

**microATX Motherboard supports 14nmLGA1151 Intel® Core™ i7/i5/i3,  
Pentium® or Celeron® processor supported, DDR4,  
Dual Independent Displays VGA/ DVI-I/LVDS,  
Dual GbE LAN, USB 3.0, SATA 6Gb/s,  
HD Audio and RoHS**

# **IMB-H110**

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

Sep 26, 2016.

### **Package List**

IMB-H110 package includes the following items:

- 1 x IMB-H110 motherboard
- 1 x I/O shielding
- 2 x SATA cable
- 1 x One Key Recovery CD
- 1 x QIG
- 1 x Utility CD



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## Specifications

- CPU:  
LGA1151 socket supports Intel® skylake-S
- Chipset: Intel® skylake H110
- Memory:  
Two 260-pin 2133MHz Dual-Channel DDR4 SDRAM  
Unbuffered DIMM supported up to 64GB
- BIOS: UEFI BIOS
- Graphic Engine:  
Intel® HD Graphics Gen 9 Engines with Low power 16  
execution unit, supports DX2015, OpenGL 5.X and  
OpenCL2.x, ES 2.0
- Display Output:  
Dual display  
VGA (Chrontel 7517)  
DVI-I (ASM1442, Chrontel 7517)  
LVDS (Chrontel 7511)  
iDP
- Ethernet:  
LAN1: RTL 8111GN controller  
LAN2: RTL 8111GN controller
- External I/O Interface:  
4 x USB 3.0  
6 x USB 2.0
- Internal I/O Interface:  
1 x KB/MS (1x6 pin)  
1 x LPT (2 x 13pin, P=2.54)  
4 x SATA 6Gb/s  
2 x RS-232/422/485 (1x4 pin, P=2.0, colay with COM4)  
2 x USB2.0 (2x4 pin, P=2.0)  
10 x RS-232 (2x5 pin, P=2.0)
- LPC to COM: F81866

- SMBus: 1 x SMBus (1x4 pin)
- TPM: 1 x TPM (2x10 pin)
- Audio:
  - Realtek ALC662 HD Audio Codec support 5.1 Channel, (2 Audio Jack colay 3)
  - Front Audio (2x 5 pin) (Line-in, Line-out, Mic)
- Front Audio: 2 x 5-pin pin header
- 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)
- I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- Expansion:
  - 1 x PCIe x16 slot (Gen3)
  - 1 x PCIe x1 slot (Gen2)
  - 2 x PCI slot
  - 1 x Full-size PCIe Mini card slot
- 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 (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- Power supply: ATX/AT power supply
- Power Consumption:
  - 3.3V@0.93A, 5V@2.99A, 12V@6.88A, 5VSB@0.02A
  - (Intel® Core™ i7 6700K 4.0GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)
- Operation Temperature: -20°C ~ 60°C
- Storage Temperature: -30°C ~ 70°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Weight: GW:1200g, NW: 700g

## Ordering Information

- **IMB-H110:**  
microATX motherboard supports 14nm LGA1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported, DDR4, Dual independent displays VGA/DVI-I/LVDS, Dual GbE LAN, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
- **19800-000049-RS:** LPT cable
- **19800-000051-RS:** RS-232 cable, 230mm (P=2.54)
- **19800-000075-RS:** PS/2 KB/MS Y-cable with bracket, 220mm
- **19800-010500-100-RS:** USB 3.0 cable, 457mm with bracket
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P
- **32205-001203-100-RS:** RS-232 cable, 40-pin to four DB-9
- **32205-003800-100-RS:** RS-422/485 cable, 200mm
- **CF-1156A-RS-R11:** High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
- **CF-1156E-R11:**  
High performance LGA1155/LGA1156 cooler kit, 95W
- **DP-DP-R10:**  
DisplayPort to DisplayPort converter board (For iEi IDP connector)
- **DP-DVI-R10:**  
DisplayPort to DVI-D converter board (For iEi IDP connector)
- **DP-HDMI-R10:**  
DisplayPort to HDMI converter board (For iEi IDP connector)
- **DP-LVDS-R10:**  
DisplayPort to 24 bit dual channel LVDS converter board (For iEi IDP connector)
- **DP-VGA-R10:**  
DisplayPort to VGA converter board (For iEi IDP connector)
- **TPM-IN01-R11:** 20-Pin Infineon TPM module, software management tool, firmware V3.17

