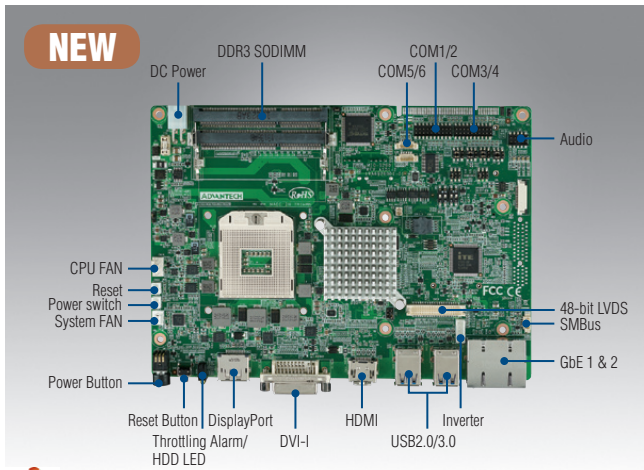


# MIO-9290

Intel® 3<sup>rd</sup> Core™ i7/i5/i3 rPGA988, 5.25" MI/O SBC,  
 DDR3/DDR3L, DP, HDMI, DVI-I, 48-bit LVDS, 2GbE,  
 2 Mini PCIe, mSATA, iManager, MIOe



iManager susiAccess CE FCC

## Features

- Supports Intel 3<sup>rd</sup> Generation Core™ i7/i5/i3 mobile processor (rPGA) with Intel QM77 PCH, 2 x DDR3/DDR3L SO-DIMM support up to 16 GB
- DirectX11, OpenGL3.1, OpenCL1.1, 3 independent display: DP + HDMI + DVI-I
- Flexible design using integrated multiple I/O: MIOe enhances vertical applications & protects domain knowhow
- 2 GbE support, HD Audio, Rich I/O interface with 6 COM, 2 SATA, SMBUS/I<sup>2</sup>C, 16-bit GPIO, 2 Full-size Mini PCIe/mSATA, 2 USB2.0, 4 USB3.0
- Supports iManager, SUSIAccess, Embedded Software APIs & Intel iAMT 8.0

### Software APIs:



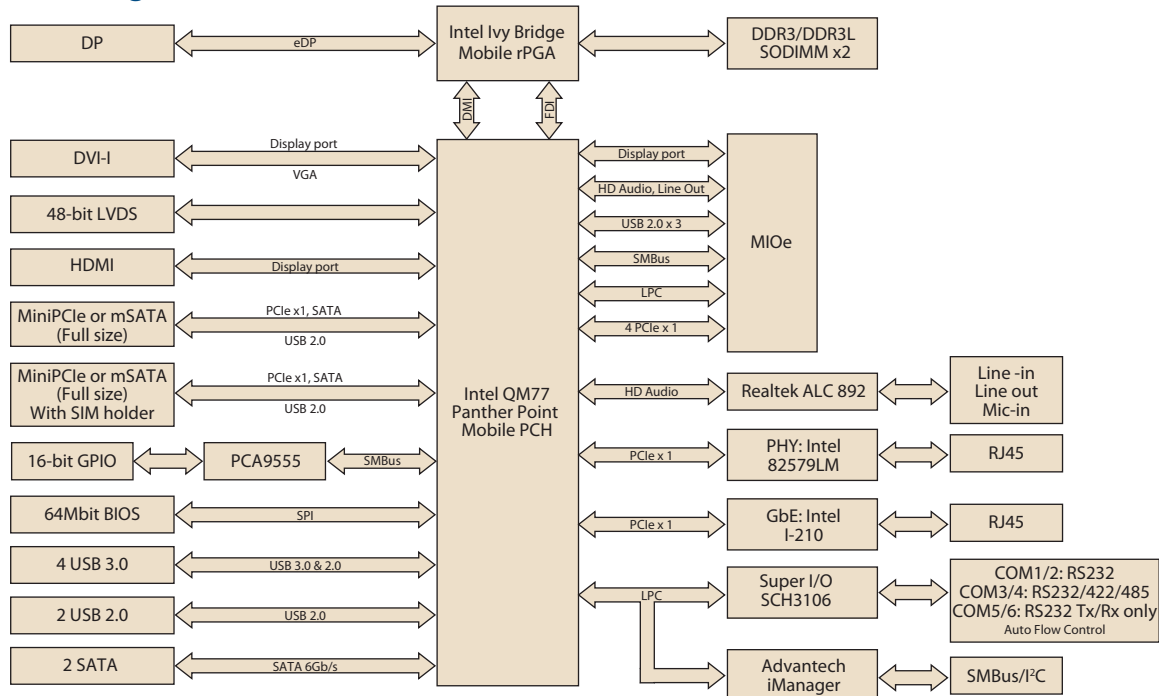
### Utilities:



