

**ATX motherboard supports 22nm LGA 1150 4th Generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® H81, DDR3, VGA/DVI-D/iDP, Dual Intel® PCIe GbE, USB3.0, SATA 6Gb/s, HD Audio and RoHS**

# **IMBA-H810**

## **Quick Installation Guide** **Version 1.0**

March 1, 2023

### **Package List**

IMBA-H810 package includes the following items:

- 1 x IMBA-H810-R10 Single board computer
- 1 x I/O shielding
- 2 x SATA cable
- 1 x QIG



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## Specifications

- CPU:  
LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® processor supported
- Chipset: Intel® H81
- Memory:  
Two 240-pin 1333/1600 MHz dual-channel DDR3 SDRAM unbuffered DIMM supported (system max. 16GB)
- BIOS: UEFI BIOS
- Graphics Engine:  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- Display Output:  
VGA (up to 1920x1200 @ 60 Hz)  
DVI-D  
iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160 @60 Hz)
- Ethernet:  
LAN1: Intel® I217-LM  
LAN2: Intel® I211-AT PCIe Controller
- External I/O Interface:  
1 x PS/2  
2 x RS-232  
2 x USB 2.0  
2 x USB 3.0
- Internal I/O Interface:  
1 x IR (1x5 pin)  
1 x KB/MS (1x6 pin)  
1 x LPT (2x13 pin)  
1 x mSATA (share with SATA4)  
3 x RS-232 (2x5 pin, P=2.54)  
1 x RS-422/485 (1x4 pin, P=2.0)

- 1 x USB 2.0 (180 degree type A)
- 4 x USB 2.0 (2x4 pin, P=2.54)
- 2 x SATA 3Gb/s (SATA3, SATA4) (Red)
- 2 x SATA 6Gb/s (SATA1, SATA2) (H81 supports AHCI, no RAID) (Blue)
- Audio:
  - Support 5.1 channel HD audio by ALC662 (2x5 pin)
- Front Panel:
  - 1 x Front panel (2x7 pin, Power LED, HDD LED, Speaker, Power Button, Reset Button)
- LEN LED: 2 x LAN LED (1x2 pin)
- TPM: 1 x TPM (2x10 pin)
- SMBus: 1 x SMBus (1x4 pin)
- I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- Expansion:
  - 1 x PCIe x16
  - 2 x PCIe x1
  - 4 x PCI
  - 1 x PCIe Mini
- Watchdog Timer:
  - Software programmable support 1~255 sec. system reset
- Digital I/O: 8-bit digital I/O (2x5 pin)
- Fan Connector:
  - 1 x CPU smart fan (1x 4 pin)
  - 2 x System smart fan (2x 3 pin)
- Chassis Open: 1 x 2 pin
- Power supply: AT/ATX
- Power Consumption:
  - 3.3V@0.83A, 5V@2.2A, 12V@3.88A, 5VSB@0.3A
  - (Intel® Core™ i7-4770K 3.90GHz CPU with 8GB (2x4 GB) 1333MHz DDR3 memory)
- Operation Temperature: -20°C ~ 60°C
- Operation Humidity: 5% ~ 95%, non-condensing

- Dimensions: 244mm x 305mm

## Ordering Information

- **IMBA-H810:**  
ATX motherboard supports 22nm LGA 1150 4th Gen. Intel® Core™ i7/i5/i3, Pentium® and Celeron® H81, DDR3, VGA/DVI-D/iDP, Dual Intel® PCIe GbE, USB3.0, SATA 6Gb/s, HD Audio and RoHS
- **19800-000049-RS:** LPT cable
- **19800-025700-100-RS:** PS/2 KB/MS Y-cable with bracket, 220mm
- **19800-010500-200-RS:** Dual-port USB 3.2 Gen 1 cable with bracket, 450mm
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P
- **19800-020100-100-RS:** Dual RS-232 cable, 230mm, p=2.54
- **32205-003800-200-RS:** RS-422/485 cable, 200mm, p=2.0
- **DP-LVDS-R10:**  
DisplayPort to 24-bit dual channel LVDS converter board  
(for IEI IDP connector)
- **DP-HDMI-R10:**  
DisplayPort to HDMI converter board (for IEI IDP connector)
- **DP-DVI-R10:**  
DisplayPort to DVI-D converter board (for IEI IDP connector)
- **DP-DP-R10:**  
DisplayPort to DisplayPort converter board (for IEI IDP connector)
- **DP-VGA-R10:**  
DisplayPort to VGA converter board (for IEI IDP connector)
- **CF-1156A-RS-R11:**  
High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
- **CF-1156E-R11:**  
High performance LGA1155/LGA1156 cooler kit, 95W
- **TPM-IN01-R11:** 20-Pin Infineon TPM module, software management tool, firmware V3.17

