



## AEROMOTIVE Part # 17113 4.6L Mustang Digital FMU INSTALLATION INSTRUCTIONS

### CAUTION:

Installation of this product requires detailed knowledge of automotive systems and repair procedures. We recommend that this installation be carried out by a qualified automotive technician.

When installing this product, wear eye goggles and other safety apparel as needed to protect yourself from debris. If the vehicle must be raised to obtain access to the undercarriage, make sure the vehicle is supported by jack stands on a hard, level surface. Set the vehicle parking brake and use wheel chocks as necessary.

### WARNING!

Disconnect the vehicle negative battery cable before beginning this installation. Observe all routine safety precautions when working on or near the vehicle battery.

**Note:** This device is intended for use on mildly supercharged or turbo charged OEM non-return style fuel systems. This device will not function on return style fuel systems, unless the external boost pump is placed after the by-pass regulator. For accurate tuning, a wide band O<sub>2</sub> sensor is highly recommended.

Aeromotive system components are not legal for sale or use on emission controlled motor vehicles.

#### **This kit contains the following parts:**

- 1 ea Digital FMU Module
- 20ft Red 12 Ga. Wire
- 10ft Black 12 Ga. Wire
- 10 ft Red 16 Ga. Wire
- 3ea Yellow 3/8" Ring Connector
- 4ea Yellow #10 Ring Connector
- 3ea Yellow #6 Spade Connector
- 1ea Blue #6 Spade Connector
- 1ea 20 Amp Type 1 Circuit Breaker
- 12ea Tie-wrap
- 1ea 11109 Fuel Pump
- 6ft 5/32" vacuum / boost hose
- 5ft 5/16" Fuel Injection Hose
- 2ea 5/16" Brass Tee
- 1ea Universal Tee Fitting
- 1ea Check Valve, 1/4" NPT
- 2ea 5/16" Barb to 1/4" NPT Brass Adapter
- 12ea Hose Clamps
- 1ea Quick Connector, Male
- 1ea Quick Connector, Female
- 1ea Fuel Pressure Relocation Kit



The following steps are typical of most installations:

1. Once the engine has been allowed to cool, disconnect the negative battery cable and relieve the fuel system pressure.
2. Raise the vehicle and support it with jack stands.
3. Referring to the appropriate vehicle service manual for instructions, drain, disconnect any electrical and fuel component connections necessary.
4. Find a suitable place in the vehicle to mount the Aeromotive Digital FMU. Make sure the location will be accessible during test-driving for tuning. Typical mounting locations include in the center console, glove compartment, etc.

**Note: The Digital FMU is not weatherproof and must be mounted inside the vehicle!**

5. On the outlet side of the enclosed fuel pump remove the check valve from the pump outlet tube using a pair of needle nose pliers, if one is present. The pump shown has the check valve removed.



6. Apply a small amount of Teflon tape or Teflon pipe thread sealant to the 1/4" NPT threads of each of the 5/16" Barb x 1/4" NPT fittings.



7. Thread each of the 5/16" Barb x 1/4" NPT fittings into each side of the check valve and tighten.



8. From the enclosed 5-foot section of fuel injection hose, cut 2 sections approx. 2"-3" in length.



9. Slide one of the 3" lengths of hose on to the pump inlet barb and the second 3" length onto the fuel pump outlet barb.



10. Using the enclosed hose clamps secure the fuel lines to the fuel pump.



11. Slide a second hose clamp onto each of the above two lines.



12. Insert each of the supplied tee fittings into each of the hoses coming from the fuel pump.



13. Using the loose second hose clamp on each of the fuel lines, secure the fuel line to the tee fitting.



14. From the remaining section of fuel injection hose, cut 2 sections approx. 6" in length.



15. Slide each of the 6" lengths of hose onto each side of the check valve assembly.



16. Using the enclosed hose clamps secure the fuel line to the check valve.



17. Slide a second hose clamp onto each of the above two lines.



18. Insert the tee fitting on the inlet side of the fuel pump into the fuel injection hose on the inlet side of the check valve assembly and secure using the second hose clamp on the check valve hose.



