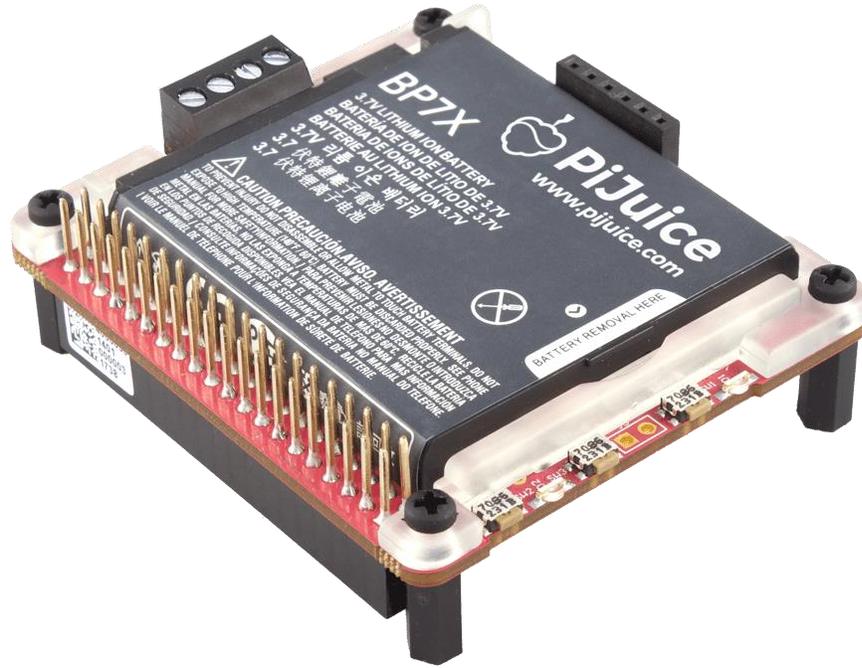# PiJuice HAT – A Portable Power Platform For Every Raspberry Pi

SKU: PIS-0212

As one of the smallest systems around there are so many amazing things you could do with the Raspberry Pi if it was self-powered and portable. Introducing PiJuice! A fully uninterruptable power supply that will always keep your Raspberry Pi powered.

Description

NOTE: As we approach the production of the first batch of the PiJuice, we have temporarily stopped taking back orders. For more information on the product range, see our successful Kickstarter campaign**.**
As one of the smallest systems around there are so many amazing things you could do with the Raspberry Pi if it was self-powered and portable. Introducing PiJuice! A fully uninterruptable power supply that will always keep your Raspberry Pi powered. Our revolutionary PiAnywhere technology – contained in every PiJuice HAT – is the best way to take your Pi off the grid!

The real time clock (RTC) on board will let your Pi know what time it is even with no power input or internet connection. Alongside this is an integrated microcontroller (MCU) chip which will manage soft shut down functionality and a true low power deep sleep state and intelligent startup.

You will be able to always keep track of the charge levels and other info with the two built-in tri-coloured RGB LEDs, trigger events and scripts with the three programmable buttons and since the PiJuice will use up to just five of your GPIO pins (just power and I2C), the rest are free to diversify your project. The stacking header allows you to continue to use your existing HATs and add-ons with PiJuice.

Keep your Raspberry Pi running with solar, wind and other renewable power.

Ultimate integrated power is one thing but what if we could make the Raspberry Pi renewably powered too? Solar, wind, thermoelectric and other renewable power is free, clean, and green and we're proud to have developed an affordable and efficient renewable power solution for the Raspberry Pi!

PiJuice is self-monitoring and, like a space satellite, can become a completely autonomous system. Use the PiJuice as part of an autonomous camera system, weather stations, off-grid desktops, and so many other great outdoor projects.

