

MI-IBJ1902

**Intel® Celeron® J1900
Mini-ITX Motherboard**

User's Manual

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Important Safety Information

Read these precautions carefully before using the board.

Environmental conditions:

- Use this product in environments with an ambient temperature between 0 °C and 60 °C.
- Do not store this product where the temperature may fall below -20 °C or rise above 75 °C. To prevent damage, use the product in a controlled environment.

Care for your product:

- Before cleaning the board, unplug all cables and remove the battery.
- Clean the board with a circuit board cleaner or degreaser, or with cotton swabs and isopropyl alcohol.
- Remove dust with a computer vacuum cleaner to keep the heatsink and any fan from clogging.

WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquid on this product.
- Do not place heavy objects on top of this product.

Anti-static precautions:

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the board on an anti-static kit or mat.
- Hold the board by its edges when handling it.
- Touch the non-metallic edges of components rather than the surface of the board.
- Discharge static regularly by touching a grounded metal object.

CAUTION

Replace the battery only with the same or an equivalent type (CR2032) recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or local recycling regulations.

Warranty Policy

- **Industrial Standard products:** (Subject to contract)
12-month (1-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.
- **Third-party parts:**
12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by us, such as CPU, memory, storage device, power adapter, panel and touchscreen,
- * *Products that fail because of misuse, accident, improper installation or unauthorized repair are treated as out of warranty, and repair and shipping charges will be billed to the customer.*

Technical Support, Services & Documentations

1. Visit IBT website at www.ibt.ca to find the latest information about the product, including drivers, faq, user manual and documentation, or contact your local dealer.
2. If you encounter any technical problems and require assistance from your local dealer or distributor or sales representative, please prepare and send the following information (you may fill-up the form on the website www.ibt.ca/support):
 - Product model name
 - Product serial number
 - Detailed description of the problem
 - The error messages in text or in screenshots if there is any
 - The arrangement of the peripherals
 - Software in use (such as OS and application software, including the version numbers)and send this or send to support@ibt.ca with your question.

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Chapter 1

General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Block Diagram
- Board Overview
- Board Dimensions

1.1 Introduction

MI-IBJ1902 is a Mini-ITX motherboard based on the Intel® Celeron® J1900 quad-core processor. It combines low power consumption (10W TDP) with a rich set of legacy and modern I/O: dual Gigabit LAN, four COM ports, dual-channel 24-bit LVDS, VGA, 8-bit GPIO, parallel port and two Mini PCI-E sockets. It is well suited for industrial control and automation, kiosks, digital signage, POS terminals and thin clients.

1.2 Features

- Intel® Celeron® J1900 quad-core SoC onboard, up to 2.4 GHz (10W TDP)
- 1 x DDR3L-1333 SO-DIMM, up to 8 GB
- 2 x Realtek RTL8111F PCIe GbE LAN
- 1 x VGA, 1 x 24-bit dual-channel LVDS (eDP optional)
- 4 x COM (3 x RS-232, 1 x RS-232/TTL), 8-bit GPIO, 1 x LPT
- 7 x USB (1 x USB 3.0, 6 x USB 2.0)
- 2 x Mini PCI-E (WiFi/4G/3G with SIM slot, mSATA), 1 x SATA 2.0
- Onboard 2 x 5W audio amplifier
- Single DC 12V power input

1.3 Packing List

Your product package should include the items listed below. If any item is missing, contact the distributor or dealer from whom you purchased the product.

- MI-IBJ1902 Motherboard
- I/O Shield (On demand)
- SATA / Power Cable (on demand)
- User's Manual (via a web link), may include also Quick reference.

1.4 Optional Accessories

Cables and accessories (COM port cables, USB cables, power adapter, LVDS cables) are available on request. Please contact us or your dealer for details.

