

# MITX-BYT60 Motherboard

## User Manual V5.0

## Chapter 1 Product Introduction

### 1.1 Parameters

**Processor:** Intel Bay Trail-D Celeron J1900(2.0GHz, quad-core, TDP10W)

Intel Bay Trail-D Celeron J1800(2.41GHz, dual-core, TDP10W)

Intel Bay Trail-D Atom-E3845(1.91GHz, quad-core, TDP10W)

**System memory:** one single channel DDR3L 1333MHz slot up to 8GB

**Display:** Integrated Intel HD Graphics, supports HDMI and VGA, dual channel 24-bit LVDS (2-lane eDP,optional), supports dual display.

**Storage:** 2 x SATA2.0, 1 x mSATA slot(SATA2 and mSATA are alternatives), 1 x eMMC (optional on V5.0 motherboard).

**USB:** 8 x USB at most (one port supports USB3.0, another two ports share physical position with LAN, which are alternatives).

**Ethernet:** 2 x RTL8111F LAN (LAN2 and 2 x USB2.0 are alternatives).

**Audio:** ALC662, supports Speaker-out, MIC-in, SPDIF and amplifier.

**I/O:** IT8786E supports 6 x COM (COM6 can be set as RS232 or RS485) and 1 x LPT(can be set as 16 x GPIO) , IT8772E only supports COM1.

**Other I/O interfaces:** 1 x Mini-PCIe ( supports WIFI, support 3G/4G with SIM card slot), 8 x GPIO, PS/2 KB /MS (mSATA slot can be configured as mini-PCIe slot, supports a maximum of two mini-PCIE devices).

**Dimension:** 170mm x 170mm.

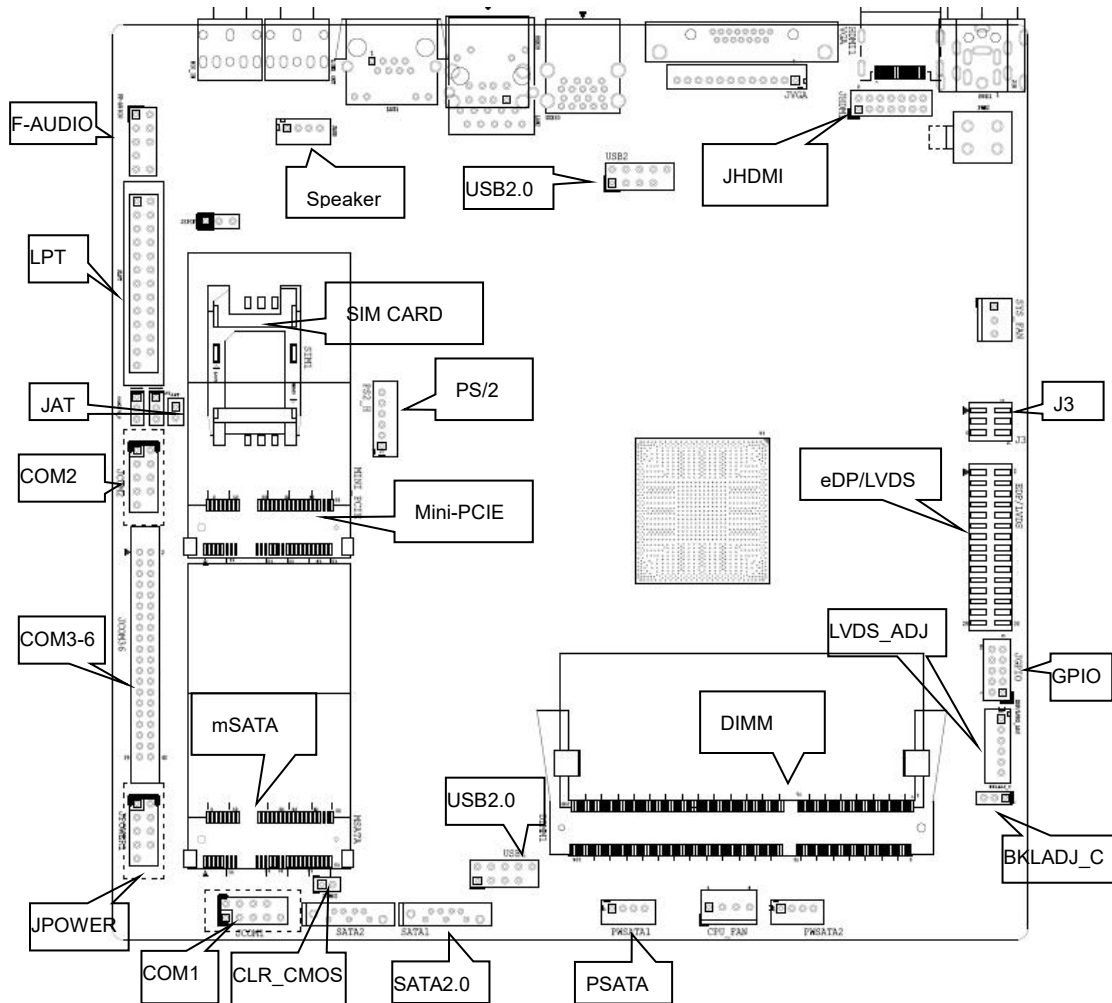
**Power:** DC-IN adapter (12V).

