

MIO-9290 Intel® 3rd Core™ i7/i5/i3/Celeron rPGA988, 5.25" MI/O SBC, DDR3/DDR3L, DP, HDMI, DVI-I, 48-bit LVDS, 2GbE, 4 USB3.0, 2 Mini PCIe, mSATA, iManager, MIOe Startup Manual

Packing List

Before you begin installing your board, please make sure that the following items have been shipped:

- 1 x MIO-9290 SBC
- 1 x SATA Cable 30cm (P/N 1700002155-01)
- 1 x SATA Power Cable 35cm (P/N 1700018785)
- 1 x Audio Cable 20cm (P/N 1700019584)
- 1 x COM RS-422/485 Cable 22cm (P/N 1701200220)
- 1 Screw and stud pack
(4 screws for Mini PCIe,
4 M3 studs and screws
for MIOe module) (P/N 9666929000E)
- 1 x Mini Jumper (10pc package) (P/N 9689000002)
- 1 x Startup Manual (P/N 2006529000)
- 1 x Cooler (P/N 1960054541N011)

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note1: For detailed contents of MIO-9290, please refer to information on the support web site: <http://support.advantech.com.tw/>

Note2: Adobe Reader is required to view any PDF file. Adobe Reader can be downloaded at: <http://get.adobe.com/tw/reader/otherversions/> (Adobe is the trademark of Adobe Systems Incorporated)

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com>

<http://www.advantech.com/eplatform>

For technical support and service, please visit our support website at:

<http://support.advantech.com.tw/>

This manual is for the MIO-9290.

Part No. 2006929000
Printed in China

1st Edition
September 2013

Specifications

General

- **CPU (socket type):** Intel® Core™
 - i7 3610QE (Quad Core 2.3GHz)
 - i5 3610ME (Dual Core 2.7GHz)
 - i3 3120ME (Dual Core 2.4GHz)
 - Celeron 1020E (Dual Core 2.2GHz)
- **System Memory:** 2 x 204-pin SODIMM DDR3 up to 8GB, DDR3/DDR3L 1333/1600 MHz
- **Intel® Smart Cache:**
 - i7 3610QE : 6MB
 - i5 3610ME : 3MB
 - i3 3120ME : 3MB
 - Celeron 1020E : 2MB
- **System Chipsets:** Intel® QM77
- **BIOS:** AMI EFI 64-Mbit
- **Watchdog Timer:** 255 levels timer interval, programmable by software. Multi-level WDT (set by iManager)
- **Expansion Interface:**
 - 2 x Full-size Mini PCIe (Supports mSATA)
 - MIOe (SMBus, 3 USB2.0, LPC, 4 PCIe x 1, line out, 5 Vsb/12 Vsb power, Displayport)
- **Battery:** Lithium 3 V / 210 mAh
- **Audio:** Supports High Definition Audio (HD), line-in, line-out, Mic-in

Display

- **Controller:** Intel® Core™ Ivy Bridge Processor + Intel QM77 Integrated GFX Gen 7
- **Maximum Resolution:**
 - DisplayPort: up to 2560x1600 @ 60Hz
 - LVDS: 48-bit LVDS, up to 1920x1200 @ 60Hz
 - HDMI: Supports HDMI 1.4a, up to 1920x1200 @ 60Hz
 - DVI-I: up to 1920x1200 @ 60Hz
- **Dual Independent Display:**
Any two combination between: DVI-I, LVDS, HDMI, Displayport, Displayport (from MIOe)
- **Trio Independent Display:**
 - DVI-I+Displayport+HDMI

Ethernet Interface

- **Speed:** 10/100/1000 Mbps
- **Chipset:** GbE1 - Intel 82579LM, GbE2 - Intel I210-IT
- **Ethernet Interface:** Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- **Connector:** RJ45 x2

Specifications

I/O

- **Internal I/O Interface:** LVDS, Inverter, 2 x SATA 6Gb/s, 2 x SATA power, 2 x USB 2.0, 16-bit GPIO, SMBus or I2C, HD Audio, 4 x RS-232(2 is with Tx/Rx only), 2 x RS232/422/485
- **Rear I/O:** 4 x USB 3.0, HDMI, Display Port, DVI-I, 2 x RJ45 Ethernet, LED (Red- Throttling alarm, Yellow- HDD), Power Button, Reset Button
- **MI/O Expansion:** SMBus, 3 USB 2.0, LPC, 4 PCIe x1, line out, 5 Vsb/12 Vsb power, Displayport
- **Power connector type:**
2 x 2 pin power connector

Mechanical and Environmental

- **Dimensions (L x W):** 203 x 146 mm (8 x 5.75 inches)
- **Power Supply Type:** ACPI support
- **Power Requirement:** +12 V \pm 10%
- **Power Consumption:**
 - Max in HCT12:
 - 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)
 - Celeron 1020E w/DDR3: 1.595 A @ 12 V (19.14 W), w/ DDR3L: 1.548 A @ 12 V (18.58 W)
 - Typical: Idle mode in Windows 7
 - 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)
- **Operating Temperature:** 0–60°C (32–140°F)
- **Weight:** 0.9 kg (1.98 lb), (reference weight of total package)

Jumpers, Switches and Connectors

The board has a number of jumpers, switches and connectors that allow you to configure your system to suit your application.