19. Insert the tee fitting on the outlet side of the fuel pump into the fuel injection hose on the outlet side of the check valve assembly and secure using the second hose clamp on the check valve hose.



20. Find a suitable mounting location for the external fuel pump assembly. Typical location include mount the fuel pump assembly to the fuel tank shield, the inside of the frame rail, or to the bottom of the spare tire well.

**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**

21. Once a suitable mounting location has been established, check for and remove any items on the backside of the mounting surface.
22. Using the enclosed fuel pump mounting bracket as a template drill three ¼" holes.
23. Attach the mounting bracket using the three enclosed mounting bolts, rubber dampers, nuts and washers.



24. If any items were removed from the backside of the mounting surface, when replacing those items, insure that the bolts will not interfere with or puncture them. Relocate as necessary.
25. Using the supplied large hose clamp secure the fuel pump assembly to the mounting bracket.



26. Remove the female quick connector from the inlet side of the factory fuel filter. You will be routing this line to the inlet of the external pump. From the external pump outlet you will then route a line back to the fuel filter inlet as follows:
27. From the remaining section of fuel injection hose cut a length of hose to run from the fuel pump assembly outlet to the factory fuel filter inlet, typically this is about 20" in length.

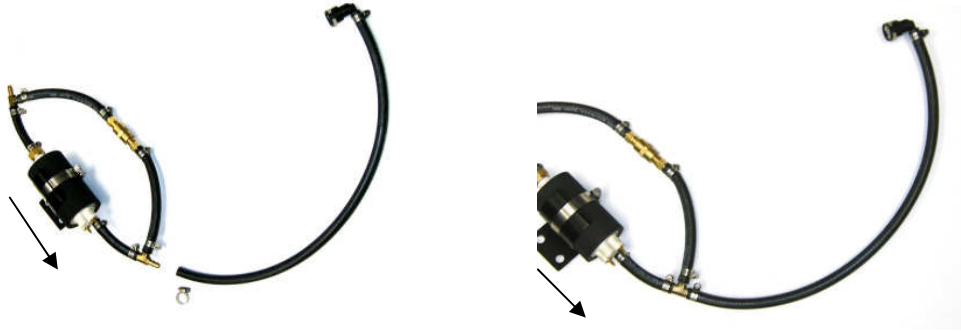
**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**



28. Secure the female quick connector included in your kit to one end of the hose using one of the enclosed hose clamps.



29. Using one of the enclosed hose clamps, secure the opposite end of this hose to the tee fitting on the outlet side of the external fuel pump assembly.



30. From the remaining section of fuel injection hose cut a length of hose, typically 20" in length, to run from the factory female quick connector removed from the filter inlet, back to the tee fitting on the inlet side of the external fuel pump assembly. You will need to install the male quick connect adapter fitting to make the connection as follows:

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31. Secure the male quick connect adapter included in your kit to one end of the hose using one of the enclosed hose clamps.



32. Secure the opposite end of the above hose to the remaining barb on the inlet side tee fitting of the fuel pump assembly using one of the enclosed hose clamps.



33. Connect the male quick connect adapter on the fuel pump assembly inlet to the factory female quick connect formerly attached to the fuel filter inlet.

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34. Install the provided Aeromotive Fuel Pressure Sensor Relocation Kit, p/n 17114, by following the installation instructions provided with the kit.
35. Attach the female quick connect fitting on the fuel pump assembly outlet to the factory fuel filter inlet.