## Specifications

		Intel Core i7 3610QE	Intel Core i5 3610ME	Intel Core i3 3120ME	Intel Celeron 1020E
Processor System	CPU	Intel Core i7 3610QE	Intel Core i5 3610ME	Intel Core i3 3120ME	Intel Celeron 1020E
	Frequency	2.3 GHz (Quad Core)	2.7 GHz (Dual Core)	2.4 GHz (Dual Core)	2.2 GHz (Dual Core)
	L3 Cache	6 MB	3 MB	3 MB	2 MB
	System Chipset	Intel QM77			
Memory	BIOS	AMI EFI 64Mbit			
	Technology	Dual Channel DDR3/DDR3L 1333/1600 MHz			
Display	Max. Capacity	8GB x 2			
	Socket	2 x 204-pin SODIMM			
	Controller	Intel Ivy Bridge Processor + Intel QM77 Integrated GFX Gen 7			
	Graphic Engine	DirectX11, OpenGL 3.1, and OpenCL 1.1			
	DisplayPort	Hardware decode acceleration: AVC/H.264, MPEG-2, VC-1 Max resolution up to 2560 x 1600 @ 60Hz			
	LVDS	LVDS with 3.3V, 5V on LCD VDD power, 5V and 12V support on LVDS inverter Dual channel 24-bit LVDS, max resolution up to 1920 x 1200 @ 60Hz			
Ethernet	HDMI	Supports HDMI 1.4 for HD Video playback Max resolution up to 1920 x 1200 @ 60Hz			
	DVI-I	Max resolution up to 1920 x 1200 @ 60Hz			
	3 Independent Display	DP + HDMI + DVI-I			
	Speed	10/100/1000Mbps			
Audio	Controller	GbE1 - Intel 82579LM, GbE2 - Intel I-210IT			
	Connector	2 RJ45 on Rear I/O			
WatchDog Timer	Chipset	Realtek ALC892, High Definition Audio (HD), Line-in, Line out, Mic-in			
		255 levels timer interval, programmable by software			
Storage	SATAIII	2 x Serial-ATA port, up to 6.0 Gb/s (600 MB/s)			
	mSATA	2 (Full-size, shared with mini PCIe)			
Rear I/O	Ethernet	2 (10/100/1000Mbps)			
	Display Port	1			
	DVI-I	1			
	HDMI	1			
	USB 3.0	4 (USB 3.0 compliant)			
	LED	Red: Throttling alarm, Yellow: HDD			
	Power Button	1			
	Reset Button	1			
	USB	2 (USB 2.0 compliant)			
	LVDS/Inverter	1			
Internal I/O	Serial	2 RS-232 from COM1/2, 2 RS-232/422/485 from COM3/4 (ESD protection for RS-232: Air gap ±15kV, Contact ±8kV)			
	I <sup>2</sup> C	2 RS-232 with Tx/Rx only from COM5/6			
	SMBus	1 (Shares with SMBus)			
	GPIO	1			
	GPIO	16-bit general purpose input/output			
Expansion	Mini PCIe	2 (Full-size, shared with mSATA)			
	MIOe	SMBus, 3 USB2.0, LPC, 4 PCIe x 1, line out, 5 Vsb/12 Vsb power, Displayport			
Power	Power Type	Single 12V DC power input			
	Power Supply Voltage	Supports single 12V input, ± 10%			
	Power Consumption (Typical)	i7 3610QE w/DDR3: 0.646 A @ 12 V (7.75 W), w/DDR3L: 0.662 A @ 12 V (7.94 W)			
		i5 3610ME w/DDR3: 0.614 A @ 12 V (7.37 W), w/DDR3L: 0.606 A @ 12 V (7.27 W)			
		i3 3120ME w/DDR3: 0.622 A @ 12 V (7.46 W), w/DDR3L: 0.612 A @ 12 V (7.34 W)			
		Celeron 1020E w/DDR3: 0.632 A @ 12 V (7.58 W), w/DDR3L: 0.623 A @ 12 V (7.48 W)			
	Power Consumption (Max, test in HCT)	i7 3610QE w/DDR3: 3.759 A @ 12 V (45.11 W), w/DDR3L: 3.675 A @ 12 V (44.1 W)			
i5 3610ME w/DDR3: 2.375 A @ 12 V (28.5 W), w/DDR3L: 2.336 A @ 12 V (28.03 W)					
i3 3120ME w/DDR3: 1.675 A @ 12 V (20.1 W), w/DDR3L: 1.656 A @ 12 V (19.87 W)					
Power Management	ACPI				
Battery	Lithium 3 V / 210 mA				
Environment	Operational	0 - 60° C (32 - 140° F) (Operational humidity: 40° C @ 95% RH Non-Condensing)			
	Non-Operational	-40° C - 85° C and 60° C @ 95% RH Non-Condensing			
Physical Characteristics	Dimensions (L x W)	203 x 146 mm (8" x 5.75")			
	Weight	0.9 kg (1.98 lb), weight of total package			

