

# User Manual

---

## WL-10 Mini ITX Motherboard



**Maxtang**<sup>®</sup>

MAXIMIZING YOUR COMPUTING PRODUCTIVITY

**Copyright**

© 2022 Shenzhen Maxtang Computer Co., Ltd. All rights reserved. No part of this publication may be reproduced, copied, stored in a retrieval system, translated into any language or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written consent of Shenzhen Maxtang Computer Co., Ltd (hereinafter referred to as “Mxtang”).

**Disclaimer**

Mxtang reserves the right to make changes and improvements to the products described in this document without prior notice. Every effort has been made to ensure the information in the document is correct; however, Mxtang does not guarantee this document is error-free.

Mxtang assumes no liability for incidental or consequential damages arising from misapplication or inability to use the product or the information contained herein, nor for any infringements of rights of third parties, which may result from its use.

**Trademarks**

All the trademarks, registrations, and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

# WL-10 Mini ITX Motherboard

## User Manual

(Version 1.3)

Version:		
No.	Description	Issue Date:
V1.0	Initial version.	2019/10/15
V1.2	Added E_DIS jumper cap switch LVDS/EDP	2020/08/31
V1.3	LAN 1 changed to Intel i219	2022/01/21

## Contents

Chapter 1 Product Introduction.....	3
1.1 Brief Introduction .....	3
1.2 Parameters.....	3
1.3 Connector Diagram.....	4
Chapter 2 Hardware.....	6
2.1 Jumper Setting.....	6
2.2 Memory Slots.....	6
2.3 Display interface .....	6
2.3.1 LVDS (screen printing: LVDS, LVDS_ADJ, J3, E_DIS).....	6
2.3.2 eDP (screen printing: LVDS, LVDS_ADJ, J3, E_DIS).....	7
2.4 HDMI pin (screen printing: JHDMI).....	9
2.5 Expansion slots (screen printing: M.2_S, M.2_E, PCIe 4X).....	9
2.6 Storage interface (screen printing: SATA1, SATA2, M.2_S).....	9
2.7 USB interface .....	9
2.8 LAN.....	10
2.9 Audio interface (screen printing: FP_AUDIO, JAUD, SPDIF).....	10
2.10 COM (screen printing: COM1, COM25, COM6, JCOM2_P, JCOM4_P).....	11
2.11 LPT (screen printing: LPT) .....	12
2.12 GPIO pin (screen printing: GPIO) .....	13
2.13 PS/2 socket (screen printing: PS2_H) .....	13
2.14 Board power supply (screen printing: PWR1, PWR3).....	14
2.15 Switch panel pin (screen printing: JPOWER1) .....	14
2.16 Hardware auto start (screen printing: JAT).....	15
2.17 CMOS Clearance/Retention (screen printing: JCMOS1).....	15

## Chapter 1 Product Introduction

### 1.1 Brief Introduction

The WL10 is based on the Intel Whiskey Lake-U platform.

### 1.2 Parameters

Whiskey Lake-U platform:

- i7-8565U--quad core, 1.8 GHz, TDP 15W, supporting Turbo Boost Technology and EIST
- i5-8265U--quad core, 1.6GHz, TDP 15W, supporting Turbo Boost Technology and EIST
- i3-8145U--dual core, 2.1GHz, TDP 15W, supporting Turbo Boost Technology and EIST
- Celeron 4205U--dual core, 1.8 GHz, TDP 15W, supporting EIST

**Memory:** 2 x SO-DIMM DDR4-2400/2133 MHz slots, supporting dual channels, maximum capacity 64GB

**GPU:** integrated graphics, 1 x HDMI 1.4, 1 x standard DP, 1 x LVDS (eDP optional)

**Storage:** 1 x M.2 Key B, supporting 2242/2280 SSD (SATA), 2 x standard SATA3.0

**USB:** 3 x USB3.0 (rear port), 5 x USB2.0 (on-board pin)

**Ethernet:** on-board 2 x Gigabyte network card (1x intel i219, 1x intel i211)

**Audio:** high-definition audio chip, supporting speaker-out, Mic-in (rear port), Line-out, Mic-in (front on-board pin), and power amplifier (on-board pin, connecting passive horn)

