

The J1 connector receives the AC input voltage.

PS1 (HLK-PM12) is an encapsulated power supply, which converts the AC input voltage to 12V DC. The power supply maximum power is 3W.

The SW1 switch turns the circuit ON and OFF. The C1 and C2 capacitors are filtering capacitors.

The U1 voltage regulator (AMS1117-3.3) steps the 12V voltage down to 3.3V, with maximum output current of 1A.

The C3 and C4 capacitors are filtering capacitors.

[illegible]

The U2 module (ESP-12E) is the responsible for receiving the commands over WiFi or switch and controlling the relay accordingly.

Some of its pins must be pulled up or down. This is done through the R1, R2 and R3 resistors.

The C5 capacitor is a filtering capacitor for the power input.

The diagram shows a relay driver circuit. A +12V supply is connected to the drain of a MOSFET (Q1, 2N7002H) and through a 1N4148 diode (D2) to the coil of a relay (K1, 12V 5A). The MOSFET's gate is driven by a signal from RELAY1 through a 390Ω resistor (R5). The MOSFET's source is connected to GND. The relay's coil is connected to the drain of the MOSFET. The relay's contacts are connected to a LINE and a terminal labeled OUT1. A 10kΩ resistor (R6) is connected between the gate and the drain of the MOSFET.

Two digital outputs are used to control the relays through the Q1 and Q2 transistors (2N7002H).

The U3 and U4 optocouplers (PC817) isolate the outputs from the power circuit.

When the output's logic level is LOW, the transistor is not conducting and the relay coil is de-energized.

When the output's logic level is HIGH, the transistor is conducting and the relay coil is energized.

The R5 resistor limit the optocoupler input current. The R6 resistor pull the transistor gate down.
The D1 diode act as a flyback diode.

The diagram shows a simple series circuit. A green line represents the +12V supply, which passes through a red rectangular resistor labeled 'R4 2.2k'. This is followed by a red LED symbol labeled 'D1 LED'. A red arrow on the LED points upwards and to the right, indicating light emission. The circuit then connects to a green line labeled 'GND'.

The D2 LED indicates when the 12V bus is powered.

The R7 resistor limits the current through the LED.

The diagram illustrates a 4-to-16 decoder circuit. It consists of four 2-to-1 multiplexers (SWITCH1, SWITCH2, OUT1, OUT2) and four 4-pin connectors (J4, J5, J6, J7). The circuit is organized as follows:

- SWITCH1** has inputs 1 and 2. Input 1 is connected to **J4** pin 1. Input 2 is connected to **J4** pin 2. The output of SWITCH1 is connected to **GND**.
- SWITCH2** has inputs 1 and 2. Input 1 is connected to **J4** pin 3. Input 2 is connected to **J4** pin 4. The output of SWITCH2 is connected to **GND**.
- OUT1** has inputs 1 and 2. Input 1 is connected to **J5** pin 1. Input 2 is connected to **J5** pin 2. The output of OUT1 is connected to **NEUT**.
- OUT2** has inputs 1 and 2. Input 1 is connected to **J5** pin 3. Input 2 is connected to **J5** pin 4. The output of OUT2 is connected to **NEUT**.

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The image contains two wiring diagrams. The left diagram, labeled J2, shows a connector with pins 1 through 6. Pin 1 is connected to a 3.3V supply. Pins 2 and 3 are crossed. Pin 4 is connected to TX, pin 5 to RX, and pin 6 to a common ground. The right diagram, labeled J3, shows a connector with pins 1 through 3. Pin 1 is connected to a 3.3V supply, pin 2 is connected to a common ground, and pin 3 is connected to a FLASH component.

The J2 connector provides access to the WiFi module serial bus.

The J3 connector needs a jumper to connect the microcontroller FLASH pin to 3V3 or GND.
GPIO0 connected to GND is used to program the microcontroller.
GPIO0 connected to 3V3 is used to run the code.