

**1986-93 Ford Mustang
Holley EFI Kit
General Guide & Instructions**

WARNING! Not CARB certified or EO compliant, for Off-Road use ONLY



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Introduction

Thank you for purchasing the 1986-93 Ford Mustang MFAadapter kit. This product was designed to help reduce installation labor time and use the basic functions of the Holley EFI system on vehicles utilizing Fox Body Mustang (1986-93) wiring for the pushrod V8 engine.

What's in the kit:

MFAadapter



Main Harness



Sub Harness





Installation Overview

These installations steps are a generic overview of what it will take to install the MFAdapter in your vehicle. Your steps may be different depending on your platform.

Steps

- 1- Disconnect the battery.
- 2- Remove passenger side seat from the vehicle.
- 3- Remove passenger side door sill plate.
- 4- Remove passenger side kick panel.
- 5- Disconnect any body harness connectors to make room to remove the EEC.
- 6- Disconnect factory EEC connector inside kick panel and remove factory EEC.
- 7- Install provided main harness into the MFKustoms adapter.
 - a. Run the main harness under the factory carpet to under the passenger seat area.
 - b. Push harness connectors through the slit in the carpet to allow connectors to rest inside the interior of the car (may need to increase the slit in the carpet with a razor blade).
- 8- Go to the engine bay and locate the firewall grommet.
 - a. Pull the grommet away from the firewall so you can cut a hole to allow the new sub-harness to pass through.
 - b. Be CAREFUL NOT to cut any of the factory wires when doing this. We find the easiest way is to pull the grommet away and cut a slit in the bottom of the grommet to allow the new sub-harness to pass through the firewall more easily. Once you push the grommet back in place, the seal will be tight around the wiring again.
- 9- Run the new sub-harness through the firewall grommet and connect to the MFAdapter. In the engine bay you can route the sub-harness in accordance to where your sensors are mounted.
- 10- Run the ECU power harness from the ECU to your battery.
 - a. If your battery is in the factory location, push the power harness power and ground wires through the firewall grommet.
 - b. If your battery is in the trunk go ahead and run your wires towards the battery.
 - c. Leave the power harness connector unplugged from the Holley ECU until the end of the installation.
- 11- For naturally aspirated or nitrous vehicles you can use the on-board 1 bar MAP sensor and connect a vacuum line from the ECU to a vacuum source on the engine.
 - a. The intake manifold is the preferred vacuum source.
 - b. Using an External MAP sensor is recommended to minimize pinching rubber lines run into the passenger compartment resulting in bad readings.
- 12- If you are supercharged or turbocharged, you are required to run an external MAP sensor. The connector on the harness is compatible with most standard GT150 style sensor. **Note: List of vendors to order sensors can be found on page 9**
- 13- Elevate the vehicle with a lift or jack & jack stands.
- 14- Remove one of the factory's narrowband O2 sensors (either bank will work).
- 15- Install the new wideband O2 sensor where the factory sensor was removed.
- 16- Plug the wideband O2 sensor into the new sub-harness "Primary Wideband" connection.



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- 17- Make sure to secure all wiring away from hot components.
- 18- Lower the vehicle back down to the ground.
- 19- Make all the connections to your sensors in your engine bay. Fuel pressure, Oil pressure, External MAP and Flex Fuel are not required but are recommended for the Holley ECU to read this data.
- 20- Plug the connectors on the main harness into the Holley EFI ECU.
- 21- Plug the included USB to CAN adapter into one of the CAN connections in the main harness. If you purchased a digital dash (optional) you may plug this into the other CAN connection in the main harness.
- 22- The ECU may be placed directly under the passenger seat. Holley offers a seat bracket for the 79-04 Mustangs (not included) if you wish to secure it to a bracket. If you ever need to service the ECU, you will need to remove the seat again.
- 23- Make you battery positive and negative connections on the new power harness.
- 24- Inside the car plug the power harness into the Holley EFI ECU.
- 25- Re-connect the battery (make sure the key is in the OFF position).
- 26- Install the MFKustoms adapter into the factory EEC connector. This can be done once car is up and running and everything is working.
- 27- Reinstall passenger side kick panel.
- 28- Reinstall passenger side door sill plate.
- 29- Reinstall passenger side seat into the vehicle.

This completes the basic installation steps.



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Inputs & Outputs

Unlike the Holley installations kits, the MFAdapter does not come with an Inputs & Outputs connector. This is because we utilized the inputs and outputs to preserve some of the factory original functionalities along with adding additional functionalities.