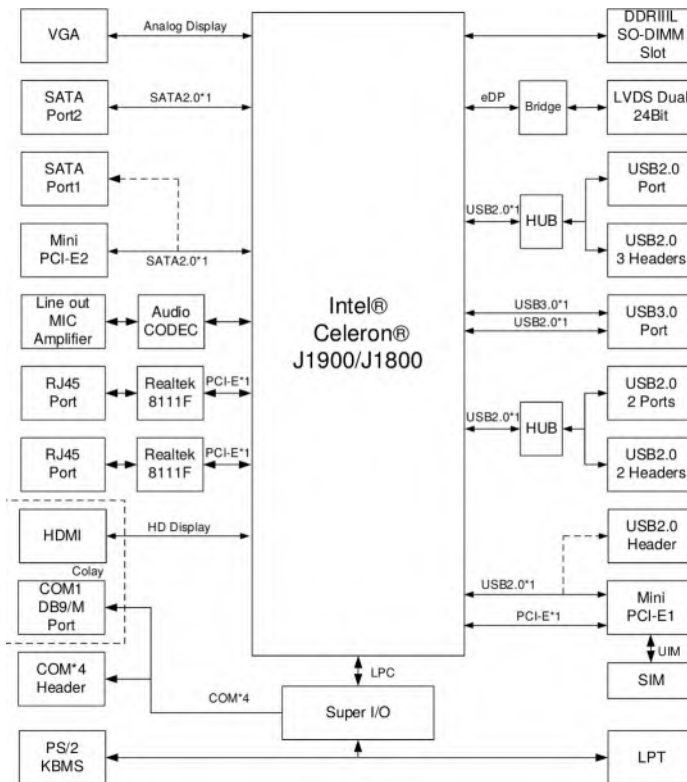
1.5 Specifications

Product Name	MI-IBJ1902
Form Factor	Mini-ITX motherboard
System	
CPU	Intel® Celeron® J1900 quad-core, 2.0 GHz (burst up to 2.4 GHz), TDP 10W
Memory	1 x DDR3L-1333 SO-DIMM, up to 8 GB
Storage	1 x SATA 2.0, 1 x mSATA (via Mini PCI-E2) ¹
Graphics	Intel® HD Graphics integrated
Network	2 x LAN: Realtek RTL8111F PCIe GbE ²
Audio Codec	Realtek HD audio codec, 2 x 5W amplifier (8 Ω loads)
Power Requirement	DC 12V
BIOS	AMI UEFI BIOS
Dimensions	170 x 170 mm (6.7" x 6.7")
Operating System	- Windows 7 / 8.1 / 10 ^{*3} / 11 ^{*3} - Linux 3.2 to 6.x.
I/O Ports	
Display	1 x VGA (up to 2560 x 1600 at 60 Hz) 1 x 24-bit dual-channel LVDS (up to 1920 x 1200 at 60 Hz), eDP optional
LAN	2 x RJ45 GbE LAN
USB	1 x USB 3.0 + 1 x USB 2.0 (rear I/O) 5 x USB 2.0 (onboard headers)
Serial	- COM1: RS-232 (rear DB9) ³ - COM2, COM4: RS-232 (onboard headers) - COM3: RS-232/TTL, jumper selectable (onboard header)
Audio Jack	1 x Line-Out, 1 x MIC-In, front audio header
Digital IO	4-In & 4-Out
Other	1 x Parallel port header 1 x PS/2 keyboard & mouse header 1 x DC 12V/5V power output
Expansion Slots	- Mini PCI-E1: WiFi / 4G / 3G, with SIM card slot - Mini PCI-E2: mSATA

Product Name	MI-IBJ1902
Environment	
Temperature	- Operating: 0 ~ 60 °C (32 ~ 140 °F) - Storage: -20 ~ 75 °C (-4 ~ 167 °F)

- * ¹ mSATA and the S_ATA1 port share the same signal; use one or the other.
- * ² LAN2 shares its position with the R_USB2 dual USB 2.0 connector; this model is fitted with LAN2.
- * ³ An HDMI connector can replace the COM1 DB9 connector on request; COM1 then remains available on the J_COM1 header.
- * ⁴ It is recommended to use Lite or IoT version.
- * All specifications are subject to change without prior notice.

1.6 Block Diagram



1.7 Overview

Top View



Bottom View



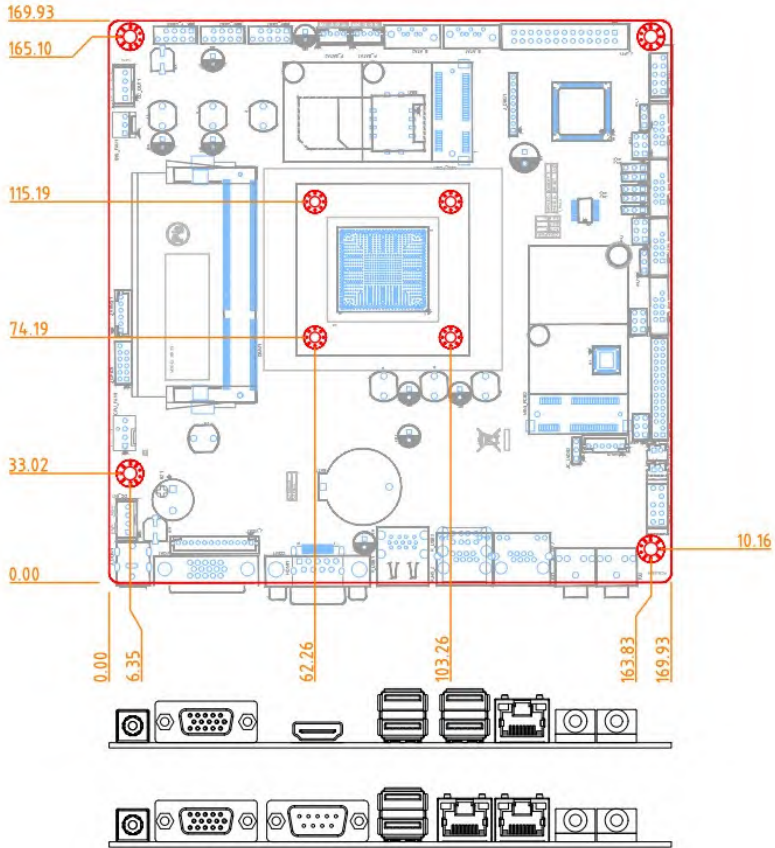
* The photos above are for reference only. Some minor components may differ.

