

## AEM FIC vs GReddy E-manage

War of the masses I tell ya!! The age old debate is at hand here: Is product 'A' better than product 'B'? Well let's bury our noses deep into the facts and beyond to answer this question. First off, let's start with some brief descriptions of each unit:

### From GReddy website:

GReddy's e-Manage is a cost effective programmable engine management system that allows you to properly tune your factory engine control without having to change the entire factory ECU system to an expensive "stand-alone" unit or the inconvenience of sending it out for a full ECU reprogram...Basic functions will allow the tuner to slightly alter factory injector duty-cycle ( $\pm 20\%$  at 5 preset RPM points) by intercepting and altering airflow or MAP sensor signals. An option for Honda VTEC cars will allow you to even adjust the VTEC shift point. Additional features are built into the system but are only accessible through the use of the e0-1, PProfec e-01 programmer or our PC-Windows based "e-Manage Support Tool" communication software (**sold separately**). There is a 16x16 airflow adjustment map, a maximum 50% larger main injector correction adjustment, upgrade air flow meter adjustment, boost limiter cut, anti-engine stall, VTEC-fuel adjustment, real-time map trace, real-time display, real-time communication and basic Data-logging. With the use of our "**Optional Injector Harness**" and the software, the unit has the ability to control an additional 16x16 injector duty cycle map and the controls for adding up to 2 additional sub-injectors. If the "**Optional Ignition Harness**" and the software are used the unit has the ability to control a 16x16 ignition timing map. All of the above maps can also be map-traced in real-time as well. If the factory range of map or airflow meter is surpassed, you can incorporate a larger airflow meter or our "Optional GReddy Pressure Sensor and Pressure Harness" to set larger scales of adjustment.

### From AEM's website:

The F/IC gives users with OBD-II vehicles and non-factory forced induction systems the ability to retard ignition and deliver accurate amounts of fuel without the need for outdated FMUs or "boost hiding" controllers. This system works parallel to the factory ECU preventing tuning limitations due to complex factory timing patterns and will not cause a check engine light (CEL).

### **PRECISE FUEL DELIVERY**

The F/IC intercepts the signal to the stock injectors, allowing the user to modify pulse-width by +/-100%. The F/IC is the only piggy-back system that can decrease injector pulse-width, allowing the user to drive larger aftermarket injectors\* while still maintaining proper air / fuel ratios. This powerful system can also tap into the factory injector signal and work independently to drive up to six (6) additional injectors.

### **TIMING RETARD CONTROL**

The F/IC has the ability to retard timing by intercepting and delaying the outputs from the

cam and crank position sensors to the engine- with no adverse affect on applications equipped with variable cam timing. The F/IC can retard timing from the factory system based on engine RPM and load inputs.

### **SENSOR CALIBRATION & CONTROL**

The F/IC can also be used to recalibrate / clamp the MAF sensor, eliminating common problems with non-boosted factory MAFs. The on-board MAP sensor allows for proper fueling in boosted applications.

### **KIT CONTENTS**

- F/IC Module
- F/IC Tuner Software CD
- F/IC Bypass Harness
- 24" Flying Lead Harness
- 36" Vacuum Hose
- 3/16" T-Fitting
- 10' USB COM Cable
- 4 - 4" Zip Ties
- Instruction Manual

Wow! That was tiring right there, and lot of info, but let's peer closer into it to allow for some granularity?

Let's start with the old reliable, GReddy E-manage. The E-manage is pretty simple and has been around for quite some time. It was proven to work pretty well on OBD1 cars, and mediocre success on OBD2. The unit is still loved by many, but with all of the sophisticated OBD2 inter-workings, this unit lacks quite a bit! The unit is controlled and programmed through jumper settings, rotary settings and the software package called the 'Support Tool'. Through the use of these 3 things, the unit now knows what it is running on (vehicle wise). It knows if it is wasted spark, how many cylinders, VTEC etc.

