

<https://github.com/Sidiment/Hardware-Software-Lab.git>

My Resistor:

R1 = 220 ohm

R2 = 150 ohm

R3 = 24K ohm

R4 = 30K ohm

R5 = 360k ohm

R6 = 300k ohm

R7 = 5 ohm

R8 = 20 ohm

Output voltage	$V_{ref} \times (1 + R2/R1) + I_{adj} \times R2$
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Where $V_{ref} = 1.25v$ $V_{out} = 2.1v$ I_{adj} is often as 0 => R1 R2

$R7 = (2.1v - 2v) / 2mA = 5ohm$

$$R_1 = \left(\frac{V_{OUT}}{V_{REF}} - 1 \right) \times R_2 \Rightarrow V_{ref} = 1.2246 / V_{out} = 2.2v / R4 = 30.1k \text{ ohm} \Rightarrow R3 = 24k \text{ ohm}$$

$R8 = 2.2v / 2mA \approx 20 \text{ ohm}$

$$V_{OUT} = V_{REF} \left(1 + \frac{R1}{R2} \right) \text{ let } R6(R2) = 300k \text{ ohm } R5 = 360k \text{ ohm}$$

The screenshot shows the Arduino IDE interface. The main.cpp file is open, displaying the following code:

```
1 #include <Arduino.h>
2
3 // Define analog pins
4 const int VOUT1_PIN = A2; // Analog pin A2
5 const int VOUT2_PIN = A0; // Analog pin A0
6
7 void setup() {
8   // Start serial communication
9   Serial.begin(115200);
10
11   // Attach ADC pins
12   adcAttachPin(VOUT1_PIN);
13   adcAttachPin(VOUT2_PIN);
14
15   // Set ADC attenuation
16   // ADC_ATTEN_DB_0 -> 0 to 1.1V
17   // ADC_ATTEN_DB_2_5 -> 0 to 1.5V
18   // ADC_ATTEN_DB_6 -> 0 to 2.2V
19   // ADC_ATTEN_DB_11 -> 0 to 3.3V (most commonly used for full-range voltage)
20   analogSetAttenuation(ADC_11db); // Set attenuation to handle up to 3.3V
21 }
22
```

The terminal output shows the following messages:

```
Hard resetting via RTS pin...
--- Terminal on /dev/cu.usbmodem101 | 9600 8-N-1
--- Available filters and text transformations: colorize, debug, default, direct, esp32_exception_decoder, hexlify, log2file, nocontrol, printable, send_on_enter, time
--- More details at https://bit.ly/pio-monitor-filters
--- Quit: Ctrl+C | Menu: Ctrl+T | Help: Ctrl+T followed by Ctrl+H
VOUT1 Voltage: 0.810 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.810 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.811 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.811 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.810 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.811 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.809 V
VOUT2 Voltage: 3.300 V
VOUT1 Voltage: 0.811 V
VOUT2 Voltage: 3.300 V
```

regulators

#	Reference	Qty	Value	Footprint	DNP
1	C1, C2	2	1uF	Capacitor_SMD:C_0805_2012Metric_Pad1.18x1.45mm_HandSolder	
2	C3, C4	2	1uF	Capacitor_SMD:C_0603_1608Metric_Pad1.08x0.95mm_HandSolder	
3	C5, C6	2	1uF	Capacitor_SMD:C_0402_1005Metric_Pad0.74x0.62mm_HandSolder	
4	D1	1	LED	LED_SMD:LED_0805_2012Metric_Pad1.15x1.40mm_HandSolder	
5	D2	1	LED	LED_SMD:LED_0603_1608Metric_Pad1.05x0.95mm_HandSolder	
6	J1, J2, J3, J4	4	n.m.	Connector_PinHeader_2.54mm:PinHeader_1x02_P2.54mm_Vertical	
7	R1	1	240ohm	Resistor_SMD:R_0805_2012Metric_Pad1.20x1.40mm_HandSolder	
8	R2	1	163.2ohm	Resistor_SMD:R_0805_2012Metric_Pad1.20x1.40mm_HandSolder	
9	R3	1	24k ohm	Resistor_SMD:R_0603_1608Metric_Pad0.98x0.95mm_HandSolder	
10	R4	1	30.1K ohm	Resistor_SMD:R_0603_1608Metric_Pad0.98x0.95mm_HandSolder	
11	R5	1	360k ohm	Resistor_SMD:R_0402_1005Metric_Pad0.72x0.64mm_HandSolder	
12	R6	1	300k ohm	Resistor_SMD:R_0402_1005Metric_Pad0.72x0.64mm_HandSolder	
13	R7	1	5ohm	Resistor_SMD:R_0805_2012Metric_Pad1.20x1.40mm_HandSolder	
14	R8	1	20 ohm	Resistor_SMD:R_0603_1608Metric_Pad0.98x0.95mm_HandSolder	
15	U1	1	LM317_SOT-223	Package_TO_SOT_SMD:SOT-223-3_TabPin2	
16	U2	1	TPS79301-EP	Package_TO_SOT_SMD:SOT-23-6	
17	U3	1	MIC5377	Package_TO_SOT_SMD:SOT-353_SC-70-5	

Text LED