Inputs		Outputs	
1	A/C Kick	1	Pin 36 on main harness **
2	Secondary Wideband sensor*	2	Fan Control***
3	Flex Fuel sensor	3	A/C Wide Open Throttle Shutdown
4	Vehicle Speed	4	Idle Air Control

* Secondary Wideband sensor on Input 2, is for those who have a chip to tune their car and are moving to Holley. It is common for users to pin a 0-5v wideband output from a standalone controller to pin 27 on the EEC connector. Pin 27 was originally setup for the EGR valve. If you don't have a secondary wideband, you can use EGR valve connector in the engine bay for an additional sensor as it will have all three wires needed (e.g. sensor ground, 5v reference, and signal).

** Pin 36 on the MFAdapter main harness can be moved to control another function as Output 1 is not utilized. Some built in possibilities include:

- Canister Purge Valve (Pin 46)
- Check Engine Light (Pin 9)

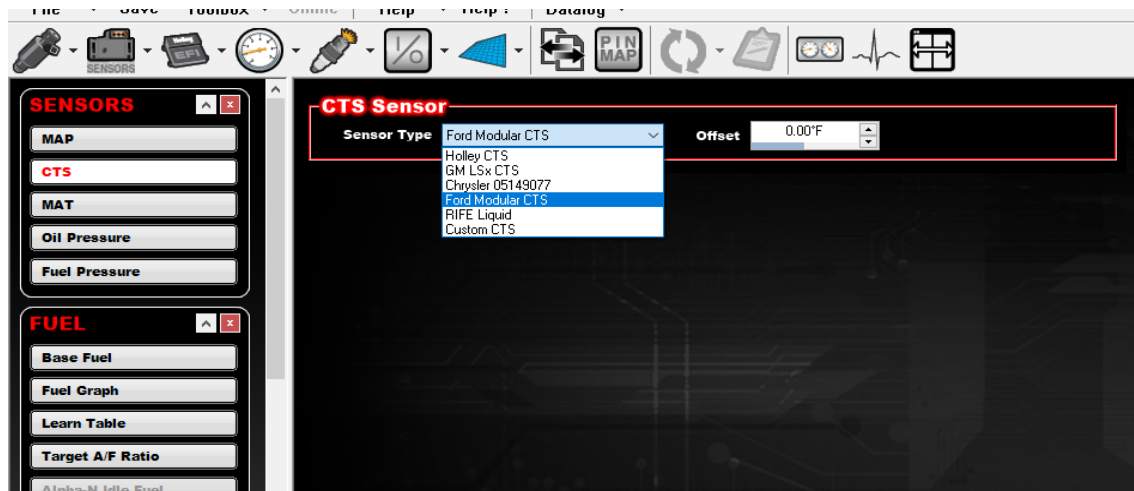
*** Fan Control: Another common upgrade A9L users with chip tuners was the enablement of the electric fan control. This utilized Pin 41 on the factory EEC connector. The MFAdapter will send a ground trigger on that factory pin to control the ground side of a relay allowing a user to upgrade or keep their existing electric fan.

Setup in the Holley EFI Software

In the Holley EFI software, you will need to set up your sensors for the ECU to see the appropriate data. The Ford Modular and Small Block Engine family shared the same sensor scaling on many sensors until around 2004.

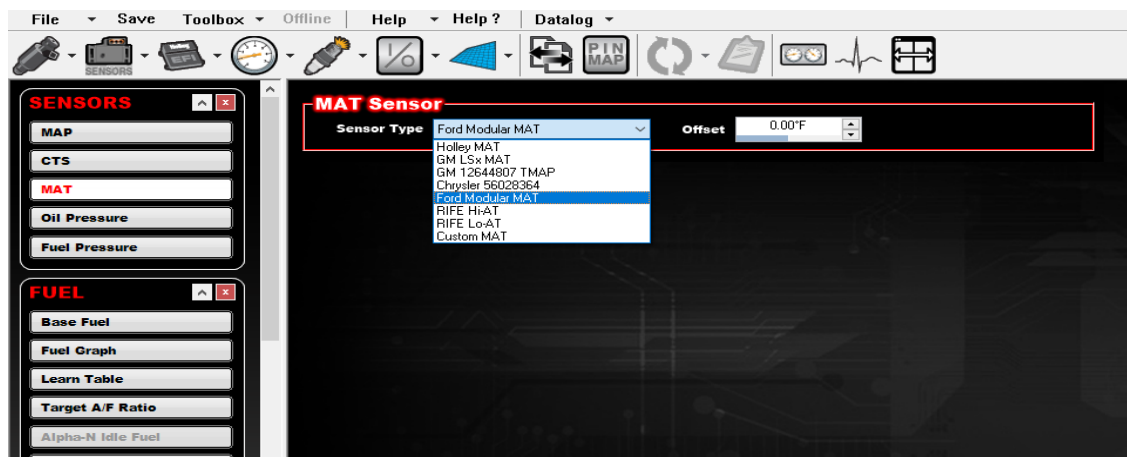
Coolant Temp Sensor (CTS)

Select "Ford Modular CTS" from the drop-down list.



