key 2280/3042, (optional M-Key 2280) & M.2 E-Key 2230
- Supports iManager 3.0 & SW APIs, WISE Paas/DeviceOn

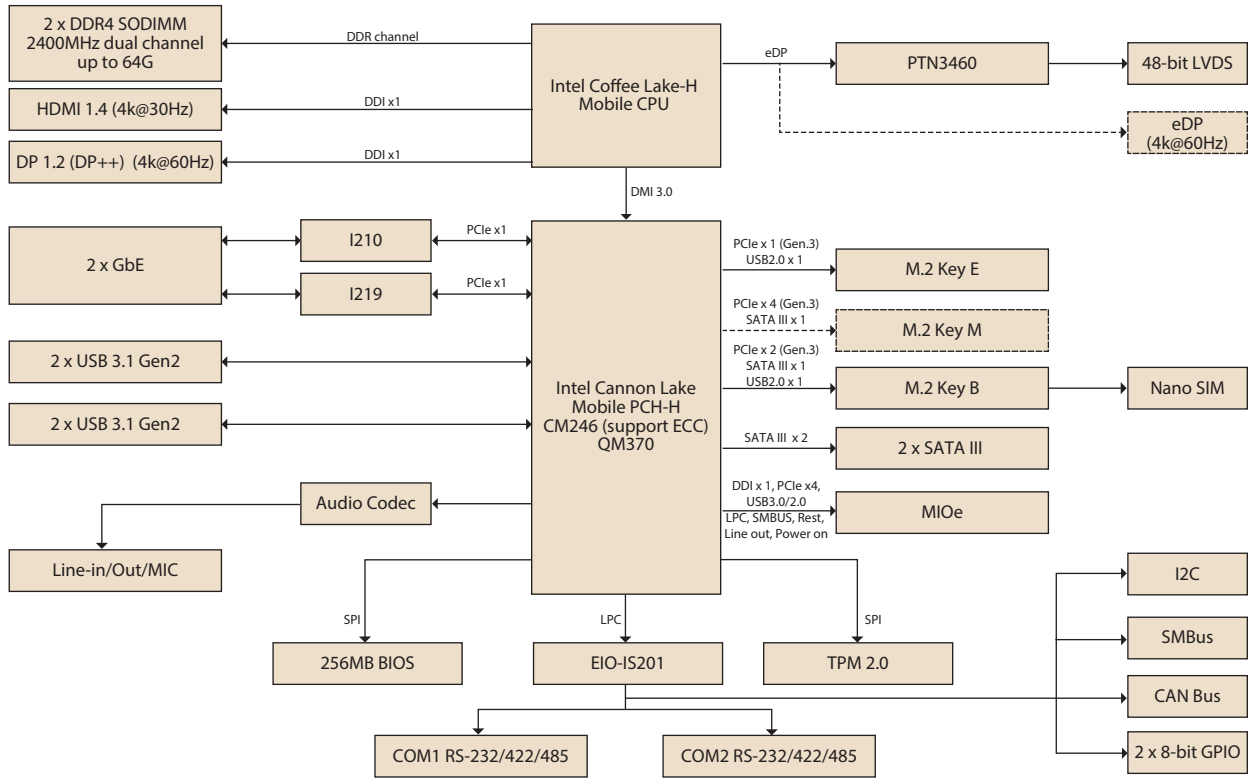
Software APIs:



