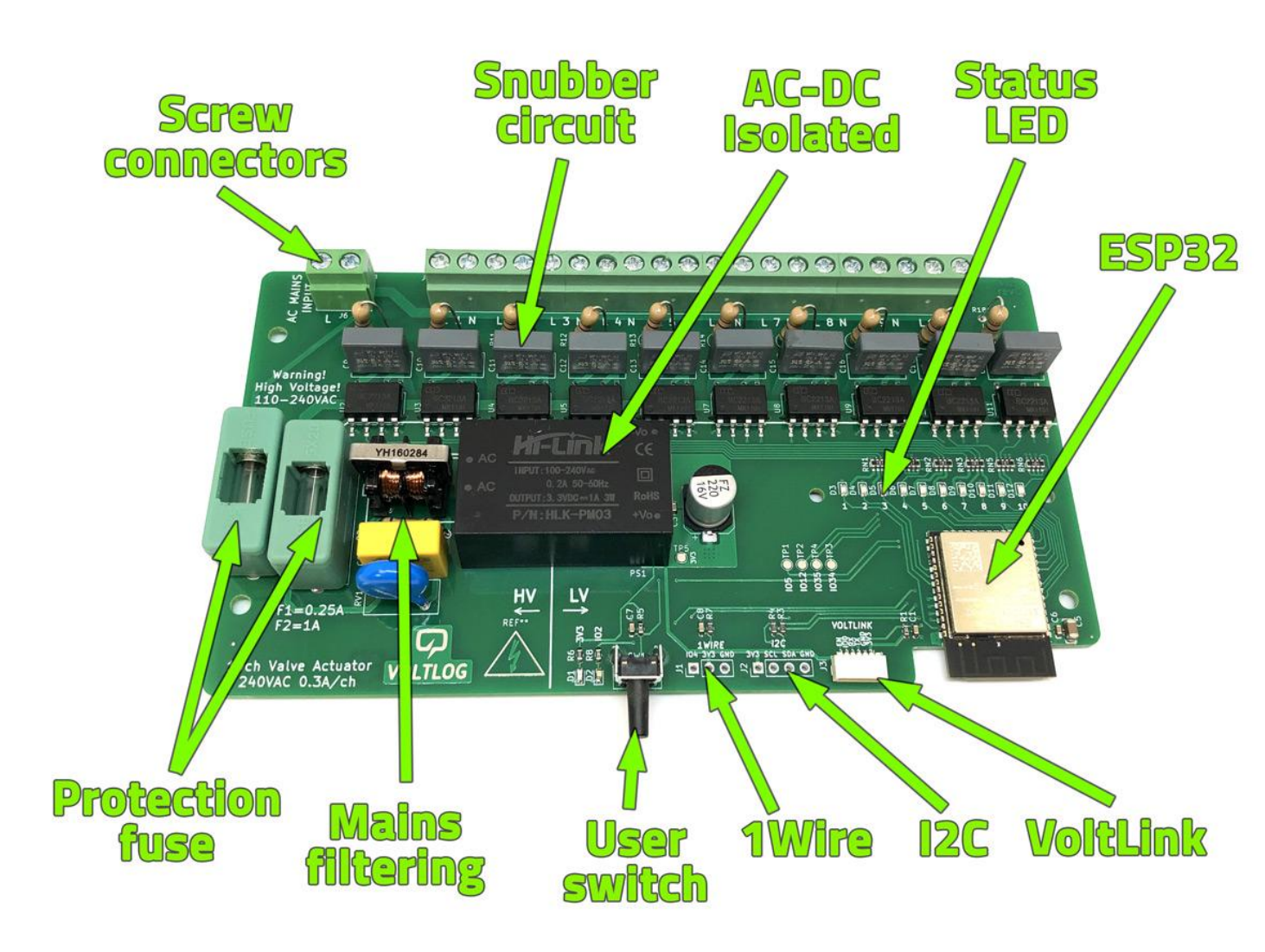
rev.B Feb-2023

ESP32 Tasmota/ESPHome Compatible Valve Controller

Quick Start Guide



Electrical Specs

- Input voltage: 110V-240V AC.
- Output current: up to 0.9A RMS per triac output and up to 2A total combined.
- Low voltage side overcurrent protection: 0.25A slow blow.
- Operating temperature range (ambient): 0-70°C relative humidity 10-80%.
- Screw connector applicable wire: 24-14AWG.
- Internal or optional external higher gain antenna.

Firmware

Board comes pre-flashed with Tasmota, just apply power and connect to the wireless access point named tasmota_XXXXXX then in your browser go to http://192.168.4.1 to access the Tasmota WebUI.

