

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer project, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the connection of a USB_B_Micro (J1) to the ESP8266 MCU (U3). The USB shield provides a +5V supply, which is regulated down to +3.3V by the 3.3V 1A regulator (U1). The regulator's output is filtered by capacitor C2 (1uF). The USB shield also provides a +3.3V supply, which is filtered by capacitor C1 (1uF).

Programming

The programming section shows the connection of a USB to UART module (J2) to the ESP8266 MCU (U3). The module's TX pin is connected to the MCU's RX pin (GPIO12), and its RX pin is connected to the MCU's TX pin (GPIO13). The module's VCC pin is connected to the +5V supply, and its GND pin is connected to GND.

ESP8266 MCU

The ESP8266 MCU (U3) is the central component. Its pins are connected as follows:

- 3V3: +3.3V supply
- EN: +3.3V supply
- RST: +3.3V supply
- ESP_RX: RXD (GPIO12)
- ESP_TX: TXD (GPIO13)
- GPIO0: BOOT
- GPIO2: EN
- GPIO4: RST
- GPIO5: RXD
- GPIO12: TXD
- GPIO13: RXD
- GPIO14: CLEAR
- GPIO15: LATCH
- GPIO16: OUTPUT_ENABLE
- GPIO17: SW_1
- GPIO18: DATA
- GPIO19: DATA
- GND: GND
- P_GND: GND
- TOUT: GND

LED Driver

The LED driver section shows the connection of a 74HC595 (U2) to the ESP8266 MCU (U3). The 74HC595 is configured as a shift register to drive 8 LEDs. The SER pin is connected to the MCU's DATA pin (GPIO18), the SRCLK pin is connected to the MCU's LATCH pin (GPIO15), and the RCLK pin is connected to the MCU's CLEAR pin (GPIO14). The VCC pin is connected to +3.3V, and the GND pin is connected to GND. The 74HC595's QA-QH pins are connected to the LEDs (LED_1 to LED_8).

LEDs

The LEDs section shows the connection of 8 LEDs (D1 to D8) to the LED driver (U2). Each LED is connected to the 74HC595's QA-QH pins and has its anode connected to +3.3V and its cathode connected to GND.

User Switch

The user switch section shows the connection of a push button switch (SW1) to the ESP8266 MCU (U3). The switch is connected to the MCU's GPIO17 pin (SW_1) and has its other terminal connected to GND.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan
ESP8266 Network Traffic Visualizer

Sheet: /
File: 8Bit_WiFi_Visualizer.sch

Title: 8Bit WiFi Visualizer

Size: A4 Date: 2019-11-21 Rev: A04
KiCad E.D.A. eeschema (5.1.6)-1 Id: 1/1

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the USB_B_Micro (J1) connected to the 3.3V regulator (U1, 3.3V 1A). The regulator's input (VI) is connected to the VBUS pin of the USB connector. The output (VO) provides +3.3V, which is filtered by capacitor C2 (1uF). A 1uF capacitor (C1) is also connected to the +5V input of the regulator.

Programming

The programming section shows the connection of the ESP8266 MCU (U3) to the programming interface. The BOOT pin is connected to the SW3 (SW_SPST) switch. The ESP_EN pin is connected to the SW2 (SW_SPST) switch. The ESP_TX and ESP_RX pins are connected to the J2 (Conn_01x04) header.

ESP8266 MCU

The ESP8266 MCU (U3, ESP-WROOM-02D) is the central component. Its pins are connected as follows:

- 3V3: +3.3V
- EN: +3.3V
- RST: RST pin
- RXD: ESP_RX
- TXD: ESP_TX
- GPIO0: BOOT
- GPIO2: CLOCK
- GPIO4: LATCH
- GPIO5: CLEAR
- GPIO12: OUTPUT_ENABLE
- GPIO13: SW_1
- GPIO14: DATA
- GPIO15: R3 (10k)
- GPIO16: TOUT
- GND: GND
- P_GND: GND