## Jumpers setting and connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX mode select switch
J_CMOS1	Clear CMOS button
PCIEX16 Power	PCIEX16 Power Setting
USB SW1, USB SW2	USB power setting
J_FLASH1	Flash Descriptor Security Override
MSATA_SW1	MSATA Selection
F_PANEL1	PWR & RST Buttons and indicators
VIDEO1	VGA 15-pin Female Connector
VIDEO1	DVI-D Connector
LAN1_USB1	RJ-45 LAN and USB 3.0 Connector
LAN2_USB2	RJ-45 LAN and USB 2.0 Connector
K/M_USB1	Keyboard & Mouse And USB 2.0 Connector
KBMS1	6 Pin-header Keyboard & Mouse Connector
USB1, USB2	Internal USB 2.0 Connectors
COM1, COM2	External Serial Port DB-9 Connector
COM3, COM5, COM6	Internal Serial Port Connectors
COM4	Internal Serial Port RS-422/RS-485 Connector
AUDIO_CV1	HD Audio Connector
FRONT_PANEL1	Front Panel Audio Connector
SATA1, SATA2	Serial ATA 3.0 Connectors
SATA3, SATA4	Serial ATA 2.0 Connectors
CN2	Mini Card Connector (M-SATA Only)
CPU_FAN1	CPU Fan Connector
SYS_FAN1, SYS_FAN2	System Fan Connectors
DIO1	Digital I/O Connector
ATX1	24-Pin ATX Power Source Connector
CPU12V1	+12V Power Source Connector
ATXPWR1	Additional Power Source Connector
TPM1	TPM Connector
CN1	SMBUS Connector
CN5	I2C Connector
LPT1	Internal Parallel Port Connector

LED_LAN1	LAN1 LINK LED Connector
LED_LAN2	LAN2 LINK LED Connector
CHASSIS1	Chassis Status Connector
JSPI1	Flash SPI ROM
JSPI2	Flash EC ROM
CN3	EC Debug Port Connector
DP1	Display Port Connector

#### J\_ATX\_AT1: AT/ATX mode select switch

PIN NO.	DESCRIPTION
Short 1 - 2	ATX Mode (default)
Short 2 - 3	AT Mode

#### J\_CMOS1: Clear CMOS button

PIN NO.	DESCRIPTION
NC (default)	Keep CMOS Setup (Normal Operation)
Press button	Clear CMOS Setup

#### PCIEX16 Power: PCIEX16 channel mode setting

PCIEX16	DESCRIPTION
1 x16 PCIe (default)	(Normal Operation)

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Chipset

Auto Power Button Status [Disabled(ATX)]

Restore AC Power Loss [Last State] -----

> PCI Express Configuration

> PCI Azalia Configuration

Power Saving Function(ERP) [Disabled]

PCIEX16 Power [1 x16 PCIe]

USB SW1 [+5V DUAL]

USB SW2 [+5V DUAL]

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

USB SW1, USB SW2: USB power setting	
USB SW1	DESCRIPTION
+5V DUAL	Normal Operation (default)
+5V	

