

1. upload RC_ESP32 firmware with a usb cable. Subsequent updates can be uploaded over wifi. In a browser enter "192.168.200.1" to get to the web interface for module 0. Module 1 would be 192.168.201.1, etc. Then select 'Update Firmware'.
2. To connect to a wifi network go to the web interface/Network. Enter the network configuration. The ESP32 will restart and attempt to connect. After 10 unsuccessful attempts it will switch to AP mode.
3. In AP mode the ESP32 creates a hotspot. Connect a tablet to the hotspot named 'RateModule (mac address)'. Use the password '111222333'. The rate app will need to be set to the AP subnet. This can be done on the menu/Module page of the app.
4. Ethernet can be used instead of wifi. A W5500 ethernet module is required. Example: <https://protosupplies.com/product/ethernet-module-w5500/>
5. External relays can be connected with a qwiic cable and 5V power + ground using the relay driver pcb here: https://github.com/AgHardware/Rate_Control/tree/main/RelayDriver5 In module configurations select "PCA9555 8 relays" or "PCA9555 16 relays".
6. For on-board relays set module configuration to "PCA9685 single". Each pin can control one single acting valve. The "PCA96785 paired" mode uses 2 pins to control one dual acting valve, powered on and off.
7. Two rates can be controlled with M1A/M1B and M2A/M2B connections to each rate control valve. Flow1/Flow2 can use up to a 12V signal to measure flow/rpm rates.
8. Up to 4 analog sensors can be connected for pressure.
9. PCB connector 23 pin Ampseal 770680-1. It can be found here with wires: <https://www.ebay.ca/itm/385526456153>
10. The ESP32 uses an IPX antenna. An example can be found here: <https://universal-solder.ca/product/2-4ghz-antenna-wi-fi-bluetooth-sma-ipx/>
11. The pcb uses a mini-fuse, 10-15 amps.