**Temperature:** -40°C~60°C.

 Do not power this board with adapters or power of other voltage.

## Chapter 2 Hardware

### 2.1 Graphic description



**⚠** Please read this manual carefully before you connect an external connector, so as to avoid damage to the board.

## 2.2 Jumper Function Setting

Set jumpers according to your needs before installing hardware.

Tips about how to identify the first header of jumpers and interfaces:

1. Observe the mark beside plugs, the first header is usually marked by “1” or bold line or triangular symbol;
2. The first header is the square pad of pads on the back.

## 2.3 System Memory

There is a DDR3L-1333MHZ SO-DIMM slot on the board up to memory of 8GB.

## 2.4 Internal Display Interfaces (JHDMI, JVGA)

JHDMI and JVGA headers (optional). These headers and their corresponding standard display interfaces (VGA and HDMI) cannot be connected to display simultaneously.

### JHDMI:

Signal	Pin		Signal
HDMI_DATA2_P	1	2	HDMI_DATA2_
HDMI_DATA1_P	3	4	HDMI_DATA1_
HDMI_DATA0_P	5	6	HDMI_DATA0_
HDMI_CLK_P	7	8	HDMI_CLK_N
HDMI_SCL	9	10	HDMI_SDA
VGA_DATA_5V	11	12	GND
HDMI_DETECT	13	14	GND

### JVGA:

Pin	Signal
1	CRT_DDC_DATA
2	CRT_DDC_CLK
3	GND
4	VGA_B_R
5	GND
6	VGA_G_R
7	GND

8	VGA_R_R
9	GND
10	CRT_HSYNC1
11	CRT_VSYNC1
12	(NC)

## 2.5 LVDS

There is a dual channel 24bit LVDS. The VCC power of LVDS screen cable is controlled by J2, and LVDS\_ADJ is controlled by the backlight power.

### LVDS data header(Silk-print: EDP/LVDS):

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	GND
GND	5	6	GND
A_DATA0_DN	7	8	A_DATA0_DP
A_DATA1_DN	9	10	A_DATA1_DP
A_DATA2_DN	11	12	A_DATA2_DP
GND	13	14	GND
A_CLK_DN	15	16	A_CLK_DP
A_DATA3_DN	17	18	A_DATA3_DP
B_DATA0_DN	19	20	B_DATA0_DP
B_DATA1_DN	21	22	B_DATA1_DP
B_DATA2_DN	23	24	B_DATA2_DP
GND	25	26	GND
B_CLK_DN	27	28	B_CLK_DP
B_DATA3_DN	29	30	B_DATA3_DP

### LVDS backlight header(Silk-print: LVDS\_ADJ):

Pin	Signal
1	GND
2	GND

3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V
6	12V

**LVDS screen backlight forward and reverse adjustment jumper(Silk-print: BKLADJ\_C):**

Pin	Setting	Function
1-2	Close	Backlight controls flip
2-3	Close	Backlight controls forward

**LVDS screen voltage jumper(Silk-print: J3) :**

Pin	Setting	Function
1-2	Close	VCC(+3.3V)
3-4	Close	VCC(+5V)
5-6	Close	VCC(+12V)

*Attention: LVDS screen's power can be adjusted among 12V/5V/3.3V via jumper setting. Customers can connect VCC with jumper cap by 2pin according to their LVDS screen's voltage (Connecting 2 or more interfaces via jumper cap at the same time is strictly forbidden).*

## 2.6 eDP (Optional)

When it is set as eDP, the function of LVDS will be cancelled.

Supports 2 lanes eDP.

The voltage of LVDS screen is controlled by J3 and eDP/LVDS\_ADJ is screen backlight brightness control socket.