## Block Diagram



## Ordering Information

Part No.	CPU	Memory	DP	LVDS	DVI-I	HDMI	GbE	HD Audio	RS-422/485	RS-232	USB 3.0	USB 2.0	SATAIII	Full-size Mini PCIe*	MIOe	Power connector	Thermal Solution*	Operation Temp.
MIO-9290F-00A1E	Socket rPGA988*	SO-DIMM	Yes	48-bit	Yes	Yes	2	Yes	2	4	4	2	2	2	Yes	2x2 pin	Active	0 ~ 60° C

\* Reserve Sandy Bridge CPU design  
 \* Full-size Mini PCIe supports mSATA  
 \* Active = with fan

## Packing List

Part No.	Description	Quantity
	MIO-9290 SBC	1
	Startup Manual	1
1700002155-01	M Cable SATA 7P/SATA 7P 30cm C=R 180/90	1
1700018785	SATA 35cm power cable	1
1701200220	COM RS-232 Cable 2*10P-2.0/D-SUB 9P (M)*2 22CM	2
1700019584	Audio Cable 2*5P-2.0/JACK*3 20cm	1
9666929000E	Screw and stud pack (4 screws for Mini PCIe, 4 M3 studs and screws for MIOe module)	1
9689000002	Mini Jumper pack	1
1960054541N011	Cooler 60x60x26.5mm	1

## Rear I/O View



## Optional Accessories

Part No.	Description
1700002155-01	SATA cable 7P/ 7P 30cm C=R 180/90
1700018785	SATA 35cm power cable
1703100260	Internal USB cable
1700021399-01	RS-232 Tx/Rx only (COM5/6) cable
1910002596-01	POST F=M3*10L M=M3*5L B=5 H=19 ST Ni
96MPI3M-2.4-3M9T	CPU i3-3120ME 2.4G 3M Dual Core
96MPI5-2.7-3M9T	CPU i5-3610ME 2.7G 3M Dual Core
96MPI7M-2.3-6M9T	CPU i7-3610QE 2.3G 6M Quad Core
96MPCM-2.2-2M9T	CPU CELERON-1020E 2.2G 2M Dual Core

## Embedded OS/API

Embedded OS/API	Part No.	Description
Win XPE	2070012322	MIO-9290 XPE 24MUI
WES 7	2070012220	MIO-9290 WES7E x86 English/Traditional Chinese/Simplified Chinese/Japanese
	2070012219	MIO-9290 WES7E 64bit English/Traditional Chinese/Simplified Chinese/Japanese
		Ubuntu 12.04
Linux		6.5
QNX		6.9
VxWorks		6.9
Software API		iManager 2.0

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[GCS22.8.100.4.2.I](#) [GLS11.2.053.2.2.E](#) [A20-OLINUXINO-LIME-E16GS16M](#) [A20-OLINUXINO-LIME-S16M](#) [A20-OLINUXINO-LIME2-](#)  
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