

User Manual

TL-50 Motherboard

A decorative graphic consisting of multiple overlapping, wavy lines in shades of gray, creating a sense of motion and depth across the lower half of the page.

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TL50 User Manual

(Version 0.5)

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Contents

TL50 User Manual	1
(Version 0.5)	1
Chapter 1 Product Introduction	3
1.1 Brief Introduction	3
1.2 Parameters	3
1.3 Connector Diagram	4
1.4 Mini PC I/O Interface	5
Chapter 2 Hardware	6
2.1 Installations	6
2.2 Jumper Setting	6
2.3 Memory Slots	6
2.4 Display Interfaces	6
2.5 Storage Interfaces	7
2.6 Expansion Slot	7
2.7 USB Interfaces	7
2.8 LAN	7
2.10 Audio Interface	7
2.11 CPU Fan (Screen printing: CPUFAN)	7
2.14 CMOS Clearance/Retention (Screen printing: CLR_CMOS)	8

Chapter 1 Product Introduction

1.1 Brief Introduction

The TL50 motherboard is a 4x4 small form factor motherboard based on the Intel Tiger Lake processor, designed to be used for Ultra-compact mini pcs and various IoT solutions.

1.2 Parameters

Intel Tiger Lake Series:

- Intel® Celeron® 6305 Processor, 2Cores 2Threads, Base Frequency: 1.80GHz, 4 MB Intel® Smart Cache, TDP-up: 15W.
- Intel® Core™ i3-1115G4 Processor, 2Cores 4Threads, Base Frequency: 3.00GHz, Max Turbo Frequency: 4.10GHz, 6 MB Intel® Smart Cache, TDP-up: 28W
- Intel® Core™ i5-1135G7 Processor, 4Cores 8Threads, Base Frequency: 2.40GHz, Max Turbo Frequency: 4.20GHz, 8 MB Intel® Smart Cache, TDP-up: 28W
- Intel® Core™ i7-1185G7E Processor, 4Cores 8Threads, Base Frequency: 2.8GHz, Max Turbo Frequency: 4.40GHz, 12 MB Intel® Smart Cache, TDP-up: 28W

Memory: 2x SO-DIMM DDR4-3200 Slots, supports dual channel up to 64GB for maximum memory capacity.

GPU: Integrated Graphics based on CPU, dual displays via 2x HDMI2.0.

Storage: 1 x M.2 Key M slot for 2280 NVMe SSD, 1x SATA3.0 interface

USB: 2x USB3.2 Gen 1, 2x USB2.0, 1xType-C (USB3.2 Gen 1)

Expansion: 1x M.2_Key E slot, type 2230 for Wi-Fi and Bluetooth

Ethernet: One RTL8111H Network Controller on-board, Data Rate Per Port: 1.0Gbps

Audio: High-Definition Realtek Audio Codec,1x Line-out, 1x Mic-in.

