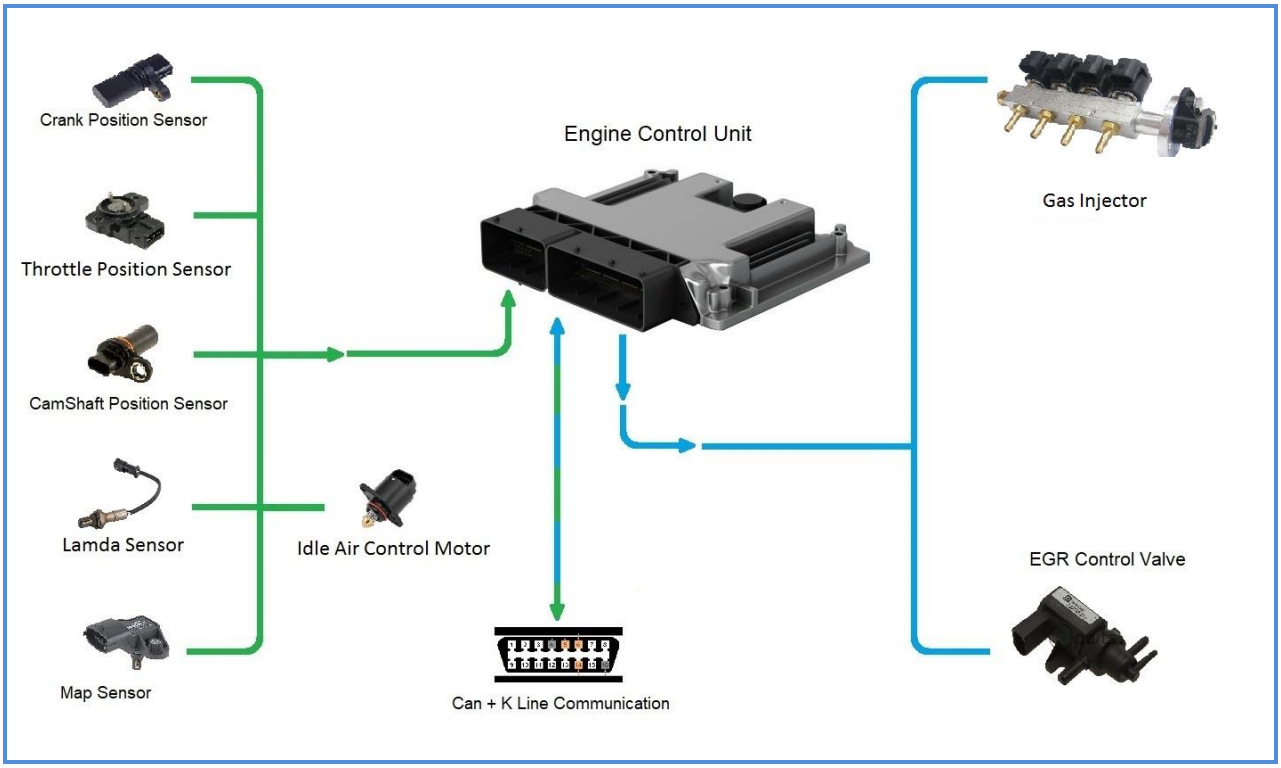
Manifold Gas Injection Kit with Open ECU and EGR (Product Code: R&DU01)

The Manifold injection kit is suitable for any single cylinder engine. The gas is injected in the manifold of the engine intake. The Electronic Control unit of a standard aftermarket Gas Kit cannot be adopted for use in research engine, because of the fact that in a standard Gas kit the injection start angle and the duration of injection are results of preprogrammed value from multidimensional maps in the ECU. While a part of the research requirement itself is finding the optimal Map values at conditions/variable as desired by the researcher. Hence we provide an open loop Electronic Control Unit (OPECU) where the user can decide the injection start angle and the injection duration.

This Electronic Control Unit is designed, programmed and tested in our company and are not available in general market/not for open market. Our Electronic Control Unit is only sold to high end research users. It's also Evident that the cost of Legion Brothers Gas Manifold injection Kit cannot be compared with cost of Gas kits being fitted on automobile for regular use.

Gas injection Open ECU with EGR



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Components of GAS Open ECU with EGR

- Crankshaft position sensor (Measures crankshaft position)
- Camshaft position sensor - (Measures camshaft position)
- MAF Sensor - (Measures mass air flow)
- Map sensor - (Measures manifold temperature and pressure)
- Engine Control Unit - (To Measure sensors and control series of actuators on an internal combustion engine and ensure excellent engine performance)
- Gas injector – (For fuel injection)
- EGR Valve - (Re-circulates controlled flow of exhaust gas into the intake)
- Can + K line - (For calibration and Troubleshoot)



Manifold Gas Injection Kit with Open ECU and EGR (Product Code: R&DU01)

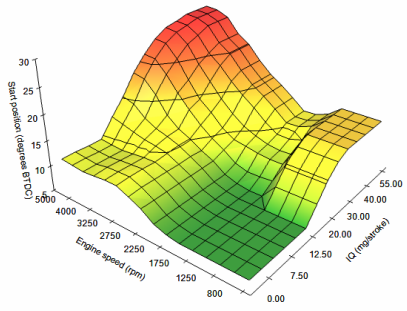
Manifold Gas Injection Kit with Open ECU and EGR	
ECU processor	Infineon
Crankshaft position	Crank trigger wheel
Camshaft position	Cam trigger wheel
Crank position sensor	Variable reluctance sensor
Cam position sensor	Hall effect sensor
Map	NTC
Software	Engine control system
Entry pipe fitting	Fitting for Wire Braided Rubber Tube carrying gas from tank to Pressure Reducer
Reducer 1st Stage	Chamber that allows a reduction of gas pressure to 1-2 Bar, Also allows a manual regulation of the outlet pressure in order to meet the requirement of the engines.
Outlet fitting	Fitting for wire Braided Tube at the outlet of the reducer, to the engine
Injector	12 V
Fuel Measurement	Load cell with Indicator