**I/O:** 5 x RS232, 1 x RS485, 1 x LPT (pin), 1 x PS/2 (KB/MS pin)

**Expansion:** 1 x M.2 key B (supporting NGFF 3G/4G), 1 x M.2 Key E (Type 2230, supporting Wi-Fi card)

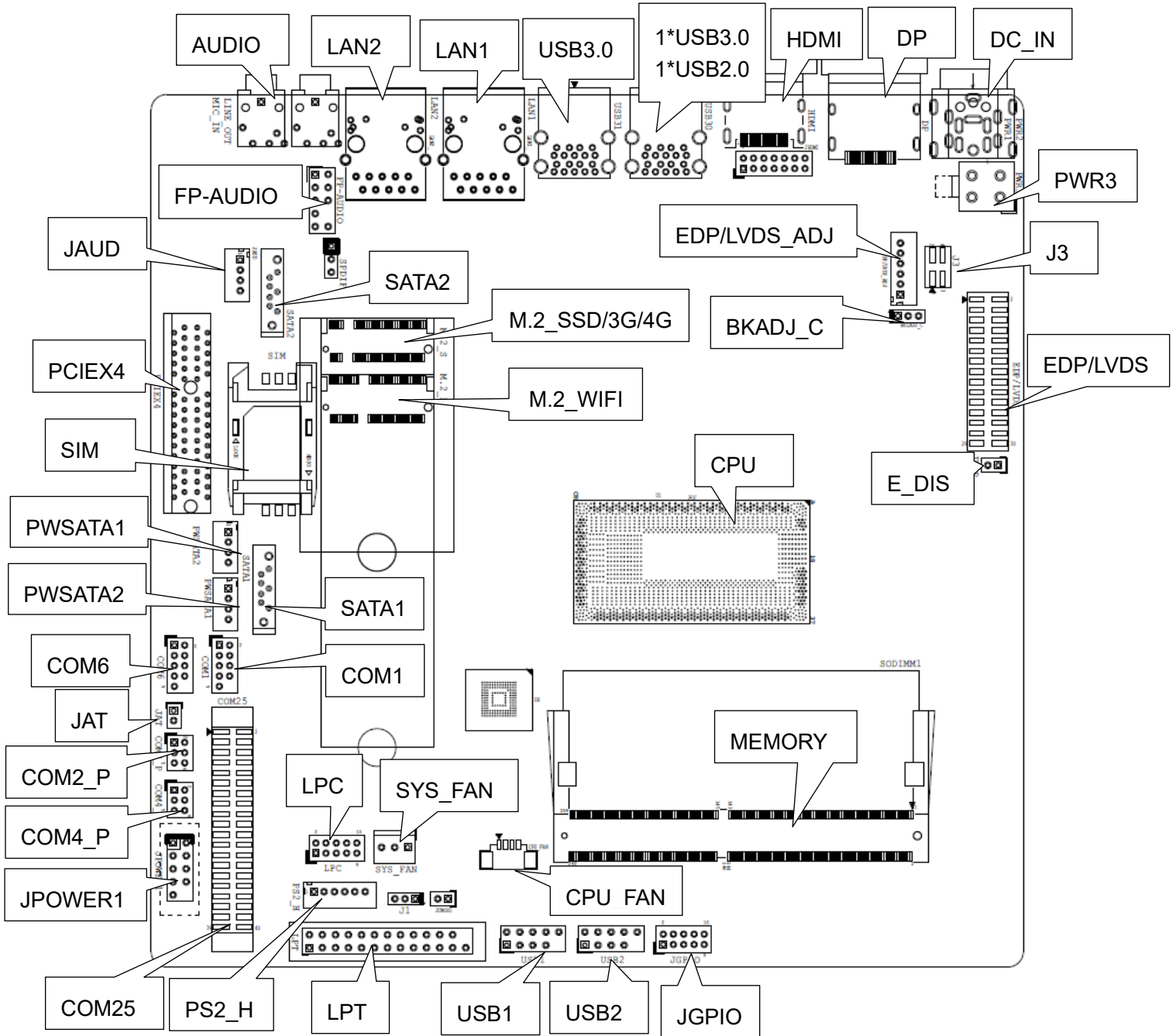
**Other I/O:** 1 x PCIe 4X slot, 8 x GPIO (on-board pin), 1 x PS/2 (pin, KB+MS)

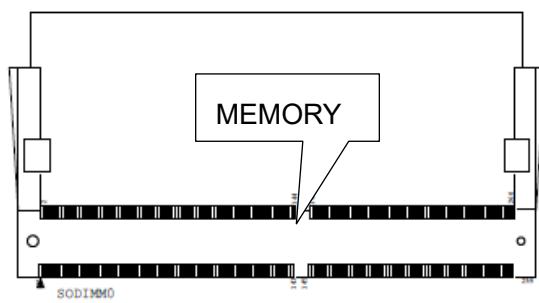
**Dimension:** 170mm x 170mm

**Power:** 12V DC-in

**Working Temperature:** -20°C~60°C

### 1.3 Connector Diagram





## Chapter 2 Hardware

### 2.1 Jumper Setting

Please configure the jumpers according to your requirements before installing the hardware.

How to identify the first header of jumpers and pins: Observe the mark beside the jumper or pins and find the header marked by “1” or bold line or triangular symbol. Or observe the rear panel and the header with square solder pad is the first header.

