

# PARTS DOCS

## How to Install DIF PWM/Dual Fan Controller on Nissan 240SX

How to install the DIF PWM/Dual Fan Controller on a Nissan 240SX for improved cooling management.

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## TOOLS:

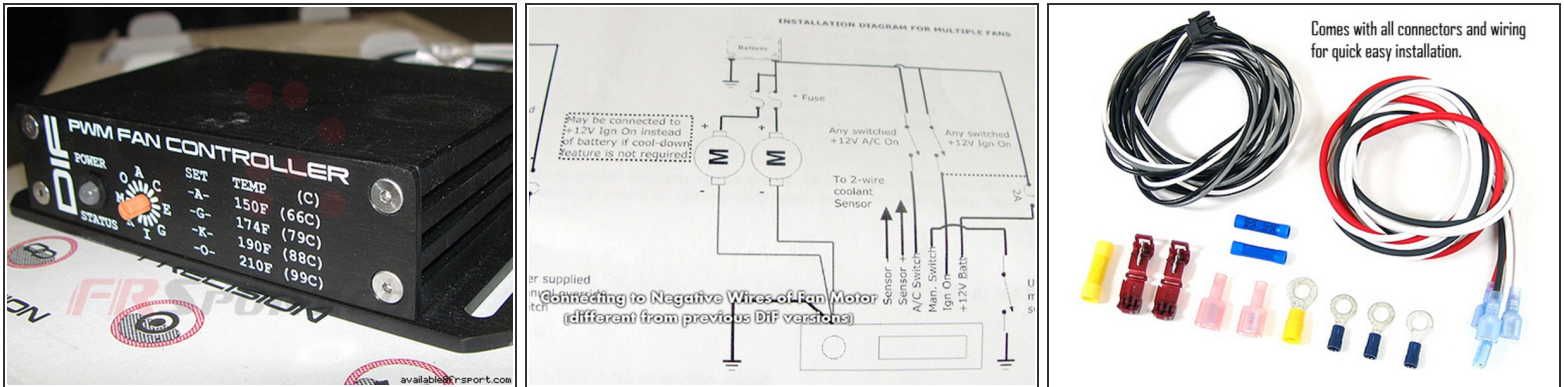
- [Standard Socket set and Ratchet](#) (1)
- [Wire Crimper/Stripper](#) (1)
- [Electrical Tape](#) (1)
- [Heat Shrink Tubing](#) (1)
- [Razor Blade](#) (1)
- [Double Sided Tape](#) (1)
- [Multimeter/Voltmeter](#) (1)



## PARTS:

- [DIF PWN Fan Controller](#) (1)
- [Fan Controller](#) (1)

## Step 1 — How to Install DIF PWM/Dual Fan Controller on Nissan 240SX



- Since this is an electrical install, disconnect the battery by removed the negative terminal.
- Removing the battery provides more room to work.
- Next, remove stock intake tubing if your car has it. This will allow easier access to the coolant temperature sensor on the intake manifold.
- It is recommended to intertwine the white and grey wire from the DIF controller together. (twisted pair wiring)
  - This will help protect against electromagnetic radiation/noise from other components in the engine bay.
  - One way to do this is to insert one end of the wires into a cordless drill; then power the drill until the disred tightness is reached.
- You can refer to the write-up for the DIF Dual Fan Controller install, which is similar.
- Image 3 shows what the DIF Dual Electric Fan Controller comes with.

## Step 2



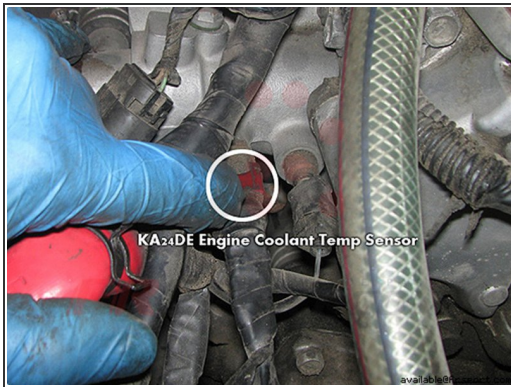
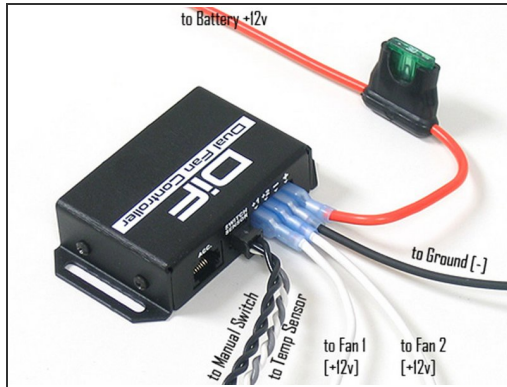
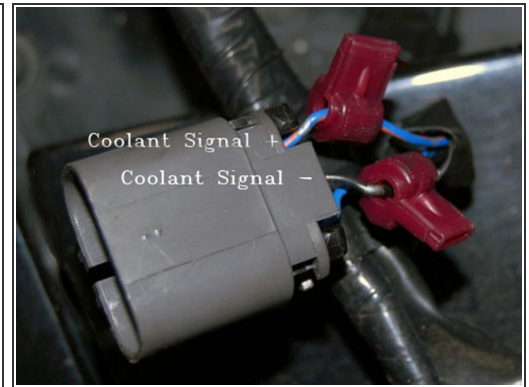
- ① However, note that there are a few key differences, namely in connecting to the fan motors and programming the unit.
- Placement of Fan Controller: I chose to mount the fan controller in front of the battery behind the radiator support.
- This location is convenient for wiring and re-configuring the DIF controller (if necessary)
- Feel free to mount it anywhere you find to your liking that is away from heat sources.