I/O View



No.	Name	No.	Name
1	DC 12V Power Input	5	GbE LAN Port 2
2	VGA Port	6	GbE LAN Port 1
3	COM1 Port (HDMI optional)	7	Audio Line-Out
4	USB 2.0 (top) / USB 3.0 (bottom)	8	Microphone-In

1.8 Dimensions



* Unit: mm

Chapter 2

Hardware Configuration

This chapter provides information on jumper settings and connectors on the board, which you need to set up a working system. It also covers the installation of the memory before you use the product. The topics covered are:

- Installation: memory
- Jumper and connector locations
- Jumper settings and connector pin assignments

2.1 Installations

2.1.1 Installing the Memory

To install the memory module, locate the SO-DIMM slot (DIMM1) on the board and follow these steps:

1. Align the key of the memory module with the key of the SO-DIMM slot and insert the module at an angle.
2. Push the module down gently until the clips on both sides of the slot lock it in place.

To remove the module, push the clips outwards with both hands; the module will pop up.

* Use only DDR3L-1333 (1.35V) SO-DIMM modules, up to 8 GB.

2.2 Setting the Jumpers

Set up and configure the board using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have any doubts about the best configuration for your use.

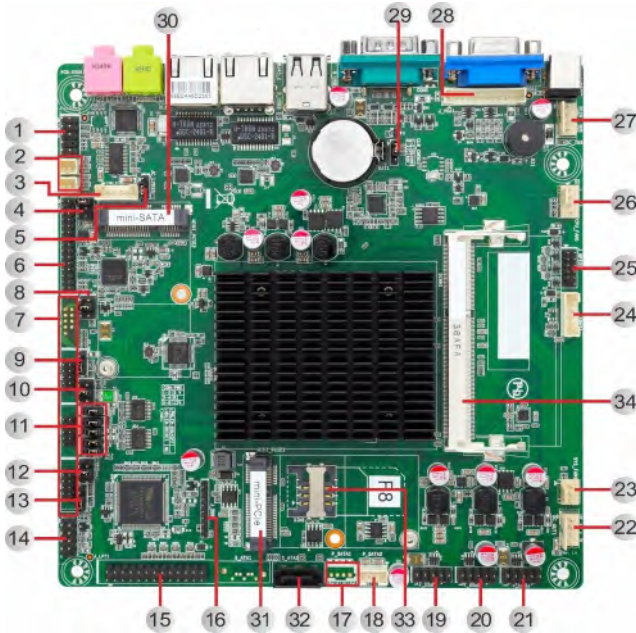
2.2.1 How to Set Jumpers

Jumpers are short-length conductors made of several metal pins with a base mounted on the circuit board. Jumper caps are placed (or removed) on the pins to enable or disable functions. When a jumper cap covers two pins, those pins are “closed”; when no cap covers them, they are “open”.

Pin 1 of a header or jumper is usually marked by a thick line or a triangle next to the pin on the top side, or by a square solder pad on the back of the board.

Setting	Illustration
Pins 1-2 closed	1 
Pins 2-3 closed	1 

2.3 Jumper & Connector Locations on MI-IBJ1902



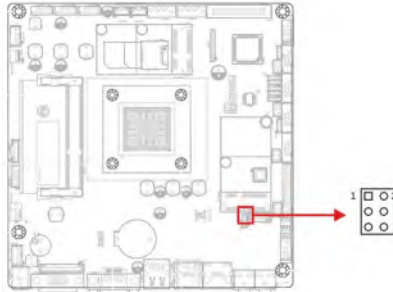
No.	Name	No.	Name
1	F_AUDIO1 – Front Audio Header	22	DC_OUT1 – DC 12V/5V Output
2	J_SPK_R1 / J_SPK_L1 – Amplifier Headers	23	SYS_FAN1 – System Fan
3	LVDS_P1 – LVDS Backlight Header	24	J_KBMS1 – Keyboard & Mouse Header
4	JC_LVDS1 – LVDS VDD Jumper	25	J_GPIO1 – GPIO Header
5	JC_LVDS2 – LVDS Backlight Mode Jumper	26	CPU_FAN1 – CPU Fan
6	LVDS1 – LVDS Signal Header	27	DC_IN1 – DC 12V Input Header
7	J_COM1 ~ J_COM4 – COM1 ~ COM4 Headers	28	J_VGA1 – VGA Header
8	JC1 – COM1 Select Jumper	29	CLR_CMOS1 – CMOS Clear Jumper
9	JC2_1 – COM2 Select Jumper 1	30	MINI_PCIE2 – Mini PCI-E2 (mSATA)
10	JC2_2 – COM2 Select Jumper 2	31	MINI_PCIE1 – Mini PCI-E1 (WiFi/4G)
11	JC3_1 ~ JC3_5 – COM3 Select Jumpers	32	S_ATA2 – SATA 2.0 Connector
12	JC4_1 – COM4 Select Jumper 1	33	SIM1 – SIM Card Slot