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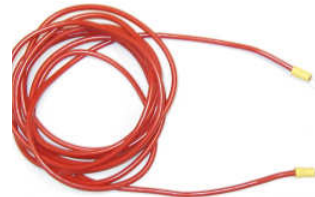
36. Using a piece of the enclosed #12 black wire, plan a route from the external fuel pump negative lead to a chassis ground. Cut the wire to the desired length and on one end of the wire crimp on one of the yellow #10 ring connectors to connect the external fuel pump negative terminal. On the other end of the wire crimp on one of the yellow 3/8" ring connectors to connect to the chassis ground.

**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**



37. Using a piece of the enclosed #12 red wire, plan a route from the external fuel pump positive lead to the mounting location of the Digital FMU inside the vehicle. Cut the wire to the desired length and on one end of the wire crimp on one of the yellow #10 ring connectors to connect the external fuel pump positive terminal. On the other end of the wire crimp on one of the yellow spade connectors to connect to the Digital FMU terminal labeled "PUMP", refer to the Digital FMU wiring diagram.

**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**



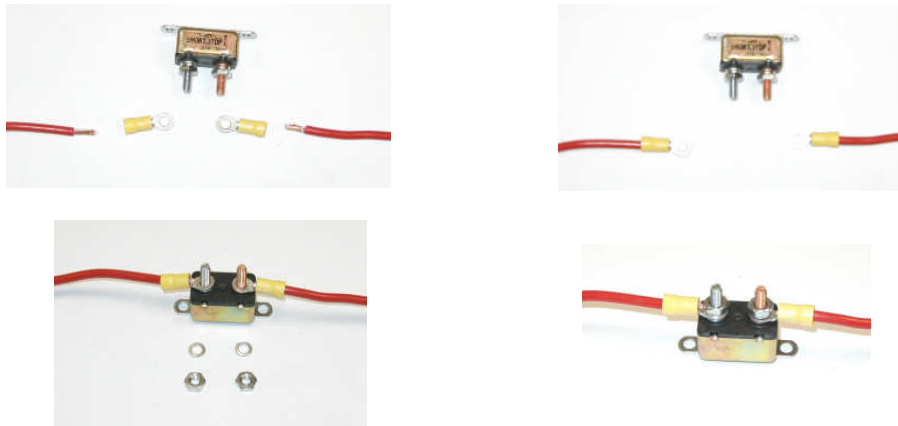
38. Using the remaining #12 red wire, plan a route from a 12 volts power source to the Digital FMU inside the vehicle. Cut the wire to the desired length leaving some extra to install a circuit breaker and on one end of the wire crimp one of the yellow 3/8" ring connectors, on the other end of the wire crimp on one of yellow spade connectors to connect to the Digital FMU terminal labeled "PWR". Refer to the Digital FMU wiring diagram.

**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**

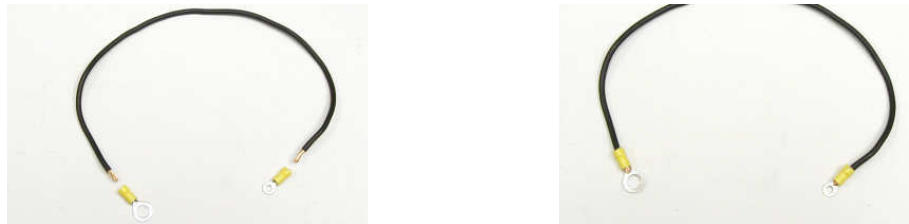


39. Mount the enclosed circuit breaker as close to the above power source as possible, cut the above #12 red wire and crimp one of the yellow #10 ring connectors on each end. Secure each of the #10 ring connectors to the circuit breaker.