### 2.2 Memory Slots

On-board 2 x SO-DIMM DDR4-2400/2133 slots, supporting dual channels, maximum capacity 64GB

### 2.3 Display interface

1 x HDMI1.4 and optional pin as backup display interface (only one can be connected at one time), 1 x DP 1.2, 1 x LVDS (eDP1.3 optional). Trio display, supporting 4K resolution.

#### 2.3.1 LVDS (screen printing: LVDS, LVDS\_ADJ, J3, E\_DIS)

Dual channel 24bit LVDS interface. The LVDS display power is controlled by the J3 jumper, and the LVDS backlight power is controlled by the LVDS\_ADJ.

Screen printing E\_DIS: Works as LVDS Control Switch, disconnect to turn on LVDS, connect to turn off LVDS.

**LVDS Data pin** (screen printing: 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
------------	----	----	------------

**Display backlight brightness adjustment pin** (screen printing: EDP/LVDS\_ADJ)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V
6	12V

**LVDS display backlight two-way adjustment jumper** (screen printing: BKLADJ\_C)

Pin	Settings	Function
1-2	Close	Backlight Control Reverse
2-3	Close	Backlight Control Standard

**Display power supply jumper** (screen printing: J3)

Interface	Settings	Function
1-2	Close	+3.3V
3-4	Close	+5V

Note: The LVDS display power supply is controlled by jumpers. The voltage can be 5V or 3.3V. Don't short-circuit two or more interfaces with jumper cap.

**2.3.2 eDP (screen printing: LVDS, LVDS\_ADJ, J3, E\_DIS)**

This interface is optional, supporting 2 LANE eDP(1.3). When the interface is set as eDP, LVDS doesn't work. The display power is controlled by the J3 jumper, and the LVDS backlight power is controlled by the LVDS\_ADJ jumper.

Screen printing E\_DIS: Works as eDP Control Switch, disconnect to turn on EDP, connect to turn off eDP.

**eDP data pin** (screen printing: EDP/LVDS)

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	EDP_HPD
GND	5	6	GND
EDP_AUXN	7	8	EDP_AUXP

Signal	Pin		Signal
N/A	9	10	N/A
EDP_DATA0_P	11	12	EDP_DATA0_N
GND	13	14	GND
N/A	15	16	N/A
EDP_DATA1_P	17	18	EDP_DATA1_N
N/A	19	20	N/A
N/A	21	22	N/A
N/A	23	24	N/A
GND	25	26	GND
N/A	27	28	N/A
N/A	29	30	N/A

**eDP Display backlight brightness adjustment pin** (screen printing: EDP/LVDS\_ADJ)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V
6	12V

**eDP display backlight two-way adjustment jumper** (screen printing: BKLADJ\_C)

Pin	Settings	Function
1-2	Close	Backlight Control Reverse
2-3	Close	Backlight Control Standard

**eDP display power supply jumper** (screen printing: J3)

Interface	Settings	Function
1-2	Close	+3.3V
3-4	Close	+5V

Note: The eDP display power is controlled by jumpers. The voltage can be 5V or 3.3V. Don't short-circuit two or more interfaces with jumper cap.

## 2.4 HDMI pin (screen printing: JHDMI)

The board is equipped with pin HDMI interface as backup option. The interface can work with the standard HDMI interface at the same time.

**JHDMI** (screen printing: JHDMI)

Signal	Pin		Signal
DATA2_P	1	2	DATA2_N
DATA1_P	3	4	DATA1_N
DATA0_P	5	6	DATA0_N
CLK_P	7	8	CLK_N
SCL	9	10	SDA
5V	11	12	GND
HPD	13	14	GND

## 2.5 Expansion slots (screen printing: M.2\_S, M.2\_E, PCIe 4X)

Screen printing M.2\_S: M.2 Key B, supporting NGFF 3G/4G module, with standard SIM card slot.

Screen printing M.2\_E: M.2 Key E, supporting NGFF Wi-Fi card.

Screen printing PCIEX4: PCIe 3.0/4X slot, for expanded PCIe devices like networking card and graphics card.

## 2.6 Storage interface (screen printing: SATA1, SATA2, M.2\_S)

Supporting 2 standard SATA3.0 interfaces at most, with transmission rate 6GB/s and two disk power supply sockets. If the CPU is a Celeron processor, the board can support only one SATA3.0 (SATA1).

M.2 Key B slot (screen printing: M.2\_S) supports 2242/2280 SATA SSD.

## 2.7 USB interface

3 standard USB3.0. 5 x USB2.0, 4 of them being USB2.0 pin on-board, the test one being rear USB2.0 port (screen printing: USB3.0)

**USB1 and USB2** (screen printing: USB1, USB2)

Signal	Pin		Signal
VCC 5V	1	2	VCC 5V

USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
(NC)	9	10	N/A

## 2.8 LAN

High-performance Gigabyte Ethernet controller, features 1x intel i219 and 1x intel i211, with 2 x RJ45 interfaces. Supporting Magic packet wake up. LAN1 supports PXE network boot.