No.	Name	No.	Name
13	JC4_2 – COM4 Select Jumper 2	34	DIMM1 – SO-DIMM Slot
14	F_PANEL1 – Front Panel Header	35	J_DCIN1 – DC 12V Input Jack
15	J_LPT1 – Parallel Header	36	VGA1 – VGA DB15 Connector
16	J_DBG1 – Debug Header	37	HDMI (COM1) – COM1 DB9 (HDMI opt.)
17	P_SATA1 – SATA Power Header 1	38	R_USB1 – USB 3.0 + USB 2.0
18	P_SATA2 – SATA Power Header 2	39	RJ45_2 (R_USB2) – GbE LAN 2 (USB opt.)
19	F_USB1 – Front USB Header 1	40	RJ45_1 – GbE LAN 1
20	F_USB2 – Front USB Header 2	41	PJ1 – Line-Out Jack
21	F_USB3 – Front USB Header 3	42	PJ2 – MIC Jack

2.4 Jumpers Quick Reference

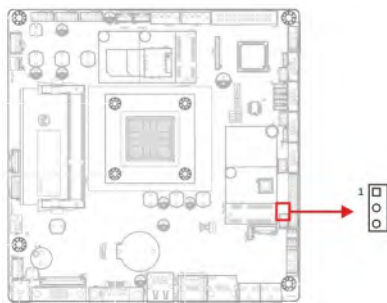
Function	Jumper Name	Page
LVDS Panel Power Selection	JC_LVDS1	12
LVDS Backlight Control Mode	JC_LVDS2	13
COM1 Pin 1 Selection	JC1	13
COM2 Pin 1 Selection	JC2_1	14
COM2 Pin 9 Selection	JC2_2	14
COM3 RS-232 / TTL Selection	JC3_1 ~ JC3_5	15
COM4 Pin 1 Selection	JC4_1	16
COM4 Pin 9 Selection	JC4_2	16
Clearing CMOS Data	CLR_CMOS1	17

2.4.1 LVDS Panel Power Selection (JC_LVDS1)



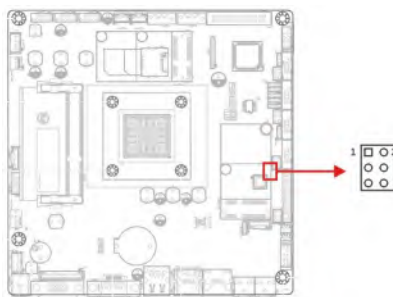
Function	Pin closed	Illustration
3.3V (default)	1-2	
5V	3-4	
12V	5-6	

2.4.2 LVDS Backlight Control Mode (JC_LVDS2)



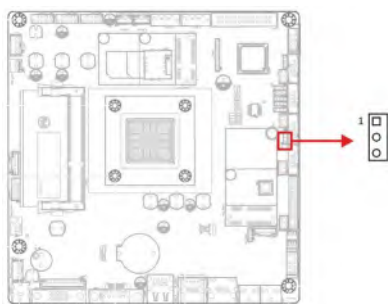
Function	Pin closed	Illustration
PWM control (default)	1-2	1
DC voltage control	2-3	1

2.4.3 COM1 Pin 1 Selection (JC1)



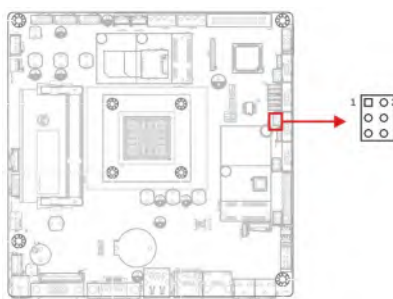
Function	Pin closed	Illustration
COM1 Pin 1: 5V	1-2	1
COM1 Pin 1: DCD# (default)	3-4	1
COM1 Pin 1: 12V	5-6	1

2.4.4 COM2 Pin 1 Selection (JC2_1)



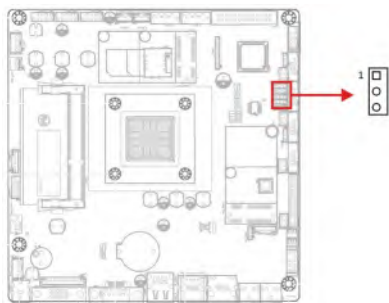
Function	Pin closed	Illustration
COM2 Pin 1: 5V	1-2	1
COM2 Pin 1: DCD# (default)	2-3	1