## Jumpers setting and connectors

LABEL	FUNCTION
J_PW1	Panel Power setting
SW1	LVDS Panel Resolution Selection
SW_DP1	LVDS/IDP Display Switch
J_DVI_CRT1	DVI-I Display Switch
SW_A/T1	AT Power Auto BTN Switch
J_CMOS1	Clear CMOS Switch
ATX1	Power input Connector
PW2	Power input Connector
PW1	Power input Connector
CPU_FAN1	CPU fan connector
SYS_FAN1	System fan connector
KB_MS1	6-pin header Keyboard/Mouse Connector
J_SMB1	SMBUS Connector
J_I2C1	I2C Connector
J_CS1	Chassie Pin Header
INV1	Panel inverter
LVDS1	LVDS Connector
DP1	IDP Connector
J_AUDIO1	Audio pin Header
COM1/COM2/COM3/COM4 /COM7/COM8/COM9/COM 10/COM11/COM12	RS232
COM5/COM6	RS232/422/485
LPT1	LPT pin Header
J_USB1	Dual USB 2.0
F_PANEL1	FRONT PANEL & Power Button
TPM1	TPM
DIO1	Digital IO
J_SPI1	BIOS Programmer Connector
SATA1~4	SATA HDD Connector
J_EC1	EC Programmer Connector
EC_DBG1	For EC Debug card (FPC 20Pin)

DVII1	External DVI-I and VGA Connector
H_USB1	External Four USB2.0 Connector
USB1	External Dual USB2.0 Connector
LAN1_USB1	External GIGA LAN and USB3.0 Connector
LAN2_USB1	External GIGA LAN and USB3.0 Connector
AUDIO1	External Audio Connector
CHA_DIMM1/CHB_DIMM1	DDR4 DIMM Slot
PCIE16_1	PCIEx16 Slot
PCIE1	PCIEx1 Slot
PCI1/PCI2	PCI Slot
MINI-PCIE1	Support USB and PCIE Interface

#### **J\_PW1: Panel Power setting**

<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short 1 - 2	Keep VCC3V Panel Setup
Short 2 - 3	Keep VCC5V Panel Setup

#### **SW\_DP1: LVDS/IDP Display Switch**

<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short A-B	LVDS Display
Short B-C	IDP Display

#### **J\_DVI\_CRT1: DVI-I Display Switch**

<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short A-B	DVI Display
Short B-C	DVI-I Display

#### **SW\_A/T1: AT Power Auto BTN Switch**

<b>PIN NO.</b>	<b>DESCRIPTION</b>
Short A - B	ATX Mode
Short B - C	AT Mode

#### **J\_CMOS1: Clear CMOS Setup**

<b>PIN NO.</b>	<b>DESCRIPTION</b>
Open	Normal Operation (Default)
Push	Clear CMOS Setup

<b>SW1: LVDS Panel Resolution Selection</b>	
* ON=0, OFF=1; Single=S, Dual=D	
<b>4-3-2-1</b>	<b>DESCRIPTION</b>
0000	800x600 18bit S (default)
0001	1024x768 18bit S
0010	1024x768 24bit S
0011	1280x768 18bit S
0100	1280x800 18bit S
0101	1280x960 18bit S
0110	1280x1024 24bit D
0111	1366x768 18bit S
1000	1366x768 24bit S
1001	1440x960 24bit D
1010	1400x1050 24bit D
1011	1600x900 24bit D
1100	1680x1050 24bit D
1101	1600x1200 24bit D
1110	1920x1080 24bit D
1111	1920x1200 24bit D

