DIY Injector Piggyback Module for EFI Engines

A custom solution for extending injector closing times after engine displacement upgrades.

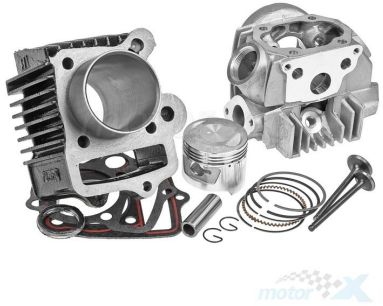
Project Overview

Problem:

- Stock ECUs are incompatible with increased engine displacement after a big bore upgrade and with a free-flowing exhaust system.

Solution

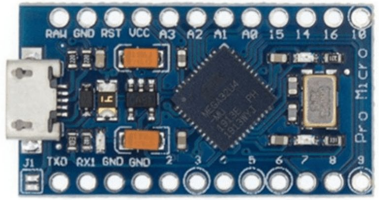
- A piggyback module to extend injector closing times for single-injector EFI engines.
- Open-source design for DIY enthusiasts.

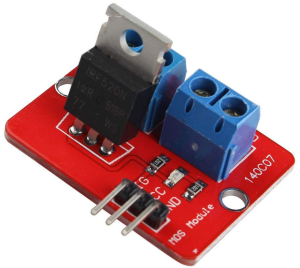


System Design & Components

Components:

- Injector Signal Capture: EV1 connectors with PC817 Optocoupler.
- Microcontroller: Arduino Micro Pro for timing and control
- Switching Module: IRF520 MOSFET Driver with a 1N4007 flyback diode.





Flow:

1. Signal captured from the ECU.
2. Delay calculated and applied.
3. Modified signal sent back to injector.

Prerequisites

Before Installation:

- Increase engine displacement (e.g., 50cc → 72cc).
- A free-flowing exhaust system enhances engine performance by reducing back pressure.
- Unlock ECU.
- Upgrade front sprocket (e.g., 12T → 14T).

Reasoning:

- Optimizes engine performance for the increased cylinder capacity.

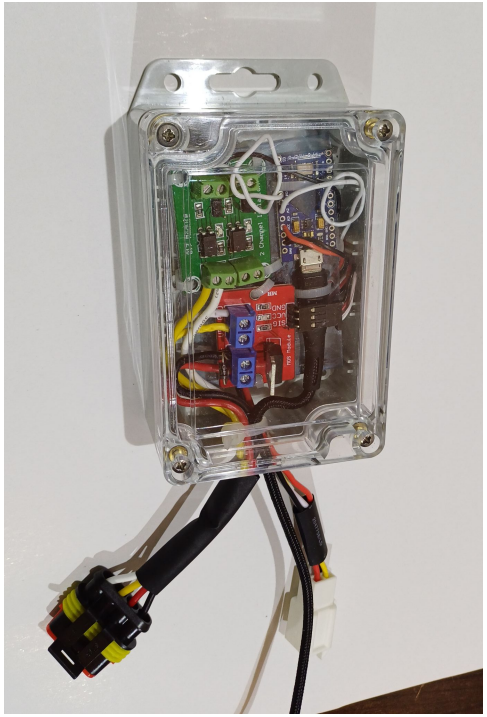
Installation & Setup

Steps:

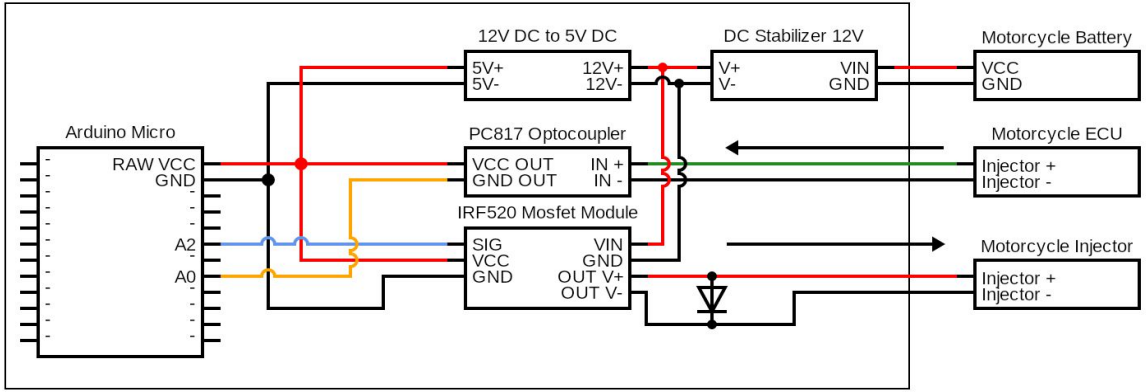
- Assemble the module based on the circuit diagram.
- Load Arduino code via Arduino IDE.
- Connect module to ECU and injector using EV1 connectors.