The table below lists the function of each of the jumpers, switches and connectors.

Jumpers	
Label	Function
J1	DDR3/DDR3L Setting
J2	Auto Power On Setting
J3	COM4 RS232/422/485 Setting
J4	COM3 RS232/422/485 Setting
J5	COM4 RS232/422/485 Setting

Jumpers and Connectors

J6	COM3 RS232/422/485 Setting
J7	COM4 RS232/422/485 Setting
J8	COM3 RS232/422/485 Setting
J9	Clear CMOS
J10	LCD Power

Switches and Settings

Label	Function
SW1	COM4 RS485 TERMINATION PU/PD
SW2	COM3 RS485 TERMINATION PU/PD
SW5	CN38 PCIE/ mSATA SELECTION
SW6	CN29 PCIE/ mSATA SELECTION

Connectors

Label	Function
CN1	12V Power Input
CN2	COM3/COM4
CN3	COM1/COM2
CN5	Audio
CN7	COM5 TX/RX
CN8	COM6 TX/RX
CN14	CPU Socket
CN15	CPU FAN
CN16	Reset
CN17	Power Switch
CN18	48 bits LVDS Panel
CN19	System FAN
CN20	SMBus
CN21	Inverter Power Output
CN22	LAN
CN23	External USB2.0+USB3.0
CN24	External USB2.0+USB3.0
CN25	Display Port
CN26	HDMI
CN27	DVI-I
CN29	Mini PCIE
CN30	SATA
CN31	SATA
CN32	GPIO
CN33	GPIO

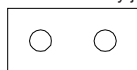
Jumpers and Connectors

CN34	SATA Power
CN35	SATA Power
CN36	SIM
CN37	Internal USB
CN38	Mini PCIE
CN39	MIOe

J1: DDR3 / DDR3L Select

Setting	Function
Open	DDR3 Memory module (Default)*
Closed	DDR3L Memory module

*DDR3/DDR3L default is auto select, but have an option that can select as DDR3/DDR3L by jumper.



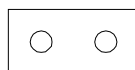
Open



Closed

J2: Auto Power On Setting

Setting	Function
Open	Power Button for Power On (Default)
Closed	Auto Power On



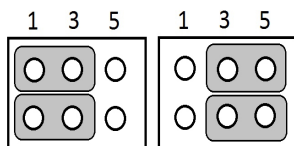
Open



Closed

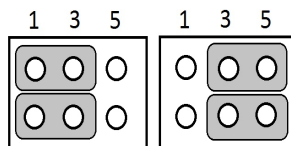
J3 & J5: COM4 RS232/422/485 Setting

Setting	Function
(1-3)*(2-4)	COM4 RS232 (Default)
(3-5)*(4-6)	COM4 RS422/485



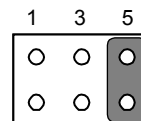
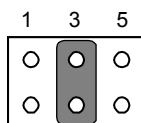
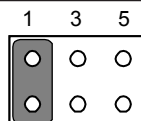
J4 & J6: COM3 RS232/422/485 Setting

Setting	Function
(1-3)*(2-4)	COM3 RS232 (Default)
(3-5)*(4-6)	COM3 RS422/485



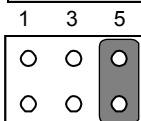
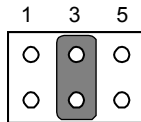
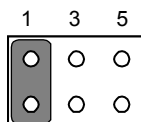
J7: COM4 RS232/422/485 Setting

Setting	Function
(1-2)	COM4 RS232 (Default)
(3-4)	COM4 RS485
(5-6)	COM4 RS422



J8: COM3 RS232/422/485 Setting

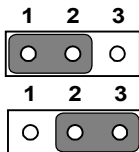
Setting	Function
(1-2)	COM3 RS232 (Default)
(3-4)	COM4 RS485
(5-6)	COM4 RS422