### Step 3



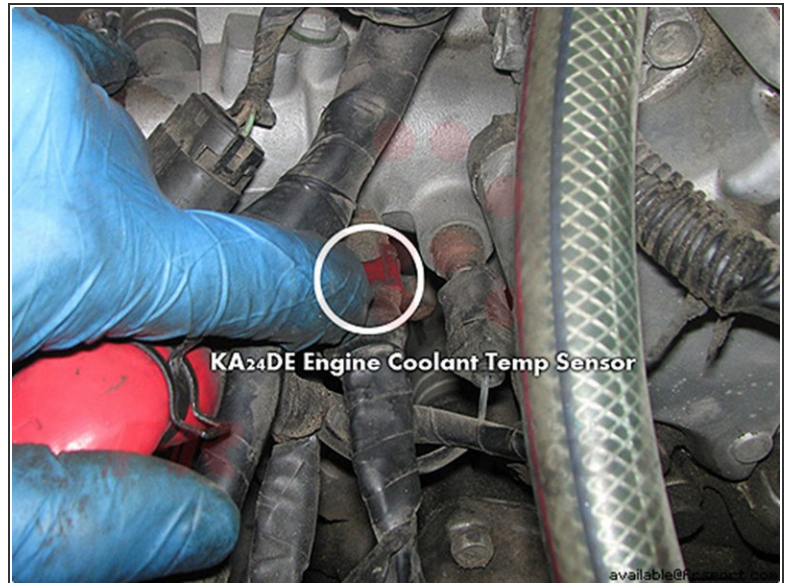
- A small strip of double-sided tape can be attached to the bottom of the fan controller for simple mounting.
- It is easier to attached the tape to the fan controller and leave the other side of the tape unpeeled.
- This will allow moving the DIF controller to a more suitable spot/orientation later during the install.
- For my install, I chose to modify an L-bracket and mount the controller with screws to the radiator support.

## Step 4 — Wiring the Engine Bay:



- Electric Fans: Connect the positive wires of the fan motors to the battery.
  - Make sure you use the proper AMP fuse for your fan.
- Connect the negative wires of the fan motors to the two large white negative wires coming from the fan controller.
- Fan Controller: Connect the large black negative wire of the electric fans to a clean chassis ground area or directly to the negative terminal of the battery.
- If using a chassis ground, it is recommended to sand the area down to bare metal and using dielectric grease, which will help prevent corrosion and moisture build-up.
- The large white negative wires of the fan controller should already be connected to the negatives of the fan motors (from above).
- Image 2: Diagram of wiring for the DIF Dual Fan Controller.

## Step 5



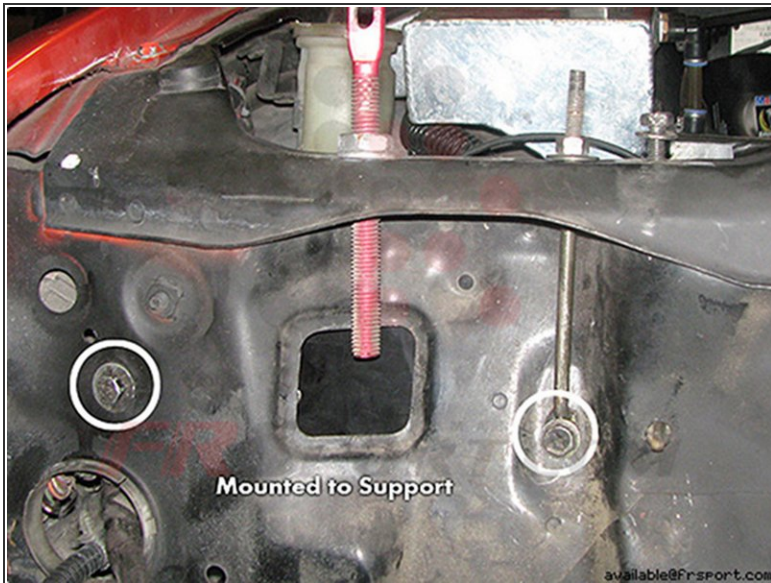
- The coolant temp sensor is located on the upper intake manifold near the upper radiator hose inlet.
- There are two temp sensors in the engine bay - one (1 wire) for the dash, and one (2 wire) for the ECU.
- The correct one to tap into is the 2-wire ECU sensor. On the KA24DE, it can be identified by a red 2-wire plug held on by a clip.
- Remove the clip and pull the plug. Once the plug is out, use a razor blade to remove some of the harness cover shielding to allow room for tapping the wires.
- The blue wire w/tracer is the positive coolant temp. wire. The black wire is the negative coolant temp. wire.
- Connect these wires to the **S+** and **S-** terminals on the fan controller. After shielding has been removed, you can either tap the wires with t-taps, or strip and solder the connection.

