



SA-001 Instruction Sheet

Please note that this module was not designed for someone who has no experience with wiring. The instructions below are a very general guide to aid in the process of converting most late model engine management harnesses to stand-alone use.

This kit was designed with the GM LT1 (and derivatives) and the LS1 (and derivatives) in mind, but it can be used on any engine harness for any engine that may be capable of running stand-alone. Including but not limited to GM T.P.I. harnesses, Ford Mustang harnesses, Honda and Nissan harnesses to name a few. Keep in mind that reprogramming may be required in some cases. For instance, the GM Vortec engines (4.8, 5.3, 6.0) need to have the engine computer changed to eliminate the anti-theft system, it cannot be bypassed with an external module like the Corvette and Camaro LS1 engines. You WILL have to do some figuring on your own to determine how certain things will work. You will have to have some basic knowledge of engine wiring and circuitry. It is impossible to make accurate instructions for every application out there.

This module is designed to allow any engine harness to be converted to "Stand-alone". This means that the engine can run in any vehicle, or even on an engine stand, with only a few external requirements. These external requirements consist of, a battery or 12V source, Fuel Pump, and a cranking/starter switch to turn the engine over. Aside from these requirements, this module also contains relays for electric fans and an air conditioning compressor.

There is fused ignition power (sometimes referred to as switched 12V power) for an Engine computer, transmission, Oxygen and Mass Air Sensors, Coil(s), Injectors, & any other components that require a switched 12V power. There are 2 battery power circuits (constant 12V) for the Engine computer, Diagnostic Port, or any other sensors/components that may require a constant battery power.

It would be a good idea to have a multimeter, soldering iron/gun, solder, heat shrink, wire cutters, and wire strippers when starting this kind of project. Detailed wiring diagrams showing the functions of the particular engine you are dealing with would be a very good idea as well. Helminc.com is a good source for factory GM service manuals. To start with, it is a good idea to take off all of the covering on the harness. This will expose the bare wires as much as possible so they can be traced easily. Keep some tape handy to hold areas of the harness together so it doesn't come apart and get more confusing than it will already be. If you don't have wiring diagrams and pinouts for your particular application, you can use the multimeter to check continuity and trace wires. On GM harnesses made in Canada and Mexico, ignition power wires are usually pink, and battery power is usually orange.

As mentioned, this unit was designed more with LT1 and LS1 engines in mind. That is what the labels and diagrams are based on. The fuses in each of these circuits can be changed to higher or lower Amperage for anything you would rather use them for. Although, keep in mind the gauge of the wire used for most circuits will only support certain power ranges.

Begin by finding each wire that supplies power to each component. Use a multimeter to check continuity between the components (i.e. engine coil) and the connector going to the original vehicle's fuse panel. This is good to do even if you have the proper pinouts for the vehicle just to double-check. As you determine what each wire does, cut and label it so you will know what it was for later on.

After each of the power wires are found and labeled, you will need to trace the signal wires from the ECM for things like the fuel pump and electric fans. Alternatively, these can be controlled with manual switches connected to the appropriate wires coming out of the module. The fan and A/C wires need to be grounded for the relays to function. The fuel pump signal wire needs to receive 12V to control that relay. Again, this system was designed to utilize the functions supplied in the OEM computer, so that is why the F.P. wire is different.

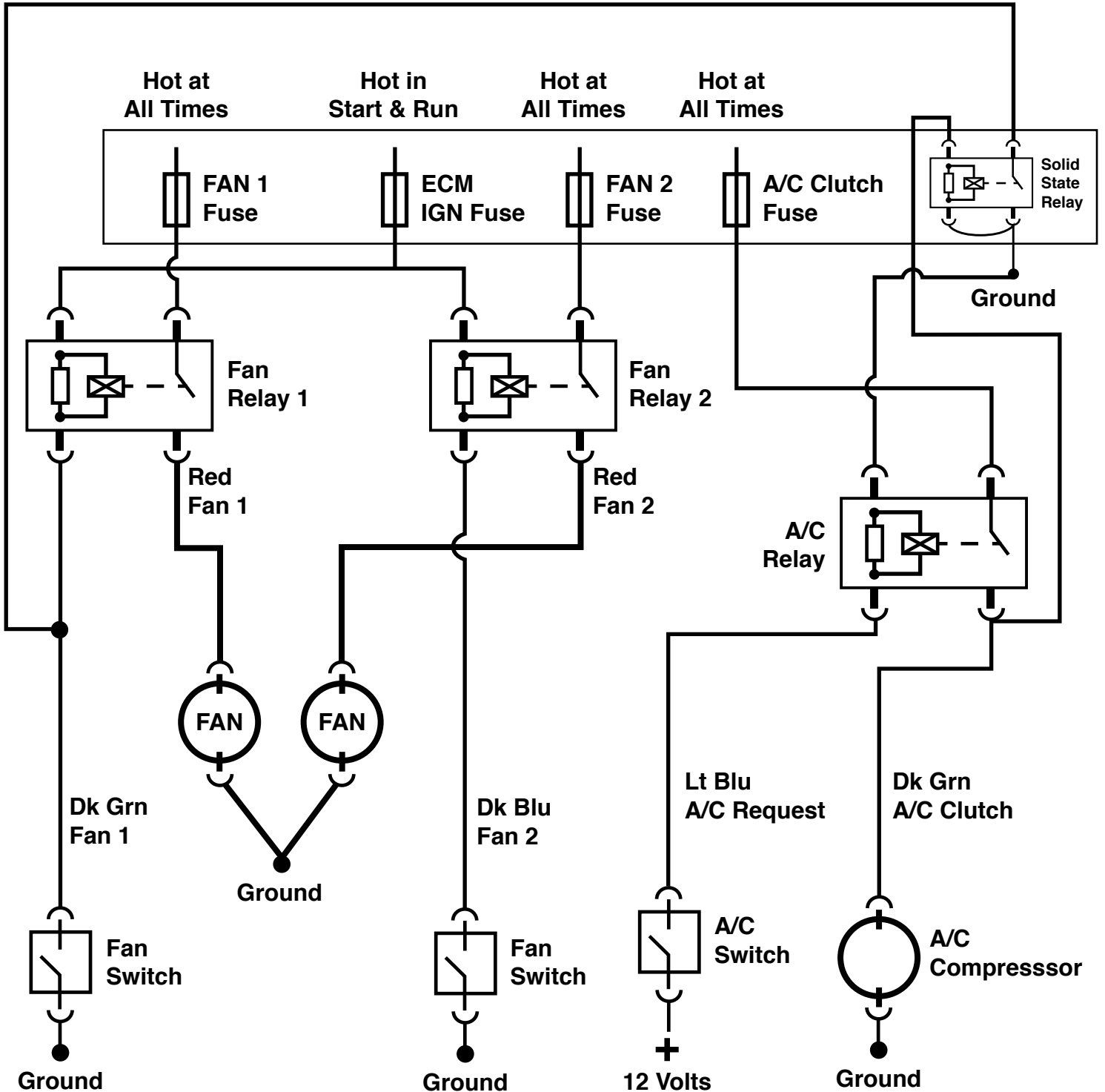
After all of the above wires have been located and labeled, they can be routed to a central location in and spliced in to the corresponding circuits of the module. (See Diagram)

