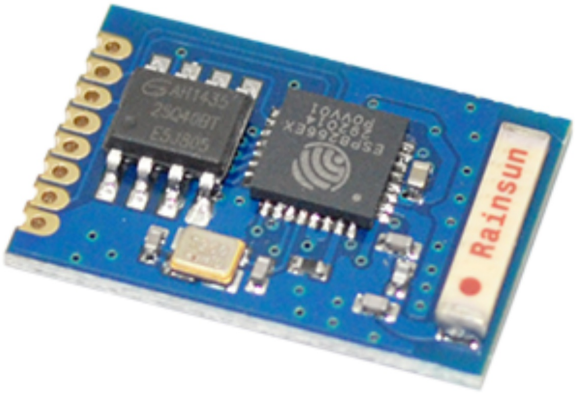
ESP8266 WiFi Module

Technical Manual Rev 1r0



The ESP8266 Wifi module is a complete Wi-Fi network where you can easily connect as a serving Wi-Fi adapter, wireless internet access interface to any microcontroller-based design on its simple connectivity through Serial Communication or UART interface.

FEATURES:

- 802.11 b/g/n protocol
- Wi-Fi Direct (P2P), soft-AP
- Integrated TCP/IP protocol
- Integrated low power 32-bit CPU
- SDIO 2.0, SPI, UART

GENERAL SPECIFICATIONS:

- Input Supply: + 3.3VDC
- IC: ESP8266
- Interface: Serial Communication
- PCB Dimensions: 21mm x 13.2mm