Manifold Air Temp Sensor (MAT)

Select "Ford Modular MAT" from the drop-down list. Also known as Air Charge Temperature (ACT) or Intake Air Temp (IAT). This should be installed before the throttle body to prevent heat soaking.



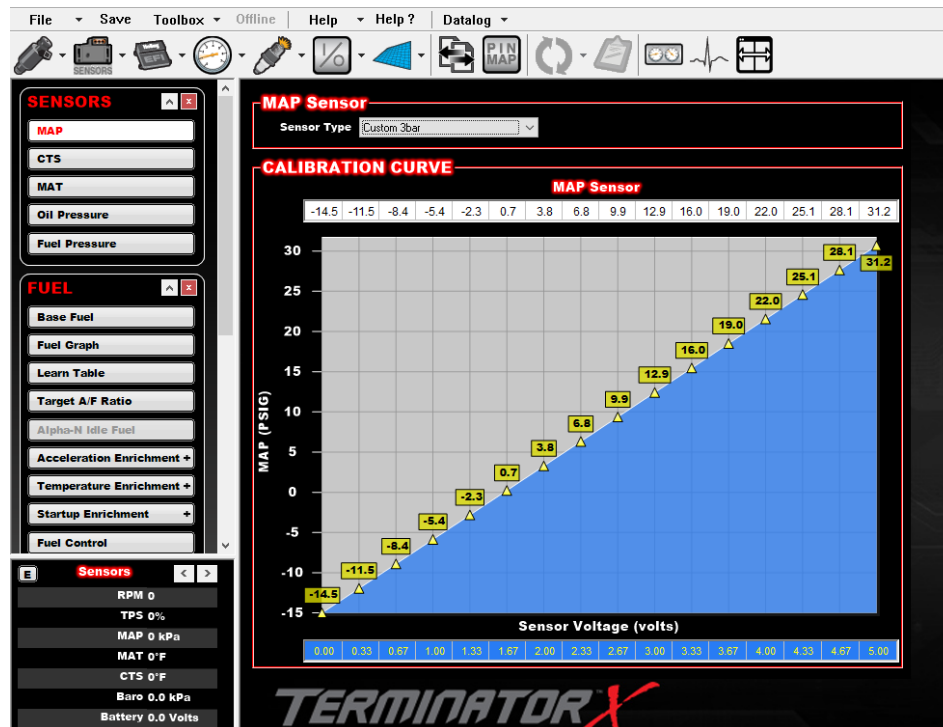


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Manifold Air Pressure Sensor (MAP)

If you purchased an external MAP sensors, you will need to input the MAP sensor calibration data.

Example of a 3bar MAP sensor:





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Idle Air Control (IAC)

The Ford IAC motor will need to be changed in the software (the digital dash is unable to make this change). Change this to 5.0L Ford and switch the type to PWM. Also switch the frequency to 315 as this should deliver the better results.

The screenshot displays the MFKUSTOMS software interface with the following settings:

- IDLE SPARK**
 - Enable: ☒
 - P Term: 80.0
 - D Term: 60.0
- IAC CONTROL**
 - Advanced Idle Control: 5.0L Ford
 - IAC Type: PWM
 - Frequency: 315.0
- IAC RAMP DOWN**
 - IAC Hold Position: 35%
 - Ramp Decay Time: 2.5 sec
 - RPM Above Idle to Start Ramp: 1000 RPM
 - RPM Above Idle to Re-enable Idle Control: 50 RPM
- STARTUP IAC POSITION**
 - Hold Time: 2.0 sec
 - Decay Time: 2.0 sec

If you have any additional questions on your installation, please email:
support@mfkustoms.com



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Additional Required Components – Terminator X/X Max

Part Number	Name
554-152 or 554-153	Holley Terminator X / X Max
558-443	Holley CAN to USB Cable
558-308	Holley ECU Power Harness
17025/ 17212	Bosch LSU 4.9 Wideband sensor

Additional Required Components – HP/Dominator

Part Number	Name
554-113 or 554-114	Holley HP / Dominator
558-443	Holley CAN to USB Cable
558-308	Holley ECU Power Harness
554-101 or 554-100	Bosch or NTK Wideband sensor

Optional Components – All ECUs

Part Number	Name
554-157	HP / Terminator X and X Max seat mount bracket
554-156	Dominator seat mount bracket
553-108	Holley 3.5" Handheld Screen
553-200	Holley 5" Screen with GPS

Sensor Vendors

[LowDoller Motorsports](https://lowdollar-motorsports.com/) - <https://lowdollar-motorsports.com/>

[Scarlett Solutions](https://scarlettssolutions.com/) - <https://scarlettssolutions.com/>

[RIFE Sensors](https://motionraceworks.com/collections/rife-sensors) - <https://motionraceworks.com/collections/rife-sensors>