2.4.5 COM2 Pin 9 Selection (JC2_2)



Function	Pin closed	Illustration
COM2 Pin 9: 5V	1-2	1
COM2 Pin 9: RI# (default)	3-4	1
COM2 Pin 9: 12V	5-6	1

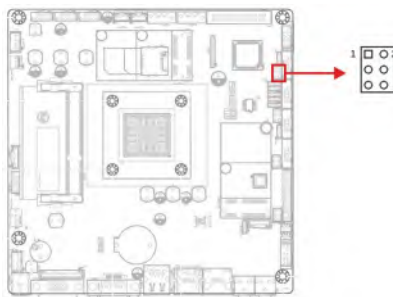
2.4.6 COM3 RS-232 / TTL Selection (JC3_1 ~ JC3_5)



Jumper	Function	Pin closed	Illustration
JC3_1	COM3 Pin 1: 5V	1-2	1
	COM3 Pin 1: DCD# (default)	2-3	1
JC3_2	COM3 Pin 2: RXD_TTL	1-2	1
	COM3 Pin 2: RXD_RS232 (default)	2-3	1
JC3_3	COM3 Pin 3: TXD_TTL	1-2	1
	COM3 Pin 3: TXD_RS232 (default)	2-3	1
JC3_4	COM3 Pin 8: RXD_TTL	1-2	1
	COM3 Pin 8: CTS# (default)	2-3	1
JC3_5	COM3 Pin 9: TXD_TTL	1-2	1
	COM3 Pin 9: RI# (default)	2-3	1

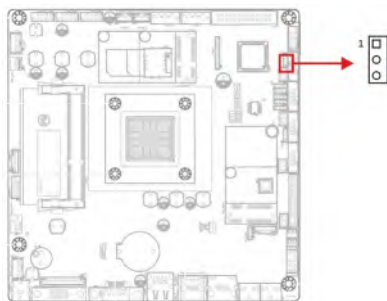
* To use COM3 in TTL mode, set JC3_2 ~ JC3_5 to 1-2 together.

2.4.7 COM4 Pin 1 Selection (JC4_1)



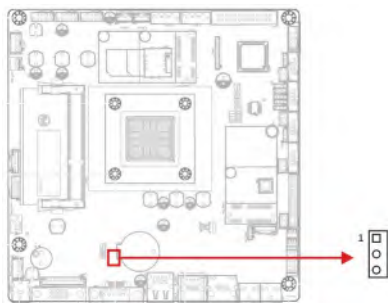
Function	Pin closed	Illustration
COM4 Pin 1: 5V	1-2	
COM4 Pin 1: DCD# (default)	3-4	
COM4 Pin 1: 12V	5-6	

2.4.8 COM4 Pin 9 Selection (JC4_2)



Function	Pin closed	Illustration
COM4 Pin 9: 5V	1-2	
COM4 Pin 9: RI# (default)	2-3	

2.4.9 Clearing CMOS Data (CLR_CMOS1)



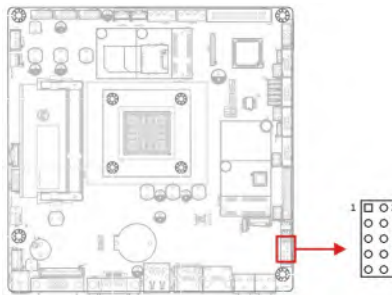
Function	Pin closed	Illustration
Normal (default)	1-2	1
Clear CMOS	2-3	1

* To clear the CMOS, turn off the system and unplug the power, move the jumper to 2-3 for a few seconds, then put it back on 1-2 before powering on.

2.5 Connectors Quick Reference

Function	Connector Name	Page
Front Audio Connector	F_AUDIO1	18
Amplifier Speaker Connectors	J_SPK_R1, J_SPK_L1	19
LVDS Backlight Connector	LVDS_P1	19
LVDS Connector	LVDS1	20
COM1 ~ COM4 Connectors	J_COM1 ~ J_COM4	21
Front Panel Connector	F_PANEL1	22
Parallel Port Connector	J_LPT1	22
SATA Power Connectors	P_SATA1, P_SATA2	23
USB 2.0 Connectors	F_USB1 ~ F_USB3	23
DC 12V/5V Power Output	DC_OUT1	24
System Fan Connector	SYS_FAN1	25
Keyboard & Mouse Connector	J_KBMS1	25
Digital I/O Connector	J_GPIO1	26
CPU Fan Connector	CPU_FAN1	26
DC 12V Power Input Connector	DC_IN1	27
VGA Connector	J_VGA1	27
GbE LAN Port	RJ45_1	28