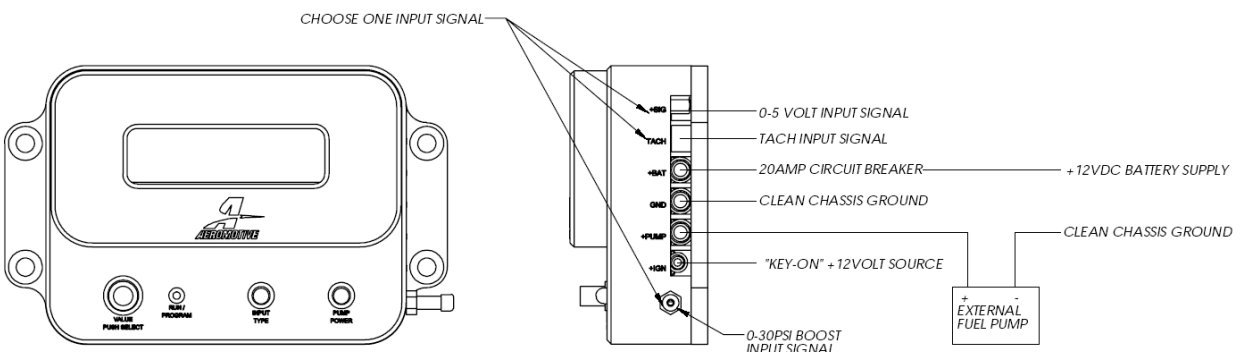
**Note:** *Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.*



40. Using the remaining #12 black wire, plan a route from a chassis ground inside the vehicle to the Digital FMU inside the vehicle. Cut the wire to the desired length and on one end of the wire crimp one of the yellow 3/8" ring connectors. On the other end of the wire crimp on one of yellow spade connectors to connect to the Digital FMU terminal labeled "GND". Refer to the Digital FMU wiring diagram.



41. Using a piece of the #16 red wire, plan a route from a "key-on" +12 volt power source to the Digital FMU inside the vehicle. Cut the wire to the desired length and on one end of the wire crimp the necessary connector to make the connection, on the other end of the wire crimp on one of the blue spade connectors to connect to the Digital FMU terminal labeled "IGN". Refer to the Digital FMU wiring diagram.





42. Branch into a manifold boost source using the enclosed universal tee fitting. Connect the universal tee fitting to the Digital FMU Boost port located inside the vehicle using the 5/32" rubber line included with kit. Refer to the Digital FMU wiring diagram. If you choose to reference an external 0-5 volt voltage source, throttle position, mass air sensor, etc., instead of referencing boost pressure, route a #16 wire from the voltage source to the Digital FMU terminal labeled "EXT".

**Note: Be sure to route all fuel lines clear of any moving suspension or drivetrain components and any exhaust components! Protect fuel lines from abrasion and road obstructions or debris.**

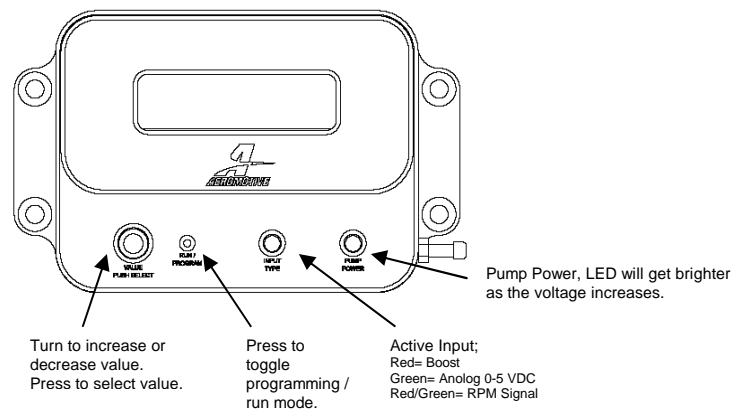
43. Once all the wires and lines are routed to the Digital FMU location, remove the 4 screws attaching the back cover. Loosen the appropriate terminal strip screw, slide the spade connector under the terminal strip screw and tighten down.

44. Once all connections are made, reattach the back cover and lightly tighten the four cover screws, **DO NOT OVER TIGHTEN COVER SCREWS.**

45. Using the above wiring schematic as a guide, recheck all wires for proper routing. Again, make sure all wires are routed clear of all moving parts and exhaust components. Protect wires from cutting and abrasion as necessary.