**eDP data header(Silk-print: EDP/LVDS):**

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	EDP_HPD

GND	5	6	GND
EDP_AUXN	7	8	EDP_AUXP
(NC)	9	10	(NC)
EDP_DATA0_P	11	12	EDP_DATA0_N
GND	13	14	GND
(NC)	15	16	(NC)
EDP_DATA1_P	17	18	EDP_DATA1_N
(NC)	19	20	(NC)
(NC)	21	22	(NC)
(NC)	23	24	(NC)
GND	25	26	GND
(NC)	27	28	(NC)
(NC)	29	30	(NC)

**eDP backlight header (Silk-print: EDP/LVDS\_ADJ):**

Pin	Signal
1	GND
2	GND
3	LCD BKL ADJ
4	LCD_BKL_ON
5	12V
6	12V

**eDP voltage header (Silk-print: J3):**

Pin	Setting	Function
1-2	Close	VCC(+3.3V)
3-4	Close	VCC(+5V)
5-6	Close	VCC(+12V)

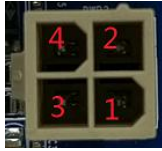
*Attention: eDP screen's power can be adjusted among 12V/5V/3.3V via jumper setting.*

*Connecting 2 or more interfaces via jumper cap at the same time is strictly forbidden.*

## 2.7 Internal PWR2

This power socket can be used as the power input of the motherboard or as a power output socket to supply power to the peripheral devices (the voltage is the same as the input

voltage of the motherboard PWR1).



Pin	Signal
1	GND
2	GND
3	+12V
4	+12V

## 2.8 Internal USB (USB1, USB2)

Internal USB header is USB2.0 Port

### USB1, USB2:

Signal	Pin		Signal
5V	1	2	5V
USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
	9	10	NC

## 2.9 LAN

With gigabit Ethernet chip RTL8111F, the board can support no more than 2 x RJ45(LAN1 and 2 x USB2.0 are alternatives).

Two ports support Wake On LAN (The situation that the board reconnects with DC power after it cuts off DC power is not included). The LAN supports PXE network boot.

### RJ45 LAN LED Description:

LILED(green)	Function	ACTLED (yellow)	Function
On	Connected	Flicker	Data transmission



## 2.10 Audio (FP\_AUDIO, JAUD, JSPIF)

ALC662 audio control chip. The green one is Speaker-out and the pink one is Mic-in; JAUD is amplifier output; JSPIF is SPDIF-out.

### FP\_AUDIO:

Signal	Pin		Signal
MIC2-L	1	2	AGND
MIC2-R	3	4	AVCC
FRO-R	5	6	MIC2-JD
F-IO-SEN(AGNG)	7	8	(NC)
FRO-L	9	10	LIN2-JD

### JAUD:

Pin	Signal
1	L+
2	L-
3	R-
4	R+

### JSPIF:

Pin	Signal
1	+5V
2	SPDIF Out
3	GND

## 2.11 COM (JCOM1 , JCOM2, JCOM36, JCOM2/4\_P)

Supports 6 x RS232, and COM6 can be set as RS485.

COM1 and COM2 are industrial definition;  
COM2 and COM4 with power, and different voltage can be set up by jumper COM2/4\_P.

**JCOM1:**

Signal	Pin		Signal
DCD#	1	2	DSR#
RXD	3	4	RTS#
TXD	5	6	CTS#
DTR#	7	8	RI#
GND	9	10	

**JCOM2:**

Signal	Pin		Signal
DCD#	1	2	DSR#
RXD	3	4	RTS#
TXD	5	6	CTS#
DTR#	7	8	(NC) / VCC(5V/12V)
GND	9	10	

**JCOM2/4 voltage setting(Silk-print: COM2/4\_P):**

Signal	Pin	Signal
1-2	Close	VCC_12V
2-3	Close	VCC_5V

 Do not connect three sets of COM at the same time or the board will be damaged.

**JCOM36:**

Signal	Pin		Signal
DCD#_3	1	2	RXD_3
TXD_3	3	4	DTR#_3

GND	5	6	DSR#_3
RTS#_3	7	8	CTS#_3
RI#_3	9	10	(NC)
DCD#_4	11	12	RXD_4
TXD_4	13	14	DTR#_4
GND	15	16	DSR#_4
RTS#_4	17	18	CTS#_4
(NC) / VCC(5V/12V)	19	20	(NC)
DCD#_5	21	22	RXD_5
TXD_5	23	24	DTR#_5
GND	25	26	DSR#_5
RTS#_5	27	28	CTS#_5
RI#_5	29	30	(NC)
DCD#_6	31	32	RXD_6
TXD_6	33	34	DTR#_6
GND	35	36	DSR#_6
RTS#_6	37	38	CTS#_6
RI#_6	39	40	(NC)

**When COM6 is set as RS232 and RS485, header definition is as follow:**

Pin	RS232	RS485
1	DCD#	DATA-
2	RXD	DATA+
3	TXD	(NC)
4	DTR#	(NC)
5	GND	GND
6	DSR#	(NC)

7	RTS#	(NC)
8	CTS#	(NC)
9	RI#	(NC)

## 2.12 LPT(JLPT, J4)

One 2x13pin LPT header(2.0mm spacing). Customers can connect it to equipment like printer. In addition, this port can be set as 16 GPIO - customers need to set the LPT function to Disabled in the BIOS.