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
Auto Power Button Status	[Disabled(ATX)]	
Restore AC Power Loss	[Last State]	-----
> PCI Express Configuration		
> PCI Azalia Configuration		
Power Saving Function(ERP)	[Disabled]	
PCIEX16 Power	[1 x16 PCIE]	
USB SW1	[+5V DUAL]	
USB SW2	[+5V DUAL]	
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J_FLASH1: Flash descriptor security override	
PIN NO.	DESCRIPTION
Short 1 - 2	Disabled (default)
Short 2 - 3	Enabled

MSATA_SW1: MSATA Selection	
PIN NO.	DESCRIPTION
OFF	Auto detect M-SATA (default)
Short 1 - 2	M-SATA Enable

F_PANEL1: PWR & RST buttons and indicators					
	PIN	DESCRIPTION	PIN	DESCRIPTION	
PWR LED	1	+5V	2	BEEP_PWR	SPKR
	3	NC	4	IPMI ID_LED+	IPMI LED
	5	GND	6	IPMI ID_LED-	
PWR BTN	7	PWRBTN_SW#	8	PC_BEEP	SPKR
	9	GND	10	NC	
HDD LED	11	+5V	12	EXTRST-	RESET
	13	SATA_LED#	14	GND	

<b>VIDEO1 : 15-pin Female Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
V1	RED	V2	GREEN
V3	BLUE	V4	NC
V5	GND	V6	GND
V7	GND	V8	GND
V9	VCC	V10	GND
V11	NC	V12	DDCDA
V13	HSYNC	V14	VSYNC
V15	DDCCLK		

<b>VIDEO1: DVI-I(Dual Link)+CRT</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
C1	RED	10	DVI_DATA1
C2	GREEN	11	GND
C3	BLUE	12	N/C
C4	HS	13	N/C
C5	GND	14	+5V
C6	NC	15	Hot Plug Detect
1	DVI_DATA2#	16	HPDET
2	DVI_DATA2	17	DVI_DATA0#
3	GND	18	DVI_DATA0
4	N/C	19	GND
5	N/C	20	N/C
6	DDC CLK	21	N/C
7	DDC DATA	22	N/C
8	VS	23	DVI_CLK
9	DVI_DATA1#	24	DVI_CLK#



<b>LAN1_USB1: Ethernet and USB 3.0 connectors</b>			
<b>USB1: External USB 3.0 connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
<b>LAN1: RJ-45 LAN connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

<b>LAN2_USB2: Ethernet and USB 2.0 connectors</b>			
<b>USB2: External USB 2.0 connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	5	VCC
2	USB_DATA-	6	USB_DATA-
3	USB_DATA+	7	USB_DATA+
4	GND	8	GND
<b>LAN2: RJ-45 LAN connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
P2	TRD2P0	P6	TRD2P2
P3	TRD2N0	P7	TRD2N2
P4	TRD2P1	P8	TRD2P3
P5.	TRD2N1	P9	TRD2N3

<b>KBMS1: PS/2 Keyboard and mouse connector</b>			
<b>KBMS1 (Purple): 6-pin Mini-DIN keyboard connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	Keyboard Data	2	NC
3	GND	4	VCC
5	Keyboard Clock	6	NC
<b>KBMS1 (Green): 6-pin Mini-DIN Mouse Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
7	Mouse Data	8	NC
9	GND	10	VCC
11	Mouse Clock	12	NC

<b>KB_MS1: 6-pin header Keyboard/Mouse Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	2	Mouse Data
3	Mouse Clock	4	Keyboard Data
5	Keyboard Clock	6	GND

<b>USB1, USB2: Internal USB 2.0 connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

<b>COM1: External RS-232 serial port connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND1	6	DSR1
7	RTS1	8	CTS1
9	RI1		

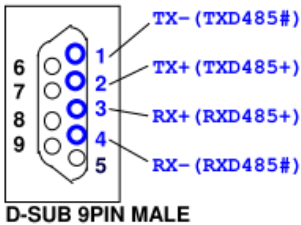
<b>COM2: External RS-232 serial port connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND2	6	DSR2
7	RTS2	8	CTS2
9	RI2		

