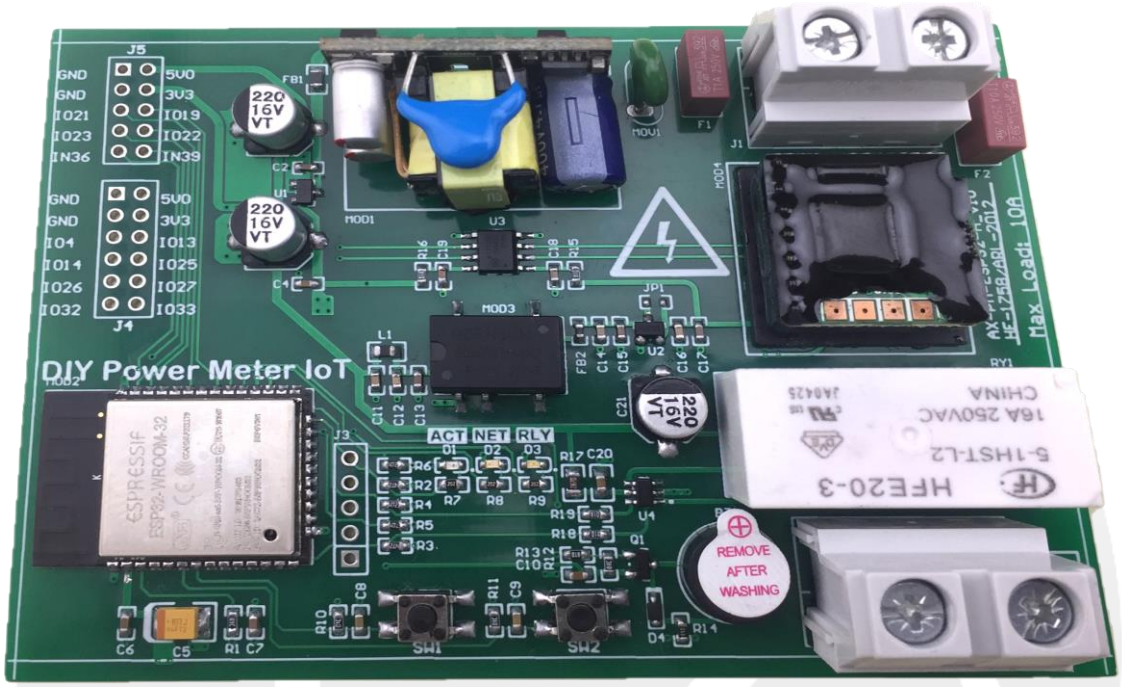
DIY AC Power Meter with ESP32 v1.0

Single Phase PM10A32-D1

Specifications:

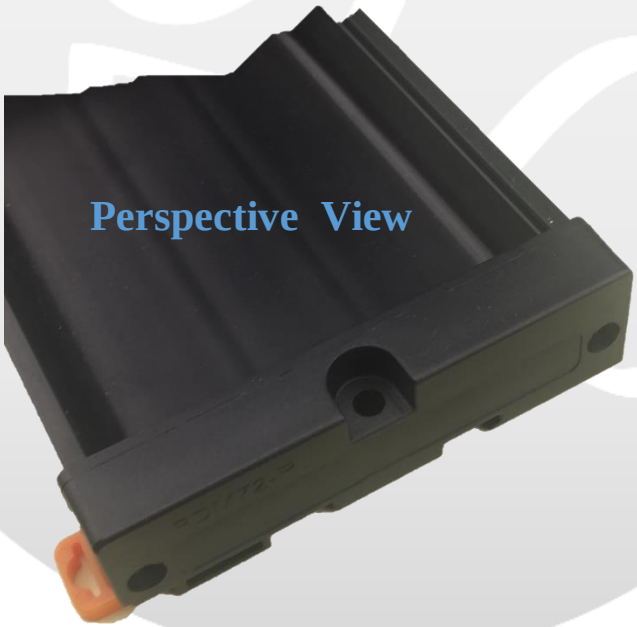
Voltage Supply Source	: Direct AC Input
Power Consumption	: 0.1 – 0.5Watt Peak
Accuracy Class	: 1
Voltage Measurement Range	: 60 – 277VAC (*Typical 85-265VAC*)
(Limited by AC-DC Module)	: 80 – 390DC (*Typical 100 – 370VDC*)
Current Measurement Range	: 10mA – 10A (Limited to Load Fuse)
Frequency Range	: 45 – 65 Hz
Power Resolution	: 0.0001kW
Energy Resolution	: 0.001kWh
Maximum Data-rate	: 250mS (*Limited to Power Meter Module*)
Isolation	: 3000VDC Galvanic Data line Isolated
	: 3000VAC AC-DC Isolated Module
	: 1500VDC 5V DC-DC Isolated Module
Load Switch	: Low Power Dual Coil Latch Relay with 16A Max
Button	: 2 Tactile Switches
Buzzer	: 1 Active Buzzer Ø 9.5mm
LED Indicator	: 3 LEDs (Red, Blue, Green)
MCU Core	: ESP32-WROOM-32D 4MB
Firmware	: Open Source with Examples & Library
Communication	: Wifi, Bluetooth (ESP32)
Antenna	: Internal Microstrip Antenna (Default)
External User Port	: 2 Ports (Total 2 Input & 12 GPIO)
	: 5V Output Max. 200mA
	: 3.3V Output Max. 100mA
ESP32 Programming Port	: 5-Pins Standard Jig with 2.54mm Pitch
Terminal Connector	: 630V 32A Max IEC Standard Entrelec ABB
	: 9.52mm Pitch, support 20 – 8 AWG
Operating Temperature	: -40 ~ 75°C
Humidity	: 5 – 95%
Dimension	: 72mm x 100mm (*PDM72 DIN Rail Case Compatible*)

