PCBoard.ca
4646 Heritage Hills Blvd., Suite 14617
Mississauga, Ontario
Canada L5R 4G3
www.pcboard.ca

NodeMCU IoT Experimenter

NodeMCU IoT Experimenter Prototype Board

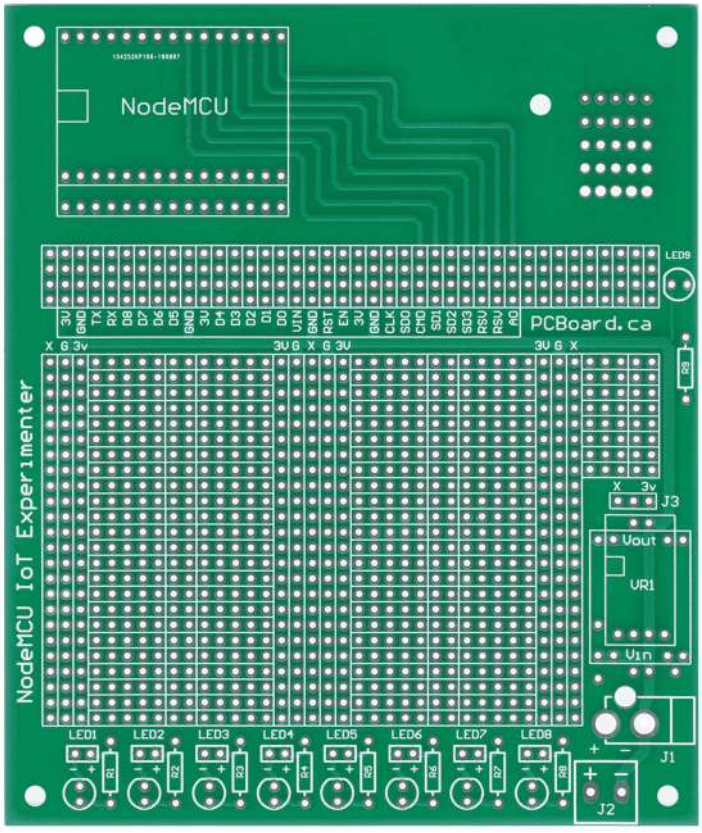
The **NodeMCU IoT Experimenter** is a versatile prototyping platform for use with a variety of the most popular NodeMCU modules including our NodeMCU carrier board. Great to use for IoT projects, advanced or straightforward interfacing and as a prototyping platform. The NodeMCU, with its versatility, including its ability to be programmed and used from the Arduino IDE, makes it along with this prototyping board the perfect experimenter's solution.

The **NodeMCU IoT Experimenter** measures 5 5/16" x 4.5" (135mm x 115mm) with a solder mask on each side, plated holes along with a high-contrast silk-screen labeling component and prototyping positions.

Features of the board include a mounting socket area to accept either wide 1.1" or narrow 0.9" pitch NodeMCU modules. This includes the Amica NodeMCU carrier board (narrow pin spacing) to compatible variants such as the LoLin NodeMCU models. Power can be provided directly to your NodeMCU module through its built-in USB interface. Alternately, power can be supplied to the **NodeMCU IoT Experimenter** board which has provisions for a regulated power supply module.

The board offers over 1,000 plated-through holes on the prototype surface, mounting for eight status indicator LEDs along with dropping resistors and a power indicator LED. The prototyping area offers power busbars for the Ground (**G**), +3.3V (**3V**) power rail, and a third rail **X**. The third rail can be used for external voltages such as a 5V rail.

Interfacing to the NodeMCU is through a series of headers which extend each pin of the NodeMCU to rows of four headers. Each port is labeled to identify matching pins from the NodeMCU. The header area is located below the NodeMCU using standard 40-pin headers allowing for versatility in interfacing for sockets or header pins.



See www.make-it.ca/nodemcu-arduino for additional details, examples and support notes on the **NodeMCU IoT Experimenter**

Component List

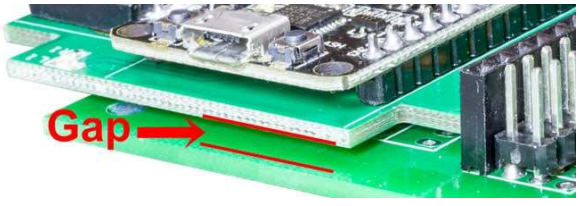
Processor:
[ ] (1) NodeMCU Processor.....**NodeMCU**
Supports 0.9" or 1.1" pitch NodeMCU processors

Semiconductors (LEDs and Regulator):
[ ] (9) Blue Indicator LED..... **LED1-LED9**
[ ] (1) Regulator Module (3.3V) – see details **VR1**

Resistors (1/4 watt, 5% Carbon Film):
[ ] (9) 56 Ω (green-blue-black-gold) (1/4 watt)..... **R1-R9**

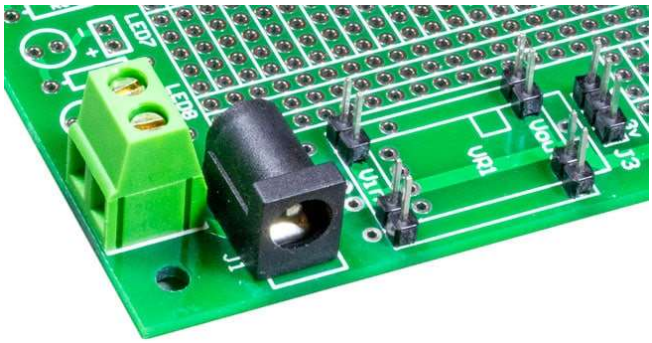
Sockets, Headers, and Connectors:
[ ] (1) 2.1mm or 2.5mm Coaxial Jack PCB Mount.....**J1**
[ ] (1) Rising Clamp Terminal Block (2 position).....**J2**
[ ] (1) 3-pin Single Row Header & Shorting Block **J3**
[ ] (1) 1x40 40-pin Female Connector ..... **I/O Connector**
[ ] (1) 2x40 Dual-Row Male Connector..... **I/O Connector**
[ ] (1) 1x40 Single-Row Male Connector ..... **I/O Connector**

