

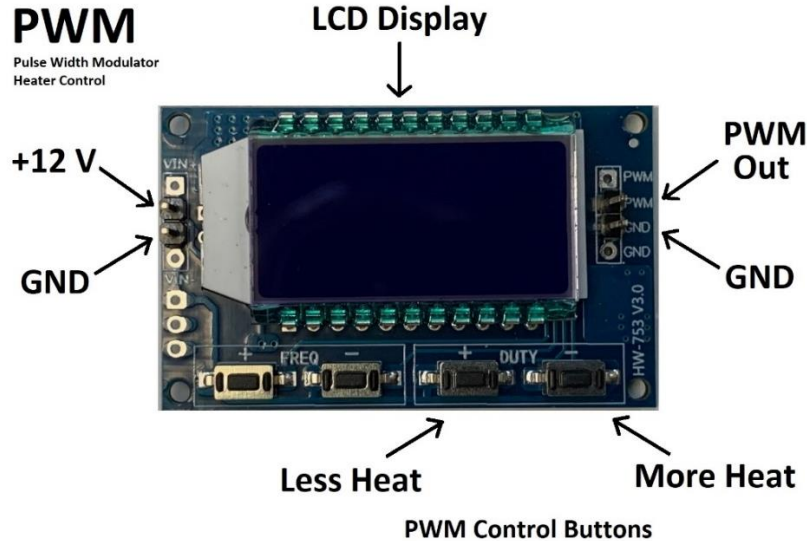
## PWM Driver Instructions for High Voltage Heater

The PWM board provided with your kit produces a 12 volt square wave pulse output at the frequency and pulse width percentage determined by the set values shown in the display.

A 12v DC supply is required for controlling the heater. Read the specification sheet online before proceeding.

### Setup Procedure

1. Connect the PWM to power per the diagram below. Using the duty cycle (DUTY) and frequency (FREQ) buttons, set it for a DUTY of 50% and FREQ of 150 Hz for initial tests. Note the following for final operation.
  - a. Set "DUTY" between 5% and 95% – power is off outside this range. Power is highest at 5% and lowest at 95%
  - b. A "FREQ" of approximately 150 Hz is recommended.
2. Fill the heater, radiator and pump with coolant and purge air completely from heater. Use pump and tilt the heater to ensure no air is in the system.
3. Connect low voltage wires to the heater (12v and PWM – see table).
4. Connect high voltage wires to the heater with fuse and external switch (see table).
5. Activate Pump and ensure coolant flow.
6. Activate PWM at 50% power. Wait 30 seconds for heater to activate. Verify heater operation using clamp ammeter or noting rise in coolant temperature.



Heater Low Voltage Wires	Purpose	Notes
Red	12v Positive	control system power
Black	12v Negative	control system ground
Green	PWM Input	PWM control input

Heater HV Input Wires	Polarity	Notes
Orange with Red band	HV Positive (B+)	wire is shielded
Orange with Black band	HV Negative (B-)	wire is shielded