DIY Power Meter ESP32 v1.0



Power Measurement Reading using Blynk Apps

PDM72 DIN Rail Case (optional)



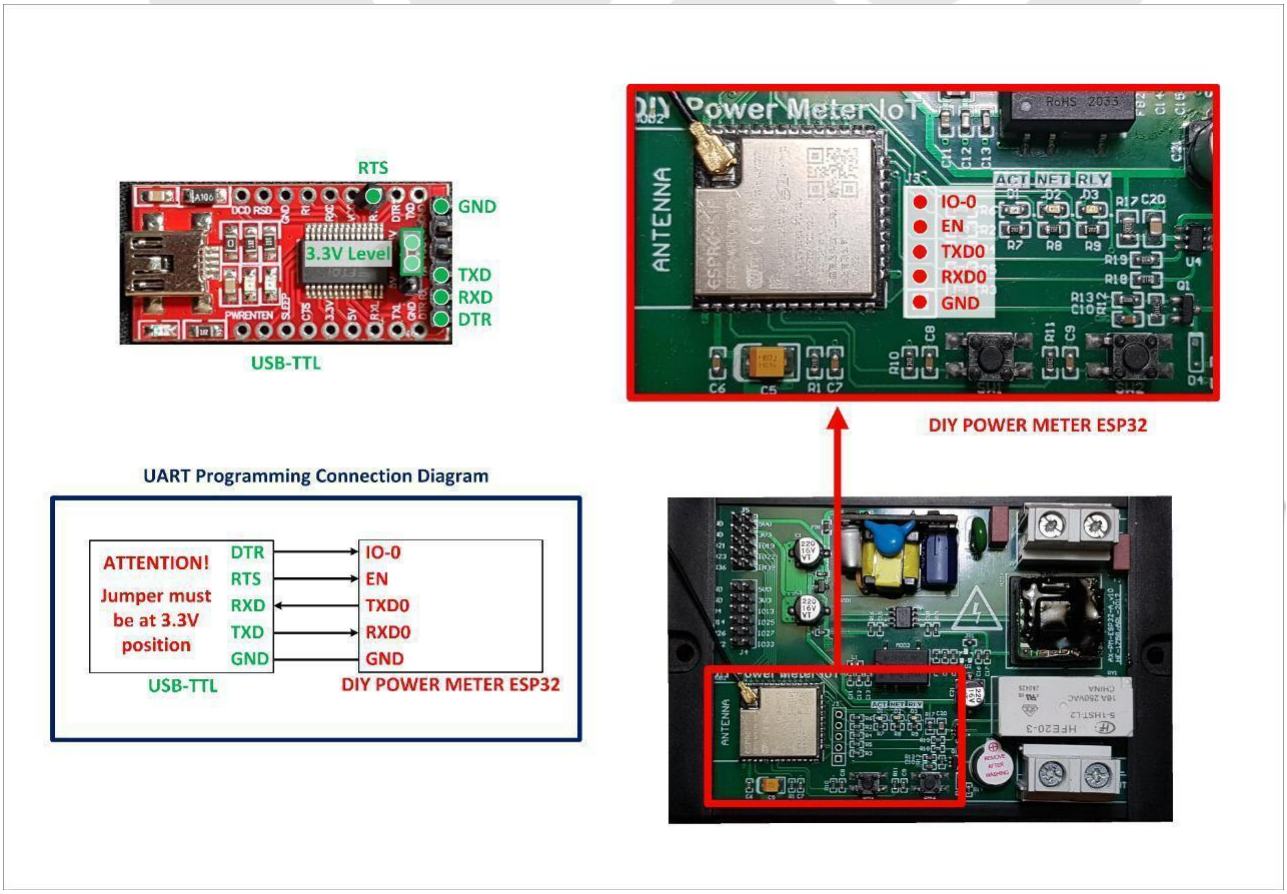
Calibration Test Result

Condition	Load Type	Error (%)
I_{max}	1.0	-0.11
	0.5L	-0.05
	0.8C	-0.06
$0.5\ I_{max}$	1.0	-0.09
	0.5L	-0.01
	0.8C	-0.13
I_b	1.0	-0.13
	0.5L	-0.14
	0.8C	-0.16
$0.2\ I_b$	1.0	-0.10
	0.5L	-0.11
	0.8C	-0.15
$0.1 I_b$	1.0	-0.14
	0.5L	-0.09
	0.8C	-0.13
$0.05 I_b$	1.0	-0.11

