

# FC-Datalogit

Mazda / Efni RX7 FD3S User Manual

<http://www.fc-datalogit.co.nz>

Questions? [Manual@fc-datalogit.co.nz](mailto:Manual@fc-datalogit.co.nz)

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Efni (Mazda) FD3S RX7. Series 6~8. Gen 3  
10/'99 ~ 7/'02

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# FC-Datalogit

## [Introduction.](#)

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FC-Datalogit is a package comprised of:

FC-Edit Software

FC-Box Hardware

- Description (Shot cut key) [short key (then >) short key]
  - What it does
    - How to use it
      - NOTE
      - **DANGER!**

Questions? [Manual@fc-datalogit.co.nz](mailto:Manual@fc-datalogit.co.nz)

**\*An important Notice before you plug in your FC-Box {[E-5-3](#) Tuner String}**

## FC-Datalogit CD



- The FC-Datalogit CD
  - You will receive the FC-Datalogit CD with you FC-Datalogit Package.
  - The CD contains
    - A PDF copy of the this manual (the manual is updated regularly, so check the Datalogit-FD3S E-group for the latest version)
    - FC-Edit (FC-Edit is updated regularly, so check the Datalogit-FD3S E-group for the latest version)

Questions? [Manual@fc-datalogit.co.nz](mailto:Manual@fc-datalogit.co.nz)



- You must install the version of FC-Edit from the Datalogit CD before you can update it!
- Log folder: with a sample log
- Settings folder: with Power FC 2-01 and 5-08 default settings
- setup exe
- To install FC-Edit
- Insert the CD into your CD ROM drive
- Open the CD
- Double click “setup exe”, follow the set-up instructions

## FC-Datalogit-FD3S user E-group

You must purchase FC-Datalogit for FD3S before you can be invited to join the FC-Datalogit FD3S user e-group.

You must not redistribute anything from the e-group. We encourage members to share their knowledge and redistribution put this into jeopardy. FC-Datalogit reserves the right to remove members from the e-group at their discretion.

To be invited e-mail the following information to [glen@fc-datalogit.co.nz](mailto:glen@fc-datalogit.co.nz)

FC-Box serial number.

FC-Edit version number.

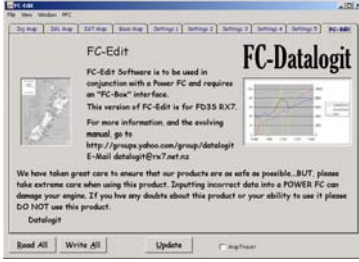
Date and point of purchase.

The e-group is a user forum with a database and some other web tools. The latest version of FC-Edit and this manual are kept on the e-group. There is a section for users to post / share their setting data if they wish. If you have any questions about FC-Datalogit or general tuning we encourage you to post them to the e-group.

All questions are posted to all e-group members.

Likewise if you can answer a question feel free to answer. We value your input. We have also added a section where you can make suggestions. We will include anything reasonable and achievable.

## 1- FC-Edit Main



Refer to FC-Edit Cover page {[FC-Edit](#)}

Main refers to the drop down menus and items placed around the central tab area on the FC-Edit software

### 1-1 File

- Drop down File menu (Alt f)
- To access the following commands; New, Open, SaveAs, Compare and Exit
  - To open the drop down File menu, Left Click “File”, once

#### 1-1-1 Default

- Restore maps and settings to “Default”
  - Loads the file “default.dat” from FCEdit folder in program files
    - To load the file “default.dat”, Left Click “Default” in the drop down File menu, once
      - The default file is NOT the same as resetting the Power FC to Apexi original settings with a commander.
      - To make the default file the same as your Apexi Power FC original settings
        - Reset your Power FC with a commander
        - Save the settings with Datalogit “save as” function
        - Name the file “default.dat”
    - You can change the data in the default file by
      - Opening the default file, change the maps or settings and then save the file as default.dat
      - Or by re-naming any other settings file “default.dat”
- All unsaved data or unsaved changes made to the previous file will be written over with the maps and settings in your default file

- Save files or you will loose the data!