The Support Tool software for the E-manage is 'ok' at best and has some issues if not updated, using a serial to USB connector, using Vista and it happens to rain (joke). This can pose some issues for the end user or tuner who did not have prior knowledge into the problematic software. Once, you are all set, it is rather easy to control and manipulate.

The Support Tool is really what makes the E-manage shine in my honest opinion. It is an "optional" unit, but is essential to programming the unit. The average street price of the Support Tool is around \$100. It allows for injector correction factor with ease (input the old and new size and your done!), has a general 'Air Flow' map, which is a decent way to add or subtract fuel based upon throttle position, and the other map that may help in some situations, is a MAP clamp option. That is also available in the 'main harness,' which is included with the E-manage unit, which you could buy at an average street price of \$300. So let's recap what we just spent to get to where we are now:

**E-manage unit \$300 (includes main harness)**

**Support Tool \$100 (allows for programming of the E-manage)**

Let's say we want to directly add injector duty cycle to these larger injectors instead of skewing the MAP or MAF sensor in the car. We need the GReddy Injector harness, which street values at around \$40. This now allows us to add duty cycle or pulse width to the injectors, but we are still working off of throttle position, which we all know on a turbo car makes for a sloppy tune. The manifold pressure or speed density tuning is where it's at! Nothing compares to tuning off of boost, to allow for serious correction based upon manifold pressure. Wait!!!! That requires the GReddy Pressure Sensor, which is around \$100 street price (adds that to the list) and now we need to connect that sensor to the E-manage and must purchase the Pressure Sensor Harness, which is another \$40. Back to the math here:

**E-manage unit \$300 (includes main harness)**  
**Support Tool \$100 (allows for programming of the E-manage)**  
**Injector harness \$40 (add duty cycle directly to the injectors)**  
**Pressure Sensor \$100 (allow for speed density tuning)**  
**Pressure Sensor harness \$40 (allows for pressure sensor to connect to unit)**  
**GRAND TOTAL SPENT THUS far: \$580**

“Now wait just a cotton-picking minute here! You mean to tell me I have to spend \$580 just to get this thing to where I can get CLOSE to done and ready to accommodate my N/A car to Turbo, which I already spent \$5K on?” The answer simply is: “yes”, and we are not done yet Dorothy. We have not even addressed the ignition side of the deal yet. Turbo cars are far more prone to detonation due to increased charge temps due to the turbocharger. This is a lot of stress on your intercooler to cool these temps to make them more compressed, cold and condensed and less prone to detonate.

Let's all remember we are not living in a perfect world, and snap back to reality, because the truth of the matter lies in the fact that the turbo car will detonate and the ignition portion of tuning should not be overlooked, so it looks like we are going to add another \$40 to the mix for that “Optional Ignition Harness”. Back to the math once again:

**E-manage unit \$300 (includes main harness)**  
**Support Tool \$100 (allows for programming of the E-manage)**  
**Injector harness \$40 (add duty cycle directly to the injectors)**  
**Pressure Sensor \$100 (allow for speed density tuning)**  
**Pressure Sensor harness \$40 (allows for pressure sensor to connect to unit)**  
**Ignition harness \$40 (allows for control of ignition timing)**  
**GRAND TOTAL SPENT THUS far: \$620**

**Now we are cooking with fire!!!** So let's get down to tuning. Ok, so we are with this \$620 E-manage and we are ready to tune. The airflow is rather useless for me. The so-called 'optional' stuff is the most beneficial and it is still rather useless in some cases. With respect to duty cycle on the injection map, you can ONLY raise it. You can not lower the fuel delivery, which in some cases is a hindrance. For example, I added a new Walbro 255 pump and now because the stock pump was falling off so much on the top end, for me to be at 0 change in pulse width is too much fuel. Bummers!!!