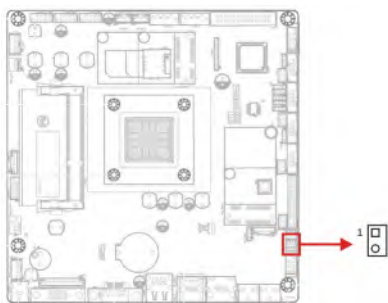
2.5.1 Front Audio Connector (F_AUDIO1)



Pin	Signal Name	Pin	Signal Name
1	MIC-In Left	2	Ground
3	MIC-In Right	4	+3.3V
5	Line-Out Right	6	N/C

Pin	Signal Name	Pin	Signal Name
7	Ground	8	—
9	Line-Out Left	10	Sense Return

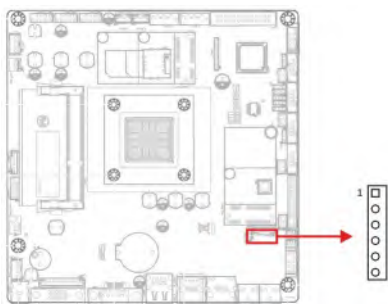
2.5.2 Amplifier Speaker Connectors (J_SPK_R1, J_SPK_L1)



Connector	Pin	Signal Name	Pin	Signal Name
J_SPK_R1	1	SPK_R-	2	SPK_R+
J_SPK_L1	1	SPK_L-	2	SPK_L+

* Amplifier output: 5W per channel into 8 Ω loads.

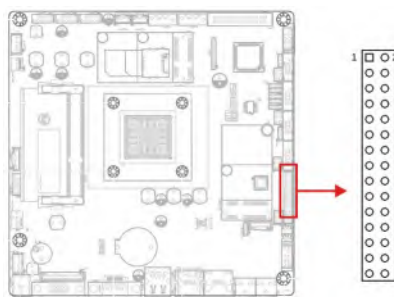
2.5.3 LVDS Backlight Connector (LVDS_P1)



Pin	Signal Name	Pin	Signal Name
1	Ground	4	Backlight Enable
2	Ground	5	+12V
3	Backlight Control *	6	+12V

* The backlight control mode (PWM or DC voltage) is selected by JC_LVDS2.

2.5.4 LVDS Connector (LVDS1)

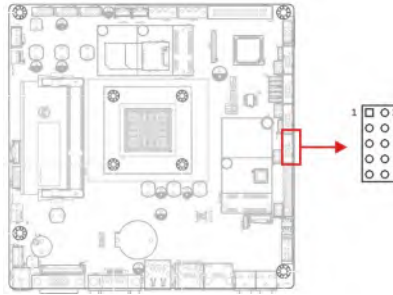


Pin	Signal Name	Pin	Signal Name
1	VDD *	2	VDD *
3	VDD *	4	N/C
5	LVDS_Detect# / eDP_HPD	6	LVDS_Detect# / eDP_HPD
7	LVDS_A_DATA0-	8	LVDS_A_DATA0+
9	LVDS_A_DATA1-	10	LVDS_A_DATA1+
11	LVDS_A_DATA2-	12	LVDS_A_DATA2+
13	Ground	14	Ground
15	LVDS_A_CLK-	16	LVDS_A_CLK+
17	LVDS_A_DATA3-	18	LVDS_A_DATA3+
19	LVDS_B_DATA0- / eDP_TX0-	20	LVDS_B_DATA0+ / eDP_TX0+
21	LVDS_B_DATA1- / eDP_TX1-	22	LVDS_B_DATA1+ / eDP_TX1+
23	LVDS_B_DATA2-	24	LVDS_B_DATA2+
25	Ground	26	Ground
27	LVDS_B_CLK-	28	LVDS_B_CLK+
29	LVDS_B_DATA3- / eDP_AUX-	30	LVDS_B_DATA3+ / eDP_AUX+

* * Panel power VDD is 3.3V by default; 5V or 12V can be selected with JC_LVDS1.

* The connector supports eDP instead of LVDS if specified at order (resistor selectable). In eDP mode, the signals not listed as eDP are N/C.

2.5.5 COM1 ~ COM4 Connectors (J_COM1 ~ J_COM4)



Pin	J_COM1	J_COM2	J_COM3	J_COM4
1	DCD# ^a	DCD# ^a	DCD# ^a	DCD# ^a
2	RXD	RXD	RXD ^b	RXD
3	TXD	TXD	TXD ^b	TXD
4	DTR#	DTR#	DTR#	DTR#
5	Ground	Ground	Ground	Ground
6	DSR#	DSR#	DSR# ^c	DSR#
7	RTS#	RTS#	RTS#	RTS#
8	CTS#	CTS#	CTS# ^b	CTS#
9	RI#	RI# ^a	RI# ^b	RI# ^a

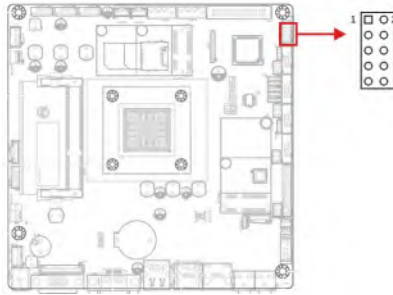
* ^a Pin 1 (and pin 9 on COM2/COM4) can supply 5V or 12V instead of the signal; see jumpers JC1, JC2_1, JC2_2, JC4_1 and JC4_2.

