Graphical user interface

Description automatically generated

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **GPIO** | **Input** | **Output** | **Notes** | **Used as** | **Type** | **Pin** |
| 0 | pulled up | OK | outputs PWM signal at boot |  |  |  |
| 1 | TX pin | OK | debug output at boot |  |  |  |
| 2 | OK | OK | connected to on-board LED | IR | RMT | 2 |
| 3 | OK | RX pin | HIGH at boot |  |  |  |
| 4 | OK | OK |  | RFID IRQ |  | 4 |
| 5 | OK | OK | outputs PWM signal at boot | Trigger | GPIO | 5 |
| 6 | x | x | connected to the integrated SPI flash |  |  |  |
| 7 | x | x | connected to the integrated SPI flash |  |  |  |
| 8 | x | x | connected to the integrated SPI flash |  |  |  |
| 9 | x | x | connected to the integrated SPI flash |  |  |  |
| 10 | x | x | connected to the integrated SPI flash |  |  |  |
| 11 | x | x | connected to the integrated SPI flash |  |  |  |
| 12 | OK | OK | boot fail if pulled high | Laser | GPIO | 12 |
| 13 | OK | OK |  | RGB Pixels 1 (Gun) | RMT | 13 |
| 14 | OK | OK | outputs PWM signal at boot | PowerUp-Button | GPIO | 14 |
| 15 | OK | OK | outputs PWM signal at boot | RFID Reader SPI | Reset | 15 |
| 16 | OK | OK |  | RGB Pixels 2 (Gun) | RMT | RX2 |
| 17 | OK | OK |  | RGB Pixels (Vest) | RMT | TX2 |
| 18 | OK | OK |  | Capacitive Touch  Display | I2C | 18 |
| 19 | OK | OK |  | Capacitive Touch  Display | I2C | 19 |
| 21 | OK | OK |  | SD Card  RFID Reader SPI | SPI1\_MISO | 21 |
| 22 | OK | OK |  | SD Card  RFID Reader SPI | SPI1\_MOSI | 22 |
| 23 | OK | OK |  | SD Card  RFID Reader SPI | SPI1\_CLOCK | 23 |
| 25 | OK | OK |  | SD Card | ChipSelect | 25 |
| 26 | OK | OK |  | Speaker | I2S\_BCK | 26 |
| 27 | OK | OK |  | Speaker | I2S\_Data | 27 |
| 32 | OK | OK |  | Speaker | I2S\_WS | 32 |
| 33 | OK | OK |  | RFID Reader SPI | ChipSelect | 33 |
| 34 | OK |  | input only | IR Receiver 1 (Gun) |  |  |
| 35 | OK |  | input only | IR Receiver 2 (Gun) |  |  |
| 36 | OK |  | input only | IR Receiver 1 (Front) |  |  |
| 39 | OK |  | input only | IR Receiver 2 (Back) |  |  |

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|  |  |  |
|  |  |  |
|  |  | SD Card - SPI1 CLOCK |
| IR Receiver 1 – Front (RMT) |  | SD Card - SPI1 MOSI |
| IR Receiver 2 – Back (RMT) |  | RGB Pixels 2 – Gun (RMT) |
| IR Receiver 1 – Gun (RMT) |  |  |
| IR Receiver 2 – Gun (RMT) |  | SD Card - SPI1 MISO |
| Speaker - I2S\_WS |  | Capacitive Touch (I2C) |
| RFID - Chip Select |  | Capacitive Touch (I2C) |
| SD Card – Chip Select |  | Trigger (GPIO) |
| Speaker - I2S\_BCK |  |  |
| Speaker – I2S\_Data |  |  |
| PowerUp-Button (GPIO) |  | RFID IRQ |
| Laser (GPIO) |  | IR (RMT) |
| RGB Pixels 1 – Gun (RMT) |  | RFID Reset |
|  |  | RGB Pixels 1 – Vest (RMT) |
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Graphical user interface

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|  |  |  |
| --- | --- | --- |
| 3.3V |  | GND |
|  |  | SD Card - SPI1 CLOCK |
| IR Receiver 1 – Front (RMT) |  | SD Card - SPI1 MOSI |
| IR Receiver 2 – Back (RMT) |  | RGB Pixels 2 – Gun (RMT) |
| IR Receiver 1 – Gun (RMT) |  |  |
| IR Receiver 2 – Gun (RMT) |  | SD Card - SPI1 MISO |
| Speaker - I2S\_WS (LRC) |  |  |
| RFID - Chip Select (SDA) |  | Capacitive Touch (I2C) |
| SD Card – Chip Select |  | Capacitive Touch (I2C) |
| Speaker - I2S\_BCK |  | Trigger (GPIO) |
| Speaker – I2S\_Data |  | PSRAM |
| PowerUp-Button (GPIO) |  | PSRAM |
| Laser (GPIO) |  | RFID IRQ |
|  |  | RGB Pixels 1 – Vest (RMT) |
| RGB Pixels 1 – Gun (RMT) |  | IR (RMT) |
| SPI FLASH |  | RFID Reset |
| SPI FLASH |  | SPI FLASH |
| SPI FLASH |  | SPI FLASH |
|  |  | SPI FLASH |

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Table

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A blue circuit board with white text

Description automatically generated with low confidence

* **LRC** (Left/Right Clock) - this is the pin that tells the amplifier when the data is for the left channel and when its for the right channel
* **BCLK** (Bit Clock) - This is the pin that tells the amplifier when to read data on the data pin.
* **DIN** (Data In) - This is the pin that has the actual data coming in, both left and right data are sent on this pin, the LRC pin indicates when left or right is being transmitted

Gain

**GAIN** is, well, the gain setting. You can have a gain of **3dB, 6dB, 9dB, 12dB** or **15dB**.

* **15dB**if a 100K resistor is connected between **GAIN** and **GND**
* **12dB** if **GAIN**is connected directly to **GND**
* **9dB** if **GAIN** is not connected to anything (this is the default)
* **6dB** if **GAIN** is connected directly to **Vin**
* **3dB** if a 100K resistor is connected between **GAIN** and **Vin**

This way, the default gain is 9dB but you can easily change it by tweaking the connection to the **GAIN** pin. Note you may need to perform a power reset to adjust the gain.

SD / MODE

This pin is used for shutdown mode but is *also* used for setting which channel is output. It's a little confusing but essentially:

* If **SD** is connected to ground directly (voltage is under 0.16V) then the amp is **shut down**
* If the voltage on **SD**is between 0.16V and 0.77V then the output is (Left + Right)/2, that is the stereo average.
* If the voltage on **SD**is between 0.77V and 1.4V then the output is just the Right channel
* If the voltage on **SD** is higher than 1.4V then the output is the Left channel.

This is compounded by an internal 100K pulldown resistor on **SD** so you need to use a pullup resistor on SD to balance out the 100K internal pulldown.