



MegaSquirt III for LS Style Engines

MegaSquirt® controllers are experimental devices intended for educational purposes.

MegaSquirt® controllers are not for sale or use on pollution controlled vehicles. Check the laws that apply in your locality to determine if using a MegaSquirt® controller is legal for your application.

Hardware Install

1. Disconnect and remove the battery from the vehicle.
2. Mount the controller to a suitable location inside the vehicle.
3. Cut a 2" access hole in the firewall and thread the harness through hole.
4. The **ground lug of the harness should be bolted directly to the engine block on the rear of the cylinder head.**
Make sure the vehicle has a ground cable between the engine and the negative post of the battery. **(The frame/chassis is not a suitable ground)**
5. The Battery (+) Un-keyed lead should be connected **directly to the positive battery terminal.**
6. The Red switched 12 volt lead, should be connected to a switched power source. **It must be hot in both the crank and run mode of the ignition switch.**
7. Connect your fuel pump relay (not included) to the 18 gauge purple wire coming off of pin 27 on the Gray ECU connector. **This is a trigger ground for the fuel pump relay.**
8. O2 sensor inputs. The harness is supplied with two un-terminated O2 sensor input wires that are labelled O2. **Wide band O2 sensors are recommended for this application.**
9. **The ground wires should be bolted directly to the engine block on the rear of the cylinder head.**
10. **Make sure the vehicle has a ground strap between the engine and the negative post of the battery.**

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Final Check List:

The *MegaSquirt-III controller for the LS Engine* comes with a base calibration already installed that can start and run a factory LS2 or crate engine with an 80 mm throttle body and **52 pounds of fuel pressure**. To further enhance performance and fine tune your specific setup, tuning software must be utilized. **You are responsible for establishing all parameters for your particular application. Failure to do so could result in engine failure.**

- a. Verify that both AMP seal connectors on the ECU are firmly seated and the clip is locked.
- b. Verify that all sensors connectors from the harness are properly connected to the sensors on the motor. Connections should not come off if you give a light tug on the connector.
- c. Verify that power and ground circuits are properly terminated.
- d. Verify that the ground cable from the engine to the battery is tight.
- e. Verify that the wiring has sufficient clearance to any hot components.
- f. Verify that no wires were pinched during the installation process.
- g. Connect the battery.
- h. Load Tuner Studio into laptop. (see software installation below)

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Software installation

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An internet connection is required to download the tuning and log viewing software.

1. The tuning program Tuner Studio as well as the log viewing program MegaLogViewer can be **downloaded directly from the EFI Analytics website (<http://tunerstudio.com>)**.

Follow the instructions from the website to download and install both programs.

2. Connect communication cable from laptop to your Gold Box and turn ignition switch to “ON” **DO NOT ATTEMPT TO START THE VEHICLE AT THIS TIME!**
3. Once you have downloaded Tuner Studio open up the program to the main page and select “**create new project**”
4. Follow the steps on the screen and click “**next**” once you have completed the step. Once you have finished creating your “new project” move on to the start up procedure below.
5. You will only have to “create a new project” for your vehicle once, before initial start up.

START UP PROCEDURE

1. Communication should have already been established during the above procedure and you should now be viewing the Tuner Studio main dashboard.
2. Click on “**basic/load settings**” at the top of the screen and select “**engine and sequential settings**” Click the “**required fuel**” button and verify that the information for engine size, number of cylinders and injector flow rate are correct for your engine. If you must make an adjustment remember to click “**burn**”
3. Now you must verify that your sensors are reading properly:
 - ✓ **MAP** Sensor should read between 96-101 KPA this is dependent on your altitude. Extreme high altitudes could have a lower MAP reading.
 - ✓ **TPS** should read **ZERO (0)** with your **foot OFF** the throttle and **100%** with the throttle pushed to wide open **WOT**.
 - ✓ **MANIFOLD AIR TEMP** should read the current air temperature in your shop.
 - ✓ **COOLANT TEMP** should read very close to the Manifold air temp when the engine is cold.
 - ✓ **BATTERY VOLTAGE** should read above 12V
4. **IF THE ABOVE CONDITIONS ARE NOT MET DO NOT ATTEMPT TO START THE VEHICLE.**
5. Once you have verified that all of your sensors are reading properly, we suggest that you save your “current tune“ and name it something like “Initial start up”. To do this follow this procedure: Click **FILE**, then click **SAVE TUNE AS** in the drop down. Now name your tune and click **SAVE**.
6. Cycle your ignition key off and wait for Tuner Studio to disconnect. Now turn your ignition back on and listen for your fuel pump to prime for 3 seconds. This is also a good time to verify that you have no fuel leaks and that you have the recommended 52 LBS of fuel pressure.