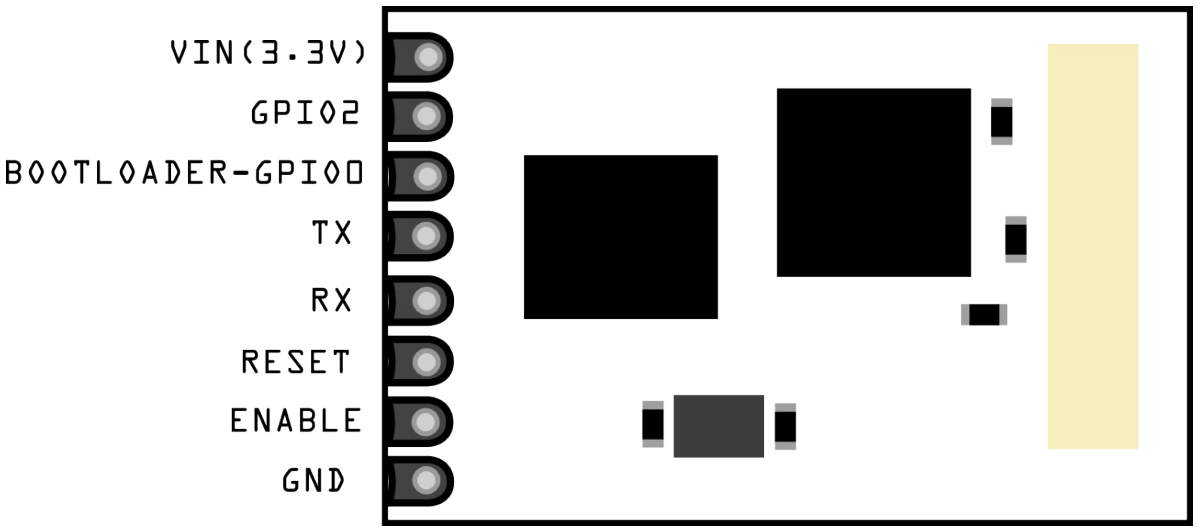
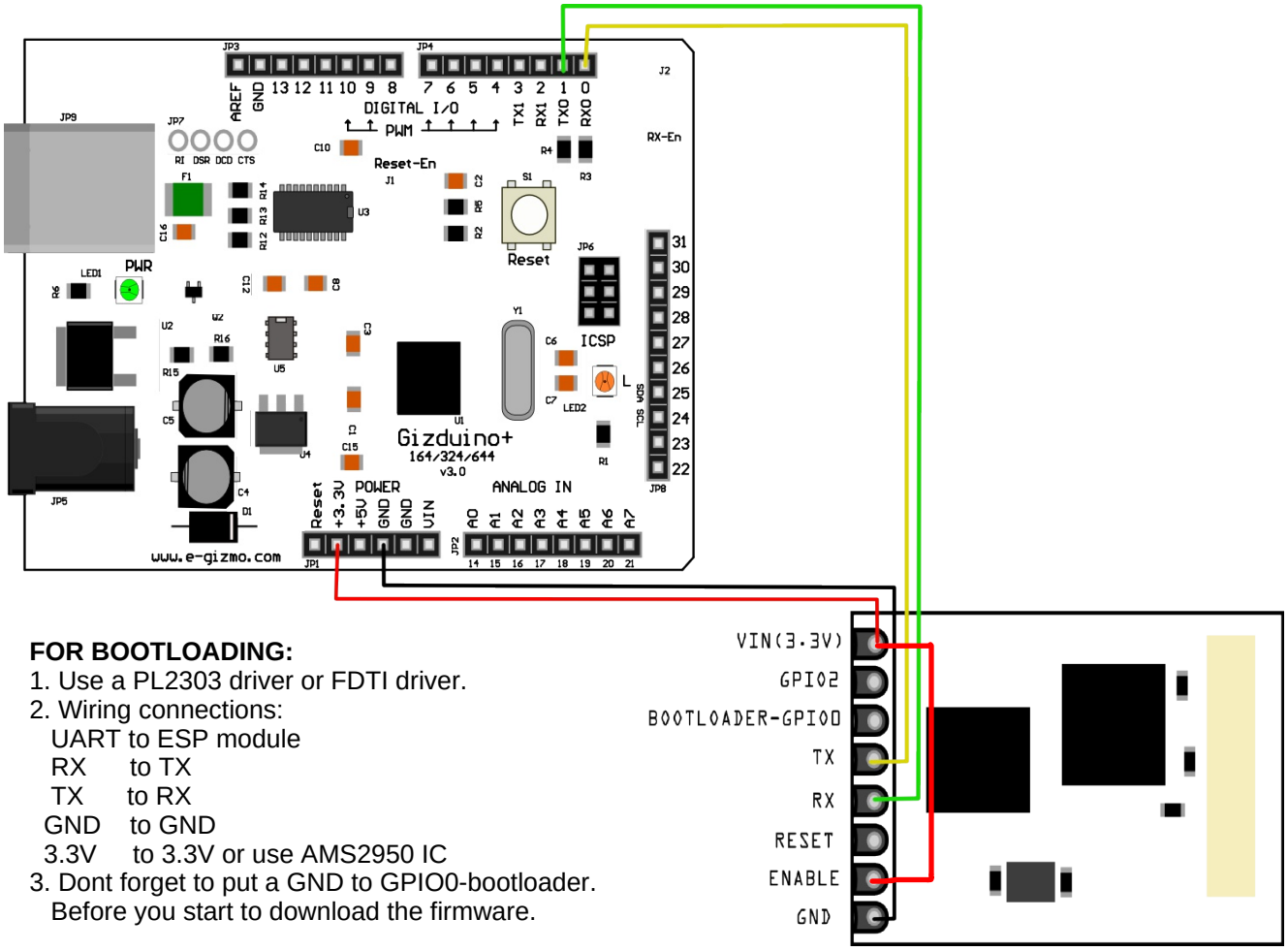


Figure 1. Major Parts placement of Wifi Module & its major Components.

The WiFi module requires a 3.3V power supply
*Note: do not connect the wifi module to the 5V, the wifi module does not have a 5V tolerant inputs.