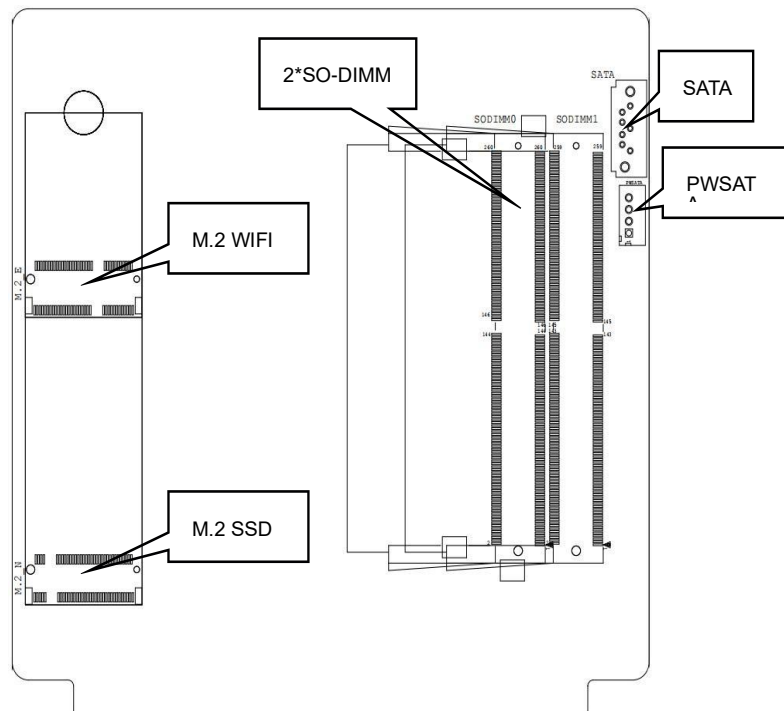
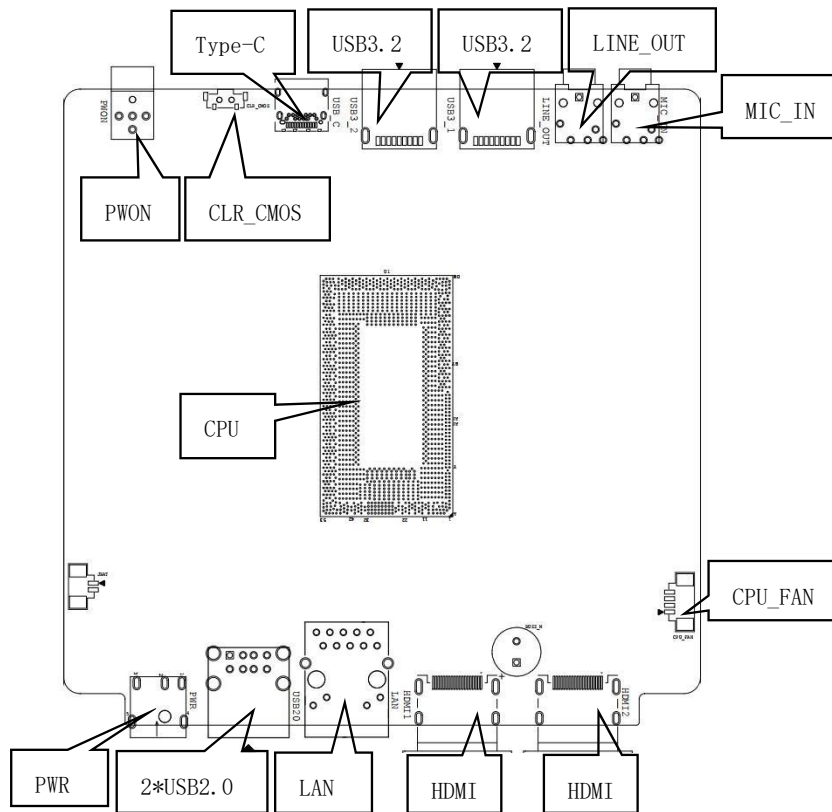
Board Dimension: 120mm x 120 mm