7. If all of the above conditions are met you are now ready start the vehicle. When you crank the engine you should see an RPM reading on the “engine speed” gauge on your Tuner Studio dashboard.
8. Once the car starts it may be necessary for you to press the throttle in order to keep it running until it has reached operating engine temperature (about 170*).
9. DO NOT ATTEMPT TO ADJUST THE FUEL VE TABLE UNTIL THE ENGINE TEMPERATURE IS UP TO about 170*
10. Now you can begin fine tuning your combination!

IF YOU ARE IN NEED OF ASSISTANCE OUR TECH DEPARTMENT IS AVAILABLE BY EITHER EMAIL OR PHONE.

EMAIL: INFO@EFISOURCE.COM

MIKE@EFISOURCE.COM

PHONE: 610-473-2089 (MONDAY-FRIDAY 7:30AM-5:00PM EST)

GM LS Crate Harness

Gray Connector

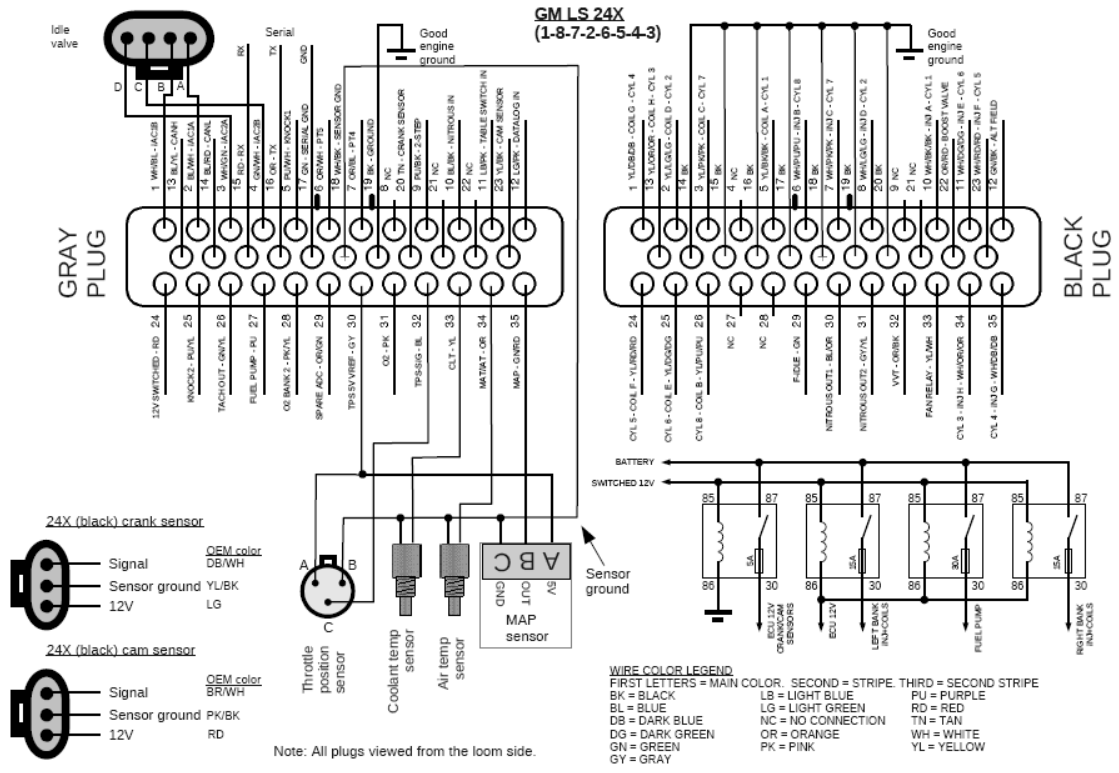
Pin #	Label	Wire Color	Stripes	Gauge	Notes
1	IAC2B	Green	White	18 Ga.	IAC Terminal C
2	IAC2A	White	Green	18 Ga.	IAC Terminal D
3	IAC1A	Blue	White	18 Ga.	IAC Terminal A
4	IAC1B	White	Blue	18 Ga.	IAC Terminal B
5	Knock	Purple	White	18 Ga.	
6	PT5 Optional Input	Orange	White	18 Ga.	Not installed
7	PT4 Optional Input	Orange	Blue	18 Ga.	Not installed
8	N.C				
9	2 Step	Purple	Black	18 Ga.	Not installed
10	Nitrous In	Blue	Black	18 Ga.	Not installed
11	Table Switch In	Light Blue	Pink	18 Ga.	Not installed
12	Data Log In	Light Green	Pink	18 Ga.	Not installed
13	Can H	Blue	Yellow	18 Ga.	Not installed
14	Can L	Blue	Red	18 Ga.	Not installed
15	RX Out	Red		18 Ga.	Adapter cable
16	TX Out	Orange		18 Ga.	Adapter cable
17	SRL Gnd	Green		18 Ga.	Adapter cable
18	Sensor Ground	White	Black	18 Ga.	
19	Ground	Black		16 Ga.	
20	Crank Sensor	Tan		18 Ga.	
21	N.C.				
22	N.C.				
23	Cam Sensor	Yellow	Black	18 Ga.	
24	ECU Power	Red		18 Ga.	
25	Knock 2	Purple	Yellow	18 Ga.	
26	Tach Out	Green	Yellow	18 Ga.	
27	Fuel Pump	Purple		18 Ga.	
28	O2 Bank 2	Pink	Yellow	18 Ga.	
29	Spare ADC	Orange	Green	18 Ga.	Not installed
30	TPS 5 Volt Vref.	Gray		18 Ga.	
31	O2	Pink		18 Ga.	
32	TPS-SIG	Blue		18 Ga.	
33	CLT	Yellow		18 Ga.	
34	IAT	Orange		18 Ga.	
35	MAP	Green	Red	18 Ga.	

