

SHIELD-LIPO

Cytron LiPo Power Shield



User's Manual

V1.0

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1. INTRODUCTION AND OVERVIEW

Cytron LiPo Power Shield (SHIELD-LIPO) is an Arduino compatible shield which is compatible with <u>Arduino UNO</u>, <u>Arduino Duemilanove</u>, <u>Arduino Mega</u>, <u>Arduino Leonardo</u> and possibly other pin compatible main boards. You can take your Arduino anywhere you wish with this LiPo Power Shield</u>.

Cytron LiPo Power Shield has stackable side headers which allows more Arduino shield to be stacked on top of it. You can stack shields on top, or stack the Shield LiPo on top. Please note that the Shield LiPo does not pass through the ICSP headers (the battery is in the way) so if your stack shield uses ICSP for data transfer (like the Ethernet Shield), you'll need to stack the Shield LiPo above it.

This Shiels-LiPo can provide at least 500mA current, and peak at 1A. It has undervoltage protection to avoid damage to battery.

Features:

- Output Voltage: 5V
- Output current: 1A
- Powered by 3.7V 1300mAH LiPo battery.
- Integrated charger, Charging current: 500mA.
- Can be charged from the onboard USB port or the USB port on the Arduino.
- Low battery indicator, Threshold voltage : 3.3V.
- Undervoltage protection, Cutout voltage: 2.4V.
- Stackable side headers.

2. PACKING LIST



1. 1 x SHIELD-LIPO

3. DIMENSION

Dimensions (mm)



4. BOARD LAYOUT





1. Stackable Digital I/O Headers

Digital I/O pins stacked to the Arduino main board.

2. Low power LED indicator

Indicator to show that LiPo Battery are below than 3.3V

3. Power indicator LED (Green)

Indicator to shows that power is supplied to Cytron LiPo Power Shield

4. **Full power LED indicator** Indicator to show that LiPo Battery are fully charged

5. Charge LED indicator

Indicator to show that LiPo Battery are charging.

6. Main Board reset button

Arduino main board will require around 30ms to ready after reset.

7. Power switch

Switch to On/Off the battery.

8. USB port

This USB port is for charging. You can use USB Micro B cable to charge the battery

9. LiPo Battery

Powered by 3.7V 1300mAH LiPo battery.

10. Vbatt Solder Jumper

Solder the pads together for monitoring battery voltage.

5. HARDWARE

This section shows the example of using SHIELD-LIPO with <u>Arduino UNO/CT-UNO</u> as the main controller.

5.1 Way to Stack the shield on Arduino board

Figure below shows that the SHIELD-LiPo is stacked on the CT-UNO. Please ensure that the pins alignment is correct. You can stack shields on top, or stack the Shield LiPo on top.



Please note that the Shield LiPo does not pass through the ICSP headers (the battery is in the way) so if your stack shield uses ICSP for data transfer (like the Ethernet Shield), you'll need to stack the Shield LiPo above it like shown in figure below.





5.2 Charging Method for SHIELD-LIPO

You can charge the LiPo battery either from the onboard USB port or the USB port on the Arduino. When the battery is charged, "Charge" LED will ON, When the battery is fully charge, "Full" will ON

1) If charge using onboard USB port, power switch can be either in ON or OFF state.





2) While if you are using Arduino USB port, you have to switch off the SHIELD LiPo. If it is ON, the battery will not charge.





5.3 Monitoring Battery Voltage.

The battery voltage level can be monitor using Arduino Board. At the back of shield there is VBATT Solder Jumper. You can solder it together like shown in the figure below. Then you can use Arduino IDE serial monitor, to monitor the battery voltage.



6. SOFTWARE

You can use Arduino IDE Serial monitor to check the battery voltage. Example of coding:

```
shield-lipo§
int Pin = A3;
               // select the input pin , A0 to A5
int VRead = 0; // variable to store the analog value
float VBatt = 0; // variable to store the value in Voltage unit
void setup()
{
  // initialize serial communications at 9600 bps:
  Serial.begin(9600);
}
void loop() {
 // read the value :
 VRead = analogRead(Pin);
 // convert analog value to Voltage(V)
 VBatt = VRead * (5.0 / 1023.0);
  //print the results to the serial monitor:
  Serial.print("Battery voltage = ");
  Serial.println(VBatt);
  // wait 0.2 seconds before the next loop
  delay(200);
}
```

7. WARRANTY

- Product warranty is valid for 12 months.
- Warranty only applies to manufacturing defect.
- Damaged caused by misuse is not covered under warranty
- Warranty does not cover freight cost for both ways.

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