### 1-1-2 Open

- Open an existing File (Alt o) [Alt f > Alt o > left click to choose file > Alt o]
  - To Open an existing file
    - To Open a existing file, Left Click “Open” in the drop down File menu, once
    - “Open” window will appear
    - Locate the file you wish to open
    - Double left click the file you wish to open
    - OR left click the file and left click the open button
      - All unsaved data or unsaved changes made to the previous file will be written over
      - Save files or you will loose the data!

### 1-1-3 SaveAs

- Save a File (Alt a) [Alt f > Alt a > Alt n (name the file) > Alt s]
  - To Save a file
    - To Save a file, Left Click “SaveAs” in the drop down File menu, once
    - “Save As” window will appear
    - Left click in the “File name” box and give the file a unique name
    - OR, left click on an existing file
    - Left click on the “Save” button
      - If you choose to save a file using an existing file name, the original file will be written over

### 1-1-4 Compare

- This unique tool is used to compare two files of settings to see if any values are different (Alt c) [Alt f > Alt c > left click to choose file > Alt o]
  - To Compare a file you are working on to another file

- Save the file you are working on.
- Click “Compare” in the drop down File menu, once
- “Open” window will appear
- Locate the file you wish to Compare with the file you already have open
- Double left click the file you wish to Compare
- OR left click the file and left click the open button
  - The difference between the two files will be displayed in all setting and map windows
  - Settings with a positive (+) difference to the file you chose to compare to will be **highlighted in red**
  - Settings with a negative (–) difference to the file you chose to compare to will be **highlighted in Yellow**
  - {T-1} To view the settings in two files simultaneously

## 1-1-5 Exit

- Shut down FC Edit program (Alt x)
  - To close FC Edit program
    - To Close FC Edit, Left Click “Exit” in the drop down File menu, once
      - **All unsaved data or unsaved changes made to the previous file will be lost**
      - **Save files or you will loose the data!**

## 1-2 Window

- Drop down Window menu (Alt w)
  - To access the following windows; Monitor and Graph
    - To open the drop down Window menu, Left Click “Window”, once

### 1-2-1 Monitor Window (FC-Datalogit)



- Click for Screen capture {[Monitor Window](#)}
- Monitor Window (Alt m) [Alt w > Alt m]
  - Monitor Window displays the various streams of data that can be logged
    - To open the Monitor window Click “Monitor” in the drop down Window menu, once
      - The streams of data are organized in separate Zones
      - One or a combination of Zones can be logged

### 1-2-1-1 Basic Zone

- Basic general data Zone
  - A Zone on the Monitor Window that displays general data available for logging
    - To select data streaming in the Basic Zone of the Monitor Window for logging Check the “Basic” check box in the Datalogit Zone on the Monitor Window
      - There are two boxes for each Data value; Live on the left and Max on the right
      - The following Data is displayed in the Basic Zone of the Monitor Window;
        - Inj Duty; Injector Duty time
        - IGL; Leading Ignition
        - IGT; Trailing Ignition
        - Rpm
        - Speed
        - Boost
        - Knock {[N-2](#) Knock Value}
        - Wtr; Water Temp
        - Air; Manifold inlet Air Temp
        - Bat Volt