Testing:

- Adjust delay percentages as needed during test rides.



Circuit Design



DIY ECU Injector Piggyback Module

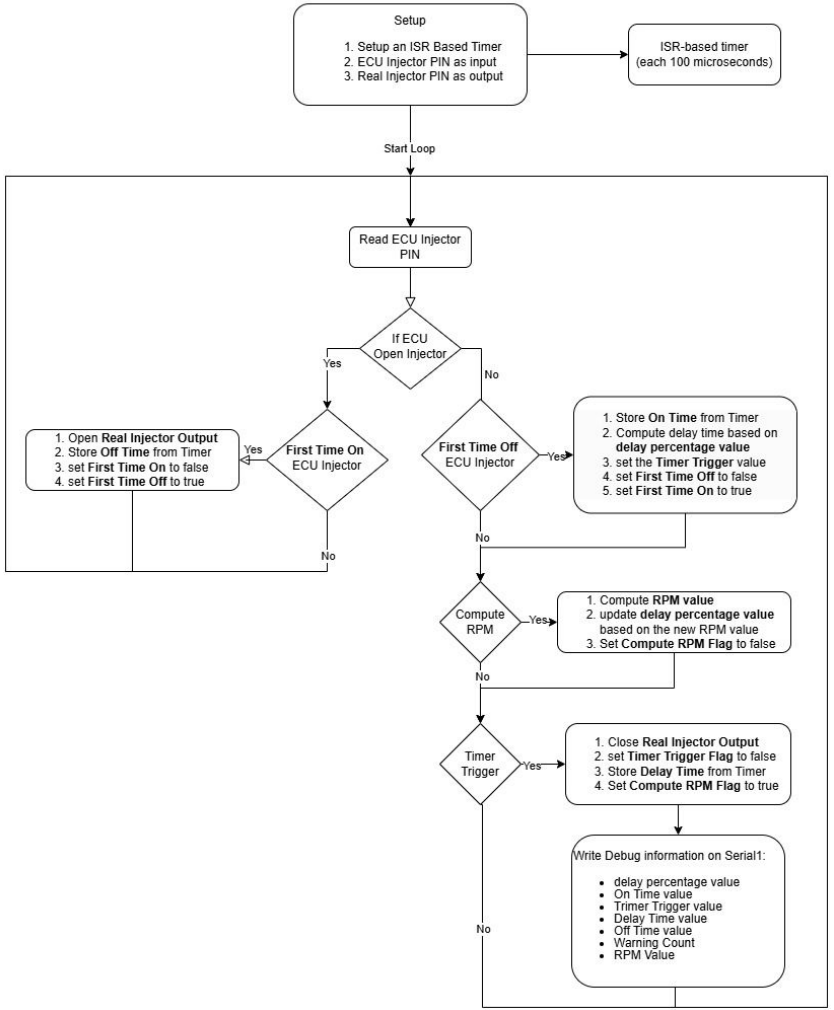
Explanation:

- Integration with existing EFI systems using EV1 connectors.

Arduino Code Workflow

Key Features:

- Delay computation using TimerOne library (v1.1).
- Adjustable delay percentage in the code.



Conclusion & Call to Action

Summary:

- Simple, cost-effective DIY solution for EFI engine upgrades.
- Fully open-source for the community.

Call to Action:

- GitHub Repository:
  - https://github.com/popradu10/pop-radu-diy-injector-ecu-piggyback
- YouTube channel: Radu Pop Moto 50cc
- Join the discussion and share feedback!