Connector Locations

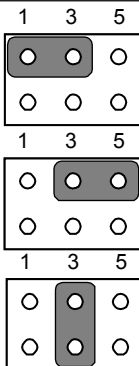
J9: Clean CMOS

Setting	Function
(1-2)	Normal (Default)
(2-3)	Clear COMS



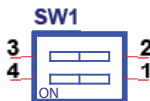
J10: LCD Power

Setting	Function
(1-3)	+3.3V (Default)
(3-5)	+5V
(3-4)	+12V



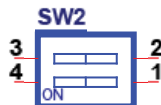
SW1: COM4 RS485 Termination PU/PD

Setting	Function
(OFF) 1 * (OFF) 2	NO TERMINATION (Default)
(OFF) 1 * (ON) 3	TERMINATION PU
(OFF) 2 * (ON) 4	TERMINATION PD



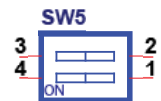
SW2: COM3 RS485 Termination PU/PD

Setting	Function
(OFF) 1 * (OFF) 2	NO TERMINATION (Default)
(OFF) 1 * (ON) 3	TERMINATION PU
(OFF) 2 * (ON) 4	TERMINATION PD



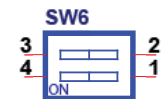
SW5: PCIE/ mSATA Selection

Setting	Function
(OFF) 1 * (ON) 3	AUTO-DETECTION (Default)
(OFF) 1 * (OFF) 2	PCIE CARD
(OFF) 2 * (ON) 4	mSATA



SW6: PCIE/ mSATA Selection

Setting	Function
(OFF) 1 * (ON) 3	AUTO-DETECTION (Default)
(OFF) 1 * (OFF) 2	PCIE CARD
(OFF) 2 * (ON) 4	mSATA



Caution! The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.



Connector Locations

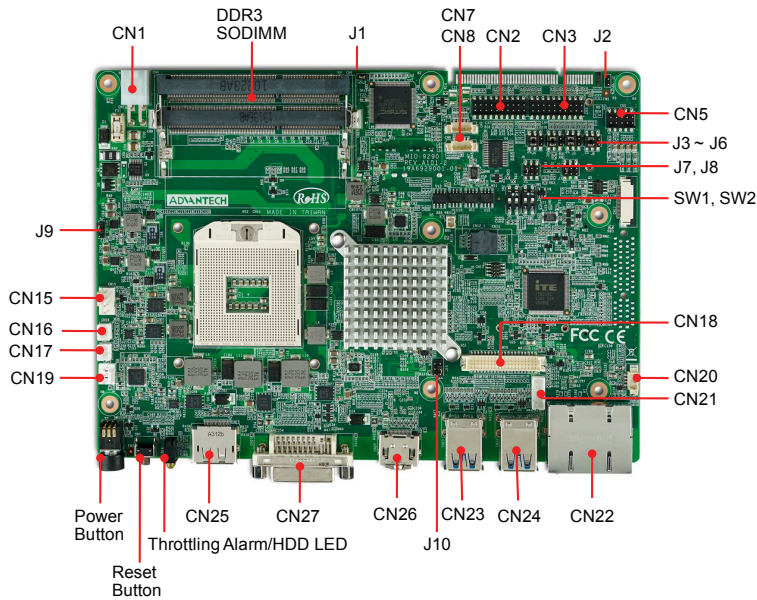


Figure 1: MIO-9290 Connector Locations (Top Side)

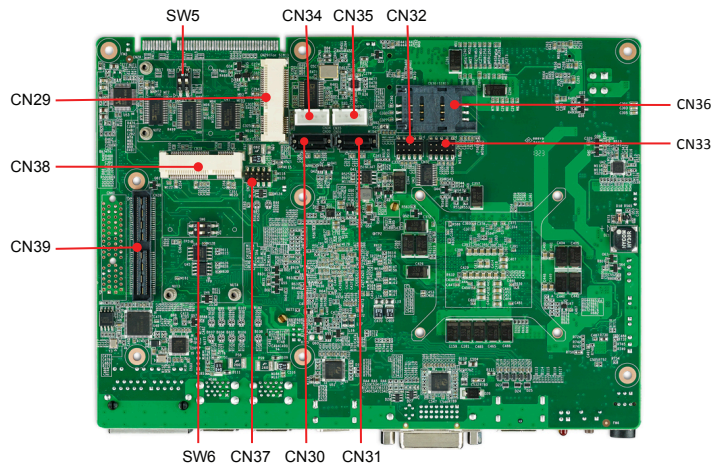


Figure 2: MIO-9290 Connector Locations (Bottom Side)

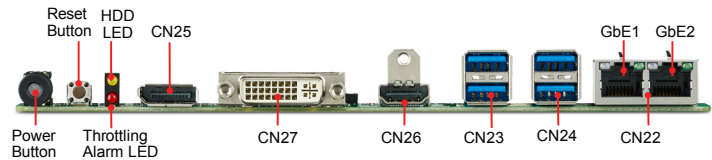


Figure 3: MIO-9290 Connector Locations (Coastline)