<b>ATX1: Power input Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC3.3V	13	VCC3.3V
2	VCC3.3V	14	-VCC12V
3	GND	15	GND
4	VCC5V	16	PS-ON
5	GND	17	GND
6	VCC5V	18	GND
7	GND	19	GND
8	PWR-OK	20	NC
9	5VSB	21	VCC5V
10	VCC12V	22	VCC5V
11	VCC12V	23	VCC5V
12	VCC3.3V	24	GND

<b>PW2: Power input Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	GND
3	VCC12V	4	VCC12V

<b>PW1: Power input Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC12V	2	GND
3	GND	4	VCC5V

<b>CPU_FAN1: CPU fan connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC12V
3	FANIO	4	PWM

<b>SYS_FAN1: System fan connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC12V
3	FANIO	4	PWM

<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	VCC5V	2	MSDATA
3	MSCLK	4	KBDATA
5	KBCLOCK	6	GND

<b>J_SMB1: 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	VCC5V

<b>J_I2C1: I2C Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	I2C_DATA
3	I2C_CLK	4	VCC5V



<b>J_CS1: Chassie Pin Header</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC3V	2	CHASSIE

<b>INV1: Panel inverter</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LCD_ADJ	2	GND
3	VCC12V	4	GND
5	BL_ON/OFF		

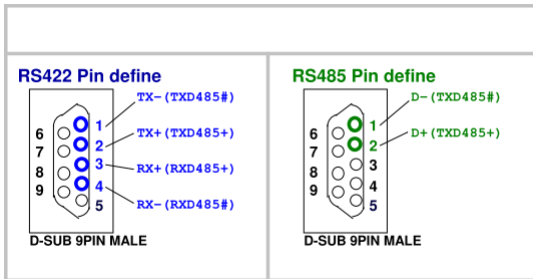
<b>LVDS1: LVDS Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	GND
3	A0P	4	A0M
5	A1P	6	A1M
7	A2P	8	A2M
9	CLK1P	10	CLK1M
11	A3P	12	A3M
13	GND	14	GND
15	A4P	16	A4M
17	A5P	18	A5M
19	A6P	20	A6M
21	CLK2P	22	CLK2,
23	A7P	24	A7M
25	GND	26	GND
27	LCD_VCC	28	LCD_VCC
29	LCD_VCC	30	LCD_VCC

<b>DP1: IDP Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	DDI1_HPD#	2	DPD_AUX_CTRL_P2
3	GND	4	DPD_AUX_CTRL_N2
5	AUX_CTRL_DET_D	6	GND
7	GND	8	DPD_OB_LANE2_P_C
9	DPD_OB_LANE3_P_C	10	DPD_OB_LANE2_N_C
11	DPD_OB_LANE3_N_C	12	GND
13	GND	14	DPD_OB_LANE0_P_C
15	DPD_OB_LANE1_P_C	16	DPD_OB_LANE0_N_C
17	DPD_OB_LANE1_N_C	18	VCC3.3V
19	VCC5V	20	NC

<b>J_AUDIO1: Audio pin Header</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	MICL	2	GND
3	MICR	4	Presence
5	LINER	6	MIC-JD
7	Sense	8	NC
9	LINEL	10	LINE-JD

<b>COM1/COM2/COM3/COM4/COM7/COM8/COM9/COM10/COM11/ COM12: RS232</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	GND

COM5/COM6: RS232/422/485			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD/TX-/D-	2	DSR
3	RX/TX+/D+	4	RTS
5	TX/RT+	6	CTS
7	DTR/RX-	8	RI
9	GND	10	GND



LPT1 : LPT pin Header			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STB	2	AFD
3	D0	4	ERR
5	D1	6	INIT
7	D2	8	SLIN
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