GM LS Crate Harness

Black Connector

Pin #	Label	Wire Color	Stripes	Gauge	Notes
1	Coil Cyl 4	Yellow	Pink / Pink	18 Ga.	
2	Coil Cyl 2	Yellow	Orange / Orange	18 Ga.	
3	Coil Cyl 7	Yellow	Light Blue / Light Blue	18 Ga.	
4	N.C.				
5	Coil Cyl 1	Yellow	Black / Black	18 Ga.	
6	Inj Cyl 8	White	Purple / Purple	18 Ga.	
7	Inj Cyl 7	White	Light Blue / Light Blue	18 Ga.	
8	Inj Cyl 2	White	Orange / Orange	18 Ga.	
9	N.C.				
10	Inj Cyl 1	White	Black / Black	18 Ga.	
11	Inj Cyl 6	White	Dark Green / Dark Green	18 Ga.	
12	N.C.				
13	Coil Cyl 3	Yellow	Light Green / Light Green	18 Ga.	
14	Ground	Black		16 Ga.	
15	Ground	Black		16 Ga.	
16	Ground	Black		16 Ga.	
17	N.C.				
18	N.C.				
19	N.C.				
20	N.C.				
21	N.C.				
22	Boost Valve	Orange	Red	18 Ga.	Not installed
23	Inj Cyl 5	White	Red / Red	18 Ga.	
24	Coil Cyl 5	Yellow	Red / Red	18 Ga.	
25	Coil Cyl 6	Yellow	Dark Green / Dark Green	18 Ga.	
26	Coil Cyl 8	Yellow	Purple / Purple	18 Ga.	
27	N.C.				
28	N.C.				
29	NC				
30	Nitrous Out	Blue	Orange	18 Ga.	Not installed
31	Nitrous Out 2	Gray	Yellow		Not installed
32	V V T	Orange	Black	18 Ga.	Not installed
33	Fan	Yellow	White	18 Ga.	Not installed
34	Inj Cyl 3	White	Light Green / Light Green	18 Ga.	
35	Inj Cyl 4	White	Pink / Pink	18 Ga.	

NOTE: LS Engine firing order is 1,8,7,2,6,5,4,3



Note: All plugs viewed from the loom side.