

ACCEL/DFI Generation 7+ ECM

Nitrous Stage 1 Output PWM Mode

On Off Edit DC% ECT Mask Edit S1

Duty Cycle Control
RPM Based Time Based

	Enable	Disable	Active State	Enabled (All Stages)
RPM	2000	1800	Not Selectable	<input checked="" type="checkbox"/>
TPS%	90	82	Not Selectable	<input checked="" type="checkbox"/>
MAP PSI	12.6	10.0	<input type="checkbox"/> Above High Setpoint <input type="checkbox"/> Below Low Setpoint	<input type="checkbox"/>

Nitrous Stage 2 Output PWM Mode

On Off Edit DC% ECT Mask Edit S2

Duty Cycle Control
RPM Based Time Based

	Enable	Disable	Active State	Enabled (All Stages)
RPM	2500	2250	Not Selectable	<input checked="" type="checkbox"/>
TPS%	90	82	Not Selectable	<input checked="" type="checkbox"/>
MAP PSI	-5.3	-6.6	<input type="checkbox"/> Above High Setpoint <input type="checkbox"/> Below Low Setpoint	<input type="checkbox"/>

Nitrous S3 PWM

On Off Edit S3

Base PWM Frequency (Hz)
20.0080

Shift Output PWM Mode

On Off Edit DC% Edit Shift

	Enable	Disable	Active State	Enabled
RPM	3000	2750	Not Selectable	<input checked="" type="checkbox"/>
TPS%	50	45	Not Selectable	<input checked="" type="checkbox"/>
MAP PSI	1.6	-1.2	<input type="checkbox"/> Above High Setpoint <input type="checkbox"/> Below Low Setpoint	<input type="checkbox"/>

TCC Output PWM Mode

On Off Edit DC% Edit TCC

	Enable	Disable	Active State	Enabled
RPM	1500	1250	Not Selectable	<input checked="" type="checkbox"/>
TPS%	50	40	Not Selectable	<input checked="" type="checkbox"/>
MAP PSI	1.6	-1.2	<input type="checkbox"/> Above High Setpoint <input type="checkbox"/> Below Low Setpoint	<input type="checkbox"/>

Bottom Status Bar:

RPM: 6370 | SPARK: 34.00 | MAP: 132.35 | ECT: 78 | A:F: 10.00 | O2 FBK: 0.0

Open Loop O2 Mode: Rich | Lean | 0

Error Code: 0

Buttons: Clear (F8), Default, Online (F9), HELP (F1)

VERSION 5.5 UPGRADE

THE FOLLOWING CHANGES CORRESPOND TO CALMAP SOFTWARE VERSIONS 5.5 AND HIGHER, AND ACCEL/DFI GENERATION 7+ ENGINE CONTROL MODULES WITH FIRMWARE REVISIONS OF 5.5 AND HIGHER.

IF YOU HAVE ANY GENERATON 7 ECM WITH AN EARLIER FIRMWARE REVISION, CONTACT YOUR LOCAL EMIC DEALER FOR DETAILS ON HOW TO UPGRADE YOUR MODULE.

A DEALER LISTING IS LOCATED ON THE WEB AT (<http://mrgasket.com/>). CLICK ON THE ACCEL/DFI LOGO LOCATED AT THE BOTTOM OF THE HOME PAGE.

Custom MAP Sensor Configuration:

DFI Generation 7+ ECMs are now capable of using any MAP sensor that generates a linear voltage output in the range of 0-5 volts. The following 4 parameters must be known in order to configure your ECM for use with a custom MAP sensor:

Minimum Sensor Pressure:

The lowest value that the sensor is capable of reading. The value must be entered in units of kPa.

Maximum Sensor Pressure:

The highest value that the sensor is capable of reading. The value must be entered in units of kPa. This value must be no greater than 384 kPa, even if your sensor is capable of reading higher than 384 kPa. Pressure values greater than 384 kPa will be ignored by the ECM.

Minimum Sensor Voltage:

This is the voltage reading output by the sensor at the minimum pressure reading.

Maximum Sensor Voltage:

This is the voltage level output by the sensor at the Maximum Pressure reading or 384 kPa, whichever is lower.

CalMap Location: System Configuration Screen -> MAP Configuration/Display.

Progressive PWM Duty Cycle Control for Nitrous Outputs:

For ECM Revisions 5.5 and Higher, the Duty Cycle of both Nitrous outputs can be programmed versus time in order to offer true Progressive Nitrous Control. Time based control enables the Nitrous Stage 1 & 2 outputs to be programmable versus Manifold Pressure and a scalable Time axis. In Time Based mode, the Nitrous Fuel Enrichment is scaled by the Duty Cycle value in order to avoid over fueling during progressive PWM control.