<b>J_USB1: Dual USB 2.0</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC5V	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC5V

<b>F_PANEL1: FRONT PANEL &amp; Power Button</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	PWR_LED+	2	SPKR+
3	NC	4	NC
5	PWR_LED-	6	NC
7	PWR_BTN+	8	SPKR-
9	PWR_BTN-	10	NC
11	HDD_LED+	12	RESET+
13	HDD_LED-	14	RESET-

<b>TPM1: TPM</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	CLOCK	2	GND
3	FRAME	4	KEY/NC
5	RESET	6	VCC5V
7	LAD3	8	LAD2
9	VCC3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	DRQ

<b>DIO1: Digital IO</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC5V
3	DOOUT3	4	DOOUT2
5	DOOUT1	6	DOOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

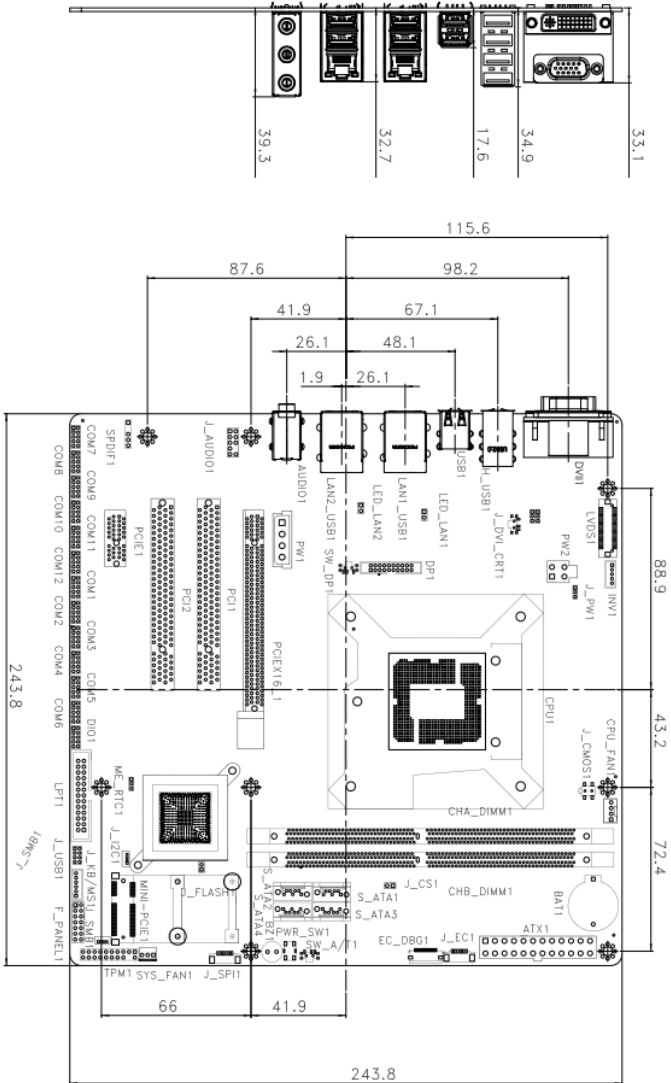
<b>J_SPI1: BIOS Programmer Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC1.8V	2	CS
3	MISO	4	CLK
5	MOSI	6	GND

<b>SATA1~4: SATA HDD Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

<b>J_EC1: EC Programmer Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC3.3V	2	CS
3	MISO	4	CLK
5	MOSI	6	GND

<b>EC_DBG1: For EC Debug card (FPC 20Pin)</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	KSI0	2	KSO0
3	KSO1	4	KSO2
5	KSO3	6	KSO4
7	KSO5	8	KSO6
9	KSO7	10	KSO8
11	KSO9	12	KSO10
13	KSO12	14	KSI1
15	KSO11	16	KSI2
17	KSI3	18	GND
19	GND	20	GND

# Board Layout: Jumper and Connector Locations



(Unit: mm)