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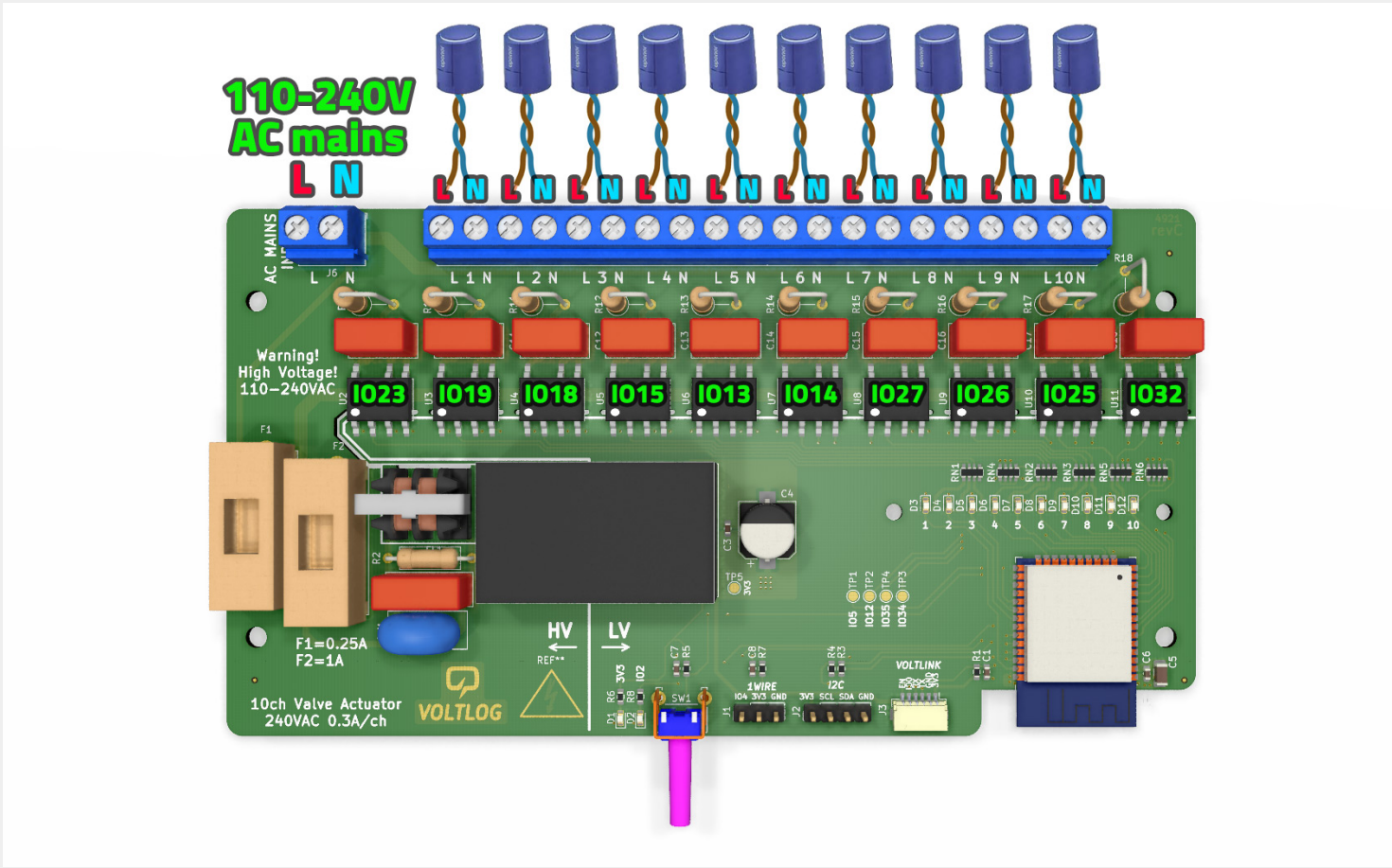
Wiring diagram



Expansion Ports

The board features a few expansion ports for UART, I2C, 1Wire and some GPIO exposed via small test pads. These can be used to connect external sensors and devices to expand the functionality of the controller board.

UART

UART expansion can be accomplished through the use of the VoltLink connector which features the following pinout: EN, IO0, RXD/IO3, TXD/IO1, GND, 3V3. The current sourcing capability on the 3V3 pin of this port is 100mA max.

I2C

I2C expansion port features 4 pins: 3V3, SCL/IO22, SDA/IO21, GND. The current sourcing capability on the 3V3 pin of this port is 100mA max.

1WIRE

1WIRE expansion port features 3 pins: DATA/IO4, 3V3, GND. DATA pin features a discrete 4K7 pull-up resistor. The current sourcing capability on the 3V3 pin of this port is 100mA max.

GPIO

General purpose IO expansion can be accomplished via the small round test pads which connect to the following GPIO: IO5, IO12, IO35, IO34.

Safety Warnings

This controller board is a DIY type of system and not a ready to go solution. There is an effort required on your side to configure this and get it working in your particular setup. Because this is a DIY project with no safety ratings or approvals, it’s best if you don’t leave it running unattended as I am not responsible for any consequences it might cause.

This controller board uses mains voltage so you need to know what you are doing, otherwise, there is a high risk of electrical shock and/or fire. This is a serious topic, if you are not sure what you are doing, ask for help from an electrician. Every connection should be double checked before applying mains power.

Operation of this equipment in a residential environment could cause radio interference.

If you plan to use the board on a different mains voltage, like 110V or with a different valve actuator with different specs, fuses will need to be adjusted accordingly and F2 can be increased up to 2A which is the limit of the PCB traces.

The 3V3 power brick which powers the control board is isolated and the triacs also provide optical isolation between the ESP32 and the mains side however if you want to be absolutely sure there is no risk of electrical shock I would recommend keeping the board disconnected from mains power during wired programming and supplying external 3V3 power via the Voltlink connector.

Wifi antenna warning

If you ordered the external antenna option, do not power on the board before connecting the external antenna as doing so could damage the RF section of the ESP32.

More info like schematics, board files, Tasmota template can be found on Github:
https://github.com/voltlog/Valve-Actuator