NodeMCU Processor Notes:



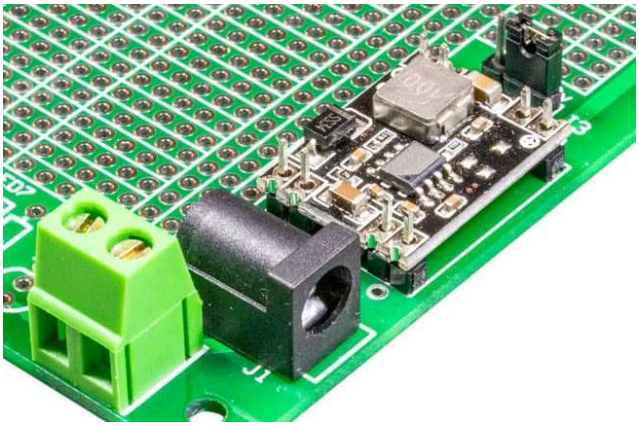
When installing the NodeMCU carrier module, leave a small gap of 1/16"-1/8" (2-3mm) between the bottom of the processor carrier and the **NodeMCU IoT Experimenter**. This ensures traces from the processor board do not short against traces on the main board.

Regulated Power Module



The NodeMCU includes an onboard AMS1117 3.3V voltage regulator. This is sufficient to power the module, but when interfacing to external circuits, it may not be adequate.

The **NodeMCU IoT Experimenter** features the capabilities of adding a more efficient and powerful regulator. We have chosen a cost-efficient module to go on the board at ***VR1*** which can supply up to **3A** at **3.3V**. It is advisable to solder the eight header pins on the **NodeMCU IoT Experimenter.** Afterward, install a 3.3V power module onto the pins and solder into position. Ensure you match the input and output terminals to those on the board (the **Input** to the module should be closest to the power jacks at ***J1*** and ***J2***).



Power J3 Jumper

Located above the regulator module is a 3-way jumper at ***J3*** and offers two positions, ***X*** or ***3V***. When jumpered across the ***Center Pin*** to ***3V***, the output from the regulator module will be provided to the **NodeMCU** and **3V** rails on the board.

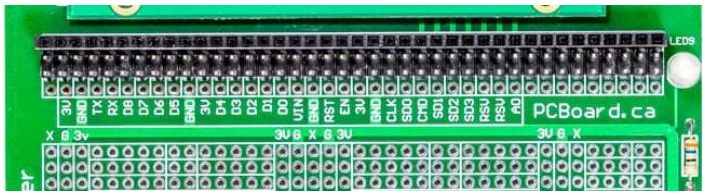
Alternately, if you install a different value of regulator (such as a 5V model), position the jumper across the ***Center Pin*** and ***X*** which will direct the current to the **X** rails on the board.

If using a higher value regulator than 3.3V (such as a 5V), the regulator on the NodeMCU can be used to power the NodeMCU. Enable the jumper to ***X*** position (which provides power to the X rails). Place a jumper from any ***X*** rail to ***Vin*** interface pad. Keep in mind; you will be limited to the current handling capabilities of the regulator on the **NodeMCU**.

Power Input Jacks

When using the optional regulated power module ***VR1***, the board can have power applied to ***J1***, which can be a 2.1mm or 2.5mm power jack. Connection ***J2*** optionally accept wires directly into the board or through a Rising Clamp Terminal Block (2-pin).

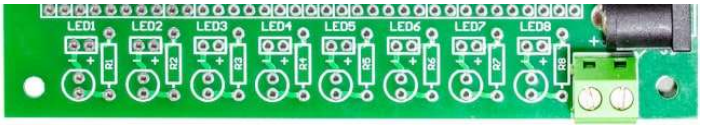
Prototype Area



The prototype area on the board has over 1,000 plated 0.1” spaced holes. All processor pins extend to a set of four rows just below the **NodeMCU** and are labeled with their corresponding functions.

The top row will contain a single-row header socket which mates with Dupont style Male connectors. The next two rows are Male header pins which mate to Dupont style Female connectors. The last and bottom row is left empty to allow for solder connections for a more permanent solution.

LED Interface



An area for eight LEDs and dropping resistors is included at the bottom of the board to aid in rapid prototyping.

Positions ***LED1*** to ***LED8*** offers mounts for eight LEDs along with dropping resistors (***R1*** to ***R8***) for each LED. Connection to each LED is through the header block just above each LED, marked with a **+** and **-** negative connections.

When controlling LEDs from the NodeMCU, remember the NodeMCU can source or sink a maximum of **12mA** per pin.

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Special Considerations: The **NodeMCU** operates at 3.3V. If you connect to a 5V power supply, you'll destroy it.

Unlike some 5V or 3.3V Arduino boards, the **NodeMCU** ESP8266's I/O pins are not 5V tolerant. Consider a **Level Converter** for interfacing to TTL (5V logic).