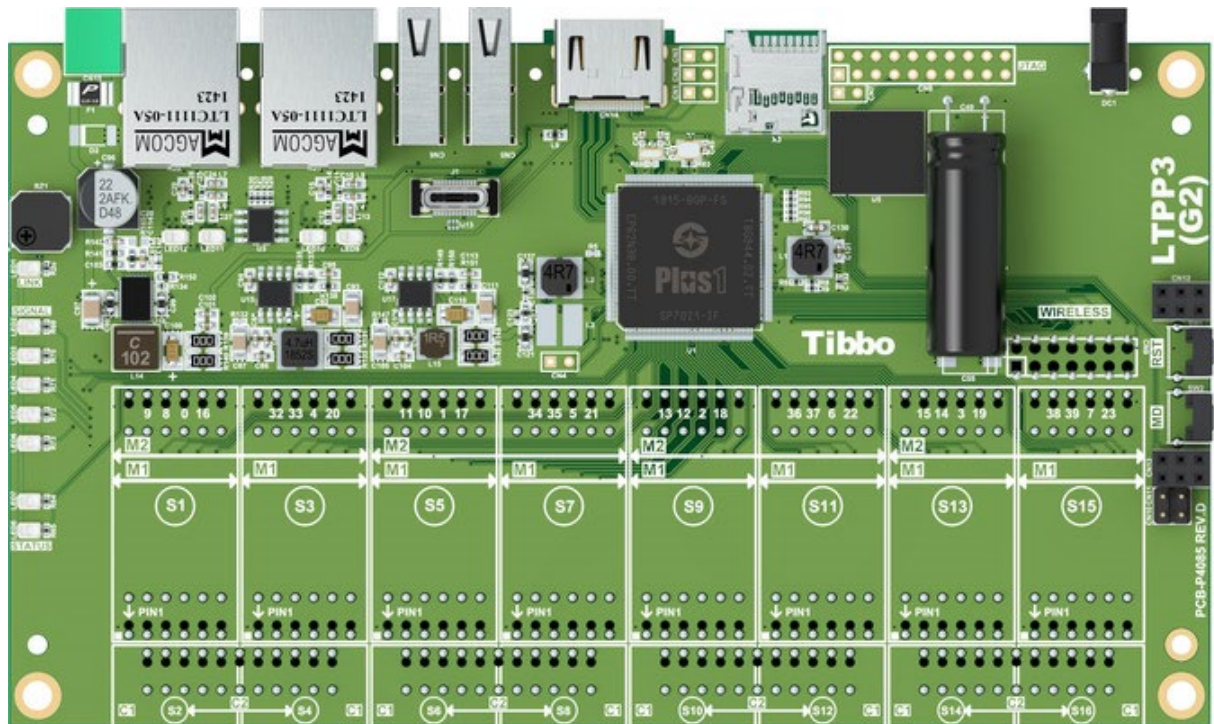




Size 3 Linux Tibbo Project PCB (LTPP3), Gen 2



Gen. 2 performance highlights

The Size 3 Linux Tibbo Project PCB (LTPP3) Gen. 2 is a comprehensive reimagining of the original [LTPP3](#) concept. Commonly used features and interfaces are now directly integrated onto the board, creating a more complete, efficient, and refined solution. Highlights:

- Based on the specially designed Plus1 (SP7021) quad-core 1GHz Cortex-A7 CPU
- 4GB of eMMC storage
- Two 10/100 Base-T Ethernet ports support daisy-chaining
- Optional 802.11a/b/g/n/ac and Bluetooth/BLE 5.0
- An integrated wide-input-range power supply

Introduction

In response to users' feedback, the LTPP3(G2) introduces several improvements over its predecessor, starting with the board's processor — [Plus1 \(SP7021\) CPU](#) jointly developed by Sunplus and Tibbo. The Plus1 chip was specifically designed to directly address the unmet needs of the IoT and industrial control markets.