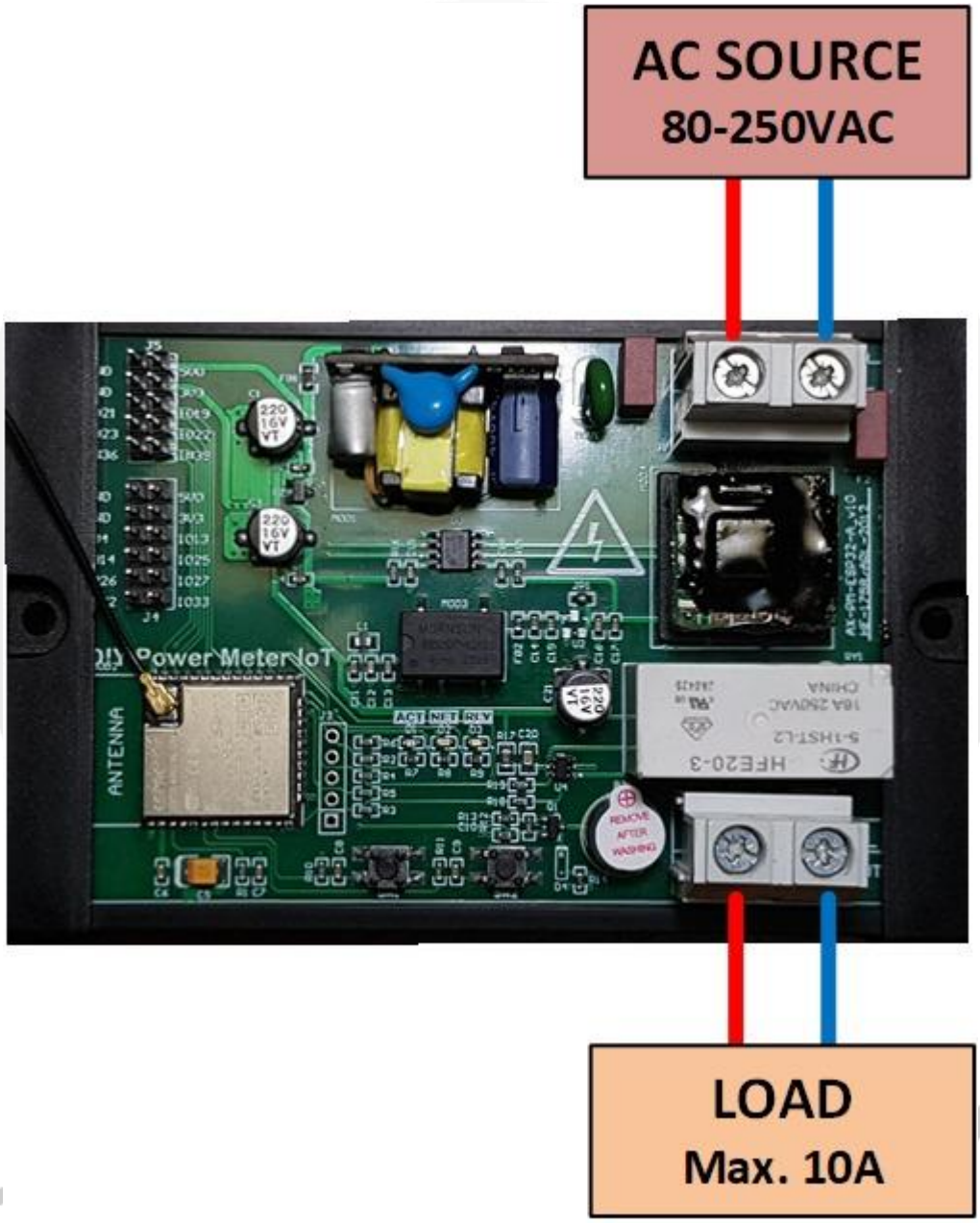
Note: *I_{max} = 16A I_b = 1A (as Specified 1(16)A)*

using Class 0.02 Calibration Device

Diagram Connection for ESP32 Programming USB TTL Module



Installation Wiring Diagram



Github Tutorial & Example Code

https://github.com/axial-labs/diypowermeteresp32/blob/main/README.md

QR Code to Clone Blynk Example Apps