Specifications

Platform	Processor	E-2276ME	I7-9850HE	I7-9850HL	I5-8400H
	Max. Frequency	4.5 GHz	4.4 GHz	4.1 GHz	4.2 GHz
	Base Frequency	2.8 GHz	2.7 GHz	1.9 GHz	2.5 GHz
	Core/Tread	6C/12T	6C/12T	6C/12T	4C/8T
	LLC	12MB	9MB	9MB	8MB
	CPU TDP	45W	45W	25W	45W
	Chipset	CM246	QM370	QM370	QM370
Memory	BIOS	AMI EFI 256Mbit			
	Technology	DDR4-2400			
	Max. Capacity	Up to 64GB *Support with selected memory module			
	Channel/Socket	Dual Channel 260P SO-DIMM (1 DIMM per Channel)			
Graphics	ECC Support	Yes	No	No	No
	Controller	Intel Gen 9 low power graphics			
Display I/F	Max. Frequency	1150 MHz	1150 MHz	1150 MHz	1100 MHz
	Base Frequency	350 MHz	350 MHz	350 MHz	350 MHz
	3D/HW Acceleration	3D: DX 2015/11.2/11.1/10/9 ; OpenGL4.5; OpenCL 2.0/1.2/1.0 HW Decode: AVC/H264, VC1/WMV9, MPEG2, HEVC/H265 (8/10 bits), VP8, JPEG/MJPEG, VP9 HW Encode: AVC/H264, MPEG2, HEVC/H265, VP8, JPEG, VP9			
	LCD	1 x LVDS Dual Channel 24-bit, up to WUXGA 1920 x 1200 at 60Hz; *Optional, eDP 1.4, support up to 4096x2304 @ 60Hz			
Ethernet	HDMI/DP	1 x HDMI 1.4a. Support up to 4096x2160 @ 30 Hz; 1 x DP 1.2. Support up to 4096x2304 @ 60Hz			
	Multiple Display	Triple simultaneous displays with 48-bit LVDS/eDP + HDMI + DP			
External I/O	Controller	LAN1: Intel 219LM, LAN2: Intel 210IT			
	Speed	10/100/1000 Mbps			
Internal I/O	Ethernet	2 x RJ-45			
	VGA/HDMI/DP	-/1/1			
	USB3.1	4 (USB3.1 Gen.2)			
	COM Port	1 x RS-232/422/485			
	LED	Power status, HDD R/W			
	Power DC-Jack	Optional			
	SATA	2 x SATA GenIII 6.0Gbps			
Board Feature	USB2.0	2			
	Serial Bus	1 x SMBus; 1 x I2C			
	COM Port	1 x RS-232/422/485			
	GPIO	2 x 8-bit general purpose input/output			
	Audio	Realtek ALC888S, High Definition Audio (HD), Line-in, Line out, Mic-in			
	Inverter	3.3/5/12V for VDD power, 5/12V for inverter			
	LPC/SPI Bus	SPI for BIOS & TPM 2.0			
	CAN Bus	1			
	Fan	1 x 4-Wire Smart Fan, 12V@2A			
	Front Panel Control	Power LED, HD LED, Reset, Power Switch, Case Open, Buzzer			
Storage	Watchdog Timer	65536 level, 0-65535 sec			
	TPM	TPM2.0 (Infineon SLB9670)			
Expansion	iManager 3.0	Software APIs for Power Monitor, CPU Temp., Smart Fan, GPIO, WDT, SMBus, I2C, Backlight & Brightness Control, CANBus			
	NVMe	1, PCIe Gen.3 x4 with optional M-key			
Power	SATA	2, up to 6Gb/s (600 MB/s)			
	M.2	1 x E-Key (PCIe x1, USB 2.0) - M.2 2230 WiFi/BT module 1 x B-Key (PCIe Gen.3 x2, SATA Gen.3, USB2.0) - M.2 2280 SSD module or M.2 3042 4G/LTE module (with nano SIM slot and bracket) *Optional, M-Key (PCIe Gen.3 x4, SATA Gen.3) - M.2 2280 NVMe/PCIe Gen.3x4 SSD module			
	mPCIe/mSATA	-			
Environment	MIO Extension	DDI x 1, PCIe x 4, USB3.0, USB2.0, LPC, SMBus, Line-out, Power-on, Reset			
	Supply Voltage	Vin: DC 12V ± 10%; RTC Battery: Lithium 3V/210mAH			
	Connector	ATX 2x2 pin 90D, optional DC-Jack with lock or ATX 2x2 pin 180D			
	Power Management	AT, ATX			
Certification	Max. Consumption	TBC	TBC	TBC	TBC
	Idle Consumption	TBC	TBC	TBC	TBC
	Temperature	Operating: Standard: 0 - 60 °C (32 - 140 °F), Extend: -40 - 85 °C (-40 - 185 °F) Storage: -40 - 85 °C (-40 - 185 °F)			
Mechanical	Humidity	Operating: 40 °C @ 95% relative humidity, non-condensing Storage: 60 °C @ 95% relative humidity, non-condensing			
	Vibration Resistance	3.5 Grms			
Safety	EMC	CE, FCC			
	Safety	-			
Dimensions	Dimensions	146 x 102 mm (5.7" x 4")			

Block Diagram



*Function block with dotted line support by request

Ordering Information

Part No.	CPU	Core	Max. Frequency	TDP	vPro	PCH	ECC	LVDS/eDP ¹	M.2 Slot Extension ²	Power Connector ³	Thermal Solution	Operating Temperature
MIO-5393RE6C-U8A1	E-2276ME	6	4.5 GHz	45W	Yes	CM246	Yes	LVDS	B-key + E-key	2x2 pin	Active	0 ~ 60 °C
MIO-5393RC7Q-U7A1	i7-9850HE	6	4.4 GHz	45W	Yes	QM370	No	LVDS	B-key + E-key	2x2 pin	Active	0 ~ 60 °C
MIO-5393RC7Q-S9A1	i7-9850HL	6	4.1 GHz	25W	Yes	QM370	No	LVDS	B-key + E-key	2x2 pin	Active	0 ~ 60 °C
MIO-5393C5Q-U5A1	i5-8400H	4	4.2 GHz	45W	Yes	QM370	No	LVDS	B-key + E-key	2x2 pin	Active	0 ~ 60 °C
MIO-5393RC7QZ2-U7A1	i7-9850HE	6	4.4 GHz	45W	Yes	QM370	No	LVDS	B-key + E-key	2x2 pin	Active	-40 ~ 85 °C
MIO-5393RC7QZ2-S9A1	i7-9850HL	6	4.1 GHz	25W	Yes	QM370	No	LVDS	B-key + E-key	2x2 pin	Active	-40 ~ 85 °C

1. eDP is supported by request

2. M.2 M-key +E-key is supported by request

3. DC-Jack with lock is supported by request

Packing List

Part No.	Description	Quantity
	MIO-5393 SBC	1
TBD	Startup Manual	1
TBD	Mini Jumper Pack	1
TBD	Cooler	1
TBD	Heat Sink	1

Optional Accessories

Part No.	Description
TBD	Heat Spreader
TBD	Adapter

Embedded OS/API

OS	Part No.	Description
WIN10	TBD	
Software API		iManager 3.0
Software API		WISE-PaaS/DeviceOn

Rear I/O View