When the JLPT pin is set for different functions, J4 is also required to change accordingly as a voltage configuration pin.

### LPT(Printing port):

Signal	Pin		Signal
STB	1	2	AFD
LPT_PPD0	3	4	ERROR
LPT_PPD1	5	6	INIT
LPT_PPD2	7	8	SLIN
LPT_PPD3	9	10	GND
LPT_PPD4	11	12	GND
LPT_PPD5	13	14	GND
LPT_PPD6	15	16	GND
LPT_PPD7	17	18	GND
ACK	19	20	GND
BUSY	21	22	GND
PE	23	24	GND
SLCT	25	26	(NC)

### JLPT(GPIO):

Signal	Pin	Signal
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GPIO_87	1	2	GPIO_86
GPIO_70	3	4	(NC)
GPIO_71	5	6	GPIO_85
GPIO_72	7	8	GPIO_84
GPIO_73	9	10	GND
GPIO_74	11	12	GND
GPIO_75	13	14	GND
GPIO_76	15	16	GND
GPIO_77	17	18	GND
GPIO_83	19	20	GND
GPIO_82	21	22	GND
GPIO_81	23	24	GND
GPIO_80	25	26	(NC)

#### J4 (Voltage setting) :

Function	Setting
GPIO	short-circuit 1-2
Printing port	short-circuit 2-3

 Do not short-circuit three sets of pins at the same time or the board will be damaged.

### 2.13 GPIO(JGPIO)

One 2×5Pin(connected from CPU) JGPIO, 8 programmable I/O interfaces.

Signal	Pin		Signal
GPI_S5_0	1	2	1.8V
GPI_S5_1	3	4	GPO_S5_6

GPI_S5_2	5	6	GPO_S5_7
GPI_S5_3	7	8	GPO_S5_8
GND	9	10	GPO_S5_9

## 2.14 SATA and mSATA (SATA1, SATA2, mSATA, PWSATA1, PWSATA2)

Two SATA2.0 at most(SATA2 and mSATA are alternatives), one mSATA slot, two 4pin SATA power supply.

### PWSATA1/2:

Pin	Signal
1	+5V
2	GND
3	GND
4	+12V

## 2.15 Mini-PCle(Mini-PCle, SIM1)

Supports wifi card. If 3G/4G card is loaded, it will support 3G/4G network.

## 2.16 PS/2 (PS2)

6pin PS/2 socket is provided on the board.

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

## 2.17 CPU FAN (CPU\_FAN1)

There is 4pin CPU fan socket on the board. The default setting of power is +5V(12V, optional).

### CPU\_FAN :

Pin	Signal
1	GND
2	VCC
3	CPUFAN_TAC
4	CPUFAN_CTL

## 2.18 System FAN (SYS\_FAN)

There is 3pin system fan socket on the board. The default setting of power is +5V(12V, optional).

### SYS\_FAN :

Pin	Signal
1	GND
2	VCC
3	CPUFAN_TAC

## 2.19 Front Panel Control Interface (JPOWER1)

Front panel control interface is to connect function buttons and indication lights on the front panel.

### JPOWER1:

Signal	Pin		Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWR_LED-
RST_BTN-	5	6	PWR_ON+
RST_BTN+	7	8	PWR_ON-
(NC)	9	10	

## 2.20 Auto Power On (JAT)

### JAT:

Setting	JAT
Close	On

*Attention: The function of the jumper is similar to that of Restore AC Power Loss in BIOS. When the latter is set to be “power on”, the function will automatically work.*

## 2.21 JCMOS

CMOS is powered by the button battery on the board. Clearing CMOS will permanently clear previous system setting and restore it to factory setting.

**Steps:** 1. Power the computer off;


2. Connect JCMOS first and second pin via the jumper cap for 10 secs, and disconnect;

3. Turn on the computer , and press <Del> to enter BIOS setting, overload the best default value;

4. Save and exit.

### CLR\_MOS:

Setting	CLR_MOS
Close	Clear CMOS contents

 *Do not clear CMOS when the computer is connected to power.*