* ^b COM3 pins 2, 3, 8 and 9 switch to TTL mode (RXD_TTL / TXD_TTL) with jumpers JC3_2 ~ JC3_5. COM3 pin 1 can supply 5V (JC3_1) or 3.3V if specified.

* ^c COM3 pin 6 can supply 5V or 3.3V if specified at order (resistor selectable).

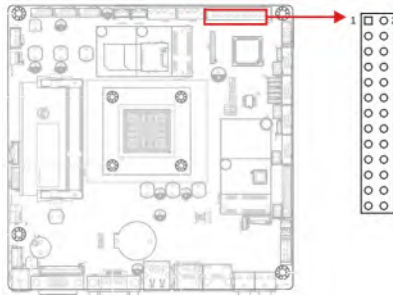
* COM1 is also routed to the rear DB9 connector. When the optional HDMI connector is fitted, COM1 is available on J_COM1 only.

2.5.6 Front Panel Connector (F_PANEL1)



Pin	Signal Name	Pin	Signal Name
1	HDD LED+	2	Power LED+
3	HDD LED-	4	Power LED-
5	Reset-	6	Power Button+
7	Reset+	8	Power Button-
9	N/C	10	—

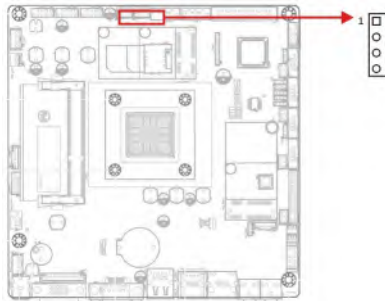
2.5.7 Parallel Port Connector (J_LPT1)



Pin	Signal Name	Pin	Signal Name
1	STROBE#	2	AUTOFEED#
3	DATA0	4	ERROR#
5	DATA1	6	INIT#
7	DATA2	8	SLCTIN#
9	DATA3	10	Ground
11	DATA4	12	Ground
13	DATA5	14	Ground
15	DATA6	16	Ground

Pin	Signal Name	Pin	Signal Name
17	DATA7	18	Ground
19	ACKNLG#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

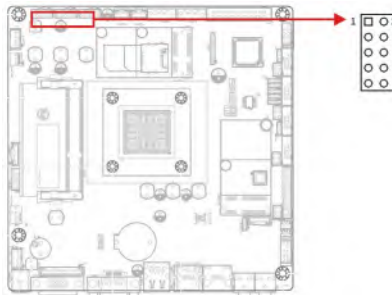
2.5.8 SATA Power Connectors (P_SATA1, P_SATA2)



Pin	Signal Name	Pin	Signal Name
1	+12V	3	Ground
2	Ground	4	+5V

* P_SATA1 and P_SATA2 have the same pin assignment.

2.5.9 USB 2.0 Connectors (F_USB1 ~ F_USB3)

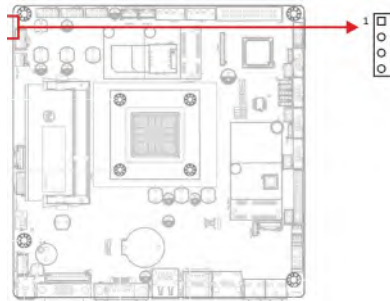


Pin	F_USB1	F_USB2	F_USB3
1	+5V	+5V	+5V
2	+5V	+5V	+5V
3	USB1-	USB3- *	USB5-

Pin	F_USB1	F_USB2	F_USB3
4	USB2-	USB4-	USB6-
5	USB1+	USB3+ *	USB5+
6	USB2+	USB4+	USB6+
7	Ground	Ground	Ground
8	Ground	Ground	Ground
9	—	—	—
10	Ground	Ground	Ground

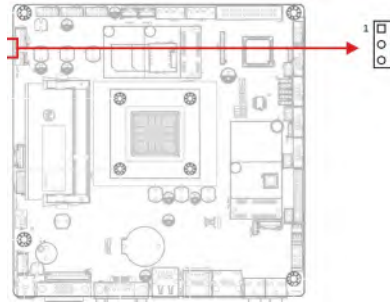
* * USB3 on F_USB2 is available only when Mini PCI-E1 is not used for a 4G/3G module.