LED Driver

The LED driver section shows the connection of the 74HC595 (U2) to the ESP8266 MCU. The 74HC595 is configured as a shift register to drive 8 LEDs (D1-D8). The SER pin is connected to the DATA pin of the MCU. The SRCLK pin is connected to the CLOCK pin of the MCU. The SRCLR pin is connected to the LATCH pin of the MCU. The RCLK pin is connected to the CLEAR pin of the MCU. The OE pin is connected to the OUTPUT_ENABLE pin of the MCU. The QH pin is connected to the SW_1 pin of the MCU. The QH pin is also connected to the R3 (10k) resistor.

LEDs

The LEDs (D1-D8) are connected to the output pins of the 74HC595. The LEDs are labeled LED_1 through LED_8, corresponding to the QH pin of the 74HC595.

User Switch

The User Switch section shows the connection of the SW1 (SW_Push_Dual) switch to the ESP8266 MCU. The SW_1 pin of the MCU is connected to the SW1 switch. The SW1 switch is also connected to the R5 (10k) resistor, which is connected to the +3.3V supply.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan
ESP8266 Network Traffic Visualizer

Sheet: /
File: 8Bit_WiFi_Visualizer.sch

Title: 8Bit WiFi Visualizer

Size: A4 Date: 2019-11-21 Rev: A04
KiCad E.D.A. eeschema (5.1.6)-1 Id: 1/1

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the USB_B_Micro (J1) connected to the 3.3V regulator (U1, 3.3V 1A). The regulator's input (VI) is connected to the VBUS pin of the USB connector. The output (VO) provides +3.3V, which is filtered by capacitor C2 (1uF). A 1uF capacitor (C1) is also connected to the +5V input of the regulator.

Programming

The programming section shows the connection of the ESP8266 MCU (U3) to the programming interface. The BOOT pin is connected to the SW3 (SW_SPST) switch. The ESP_EN pin is connected to the SW2 (SW_SPST) switch. The ESP_TX and ESP_RX pins are connected to the J2 (Conn_01x04) header.

ESP8266 MCU

The ESP8266 MCU (U3, ESP-WROOM-02D) is the central component. Its pins are connected as follows:

- 3V3: +3.3V
- EN: +3.3V
- RST: RST pin
- RXD: ESP_RX
- TXD: ESP_TX
- GPIO0: BOOT
- GPIO2: CLOCK
- GPIO4: LATCH
- GPIO5: CLEAR
- GPIO12: OUTPUT_ENABLE
- GPIO13: SW_1
- GPIO14: DATA
- GPIO15: R3 (10k)
- GPIO16: TOUT
- GND: GND
- P_GND: GND

LED Driver

The LED driver section shows the connection of the 74HC595 (U2) to the ESP8266 MCU. The 74HC595 is configured as a shift register to drive 8 LEDs (D1-D8). The SER pin is connected to the DATA pin of the MCU. The SRCLK pin is connected to the CLOCK pin of the MCU. The SRCLR pin is connected to the LATCH pin of the MCU. The RCLK pin is connected to the CLEAR pin of the MCU. The OE pin is connected to the OUTPUT_ENABLE pin of the MCU. The QH pin is connected to the SW_1 pin of the MCU. The QH pin is also connected to the R3 (10k) resistor.

LEDs

The LEDs (D1-D8) are connected to the output pins of the 74HC595. The LEDs are labeled LED_1 through LED_8, corresponding to the QH pin of the 74HC595.

User Switch

The User Switch section shows the connection of the SW1 (SW_Push_Dual) switch to the ESP8266 MCU. The SW_1 pin of the MCU is connected to the SW1 switch. The SW1 switch is also connected to the R5 (10k) resistor, which is connected to the +3.3V supply.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan
ESP8266 Network Traffic Visualizer

Sheet: /
File: 8Bit_WiFi_Visualizer.sch

Title: 8Bit WiFi Visualizer

Size: A4 Date: 2019-11-21 Rev: A04
KiCad E.D.A. eeschema (5.1.6)-1 Id: 1/1

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the USB_B_Micro (J1) connected to the 3.3V regulator (U1, 3.3V 1A). The regulator's input (VI) is connected to the VBUS pin of the USB connector. The output (VO) provides +3.3V, which is filtered by capacitor C2 (1uF). A 1uF capacitor (C1) is also connected to the +5V input of the regulator.