**Interface LED indicators:**

LILED (orange)	Function	ACTLED (green)	Function
Always on	Network connected	Blinking	Data being transmitted

## 2.9 Audio interface (screen printing: FP\_AUDIO, JAUD, SPDIF)

ALC audio controlling chip. The green interface is for audio output (Speaker\_out), and the pink interface is for Mic input (Mic-in). The JAUD pin is for power amplifier, and the SPDIF pin is for SPDIF\_out.

**FP\_AUDIO** (screen printing: 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** (screen printing: JAUD)

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

**SPDIF** (screen printing: SPDIF)

Pin	Signal
1	+5V
2	SPDIF_Out
3	GND

**2.10 COM (screen printing: COM1, COM25, COM6, JCOM2\_P, JCOM4\_P)**

It is equipped with 6 COM (2.0mm spacing of built-in pins). COM1 slots are defined by industrial control; COM1 to COM5 are RS232 mode, and COM6 is RS485 mode. COM2\_P and COM4\_P provide optional 5V or 12V voltage for COM2 and COM4.

**COM1** (screen printing: COM1)

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

**COM25** (screen printing: COM25)

Signal	Pin		Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	N/A
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	N/A
DCD#	21	22	RXD

TXD	23	24	DTR#
GND	25	26	DSR#
RTS#	27	28	CTS#
RI#	29	30	N/A
DCD#	31	32	RXD
TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	N/A

**COM6** (screen printing: COM6)

Signal	Pin		Signal
DATA-	1	2	N/A
DATA+	3	4	N/A
N/A	5	6	N/A
N/A	7	8	N/A
GND	9	10	(NC)

**COM2\_P, COM4\_P** (screen printing: COM2\_P、COM4\_P)

Interface	Settings	Function
1-2	Close	5V
3-4	Close	RI
5-6	Close	12V

**2.11 LPT (screen printing: LPT)**

On-board 1 set of 2X13 pin LPT interface. The adapter cable is needed to transfer the LPT to the standard parallel interface for use. Users can connect it to equipment like printer according to their actual requirements.

**LPT** (screen printing: LPT)

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)

## 2.12 GPIO pin (screen printing: GPIO)

The board is equipped with a set of 2 x 5pin as JGPIO pin (2.0mm spacing), supporting 8 programmable I/O lanes in total.

**GPIO** (screen printing: JGPIO)

Signal	Pin		Signal
PCH_GPP_C16	1	2	3.3V
PCH_GPP_C17	3	4	PCH_GPP_A18
PCH_GPP_C18	5	6	PCH_GPP_A19
PCH_GPP_C19	7	8	PCH_GPP_A20
GND	9	10	PCH_GPP_A21

## 2.13 PS/2 socket (screen printing: PS2\_H)

The board is equipped with 1 set of 6-pin PS/2 sockets.

**P2/2** (screen printing: PS2\_H)

Pin	Signal
1	+5V

2	KB_DATA
3	KB_CLK
4	MS_DATA
5	MS_CLK
6	GND

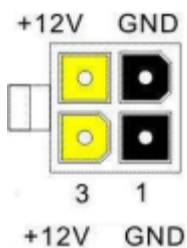
### 2.14 Board power supply (screen printing: PWR1, PWR3)

It supports 12V DC-in power adapter or ATX 12V supplementary power (2 x 2pin).

**PWR1:** 12V DC-in power socket



**PWR3:** ATX12V supplementary power supply socket (2x2PIN)



### 2.15 Switch panel pin (screen printing: JPOWER1)

The front control panel interfaces are to connect the functional buttons and indicators on the front panel.

**JPOWER1** (screen printing: JPOWER1)

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



## 2.16 Hardware auto start (screen printing: JAT)

JAT (screen printing: JAT)

Settings	JAT
Close	Hardware auto start

Please note that this jumper function is similar to the "Restore AC power loss" function in BIOS. When the latter is set to Power on, the device will also start automatically after power is connected.

## 2.17 CMOS Clearance/Retention (screen printing: JCMOS1)

CMOS is powered by the on-board button batteries. Clearing CMOS will permanently remove the previous system settings and restore the board to the original (factory settings) system settings.

**Step 1:** Turn off the PC and disconnect power adapter.

**Step 2:** Use the jumper cap to connect the 1st and 2nd headers of JCMOS for about 10 seconds and disconnect.

**Step 3:** When starting the device, press the <DEL> button to enter the BIOS, load the optimal default value and save and exit the settings.

JCOMS (screen printing: JCMOS1)

Settings	JCMOS
Close	Clear the CMOS

 **Please do not clear COMS when the PC is connected to power in case board damages.**