While sporting the same 512MB DDR3 SDRAM as its predecessor, the LTPP3(G2) boasts 4GB of eMMC storage — a significant increase from 512MB of NAND flash storage of the original LTPP3 board. It now also includes a built-in microSD slot.

The LTPP3(G2) features two 10/100 Base-T Ethernet ports with RJ45/magnetics. These ports have an internal transparent switch for daisy-chaining with other Ethernet devices or they can be configured to work as two independent ports. In addition, wireless connectivity (through an optional add-on module) has been expanded to 802.11a/b/g/n/ac and Bluetooth/BLE 5.0. The system also supports [4G LTE Cat-1](#) or NB-IoT through the use of dedicated [Tibbits](#).

Also new are integrated HDMI and serial-over-USB console ports, as well as two USB 2.0 Host ports with Type-A connectors. An onboard wide-input-range power supply provides 2.5A of current and eliminates the need for power Tibbits — use either of the 8V to 60V DC-in connectors. Note that while there are two DC-in connectors, **only one should be used at a time**.

The LTPP3(G2) comes preloaded with our own highly polished Linux distribution that was derived from Red Hat.

The LTPP3(G2) is ideal for applications that require no human-machine interface but need a substantial quantity of I/O lines and/or functions. The board is equipped with four tiles offering a total of eight Tibbit module and eight Tibbit connector sockets. These can be used to create TPS configurations with up to four full serial ports, up to 16 relays, or up to 32 control lines, such as opto-inputs, PWMs, or open-collector outputs. While this may seem like a step down from the I/O capabilities of the LTPP3, consider that the LTPP3(G2) directly incorporates most interfaces and even the power supply, thus reducing the number of Tibbits typically needed in a user's application.

The LTPP3(G2) can be used as a bare board or assembled into a [Size 3 Linux Tibbo Project Box](#) (LTPB3).

Hardware features

- Quad-core 1GHz Cortex-A7 Plus1 (SP7021) chip
- Runs a fine-tuned Yocto-based Linux distribution (kernel 4.19)
- Two 10/100BaseT auto-MDIX Ethernet ports with RJ45/magnetics
 - Internal transparent switch for daisy-chaining with Ethernet devices
 - Can alternatively be configured as two independent Ethernet ports
- Optional 802.11a/b/g/n/ac and Bluetooth/BLE 5.0 through WM6256 add-on module
- [Optional LTE Cat-1](#) or NB-IoT connectivity through dedicated [Tibbits](#)
- Four tiles with 32 general-purpose I/O lines
 - Eight sockets for Tibbit modules
 - Eight sockets for Tibbit connectors
 - Four Tibbit module sockets have UART capability
 - Baudrates of up to 921,600bps

- None/even/odd/mark/space parity modes
 - 7 or 8 bits/character
 - Full-duplex mode with RTS/CTS, XON/XOFF flow control
 - Half-duplex mode with direction control
- Eight module sockets have interrupt capability
- Four Tibbit module sockets have SPI/I2C capability
- Onboard buzzer
- RTC with a backup supercapacitor
- 512MB DDR3 SDRAM
- 4GB eMMC
- microSD socket
- 2048-byte EEPROM for data storage
- Twelve onboard LEDs
 - Green and red main status LEDs
 - Yellow Ethernet link/activity LED (serving both ports)
 - Five blue LEDs (for Wi-Fi signal strength indication, etc.)
 - Two yellow Ethernet link LEDs, one for each Ethernet port*
 - Two green Ethernet activity LEDs, one for each Ethernet port*
- Serial-over-USB console port
- Reliable power-on/brown-out reset circuit
- Power
 - Onboard power supply with 8~60V input range provides 2.5A of current and eliminates the need for power Tibbits
 - Current consumption: 400mA@12V (with both Ethernet ports enabled)
- Dimensions (LxW): 165 x 94mm
- Operating temperature range: -40°C to 85°C
- Linux software and applications are upgradeable using the DNF system

* *These LEDs are not visible when the board is placed inside the LTPB3.*