

Wiring a 1995 240sx KA24DE into the 510 chassis

Wiring your modern ECU-controlled EFI engine into your Datsun 510 may seem like a daunting task. Indeed, it was the last major project I left for myself during my KA engine swap, as I feared the process. What made it seem more difficult was that the '95+ KAs are wired differently than the earlier '91-'94 KAs. The wiring for the early motors is well-documented; however, when I began wiring my '95 motor, none of the knowledgeable engine-swapping sources I knew had attempted a later KA.

The major difference between the early and the late engines is that instead of using wires from two plugs in the engine compartment, you wire a late engine using the F3 body plug. This plug is on the ECU side of the firewall grommet, hence you will wire most of the engine from inside the passenger compartment. I found the project quite easy in the end; nearly all the wires necessary were clipped from the F3 plug.

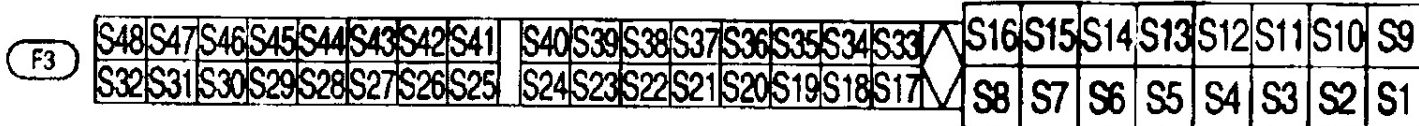
Before you begin wiring any ECU/EFI engine, there are some basic things you will need:

- You will most definitely need the electrical wiring diagrams for the exact year of engine you are installing as well as for the year of car you are installing the engine into. For example, the '91-'94 KA24DE engines have identical wiring. 1995 has completely different wiring from '91-'94. 1996 has slightly different wiring from 1995, and so on.
- You will need a decent multi-meter. See the Electrical Troubleshooting 1 article for details on multi-meters.
- You will need good-quality crimps or a soldering kit, heat-shrink tubing, electrical tape, wire ties, wire strippers, etc.
- You will need a selection of fuses and relays to power and protect your new wiring. Nissan has equipped their modern cars (including 240sx donor cars) with modular relay/fuse boxes. Located in the engine compartments, these boxes can be pulled and configured with your choice of relays and/or fuses. I used a 1x5 setup, filling it with three relays (to power the cooling fan, and fuel pump, with one left over for future needs) and two sets of three blade fuse holders. These fuses will protect the fuel pump, cooling fan, ECCS/ECU power, and radio circuits. The fuse sets slide in place of a relay in the Nissan modular box. Highly recommended.
- While not necessary, something you might want to pick up on your next trip to the junk yard is chassis wiring from a late-model Nissan, such as the loom that runs along the drivers side floor of the 240sx. This will provide you with an abundance of colored wire for your patch and splice jobs when wiring the ECU.

As with body work, the success of your wiring project lies mostly in the preparation. You should mount your ECU in an accessible position and determine where you will place your relays and fuses.

The F3 body plug is illustrated below. Specific wires are identified by pin numbers, along with the color, function, and what it connects to in the 510 wiring system. In addition to any other relays, the ECCS/ECU has it's own relay harness and plug; you will need the appropriate Nissan relay for the ECU. As you can see, it is not a lot of wiring, and four of the wires shown below aren't necessary.

ENGINE CONTROL HARNESS



Pin Number	Color	Function	Connects to
S1	Black/Red	Ignition ON/START	510 ignition ON/START
S2	Black	ECCS Ground	12V-
S10	Black/Yellow	IACV (Idle Air Control Valve) Air Regulator for Cold Start	510 ignition ON/START
S11	Black/Pink	Fuel Pump 12V+	To fuel pump relay trigger (510 ignition ON/START to other side of trigger)
S17	Red	ECCS Power	510 ignition ON/START
S18	Brown	Power from Ignition	?
S22	Green	Consult SCITX	Consult Pin 2
S23	Green/White	Consult SCICL	Consult Pin 9
S28	Yellow	Water Temp Gauge	140° 70-90Ω 212° 21-24Ω
S29	Blue/White	IACV Solenoid for Idle Air	510 ignition ON/START
S34	Orange	Start Signal	510 ignition START
S38	Green/Black	Consult SCIRX	Consult Pin 1

In addition to wiring the ECU via the F3 plug, you will also need to run a Start wire to the starter and you will need to interface the KA alternator wiring with the stock 510 wiring.

The KA alternator has a small gauge (large wire) for BAT +, a ground wire running from the battery of the alternator, and the Sense and Light wires. The Sense and Light wires are in the grey plug in the side of the alternator. The Yellow wire in this plug is the Sense wire; the White/Red wire is the Light wire. Connect these to the appropriate wires in your 510's wiring harness (specific 510 wires are not identified because of differences between years). If you have not yet installed an internally-regulated alternator into your 510, you will also have to perform the IR Conversion, documented on the DQ site.