

**ARC1****Description:**

The ARC1 Air/fuel Ratio Calibrator provides precise adjustment of air/fuel (A/F) ratio over the entire operating range of an internal combustion engine. It is especially useful for re-calibration of modified engines. The alteration or addition of turbochargers, superchargers, intake manifolds, fuel injectors, fuel regulators, throttle bodies, intake plenums, Mass Air Flow (MAF) or Manifold Absolute Pressure (MAP) sensors can alter the A/F ratio calibration. The ARC1 gives the user a convenient way to set the A/F ratio for rich, lean or stoichiometric operation over the entire RPM and load range.

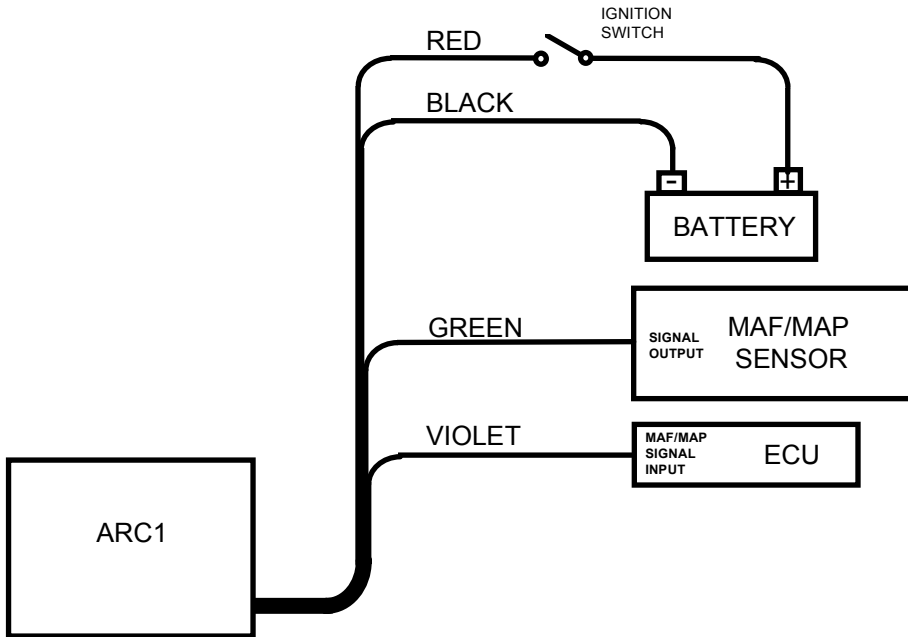
The ARC1 provides a means to achieve a best fit straight line approximation to the desired air/fuel calibration curve. It gives the user the ability to make these adjustments without a PROM change in the ECU. Furthermore, these adjustments can be made by the driver on-the-fly to optimize the air/fuel ratio for the current driving situation.

An optional +5V output is available which may be used to supply the reference voltage needed for a dedicated MAP sensor. The ARC1 is typically used in conjunction with a precision air/fuel ratio meter such as the Split Second ARM1. The air/fuel ratio meter provides the required information needed to properly set the ARC1 front panel controls.

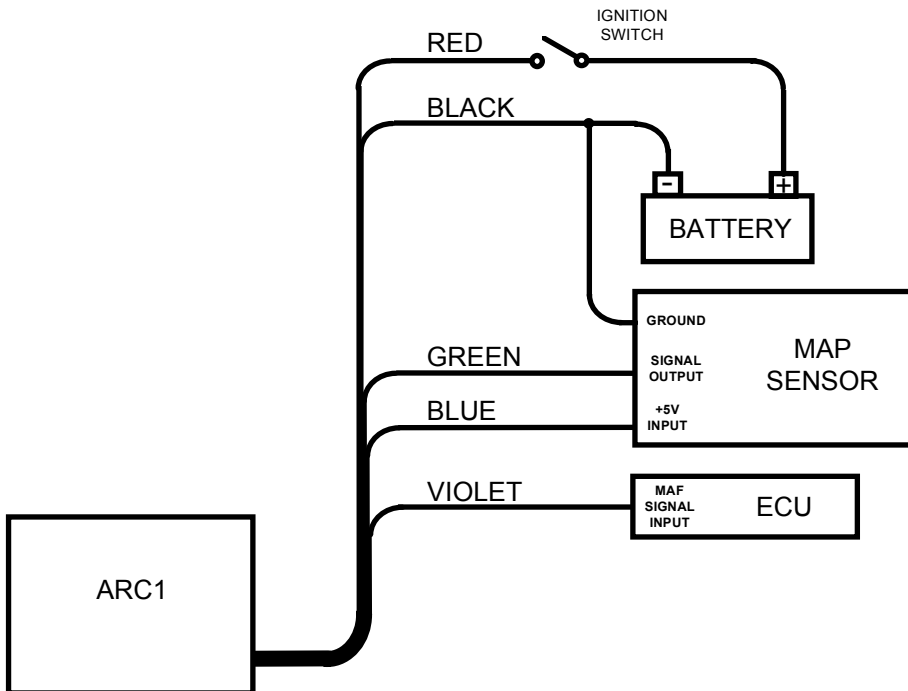
Features:

- Low load calibration (offset adjust)
- High load calibration (gain adjust)
- Output clamp (assures output is kept within ECU range)
- Filter to provide smooth idle and reduce noise
- +5V regulated output available for MAP sensor reference voltage
- Transient surge and battery reversal protection

Typical Connections With Existing MAF/MAP Sensor:



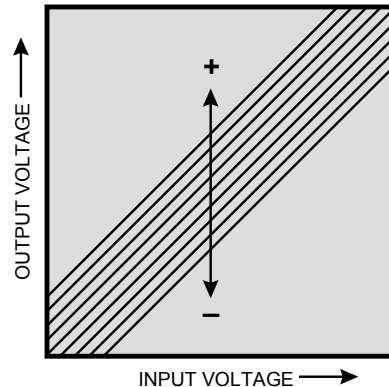
Typical Connections with Dedicated MAP Sensor:



Front Panel Adjustments:

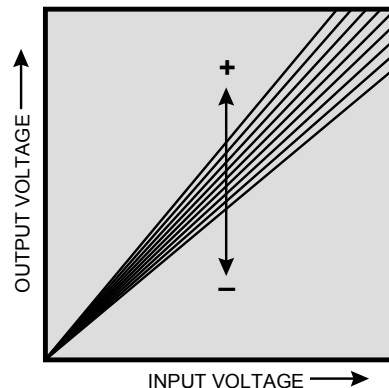
Low

The low control adds a variable offset to the input signal. It therefore moves the output up or down (rich or lean) by a fixed amount over the entire operating range. It is called low because changes in offset cause a much greater percentage change at low engine loads. Idle and low speed cruise are low load conditions.



High

The high control changes the signal gain. It therefore changes the output level by a fixed percentage over the entire operating range. It is called high because it is the primary way to adjust the air/fuel ratio at high loads. High loads occur during full throttle acceleration and climbing steep grades.



Adjustment Procedure:

Begin with the low and high controls set to the zero position. At these settings, the output voltage matches the input. Use a precision air/fuel ratio meter such as the Split Second ARM1 to monitor the operating fuel mixture.

Adjust the low control for the desired air/fuel ratio under idle and low load conditions. Then set the high control for the desired fuel mixture under hard acceleration. The controls are somewhat interactive which may make it necessary to repeat the adjustment of the low and high controls.

Once the low and high controls are set properly, the fuel mixture can be adjusted for the entire load range of the engine by adjusting the high control up and down. For example, assume the engine has been set for stoichiometric operation over the full load range. If more power is desired, the fuel mixture can be made more rich by increasing the setting of the high control. If better fuel economy is desired, the fuel mixture can be made more lean by decreasing the setting of the high control.

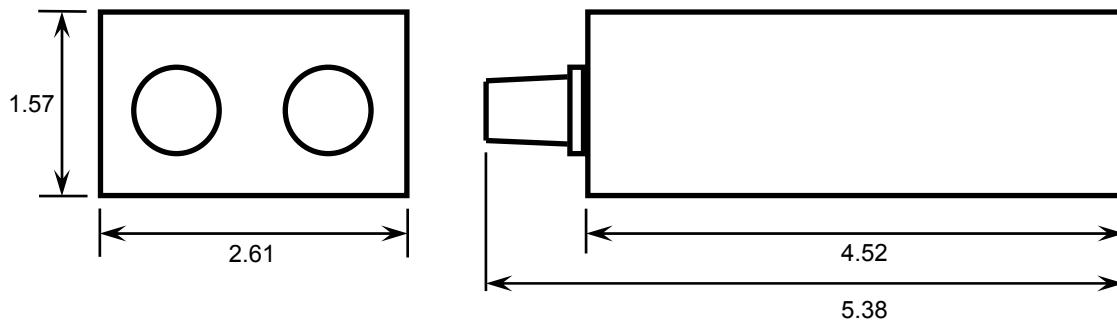
Wire Assignments:

LABEL	CONNECT TO	WIRE COLOR
BATT+	Battery positive (+12V)	Red
BATT-	Battery negative (chassis ground)	Black
SIGI+	MAF/MAP sensor signal output	Green
+5V	+5V supply to MAF/MAP sensor (optional)	Blue
SIGO	ECU signal input (MAF or MAP input)	Violet

Electrical Characteristics:

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Low Range	% adjust of full scale range	-20		+20	%
High Range	% adjust of full scale range	-20		+20	%
Supply Voltage	BATT+ to BATT-	12	13.5	16	V
Input Voltage	SIGI to BATT-	0		5	V
Output Voltage	SIGO to BATT-	0		5	V
Input Resistance	SIGI to BATT-		100		k Ω
Output Resistance	SIGO to BATT-		100		Ω
Output Current	+5V output			500	mA
Supply Current	BATT+ terminal		20		mA

Mechanical Characteristics:



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