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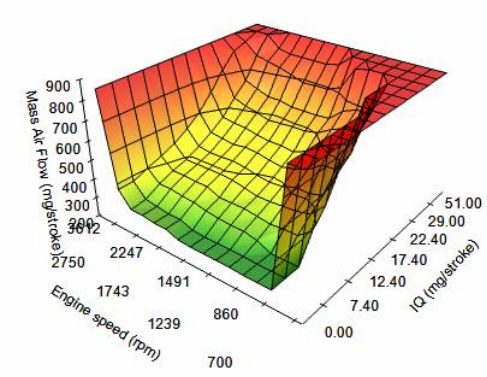
Gas injection Open ECU with EGR Functionality (Tunable Maps)

- Set idle Speed - (The user can set the required idle speed of the engine)
- Closed loop control for idling - (ECU controls the injection until engine idle)
- Start of injection - (The user can set the start of injection angle as desired)
- Injection Duration - (The user can set the Injection duration in terms of crank angle as desired)
- Injection pressure - (1bar)
- EGR - (The user can set the EGR flow as desired)
- Calibration charts are provided for Injection Quantity at various pressure

MG/ST RPM	0.00	5.00	7.50	10.00	12.50	15.00	20.00	25.00	30.00	35.00	40.00	45.00	55.00	60.00
5000	13.5°	13.5°	13.5°	13.5°	16.1°	18.2°	21.0°	23.7°	25.8°	27.1°	27.6°	28.1°	28.1°	28.1°
4500	13.1°	13.1°	13.1°	13.1°	15.1°	17.5°	20.5°	23.4°	25.5°	26.8°	27.3°	27.9°	27.9°	27.9°
4000	12.4°	12.4°	12.4°	12.4°	13.8°	15.4°	18.1°	21.0°	23.1°	25.0°	25.9°	27.0°	27.0°	27.0°
3500	11.4°	11.4°	11.4°	11.4°	12.6°	13.7°	15.1°	18.4°	19.9°	21.8°	23.0°	24.1°	24.1°	24.1°
3250	11.0°	11.0°	11.0°	11.0°	11.8°	12.8°	13.3°	15.9°	16.9°	19.0°	21.1°	22.5°	22.5°	22.5°
3000	10.4°	10.4°	10.4°	10.4°	10.9°	11.7°	11.6°	13.8°	15.1°	16.3°	18.6°	19.8°	19.8°	19.8°
2750	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	12.0°	12.7°	14.0°	16.5°	17.6°	17.6°	17.6°
2500	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.5°	11.2°	12.2°	14.7°	15.9°	15.9°	15.9°
2250	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.8°	11.1°	12.5°	14.0°	14.0°	14.0°
2000	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.4°	10.9°	12.0°	12.0°	12.0°
1750	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.1°	10.8°	12.1°	12.1°	12.1°
1500	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.0°	10.1°	11.5°	13.0°	13.0°	13.0°
1250	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°
1000	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°
800	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°	12.0°



MG/ST RPM	0.00	3.00	7.40	10.00	12.40	15.00	17.40	20.00	22.40	25.00	29.00	33.00	51.00
3612	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00
3423	365.00	365.00	395.00	420.00	450.00	495.00	550.00	630.00	720.00	795.00	820.00	850.00	850.00
2750	285.00	295.00	335.00	365.00	385.00	420.00	460.00	510.00	585.00	650.00	760.00	850.00	850.00
2499	285.00	285.00	335.00	365.00	385.00	410.00	450.00	500.00	560.00	625.00	745.00	790.00	850.00
2247	275.00	275.00	325.00	360.00	385.00	410.00	440.00	495.00	545.00	600.00	730.00	775.00	850.00
1995	275.00	275.00	320.00	360.00	385.00	415.00	450.00	480.00	525.00	600.00	710.00	775.00	850.00
1743	250.00	250.00	305.00	330.00	380.00	405.00	445.00	470.00	530.00	585.00	685.00	775.00	850.00
1596	245.00	245.00	295.00	330.00	365.00	390.00	430.00	470.00	535.00	585.00	690.00	775.00	850.00
1491	245.00	245.00	290.00	330.00	350.00	380.00	420.00	460.00	535.00	585.00	690.00	790.00	850.00
1386	245.00	245.00	290.00	320.00	350.00	385.00	435.00	490.00	550.00	590.00	720.00	850.00	850.00
1239	245.00	245.00	275.00	310.00	355.00	410.00	460.00	540.00	590.00	650.00	835.00	850.00	850.00
924	240.00	240.00	240.00	315.00	360.00	405.00	510.00	575.00	620.00	680.00	850.00	850.00	850.00
860	240.00	240.00	240.00	315.00	375.00	425.00	515.00	600.00	620.00	680.00	850.00	850.00	850.00
750	240.00	240.00	240.00	370.00	450.00	574.00	622.00	850.00	850.00	850.00	850.00	850.00	850.00
700	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00
0	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00	850.00



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