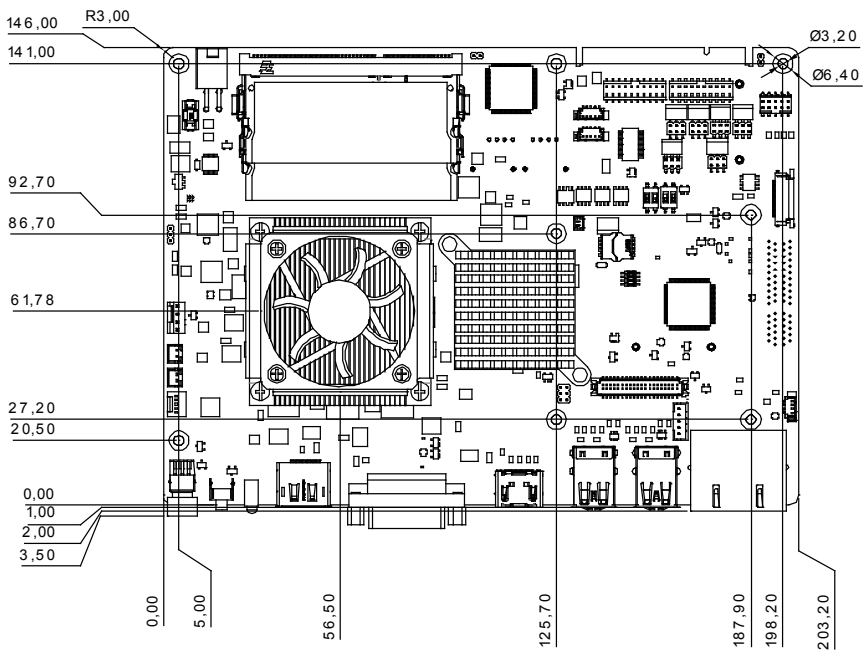


Figure 4: MIO-9290 Mechanical Drawing (Top Side)

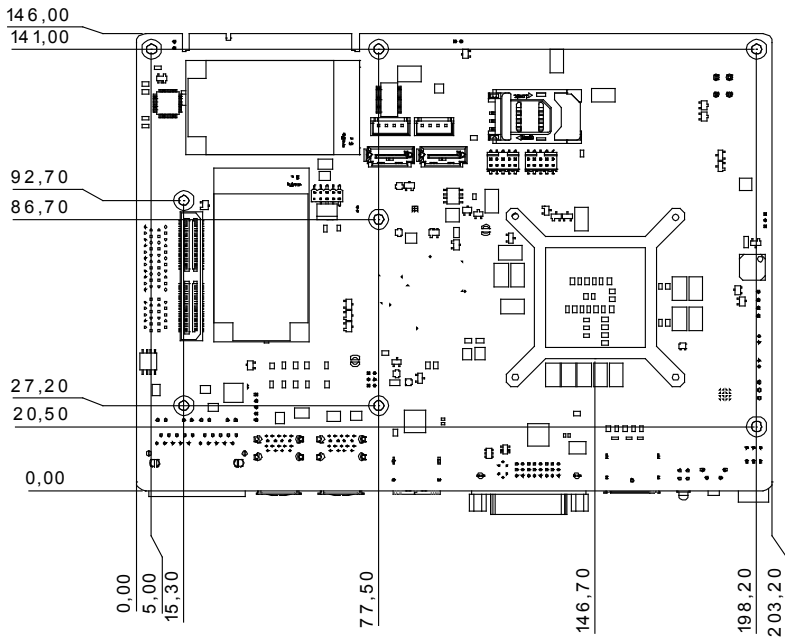


Figure 5: MIO-9290 Mechanical Drawing (Bottom Side)

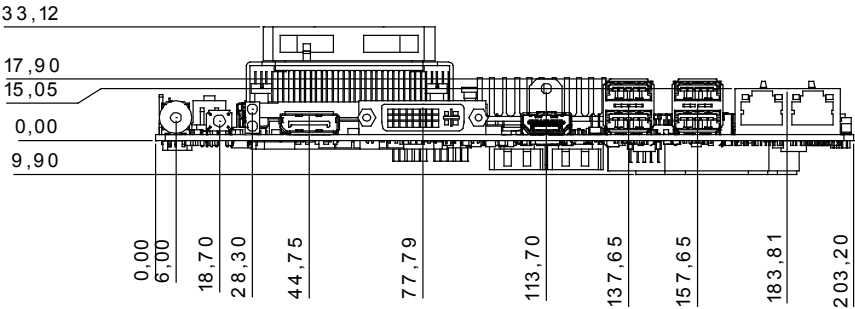


Figure 6: MIO-9290 Mechanical Drawing (Coastline)