PiJuice Features:

- Onboard 1820 mAh "off the shelf" Lipo / LiIon battery for ~4 to 6 hours in constant use! (with support for larger Lipo Battery of 5000 or 10,000 mAH+ to last up to 24 hrs +)
- A Full Uninterrupted / Uninterruptable Power Supply solution.
- Designed for the Raspberry Pi A+, B+, 2B and 3B but also compatible with Raspberry Pi Zero v1.3 and Wireless.
- Integrated Real Time Clock
- Onboard intelligent on/off switch
- Low power deep-sleep state with wake on interrupt/calendar event
- Programmable multi-colored RGB led (x2) and buttons (x3) with super simple user-configurable options
- Hardware watchdog timer to keep your Raspberry Pi on and working in mission-critical remote applications
- Our revolutionary PiAnywhere technology – the best way to take your Pi off the grid!
- Full power management API available to Raspberry Pi OS with auto shutdown capability when running low on batteries
- Raspberry Pi HAT compatible layout, with onboard EEPROM for easy plug and play operation
- Low profile design to fit inside lots of existing Raspberry Pi cases!
- Enhanced graphical user interface (GUI) available for easy install (via APT)
- Customisable scripts for enhanced flexibility and full report of battery status

- All GPIOs available via stackable header for ease of expandability and connectivity
- Charge via on-board micro USB or via the Raspberry Pi micro USB (or from onboard pin headers)
- Batteries can be charged from different type of sources and voltages
- Replace the battery without downtime. Compatible with any single cell LiPo or LiIon battery
- Fully CE and FCC tested design. Battery safety tested also.

Technical Information

- The EEPROM can be disabled and its I2C address changed for increased compatibility with other boards
- BP7X battery – original battery from Motorola Droid 2 (A955) – 1820mAh battery
- Microcontroller is an ST Micro STM32F030CCT6 ARM Cortex-M0, 48MHz, F64KB, R8KB, I2C, SPI, USART, 2.4-3.6V
- Charge IC – BQ24160RGET Charger IC Lithium-Ion/Polymer, 2.5A, 4.2-10V
- Fuel gauge IC – LC709203FQH-01TWG Battery Fuel Gauge, 1-Cell Li-ion, 2.8%
- EEPROM – CAT24C32WI-GT3 EEPROM, I2C, 32KBIT, 400KHZ, 1V7-5V5
- Optional spring pin – Mil-Max 0929-7-15-20-77-14-11-0
- Compatible with any 4 pin battery on board that can be used with 00-9155-004-742-006 battery contacts from AVX including the BP7X, BP6X, and any compatible batteries including the 1600mAh and 2300mAh ones from CameronSino (CS-MOA853SL and CS-MOA855XL)
- There is an on board 4 pin screw terminal block for larger off board batteries. Any single cell LiPo / LiIon is compatible. However, you use your own sourced battery at your own risk. We HIGHLY RECOMMEND using a battery with an internal protection circuit and a NTC (temp sensor)
- Optional header for offboard button – connected to same output as SW1
- 6 pin breakout header – with two GPIO from the ARM Cortex-M0, Vsys, 5v0, 3v3, GND connections
- Header for optional off board solar panel / wind turbine etc.
- Optional RF Shield attachment – Harwin S02-20150300 (can also double as an inexpensive heatsink)
- Input voltage range – 4.2V – 10V
- Output voltage – 3.3V and 5V
- Output amperage – maximum current at 5V gpio is 2.5A and at VSYS output 2.1A, but also this depends heavily on battery capacity. For BP7X have measured around 1.1A at 5V GPIO and around 1.6A at VSYS output. Obviously, this also depends heavily on the current draw demanded by the Raspberry Pi/device itself. To achieve a maximum of 2.5A it will need battery over 3500mAh.
- Boxed weight – 96g
- Boxed dimensions – 12.2 x 10.8 x 3.5 cm
- Unboxed weight – 57g
- Unboxed dimensions – 6.5 x 5.6 x 2 cm

PiJuice HAT box contains

- 1 x PiJuice HAT
- 1 x Battery and battery surround
- 1 x PiJuice guide
- 4 x Mounting posts attached to PiJuice
- 8 x Mounting screws (4 are already assembled to the board)
- 1 x Pogo pin
- 3 x Stickers

PiJuice Projects

With PiJuice we want to provide not only the best portable hardware/software solution, but also a set of inspiring and affordable guided projects for fun and learning in the real world.

Software & Resources

- PiJuice GitHub
- Battery Safety Documents
- Software
- PiJuice User Guide