## 1-2-1-2 Sensors Zone

- Sensors Zone
  - A Zone on the Monitor Window that displays the status or value of various sensors which are available for logging
    - To select data streaming in the Sensor Zone of the Monitor Window for logging, check the “Sensor” check box in the Datalogit Zone on the Monitor Window
      - The status of the following sensors is displayed in the Sensor Zone of the Monitor Window;
        - STR; Starter Switch
        - A/C; Air Conditioner Switch
        - PWS; Power Steering Oil Pressure Switch
        - NTR; Neutral Gear Select Switch
        - CLT; Clutch Engaged Switch
        - STP; Brake Pedal Depressed Switch
        - CAT; Catalytic Converter Over Heat Switch
        - ELD; Electric Load Switch
        - HWL; Exhaust Temp Over Heat Switch
        - FPD; Fuel Pump Operation Switch
        - FPR; Fuel Pump Control Switch
        - APR; Air Pump Relay
        - PAC; Port Air Control Valve
        - CCN; charge Control Valve
        - TCN; Turbo Control Valve
        - PRC; Pressure Regulator Valve
      - The value of the following sensors is displayed in the Sensor Zone of the Monitor Window;
        - PIM; Pressure Sensor (Map sensor)
        - VTA1; Throttle Position Sensor 1, full Range
        - VTA2; Throttle Position Sensor 2, Narrow Range
        - VMOP; Metering Oil Pump Position Sensor
        - WTRT; Water Temp Sensor
        - AIRT; Intake Air Temp Sensor
        - FUEL; Fuel Temp Sensor
        - O2S; Stock O2 Sensor

## 1-2-1-3 Auxiliary AD Zone

- Additional input Zone

- Provision has been made on the {[FC1 FC-Box 4 Additional inputs](#)} for up to four additional inputs. Their values are displayed in the Auxiliary AD Zone on the Monitor Window and can be logged
  - To select data streaming in the Auxiliary AD Zone of the Monitor Window for logging, check the “Aux a/d” check box in the Datalogit Zone on the Monitor Window
    - There are 4 additional input posts on the FC-Box, they are marked
      - AD0
      - AD1
      - AD2
      - AD3
    - Voltage must be between 0~5 volts
    - Possible additional inputs;
      - Wide band o2 sensor. UEGO
    - See section {[E-5](#) FC-Box Custom Features} for more information
    - {[1-3-2](#) Auxiliary (set up)} set up scale and values for A/d

#### 1-2-1-4 Map Position Zone

- Map Position Zone
  - Shows the current map position by displaying the values of “P” (P01~P20) and “N” (N01~N20), which can be logged
    - To select data streaming in the Map Position Zone of the Monitor Window for logging, check the “Map” check box in the Datalogit Zone on the Monitor Window
      - The values for “P” and “N” can be rescaled, see section {[C-1](#) Map Reference} for more information
      - P01~P20 {[N-3](#) Pressure Value} in the Fuel and Ign Maps
      - N01~N20; RPM.

#### 1-2-1-5 Advanced Zone

- Advanced Zone
  - A Zone on the Monitor Window that displays data useful for tuning and available for logging

- To select data streaming in the Advanced Zone of the Monitor Window for logging Check the “Advanced” check box in the Datalogit Zone on the Monitor Window
  - The following Data is displayed in the Advanced Zone of the Monitor Window;
    - RPM
    - PIM; Pressure Sensor (Map sensor) (0~24000 boost)
    - PIM V; 0~5V
    - TPS V; 0~5V
    - INJ Front Primary
    - INJ +/-
    - INGL
    - INGT
    - FuelT; Fuel Temp Sensor
    - Oil; Metering Oil Pump Position Sensor
    - PC %; Precontrol solenoid duty cycle
    - WG %; Wastegate solenoid duty cycle
    - WtrT; Water Temp Sensor
    - AirT; Intake Air Temp Sensor
    - Knock {[N-2](#) Knock Value}
    - BatV
    - Speed
    - ? Don't know what this one is ☺. Something to do with RPM?
    - O2S; Stock O2 Sensor
    - ? Don't know what this is either. Unused?
    - INJ Front Secondary

## 1-2-1-6 FC-Datalogit Zone

- Datalogging Zone
  - The area on the Monitor Window that displays which data zones have been chosen to be logged
    - To select which Zone on the Monitor Window you want to log, check the appropriate check box on the Monitor Window. You can choose one, any or all Zones.
      - The following Zones of Data on the Monitor Window are available for logging;
        - Basic Zone; 10 items
        - Sensors Zone; 24 items
        - Aux A/D Zone; 4 items
        - Map Zone; 2 items
        - Advanced Zone; 21 items



