

3sgte mkII MR2 PowerFC / Datalogit install

Posted by Quandry - 2009/08/31 20:49

My local dyno tuner is a fan of PowerFC, thankfully, there seems to be a good amount of knowledge available to suit this ECU and between the FC Commander and Data logit options, they are pretty configurable and will certainly do everything I want to do (just street work, no racing).

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There are a few vendors who offer PowerFC for the 2. Although there also seems to be a variation in pricing from shop to shop. After scouting around the web a bit, I decided on going with the ATS Power FC kit. Whilst not the cheapest option available, it made sense to me because:

- * It comes as a complete kit - requiring only a non-AFM air cleaner.
- * I emailed ATS with my ECU part number and Aaron was able to cable/load configuration that would match my car, greatly reducing install time.
- * I was going to the USA on business and ATS went out of their way to overnight me a kit with short notice.
- * It was a good test to see what it was like to deal with ATS ahead of the (larger) engine project.

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The FC commander is a nice handy size, I also went for the optional boost control solenoid. I figure it will save me buying a dedicated EBC, as the PowerFc has one built in. The nozzles on the solenoid are pretty big, I guess it's designed to run big mother turbos :rolleyes:

I plugged in the new ECU and gave the key a twist. The engine kicked straight in to life, but the rpm was all wrong, hunting around all over the place. I went on to the hand controller to check the status of the sensors and found a black box around VTA1 (Throttle position sensor). Probably I should have checked this before starting the car, but what they hey - it was exciting making a start.

I gave the tps a twist until the ECU was happy, then after a recommendation from Aaron, changed my injector settings to 120% (max for PowerFC) to cater for my 440 injectors on the 550 base map. This improved the idle greatly but it was still a little on the lumpy side.

Here is a pic of the PowerFC installed in the original ECU location:

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You can see two read wires, this is a resistor in place to simulate the MAT sensor for testing purposes.

And the GM 3bar map sensor temporary installed - with cable ties :eek:

http://solution.ie/mr2/IMG_1463.JPG

The PowerFC seems to fix the ignition timing at 20d (idle), so I popped on my advance timing light, and found that the dizzy was way out! I had to set it to 40d to get the marker in the right place, so I gave the dizzy a tweak and brought it in to line with the ECU making the idle nice and solid!

I still have some work to do with installing the MAT sensor in the throttle body, but I couldn't help but take the car for a spin to see what it was like. I feather the car around the block first, to try and build some confidence, but quickly found that the acceleration is much smoother than with the old ECU I was running, way less popping and jerking, suggesting that the timing map is working in my favour. I went on to a more main road and did some driving under boost, but found that the knock light (CEL) was flashing a bit when over .5bar so I backed off and drove conservatively just to enjoy the thrill of driving with a

completely customisable ECU. More details to follow ...

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Re:PowerFC install

Posted by Quandry - 2009/08/31 20:52

Over the weekend I continued with the pfc install by fitting the GM MAT sensor. This was a reasonably easy process after taking off all of the pipes although the wiring connector took a little getting used to. I wanted to get a nice clean install so at first I went to use the red and green cables from the cold start injector.

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It occured to me that I hadn't seen a plain red and plain green lead coming from the ECU and upon checking the pin outs I found that the cold start injector is not driven by the ECU like the main injectors. After checking the BGB it was obvious that the standard wires would not work as they are cabled in to a cold start relay and power. So I landed up snipping the wires, blanking the originals and making a new piece of harness using shrinkwrap, cable spiral and tape. It looks pretty clean and unnoticeable I think.

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The harness passes through one of the factory grommets and soldered to the ATS piggy tail leads from the ECU.

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I was then going on to do my boost solenoid but I found that my ignition lead was loose in the dizzy cap, upon closer inspection the lead connector was fatigued and broke off in my hand. Oh well I'll be riding the bus until that's fixed...

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Re:PowerFC install

Posted by Quandry - 2009/08/31 20:53

So today my FC Datalogit came in the post :thumbup this is a device that plugs in to the Power FC and allows for external editing/loading/saving of maps, config etc. It can also do on the fly data logging and can take an external wideband sensor.

Not having any resellers near by, I ordered the Datalogit from the manufacturer directly. They have an easy to use website and the order process went smoothly (using Paypal), although I did have to wait nearly a week to get my unit. It's coming from New Zealand, so the wait is to be expected. FCD were good with communications though and I was able to track it all the way.

The unit came very well packaged

<http://solution.ie/mr2/FCDL1.jpg> <http://solution.ie/mr2/FCDL2.jpg>

And came with a nice welcome note/cables to get it up and running

<http://solution.ie/mr2/FCDL3.jpg>

Laptop and FC commander goes in this side

<http://solution.ie/mr2/FCDL4.jpg>

Wideband goes in this side

<http://solution.ie/mr2/FCDL5.jpg>

It's easy to wire as there is no cable splicing. It's just plug it in to an extension cable (to reach the ECU in the back) and off you go. I ordered a 3m extension from them, however they were out of stock, so I am making do with a modified mini PS/2 cable for now.

As you can see the unit is fairly compact and I hope to tuck it away in to my center console cubby hole.

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Re:PowerFC install

Posted by Quandry - 2009/08/31 20:54

So once I got home with my Data logit I decided to run my extension lead from the trunk to the cabin. I used the ECU grommet in the trunk,

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cable wrapped it then ran my cable around the strut tower and to the forward grommet on the left hand side.

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I pulled my interior trim and got hold of the cable easy enough.

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While I was working in the engine bay I decided to mount my boost control kit for the pfc.

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Only two wires to solder in. On the ATS kit these are connected to the TVSV connectors.

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A little bit of shrink wrap and then role it in to the cable wrap.

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Love this stuff!

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Re:PowerFC / Datalogit install

Posted by Quandry - 2009/08/31 20:56

I am using a third party ps/2 cable and it is only 90% Pfc ready. The connector has to be poked in to the ECU a fair bit, and the cable had a big collar on it. A little bit of dremel action (my second favourite tool) and bending up a pin

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http://solution.ie/mr2/IMG_1585.JPG

and Bob's your uncle, a plug the fits :) I'd rather buy the right cable for the job, but they were out of stock and allow the aesthetics are not ideal - it does work.

The conversion gods were not looking upon me fondly however as I needed to modify the cable at the other end also :(

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(L) PS/2 cable, (M) FC commander plug, (R) Data Logit plug.

The data logit has a quite thick locating dowel and wouldn't quite fit the PS/2 cable. So out came the drill for some customisation

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Thankfully this was a job I could do sitting in the comfy cabin. Most of my work on the 2 lately has involved getting dirty, cold, and a sore back!

One of the easiest systems to wire, the Datalogit only has one cable and it's up and running. All simple and straight forward.

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Interior back in place and Subwoofer pumping, life is good again :D

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