Programming

The programming section shows the connection of the ESP8266 MCU (U3) to the programming interface. The BOOT pin is connected to the SW3 (SW_SPST) switch. The ESP_EN pin is connected to the SW2 (SW_SPST) switch. The ESP_TX and ESP_RX pins are connected to the J2 (Conn_01x04) header.

ESP8266 MCU

The ESP8266 MCU (U3, ESP-WROOM-02D) is the central component. Its pins are connected as follows:

- 3V3: +3.3V
- EN: +3.3V
- RST: RST pin
- RXD: ESP_RX
- TXD: ESP_TX
- GPIO0: BOOT
- GPIO2: CLOCK
- GPIO4: LATCH
- GPIO5: CLEAR
- GPIO12: OUTPUT_ENABLE
- GPIO13: SW_1
- GPIO14: DATA
- GPIO15: R3 (10k)
- GPIO16: TOUT
- GND: GND
- P_GND: GND

LED Driver

The LED driver section shows the connection of the 74HC595 (U2) to the ESP8266 MCU. The 74HC595 is configured as a shift register to drive 8 LEDs (D1-D8). The SER pin is connected to the DATA pin of the MCU. The SRCLK pin is connected to the CLOCK pin of the MCU. The SRCLR pin is connected to the LATCH pin of the MCU. The RCLK pin is connected to the CLEAR pin of the MCU. The OE pin is connected to the OUTPUT_ENABLE pin of the MCU. The QH pin is connected to the SW_1 pin of the MCU. The QH pin is also connected to the R3 (10k) resistor.

LEDs

The LEDs (D1-D8) are connected to the output pins of the 74HC595. The LEDs are labeled LED_1 through LED_8, corresponding to the QH pin of the 74HC595.

User Switch

The User Switch section shows the connection of the SW1 (SW_Push_Dual) switch to the ESP8266 MCU. The SW_1 pin of the MCU is connected to the SW1 switch. The SW1 switch is also connected to the R5 (10k) resistor, which is connected to the +3.3V supply.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan
ESP8266 Network Traffic Visualizer

Sheet: /
File: 8Bit_WiFi_Visualizer.sch

Title: 8Bit WiFi Visualizer

Size: A4 Date: 2019-11-21 Rev: A04
KiCad E.D.A. eeschema (5.1.6)-1 Id: 1/1

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer project, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the connection of a USB_B_Micro (J1) to the ESP8266 MCU (U3). The USB shield provides a +5V supply, which is regulated down to +3.3V by a 3.3V 1A voltage regulator (U1). The regulator's input is connected to the +5V line, and its output is connected to the +3.3V line. The input and output capacitors (C1 and C2) are connected to ground.

Programming

The programming section shows the connection of a USB to UART bridge (J2) to the ESP8266 MCU (U3). The bridge's TX and RX lines are connected to the MCU's RXD and TXD pins, respectively. The bridge's VBUS is connected to the +5V supply, and its GND is connected to ground.

ESP8266 MCU

The ESP8266 MCU (U3) is the central component. Its pins are connected as follows:

- Power:** +3.3V to 3V3, GND to GND, and P_GND to GND.
- GPIOs:** GPIO0 to 3V3, GPIO2 to EN, GPIO4 to RST, GPIO5 to RXD, GPIO12 to TXD, GPIO13 to LATCH, GPIO14 to CLEAR, GPIO15 to OUTPUT_ENABLE, and GPIO16 to SW_1.
- Other:** RST to RST, RXD to RXD, TXD to TXD, LATCH to LATCH, CLEAR to CLEAR, OUTPUT_ENABLE to OUTPUT_ENABLE, and SW_1 to SW_1.