## Step 6



- Once the wires are tapped, continuity should be verified with an ohm-meter. Place one prob into the sensor plug and the other onto a metal part of the t-tap.
- If there is no connection, 0 will be displayed; if there is continuity, a 1 should be displayed.
- The **BA** wire for the fan controller should be connected to the battery or other 12v signal.
- If you don't want the "cool-down" feature, connect the **BA** wire to an ignition source. The supplied fuse and fuse holder should be used with this wire.
- Connect the **IGN** wire from the fan controller to an ignition source. I chose an orange wire w/a blue tracer located near the battery. I verified this with a voltmeter.

## Step 7



- If you want to use the a/c feature (minimal 50% duty cycle fans when a/c is on), you must connect the **AC** wire to an a/c source.
- There are a couple of plugs you can tap into near the battery and a/c condenser.
- For the manual switch, you will need to connect a switch that is connected to a ground and the **MA** terminal on the fan controller.
- For all connection points, it is recommended to install heat shrink tubing or at least electrical tape to prevent any shorts in the future.

## Step 8 — Programming the DIF Fan Controller



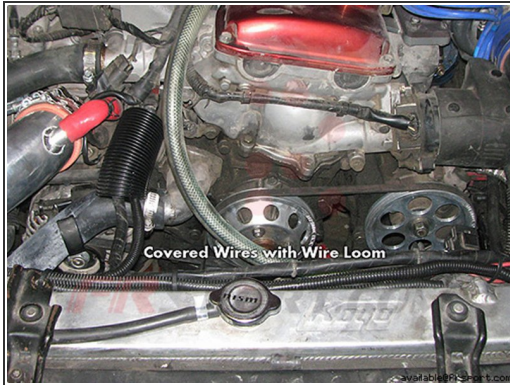
- The fan controller comes unprogrammed. If your fan controller is unprogrammed, it will just show a green light for several seconds, then turn off & repeat the cycle once the car is on.
- To program the fan controller, you need to move a few wires around to engage "programming mode."
- Turn the ignition off. Wait 20 seconds.
- Disconnected **BA** wire. Disconnect **AC** wire if you have it.
- Move **IGN** wire to **AC** terminal. Ground the **MA** wire.
- Turn the orange knob to the appropriate position (E for Nissan- this will make the fans cycle 4 times when controller is reconnected)
- Turn the key to the "ON" position.

## Step 9



- Reconnect the **BA** wire.
- At this point the fan controller should flash the LEDs and pulse the fan(s) to confirm the settings. It will continue to repeat this cycle.
- After verifying the number of pulses, disconnect the **BA** wire.
- Turn the ignition off. Wait 20 seconds.
- Move the **IGN** wire back to its original position.
- Unground/disconnect the **MA** wire.
- Reconnect the **AC** wire. Reconnect the **BA** wire.
- When the fan is working properly, the LED should alternate between green and orange. When it is cooling down, it will flash red.

## Step 10



- **Configuring the DIF Fan Controller:** The optimal operating temperature for KA's is approximately 160f to 190f.
- Since this particular vehicle has a Nismo thermostat installed, which opens thermostat at 143.6F instead of stock 169.7F, I set the fans to turn on at 158F (Letter C) for track days.
- For stock thermostat, I would probably set it around 170F to 178F, (F to H on the knob).
- **Testing the Fan Controller:** Once everything is reinstalled and setup, start the car and allow the engine to warm up. The LED should be alternating between orange and green, as described earlier.
- Depending on your particular setup, location, and weather, it may take a while before the fans activate.
- A simpler way to test the fans is to use the manual switch and/or set the adjustment dials to a lower setting, so that the fans turn on earlier.
- **Various LED status video of DIF Fan Controller:** Hopefully this video will help some installers recognize the state their fan controller is in.
- [Video of DIF PWM Fan Controller in various states](#). It covers: Not programmed, programming state, normal operation, cool-down feature.