46. Carefully lower the car onto the ground

47. Using the diagram below, familiarize yourself with the basic controls of the digital FMU.



48. To start programming the DFMU or make changes to the current program, use a paper clip or piece of wire to depress the run/program button on the front of the DFMU module.

49. Turn the "Value" knob until the desired input signal is show (Boost, Analog 0-5V, or RPM) and press the knob.

50. Follow the menu prompts turning the knob to adjust the value and pressing the knob to select the value.

51. Select the number of zones (1 to 15), this will be the number of programmable output points in your input signal operating range. The each zone output point can be adjusted from 0-100%, 0 being no increase fuel pressure, and 100% be the maximum increase in fuel pressure. As boost, RPM or external voltage is applied to the Digital FMU, the display will show the input signal value and the output value as a percent.
52. When the menu returns to the input type or when you are done making changes depress the run/program button on the front of the DFMU module to return the module to the run mode.

### ***Program Mode***

#### ***Analog Signal***

***Number of Zones (1 to 15)***  
***Set Max Voltage (0-9.9 VDC)***

#### ***RPM Signal***

***Number of Zones (1 to 15)***  
***Set Max RPM (2,000 to 15,000)***  
***# Cylinders (2-12)***

#### ***Boost Signal***

***Number of Zones (1 to 15)***  
***Set Max Boost (2-30 psig)***

53. Test drive the car to ensure proper operation and re-check the fuel system for leaks. **If any leaks are found, immediately discontinue use of the vehicle and repair the leak(s)!**

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**WARNING:** This product can expose you to chemicals, including chromium, which is known to the State of California to cause cancer or birth defects or other reproductive harm. For more information, visit: [www.p65Warnings.ca.gov](http://www.p65Warnings.ca.gov)

### ***AEROMOTIVE, INC. LIMITED WARRANTY***

This Aeromotive Product, with proof of purchase dated on or after January 1, 2003, is warranted to be free from defects in materials and workmanship for a period of one year from the original date of purchase. No warranty claim will be valid without authentic, dated proof of purchase.

This warranty is to the original retail purchaser and none other and is available directly from Aeromotive and not through any point of distribution or purchase.

If a defect is suspected, the retail purchaser must contact Aeromotive directly to discuss the problem, possible solutions and obtain a Return Goods Authorization (RGA), if deemed necessary by the company. Please call 913-647-7300 and dial option 3 for the technical service dept. All returns must be shipped freight pre-paid to the company and with valid RGA before they will be processed.

Aeromotive will examine any product returned with the proper authorization to determine if the failure resulted from a defect or from abuse, improper installation, misapplication or alteration. Aeromotive will then, at it's sole discretion, return, repair or replace the product.

If any Aeromotive product is determined defective, buyer's exclusive remedy is limited in value to the sale price of the good. In no event shall Aeromotive be liable for incidental or consequential damages.

Aeromotive expressly retains the right to make changes and improvements in any product it manufactures and sells at any time. These changes and improvements may be made without notice at any time and without any obligation to change the catalogs or printed materials.

Aeromotive expressly retains the right to discontinue at any time and without notice any Aeromotive product that it manufactures or sells.

This warranty is limited and expressly limits any implied warranty to one year from the date of the original retail purchase on all Aeromotive products.

No person, party or corporate entity other than Aeromotive shall have the right to: determine whether or not this Limited Warranty is applicable to any Aeromotive product, authorize any action whatsoever under the terms and conditions of this Limited Warranty, assume any obligation or liability of any nature whatsoever on behalf of Aeromotive under the terms and conditions of this Limited Warranty.

This Limited Warranty covers only the product itself and not the cost of installation or removal.

This Limited Warranty is in lieu of and expressly excludes any and all other warranties, expressed or implied. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.