Table 1. Pin Descriptions

PIN NAME	DESCRIPTIONS
VIN	+3.3 V DC Input Supply
GPIO2	Other
GPIO0	Bootloader, for Firmware updates
TX	Transmit
RX	Received
RESET	Reset pin
ENABLE	Enable the Wifi (Active-HIGH)
GND	Ground



FOR BOOTLOADING:

1. Use a PL2303 driver or FDTI driver.
2. Wiring connections:
   UART to ESP module
   RX to TX
   TX to RX
   GND to GND
   3.3V to 3.3V or use AMS2950 IC
3. Dont forget to put a GND to GPIO0-bootloader.
   Before you start to download the firmware.

Figure 2. WiFi module connected to a Gizduino microcontroller

To connect the Wifi module to the Gizduino microcontroller:

- connect the red wire to VIN(3.3V) to the +3.3V power from the microcontroller.
- connect the black wire to the ground.
- connect the green wire to the TX of the Wifi module and microcontroller
- connect the yellow wite to the RX of the wifi module and microcontroller

Table 2. AT Commands for ESP8266

Commands	Description	Type
AT+RST	restart the module	basic
AT+CWMODE	wifi mode	wifi
AT+CWJAP	join the AP	wifi
AT+CWLAP	list the AP	wifi
AT+CWQAP	quit the AP	wifi
AT+CIPSTATUS	get the connection status	TCP/IP
AT+CIPSTART	set up TCP or UDP connection	TCP/IP
AT+CIPSEND	send data	TCP/IP
AT+CIPCLOSE	close TCP or	TCP/IP
AT+CIFSR	Get IP address	TCP/IP
AT+CIPMUX	set multiple connections	TCP/IP
AT+CIPSERVER	set as server	TCP/IP

AT+CWMODE

Inquiry: AT+CWMODE?

Test: AT+CWMODE=?

Parameters:
1 = Status, 2 = AP, 3 = both

AT+CWJAP

Inquiry: AT+CWJAP?

Set: AT+CWJAP = <ssid>,<pwd>

Parameters:
ssid = ssid, pwd = wifi password

AT+CWQAP

Test: AT+CWQAP=?

AT+CWSAP

Inquiry: AT+CWSAP?

Set:
AT+CWSAP = <ssid>,<pwd>,<chl>,<ecn>

Parameters:
ssid = ssid, chl = channel,
ecn = encryption

Examples:
Connect to your router:
AT+CWJAP = "YOUR SSID","helloword"
Check if connected:
AT+CWJAP?

AT+CIPSTATUS

Inquiry: AT+CWSTATUS?

Set: AT+CIPSTATUS

AT+CIPSTART

Test: AT+CIPSTART?

Set:
1. Single connection (+CIPMUX=0)
AT+CIPSTART=<type>,<addr>,<port>
2. Multiple connection (+CIPMUX=1)
AT+CIPSTART=<id>,<type>,<addr>,<port>

Parameters:
id = 0-4, type = TCP/UDP,
addr = IP address,
port = port

Examples:
Connect to another TCP server, set multiple connection first:
AT+CIPMUX = 1
connect:
AT+CIPSTART = 4,"TCP","X1.X2.X3.X4",9999

AT+CIPSEND

Test: AT+CIPSEND=?

Set:
1. Single connection (+CMMUX=0)
AT+CIPSEND=<length>
2. Multiple connection (+CIPMUX=1)
AT+CIPSEND=<id>,<length>

Examples:
send data:
AT+CIPSEND=4,15 and then enter the data

AT+CIPCLOSE

Test: AT+CIPCLOSE=?

Set: AT+CIPCLOSE=<id> or AT+CIPCLOSE

AT+CIFSR

Test: AT+CIFSR=?

Set: AT+CIFSR

AT+CIPMUX

Inquiry: AT+CIPMUX=?

Set: AT+CIPMUX=<mode>

Parameters:
0 for single connection
1 for multiple connection

AT+CIPSERVER

Set: AT+CIPSERVER=<mode>[,<port>]

Parameters:
mode 0 to close server mode
mode 1 to open
port = port

Examples:
Turn on as a TCP server:
AT+CIPSERVER=1,8888
check the self server IP address:
AT+CIFSR=?