CalMap Location: PWM Output Configuration Screen.

[Technical Version]

Map Sensor Configuration/Display Units

1, 2, or 3 Bar Map, or Alpha-N can be selected. If Alpha-N is selected, a 1 Bar Map range is assumed, and the Alpha-N, TPS vs. RPM table should be calibrated. You can also Select the type of units (% MAP, PSIA, or KPa) to have the MAP sensor reading displayed within CalMap when you are editing the individual ECM calibration tables.

Custom MAP Sensor Configuration (ECM Firmware Version 5.5 Only)

For Engine Control Modules with firmware revision 5.5 and higher, it is possible to create a custom MAP sensor configuration. DFI Generation 7+ ECMs are now capable of using any MAP sensor that generates a linear voltage output in the range of 0-5 volts. Note that the MAP sensor is powered by a precision 5.0 volt supply, so any custom sensor should be capable of operating on a supply voltage of 5.0 volts.

If your sensor is not capable of operating on a 5.0 volt supply, you will need to rewire your MAP sensor connections so that Pin C on the MAP sensor connector can be powered by a suitable supply voltage. Note that Ignition and Battery voltages are typically not regulated, and if either of these are used to power your sensor, the sensor output may be susceptible to variations in the supply voltage. Ignition and Battery voltage tend to sag under cranking, and upon certain load changes on the engine -- such as the Air Conditioning turning on. It is possible that your MAP sensor output may be impacted by changes in Ignition/Battery voltage if either is used to power the sensor.

The following 4 parameters must be known in order to configure your ECM for use with a custom MAP sensor:

Minimum Sensor Pressure:

The lowest value that the sensor is capable of reading. The value must be entered in kPa.

Maximum Sensor Pressure:

The highest value that the sensor is capable of reading. The value must be entered in kPa. This value must be no greater than 384 kPa, even if your sensor is capable of reading higher than 384 kPa. Pressure values greater than 384 kPa will be ignored by the ECM.

Minimum Sensor Voltage:

This is the voltage reading output by the sensor at the minimum pressure reading.

Maximum Sensor Voltage:

This is the voltage reading output by the sensor at the maximum pressure reading or 384 kPa, whichever is lower.

When using a custom sensor, it may be necessary to calibrate the ECM so that it reads the proper pressure from the sensor regardless of ECM hardware and sensor output voltage variances. To do this, you will need to adjust the Minimum and Maximum Sensor Voltage table in a Key On, Engine Off condition. This lets the MAP sensor operate without the engine running, causing the MAP sensor to read the current barometric pressure. Adjust the Minimum Sensor Voltage table until the output of your sensor reads a value equal to the current barometric pressure as reported by your local weather information source. If it is not possible to read the proper pressure by adjusting the Minimum Voltage table, you may also need to adjust the value of the Maximum Sensor Voltage table.

Alternatively, you could also connect a standard DFI 1, 2, or 3 BAR MAP sensor to the ECM and note it's Key On, Engine Off reading. You could then change your Custom Minimum and Maximum Voltage tables until your custom sensor reads that same pressure value.

Progressive PWM Control for Nitrous Stage 1 and Stage 2 Outputs

For ECM Revisions 5.5 and Higher, the Duty Cycle of both Nitrous outputs can be programmed versus time in order to offer true Progressive Nitrous Control. From the PWM Configuration Screen, place the Duty Cycle Control switch into the Time Based position for progressive PWM control, or the RPM Based position for standard operation as a function of Engine Speed. Time based control will enable the Nitrous Stage 1 & 2 outputs to be programmable versus MAP and a Programmable Time axis. The desired Time axis breakpoint values can be entered along the top of the table and are programmable from 0 - 8.3 seconds, with a resolution of 32.4 mS. Note that in Time Based mode, the Nitrous Enrichment is scaled by the Duty Cycle value in order to avoid overfueling during progressive PWM control. Also note that Nitrous Stage 3 PWM should be turned off for best results in Time Based mode. If the Stage 3 PWM switch is on, and the module enters Stage 3 of the nitrous oxide control system, the Nitrous Enrichment Fuel value will be calculated by averaging the Stage 1 and Stage 2 Duty Cycles, and multiplying the result by the maximum calculated fuel value for Stage 3 Nitrous.

Mathematically, Stage 3 Nitrous Enrichment is:

$$F_{nos3} = ((\text{Stage 1 DC\%} + \text{Stage 2 DC\%})/2) * (\text{Stage 3 Nitrous Fuel @ 100\% DC})$$