<b>COM3, COM5, COM6: Internal RS-232 serial port connectors</b>				
<b>Function</b>	<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
COM3	11	DCD	12	DSR
	13	RXD	14	RST
	15	TXD	16	CTS
	17	DTR	18	RI
	19	GND	20	GND
COM5	21	DCD	22	DSR
	23	RXD	24	RST
	25	TXD	26	CTS
	27	DTR	28	RI
	29	GND	30	GND
COM6	31	DCD	32	DSR
	33	RXD	34	RST
	35	TXD	36	CTS
	37	DTR	38	RI
	39	GND	40	GND

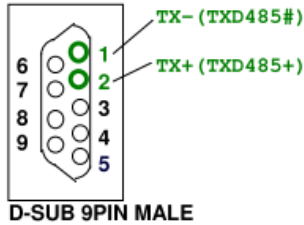
<b>AUDIO_CV1 : Audio Line-In/Out MIC Connector</b>	
<b>PIN NO.</b>	<b>DESCRIPTION</b>
Line_In (Blue)	CD/DVD or other audio source input port
Line_Out (Green)	Connect this port to headphone or speaker
Microphone (Pink)	Connect this port to microphone

COM4: RS-422/485 serial port connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RXD485#	2	RXD485+
3	TXD485+	4	TXD485#

RS422 Pin define



RS485 Pin define



FRONT-PANEL1 : Audio Source Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MIC2-L	2	GND
3	MIC2-R	4	Presence#
5	LINE2-R	6	MIC2-JD
7	FRONT-IO	8	NC
9	LINE2-L	10	LINE2-JD

SATA1, SATA2, SATA3, SATA4: Serial ATA 3.0 connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA RX+
7	GND	8	N/C

SATA3, SATA4: Serial ATA 2.0 connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA RX+
7	GND	8	N/C

<b>CN2: M-SATA card connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	PCIE_WAKE#	2	+3.3V
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	MSATA_CLK#	12	N/C
13	MSATA_CLK	14	N/C
15	GND	16	N/C
17	PLTRST_N	18	GND
19	N/C	20	+3.3V
21	GND	22	PLTRST_N
23	SATA_RX+	24	+3.3V
25	SATA_RX-	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	SATA_TX-	32	SMB_DATA
33	SATA_TX+	34	GND
35	GND	36	USB_DATA-
37	GND	38	USB_DATA+
39	+3.3V	40	GND
41	+3.3V	42	N/C
43	+3.3V	44	N/C
45	CLINK_CLK	46	N/C
47	CLINK_DATA	48	1.5V
49	CLINK_RST#	50	GND
51	MSATA_DET	52	+3.3V

<b>CPU_FAN1: CPU fan connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+12V
3	FANIO	4	PWM

<b>SYS_FAN1, SYS_FAN2: System fan connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	FANIO	2	+12V (PWM)
3	GND		

<b>DIO1 : Digital Input / Output Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

<b>ATX1: 24-pin ATX power source connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

<b>CPU12V1: +12V power source connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	GND
3	+12V	4	+12V

<b>ATXPWR1: Additional Power Source Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+12V	2	GND
3	GND	4	VCC

<b>TPM1: Trusted Platform Module Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LCLK	2	GND
3	LFRAME#	4	KEY
5	LRERST#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	GLKRUN#
19	LPCPD#	20	LDRQ#

<b>CN1: SMBUS connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	SMB_DATA
3	SMB_CLK	4	+5V

<b>CN5: I2C connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	PCH_GP38
3	PCH_GP39	4	+5V

<b>LPT1: Parallel Port Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	STROBE#	14	AUTO FORM FEED #
2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE#	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	PRINTER SELECT		

<b>LED_LAN1: LAN Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	LAN1_LED_LNK#_ACT

<b>LED_LAN2: LAN Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	LAN2_LED_LNK#_ACT

<b>CHASSIS1: Chassis Status Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3VSB	2	CHASSIS OPEN