With all of the fused circuits, fuel pump signal, and fan signals out of the way, that should leave the following:

- ✍ **Crank Signal** - This wire connects to the ignition switch/key and receives 12V when the key is turned to "Start". Be sure and utilize the safety of a Park/Neutral switch, or clutch position switch so the vehicle will not start in gear.
- ✍ **Power to Fuel Pump** – This wire comes from the fuel Pump Relay and supplies fused power out to the Fuel Pump. When computer controlled, the fuel system will prime for a second or 2 when the key is first turned to on. It will not keep pumping until the engine is running.
- ✍ **12V switched** – Connect to any 12V power source that is hot when the key is in both the start AND run position.

Color	Label	Fuse	Description
Pink	ECM Ign.	10 Amp	Fused Ignition Power to Engine Computer
Pink	Trans	10 Amp	Fused Ignition Power to Transmission (Auto) or to Backup Lights (Man)
Pink	IGN Empty	Blank	Extra Ignition Circuit (Often Used for Coil on LT1 w/ 15 AMP Fuse)
Pink	Bank 1	15 Amp	Fused Ignition Power to Bank 1 Coils / Fuel Injectors (LS1) or Bank 1 Injectors (LT1 Change to 7.5 Amp Fuse)
Pink	Bank 2	15 Amp	Fused Ignition Power to Bank 2 Coils / Fuel Injectors (LS1) or Bank 2 Injectors (LT1 Change to 7.5 Amp Fuse)
Pink	O2 / MAF	15 Amp	Fused Ignition Power to Mass Air and O2 Sensors
Orange	ECM Battery	10 Amp	Fused Battery Output to Engine Computer (Often spliced to Data Link Connector)
Orange	Battery Empty	Blank	Extra Battery Output Circuit (Use for anything not exceeding 15 Amp)
Pink/Black	12 V switched	N/A	Splice to any 12V source during Start and Run (See Diagram)
Yellow	Cranking Signal	N/A	Supply cranking power to this wire when the key is turned to the start/crank position (See Diagram)
Dark Green / White	Fuel Pump request	N/A	Connect to Computer "Fuel Pump Relay Control" or Toggle Switch (See Diagram)
Dark Green	Fan 1	30 Amp	Connect to Computer "Fan 1 Control" or Manual Toggle Switch (See Diagram)
Dark Blue	Fan 2	30 Amp	Connect to Computer "Fan 2 Control" or Manual Toggle Switch (See Diagram)
Light Blue	A/C request	N/A	Supply 12V to this wire to engage the A/C compressor. It is recommended to use a low & High Pressure cut off switch, between the A/C control switch and this wire (See Diagram)
Dark Green	A/C Clutch	15 Amp	Supplies Power to the A/C Clutch when requested (See Diagram)
Gray	Power To Fuel Pump	20 Amp	Supplies power to the Fuel pump from the relay supplied in the harness (See Diagram)
Purple	Starter	N/A	Supplies Power to the Starter Solenoid (See Diagram)
Red	Fan 1	30 Amp	Supplies Power to Electric fan (Turns on with A/C Clutch) (See Diagram)
Red	Fan 2	30 Amp	Supplies Power to Electric fan (See Diagram)
Black	Ground	N/A	Ground wire for SA-001 Module. Connect to Good Ground source.

SA-001 Cooling Fan and A/C Relay Schematic



SA-001 Fuel Pump, Ignition Power and Starter Relay Schematic