LED Driver

The LED driver section shows the connection of a 74HC595 (U2) to the ESP8266 MCU (U3). The 74HC595 is configured as a shift register to drive eight LEDs. The SER pin is connected to the MCU's DATA pin, and the SRCLK pin is connected to the MCU's LATCH pin. The VCC pin is connected to +3.3V, and the GND pin is connected to ground.

LEDs

The LEDs section shows the connection of eight LEDs (D1-D8) to the 74HC595 (U2). The LEDs are connected to the QA-QH pins of the 74HC595, and their cathodes are connected to ground.

User Switch

The user switch section shows the connection of a push button switch (SW1) to the ESP8266 MCU (U3). The switch is connected to the MCU's SW_1 pin, and its other terminal is connected to ground.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan ESP8266 Network Traffic Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A.	eeschema (5.1.6)-1	Id: 1/1

This diagram illustrates the hardware components and connections for the 8Bit WiFi Visualizer project, centered around the ESP8266 MCU.

3.3V Power Supply

The power supply section shows the connection of a USB_B_Micro (J1) to the ESP8266 MCU (U3). The USB shield provides a +5V supply, which is regulated down to +3.3V by a 3.3V 1A voltage regulator (U1). The regulator's input is connected to the +5V line, and its output is connected to the +3.3V line. The input and output capacitors (C1 and C2) are connected to ground.

Programming

The programming section shows the connection of a USB to UART bridge (J2) to the ESP8266 MCU (U3). The bridge's TX and RX lines are connected to the MCU's RXD and TXD pins, respectively. The bridge's VBUS is connected to the +5V supply, and its GND is connected to ground.

ESP8266 MCU

The ESP8266 MCU (U3) is the central component. Its pins are connected as follows:

- Power:** +3.3V to 3V3, GND to GND, and P_GND to GND.
- GPIOs:** GPIO0 to 3V3, GPIO2 to EN, GPIO4 to RST, GPIO5 to RXD, GPIO12 to TXD, GPIO13 to LATCH, GPIO14 to CLEAR, GPIO15 to OUTPUT_ENABLE, and GPIO16 to SW_1.
- Other:** RST to RST, RXD to RXD, TXD to TXD, LATCH to LATCH, CLEAR to CLEAR, OUTPUT_ENABLE to OUTPUT_ENABLE, and SW_1 to SW_1.

LED Driver

The LED driver section shows the connection of a 74HC595 (U2) to the ESP8266 MCU (U3). The 74HC595 is configured as a shift register to drive 8 LEDs. The SER pin is connected to the MCU's DATA pin, and the SRCLK pin is connected to the MCU's LATCH pin. The VCC pin is connected to +3.3V, and the GND pin is connected to ground.

LEDs

The LEDs section shows the connection of 8 LEDs (D1-D8) to the 74HC595 (U2). The LEDs are connected to the QA-QH pins of the 74HC595, and their cathodes are connected to ground.

User Switch

The user switch section shows the connection of a push button switch (SW1) to the ESP8266 MCU (U3). The switch is connected to the MCU's SW_1 pin and ground.

It is recommended that users do not solder Pad 19 to the base board. If users do want to solder it, they need to ensure that the correct quantity of soldering paste is applied.

Chandler McCowan
ESP8266 Network Traffic Visualizer

Sheet: /
File: 8Bit_WiFi_Visualizer.sch

Title: 8Bit WiFi Visualizer

Size: A4 Date: 2019-11-21 Rev: A04
KiCad E.D.A. eeschema (5.1.6)-1 Id: 1/1

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	

Chandler McCowan ESP8266 Network Traffick Visualizer		
Sheet: / File: 8Bit_WiFi_Visualizer.sch		
Title: 8Bit WiFi Visualizer		
Size: A4	Date: 2019-11-21	Rev: A04
KiCad E.D.A. eschema (5.1.6)–1	Id: 1/1	