<b>JSPI1: Flash SPI ROM connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	GND	6	SPI_CLK
7	SPI_SI	8	NC

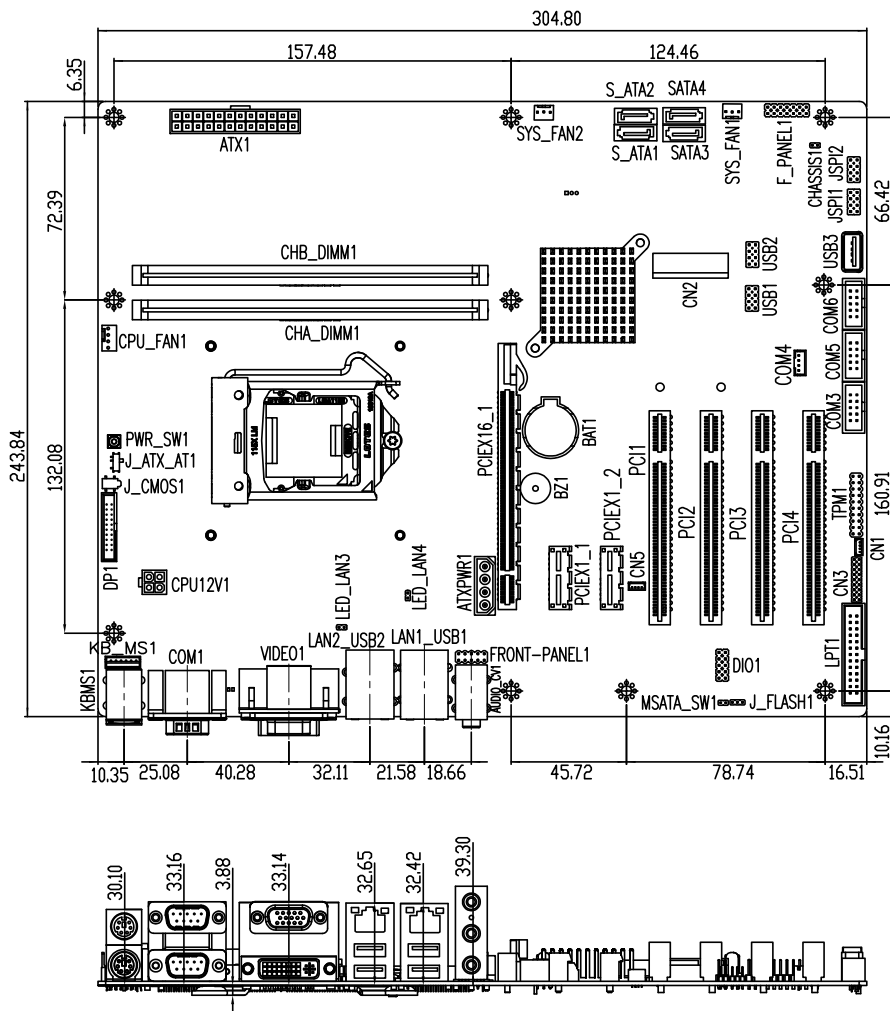


<b>JSPI2: Flash EC ROM connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	2	SPI_CS#
3	SPI_SO	4	NC
5	GND	6	SPI_CLK
7	SPI_SI	8	NC

<b>CN3: EC debug connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PD0	4	NC
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND
11	EC_EPP_PD4	12	NC
13	EC_EPP_PD5	14	EC_EPP_BUSY
15	EC_EPP_PD6	16	EC_EPP_KSI5
17	EC_EPP_PD7	18	EC_EPP_KSI4

<b>DP1: DisplayPort connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	11	AUXP
2	LANE1N	12	AUXN
3	LANE1P	13	GND
4	GND	14	LANE2P
5	LANE3N	15	LANE2N
6	LANE3P	16	GND
7	GND	17	LANE0P
8	AUX_CTRL_DET_D	18	LANE0N
9	GND	19	+3.3V
10	HPD		

# Board Layout: Jumper and Connector Locations



(Unit: mm)