Chassis Dimension: 120mm x 130 mm x52 mm

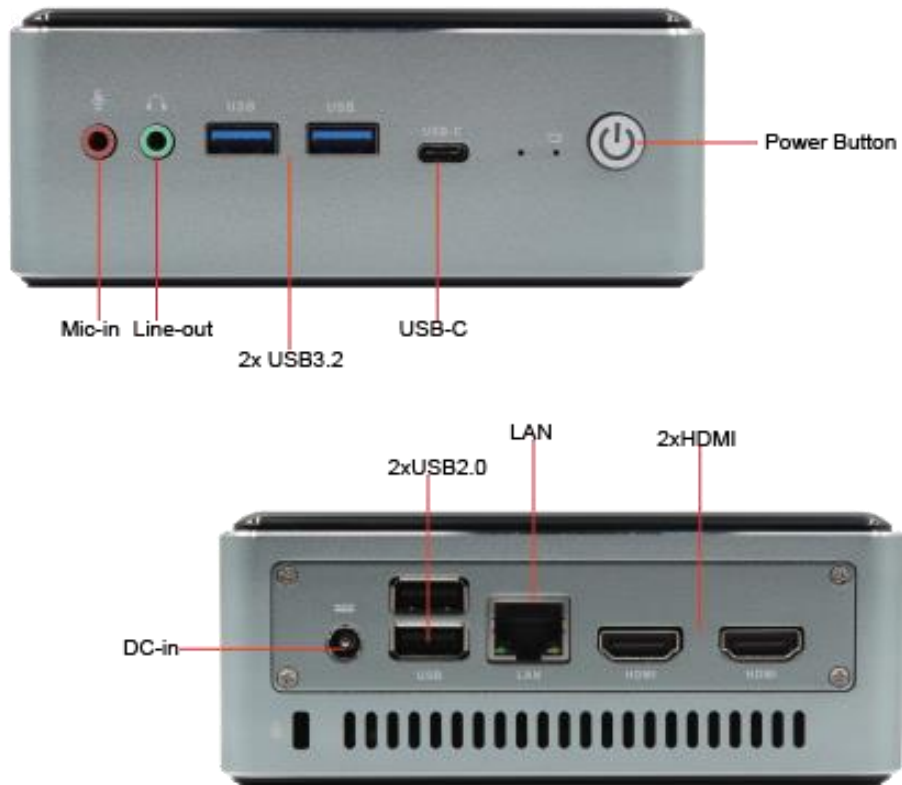
Power: 12V/19V DC-in

Working Temperature: 0°C~50°C

1.3 Connector Diagram



1.4 Mini PC I/O Interface



Chapter 2 Hardware

2.1 Installations

Please refer to the following steps for installations:

1. Read the user manual carefully to make sure all the adjustments on the TL50 are correct.
2. Installing the Memory:
 - Press the ejector tab of the memory slot outwards with your fingertips.
 - Hold the memory module and align the key to the module with that on the memory slot.
 - Gently push the module into the slot until the ejector levers return completely to the closed position, holding the module in place when the module touches the bottom of the slot. To remove the module, press the ejector levers outwards to unseat the module.
3. Installing the expansion cards:
 - Locate the expansion slots and remove the screw, insert the cards into the slot at a 45-degree angle then attach the screw to the expansion cards, gently press down on it then install the screw back.
4. Connect all signal wires, cables, panel control wiring, and power supplies.
5. Start the computer and complete the setup of the BIOS program.

The board's components are integrated circuits and can easily be damaged by Electrostatic Discharge or ESD; therefore, please follow the instructions:

- Hold the board's edge when handing, and do not touch onboard pins, components, or plug sockets.
- When touching integrated circuit components (such as CPU, RAM, etc.), please wear an anti-static wrist strap/glove to avoid electrostatic discharge damage to the board or other sensitive components.
- Before installing the integrated circuits/sensitive components, place the sensitive components in anti-static bags to keep them safe from ESD.
- Please make sure the power switch is OFF before plugging the power plug.

2.2 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 a square solder pad is the first header.

2.3 Memory Slots

The board provides two SO-DIMM DDR4-3200 slot and supports dual channel, up to 64GB for memory.

Notes: Make sure to hold the memory module and align the key to the module with that on the memory slot. While choosing a memory module, please make sure the module matches the board's specifications.

2.4 Display Interfaces

The board features two HDMI2.0 standard interfaces.

2.5 Storage Interfaces

The board provides 1x M.2 Key_M slot for 2280 NVMe SSD, 1x SATA3.0 interface and a 4PIN hard disk power supply interface.

PWSATA (Screen Printing: PWSATA)

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

2.6 Expansion Slot

The board provides 1x M.2_Key E slot, type 2230 for Wi-Fi and Bluetooth.

2.7 USB Interfaces

The board supports 2x USB3.2 Gen1 standard interfaces, 1x Type-C (USB3.2 Gen1) and 2x USB2.0 interfaces.

2.8 LAN

The board features 1xRJ45 LAN interface with high-speed RTL8111H network controller, data rate per ports: 1.0Gbps. It supports network wake-up (Magic packet wake-up) and UEFI PXE network boot.

LED Status Indicators:

LI_LED Status (Green)	Function	ACT_LED Status (Orange)	Function
Always on	Network Connected	Flashing	Data transmission

2.10 Audio Interface

The board features a Realtek ALC662 High-Definition Audio Codec, supports 1x Line-out(Green) and 1x Mic-in(Pink).

2.11 CPU Fan (Screen printing: CPUFAN)

The board features one cooling fan socket for better heat dissipation.

CPUFAN (Screen Printing: CPUFAN)

Pin	Signal
1	GND
2	VCC
3	TAC
4	CTL

2.14 CMOS Clearance/Retention (Screen printing: CLR_CMOS)

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

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

Step 2: Press CLR_CMOS for 10 seconds then disconnect.

Step 3: Restart the device, press the button to enter the BIOS, load the optimal default value,

Step 4: save, and exit the settings.

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