With respect to the ignition control, it's a joke! It kind of works part of time (like a DSM; LOL) I had our Snap-On MT2500 hooked in to monitor fuel trims and ignition timing, only to find out that when I was tuning and I added timing, it stayed the same according to the Snap-On unit. Then, when I retarded timing, it worked 90% of the time. How's that for accuracy???

Now for the real kicker! Since the OBD2 inception back in late 1995, there are a lot of sneaky ECU games happening and the players, such as Toyota and Honda, have become even sneakier in the past 5-7 years. More vehicles are now coming equipped with a hybrid wideband primary oxygen sensor, which is VERY hard to fool. It is providing the stock ECU with extremely accurate data and allowing it to make corrections on your car in closed-loop operation. This makes for one tough cookie to crack with respect to piggyback ECUs like the E-manage. The primary oxygen sensor plays a sophisticated spy game that the E-manage are unaware of. Why? Because the E-manage does not connect to the primary oxygen sensor at all. It has no idea the thing even exists!!! So when you are in closed loop, which on some cars I have encountered is less than 4500 RPMS and less than 85% throttle, you're being corrected by that oxygen sensor. Well what can we do to combat this, but not spend \$2K on a standalone?

The AEM FIC may quite possibly be the solution here of the millennium with respect to piggybacks and comprehensive nature. It can control fuel, retard ignition, variable MAP/MAF voltage clamp, VTEC control and O2 sensor skew. It's quite frankly a watered down AEM EMS at a great price of approximately \$400 on the street.

The fuel control is not as user friendly as the E-manage, but allows for much more precise control in my opinion. It allows the user to fully add or take away fuel all in one map. You do have manually calculate how much fuel you want to pull out instead of doing it the old before and after way like the E-manage, but the FIC's way allows for more tweaking and fine tuning due to the fact that you can take out 43% for those larger injectors to get to a 14.7:1 or 44% or 42%. So the additional control is there! It is not just a broad stroke like the E-manage.

The FIC also comes with an on-board MAP sensor that allows for tuning based off of it. It reads in absolute pressure, which takes into account all sides of manifold pressure. With using it's tools to the fullest potential, the most simplistic way to tune this unit on a car like the tC would be to clamp the MAF using a variable clamp in the MAF tables, then using the fuel map and on-board pressure sensor to control all fuel in positive manifold pressure (boost). ☺ This seems to work the best (if done properly). Of course if you can get away with getting the results you need with using minimal maps and functions inside the FIC, please do so.

The FIC also comes equipped with an O2 sensor skewing option, to help retain your maps versus that pesky wideband O2 and the stock ECU. This is truly a huge step in the piggyback realm (and long overdue quite frankly). I am not saying no one has ever come to the market with an O2 skewing piggyback before, because companies like Split Second, PCS and a few others have paved that route, but lacked control, precision and/or

ignition control as well. So what does this mean to the end user? That means NO ECU RELEARNING!!! As a word to the wise, make sure you have a hand-held scan tool handy to monitor your fuel trims and set that skewer up properly. It can be tricky and ugly quickly for sure if you're not monitoring those trims.

Lastly, the real awesome benefit of the FIC lies with the ability to retard timing on those boosted applications. The way that the FIC does this is truly like its older brother, the EMS, in the fact that it does it through the crank sensor, and not altering signals going to each and every coil pack, which can become inconsistent like the E-manage does. So this method is truly innovative and long overdue in the piggyback realm as well.

In conclusion, the AEM FIC is the true and best choice for your buck with respect to piggyback engine managements. Do not be confused, it is still a piggyback, and a REAL standalone should be considered for those high dollar, high HP goals. For the guy looking to have a little more fun on the weekend and add 100whp to their Civic, tC or whatever it may be, the AEM FIC is the definitive choice. Lastly, there is a new software release for the FIC, which allows you to datalog an AEM UEGO, which can come in incredibly handy on those street tuning or dyno tuning sessions. Enjoy!

Written by:

Paul Oleandi

Coined 'Sciontologist' by Modified Magazine

Tuner & Engineer for Dezod Motorsports

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