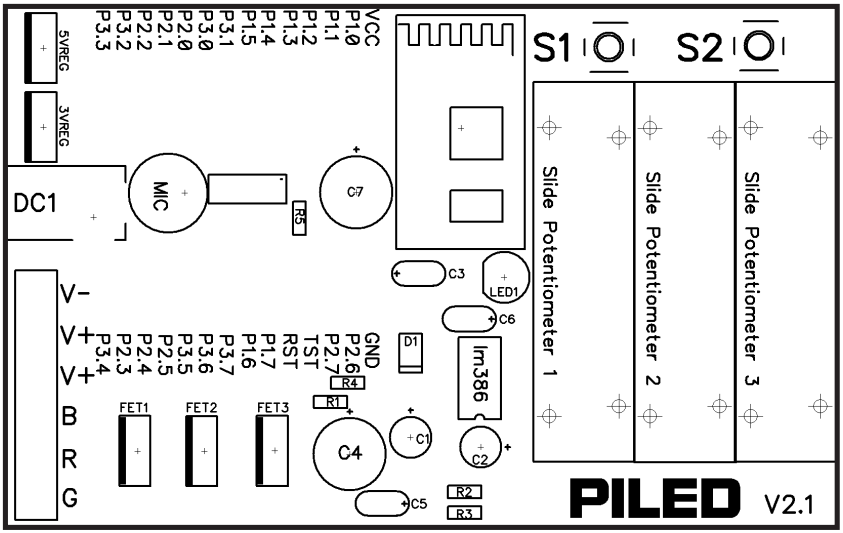
# Programmable Intelligent LED Kit
# Quickstart Guide




Before starting, check on the product page at lib3.com for any corrections or updates, as well as more detailed information and other resources.

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open source hardware

# Parts List:

**Pre-Assembled Parts:**
PILED mainboard
18 RGB LED strip (9 LEDs are extra)

**Components:**
C1,C2 - 10uF electrolytic
C3 - 1nf ceramic disc
C4 - 100uF electrolytic
C5,C6 - 10nf ceramic disc
C7 - 1000uF electrolytic
D1 - 1N4001 silicon rectifier diode
DC1 - DC 5-2.5mm barrel jack
FET1,FET2,FET3 - 36N03LT N-Channel MOSFET
SLIDE1,SLIDE2,SLIDE3 - 10k linear slide pot.
LED1 - Blue high-brightness indicator LED
Microphone - Electret condenser
5VREG - 7805CV 5V linear regulator
3VREG - 78M33 3V linear regulator
lm386 - LM386 low voltage audio power amp.
S1,S2 - tactile pushbutton
R1 - 330k - 1/8w
R2,R3 - 1k - 1/8w
R4 - 2.2k - 1/8w
R5 - 47k - 1/8w
2 Female 40 pin header strips (1 is extra)
2 Male 40 pin double header strips (1 is extra)
14 shorting blocks
2 three pole screw terminals

**Other Stuff:**
1 LED Strip junction PCB
4 standoffs
4 Polycarbonate M6 screws
4 Polycarbonate M4 screws
1 eucalyptus hardboard backing
1 prismatic acrylic diffuser

If you are missing anything or need extra parts, let us know at customerservice@lib3.com

# Abridged Instructions:

**Be sure to check the product listing at lib3.com for updates and detailed instructions.**

**Important:** Headers need to be cut to length using diagonal cutters or a hacksaw. You will need to cut the female header into two 14 pin pieces and a 4 pin long piece, and the double male header into a 14 pin long piece, a 10 pin long piece, and a 2 pin long piece. The two pin long piece is used for VCC-P1.0, the 10 pin long piece for P1.3-P3.3, and the 14 pin long piece for GND-P3.4. The 14 pin long female headers are used for VCC-P3.3 and GND-P3.4, as well as for the 4 pin power header on the bottom of the board (below FET3 and C4).

Double check the polarity of electrolytic capacitors, diodes, voltage regulators, and MOSFETs!

**Important:** When you have soldered everything in place, put shorting blocks across the pins for VCC,P1.3,P1.4,P1.5,P2.1,P2.0,GND,P1.6,P1.7,P2.4 and P1.0 to connect the on-board devices to the microcontroller.

When you are ready to test the PILED board, start without LEDs connected, and make sure none of the components get hot/warm. Once the LEDs are connected, the MOSFETs are expected to get relatively warm/hot based on load.

The LED strip can be cut along the black line every three LEDs. The order of the conductors in the PCB, LED side up, is 12V (labeled), Green, Red, Blue. To connect the RGB LED strip, peel the backing off the strip and lay it so that it overlaps the connector board traces around 70%. Drag solder from the pads on the LED strip onto the connector to join multiple strips into a square array. Use the 4 conductor wire to connect the array to the PILED board.

# Standard Firmware:

The PILED comes pre-programmed with a variety of basic RGB lighting ‘programs’. Use S1 and S2 to switch between modes.
-RGB Mixer (default): Each fader controls a color channel
-’The Clapper’: F1 sets threshold for clap detection
-RGB Sound Strobe: F1 sets ‘margin’ for auto level sensing of microphone input
-Adjustable Color Temperature: F1 controls color temperature, F2 controls brightness
-Strobe: F1 controls ‘on’ time, F2 controls ‘off’ time
-Rainbow Mode: F1 controls speed

To connect to the PILED via bluetooth, use 9600 Baud, no parity or stop bits. All commands must end with a semicolon. The two basic bluetooth commands are:
Set the output to the RGB value (0-255)

**set_rgb(red, blue, green);**
ex: *set_rgb(231,234,0);*

Fade the output to the RGB value over time. Red, green, and blue can be (0-255), time can be (0-65535) ms.

**target_rgb(red, blue, green, time);**
ex: *target_rgb(32,45,100,10000);*

Look in the extended manual available on lib3.com for more commands, and instructions on reprogramming the PILED.

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