2.5.10 DC 12V/5V Power Output (DC_OUT1)



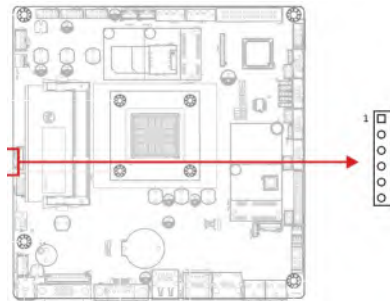
Pin	Signal Name	Pin	Signal Name
1	+12V	3	Ground
2	Ground	4	+5V

2.5.11 System Fan Connector (SYS_FAN1)



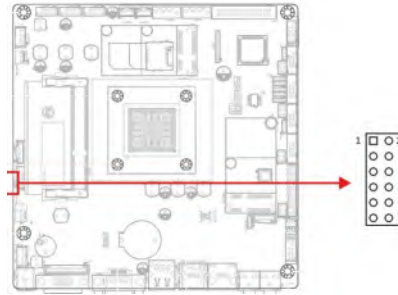
Pin	Signal Name	Pin	Signal Name
1	Ground	3	Fan Speed Detection
2	+12V		

2.5.12 Keyboard & Mouse Connector (J_KBMS1)



Pin	Signal Name	Pin	Signal Name
1	KB_CLK	4	Ground
2	KB_DATA	5	+5V
3	MS_CLK	6	MS_DATA

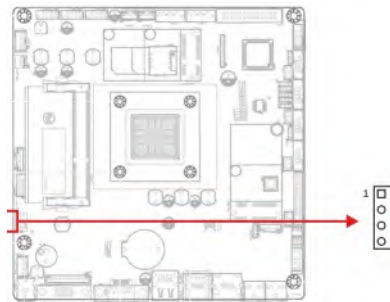
2.5.13 Digital I/O Connector (J_GPIO1)



Pin	Signal Name	Pin	Signal Name
1	GPI16 (0xA07 bit 6)	2	GPI17 (0xA07 bit 7)
3	GPIO (0xA06 bit 0)	4	GPI1 (0xA06 bit 1)
5	Ground	6	GPO2 (0xA06 bit 2)
7	GPO3 (0xA06 bit 3)	8	GPO4 (0xA06 bit 4)
9	GPO10 (0xA07 bit 0)	10	+3.3V *
		12	N/C

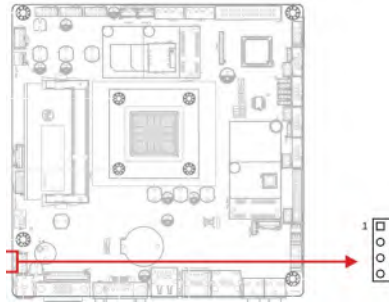
* All GPIO default to high level. GPIO signaling is 3.3V by default (powered from pin 10); 5V is available if specified at order (resistor selectable).

2.5.14 CPU Fan Connector (CPU_FAN1)



Pin	Signal Name	Pin	Signal Name
1	Ground	3	Fan Speed Detection
2	+12V	4	Fan Speed Control

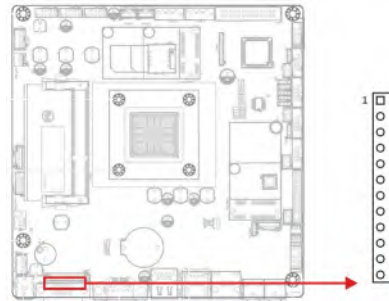
2.5.15 DC 12V Power Input Connector (DC_IN1)



Pin	Signal Name	Pin	Signal Name
1	+12V	3	Ground
2	+12V	4	Ground

* Power the board either from DC_IN1 or from the rear DC jack (J_DCIN1), not both.

2.5.16 VGA Connector (J_VGA1)



Pin	Signal Name	Pin	Signal Name
1	CRT_Detect#	7	Green
2	VSYNC	8	Ground
3	HSYNC	9	Blue
4	Ground	10	Ground
5	Red	11	DDC Data
6	Ground	12	DDC Clock

* The rear VGA (DB15) connector and J_VGA1 share the same signals and cannot be used at the same time.

2.5.17 GbE LAN Port (RJ45_1)

Pin	Signal Name	Pin	Signal Name
1	MDI0+	5	MDI2-
2	MDI0-	6	MDI1-
3	MDI1+	7	MDI3+
4	MDI2+	8	MDI3-

LED	Status	Description
Active (A)	Blinking green	Data activity
	Off	No activity
Speed (B)	Yellow	1000 Mbps
	Green	100 Mbps
	Off	10 Mbps

Drivers installation instruction

Since the PnP exist mother operating system have access to online driver distribution for the latest or stable version. If you need a specific driver you could write to the support to what available or visit our website on your product page or support at www.ibt.ca.

BIOS setting documentation

Available for Intel® Celeron® Processor J Series also known as “Intel Bay Trail” in a separated document. Visit our website on your product page or support at www.ibt.ca.