### 1-2-1-7 Lines (Logged)

- “lines” in the Datalogit Zone
- Shows the number of lines of data that were logged in the last logging session
  - The data, if viewed as a text file, is collected line by line
  - Each line has one value for each item logged, separated by a “Tab”
  - If you get 30 logs per second you will get 30 lines for each second logged
  - Different versions of Power FC will log at different rates.
  - More zones logged gives less lines per second due to the speed limit at which data can be extracted from the Power FC

### 1-2-1-8 Reset

- Reset values on Monitor Window (Alt r)
  - Used to Reset the maximum values in the Monitor Zone. Resets all values on the Monitor Window and discards the current log file
  - Left Click the “Reset” button on the Monitor Window, once
    - There is no auto save so Resetting will delete the current log file
    - Save files or you will loose the data!

### 1-2-1-9 Start

- Start Logging (Alt s)
  - Starts logging the selected Zones
  - Left Click the “Start” button on the Monitor Window, once
    - There is no auto save so “Start” will delete the previous log file
    - Save files or you will loose the data!

### 1-2-1-10 End

- Stop Logging (Alt e)
  - Stops logging of the selected Zones

- Left Click the “End” button on the Monitor Window, once
  - There is no auto save. “End” will only stop the current logging. The file created will remain until you Reset or Start a new log
  - Save the file as soon as possible
  - Save files or you will loose the data!

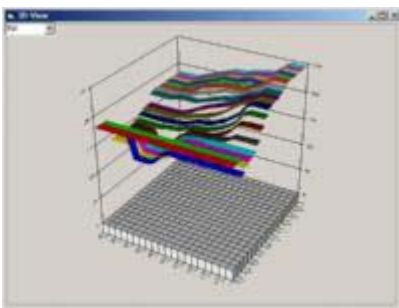
### 1-2-1-11 Save (Alt a)

- Save log file
  - Saves the log file you have just created
    - Left Click the “Save” button on the Monitor Window, once
    - “Save As” window will appear
    - Left click in the “File name” box and give the file a unique name
    - OR, left click on an existing file
    - Left click on the “Save” button
      - If you choose to save a file using an existing file name, the original file will be written over

### 1-2-2 Graph

- Graphical representation of Maps (Alt g) [Alt w > Alt g]
  - Shows graphs of the following maps; INJ, IGL, IGT, IGL-IGT and Base INJ
    - To open the Graph Window Click “Graph” in the drop down Window menu, once
    - You can resize the Graphs by dragging the graph window

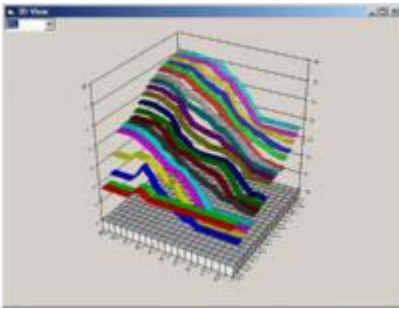
#### 1-2-2-1 INJ



- Click for Screen Capture {[INJ](#)}

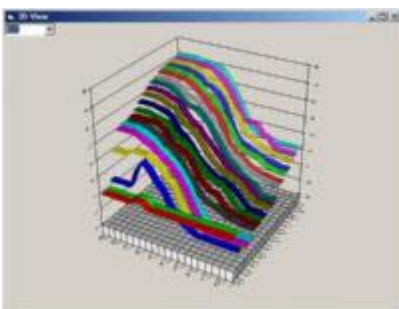
- Graphical representation of the Injector correction map [Alt w > Alt g > choose “INJ” from the drop down list]
- Shows a graph of the Injector correction map
  - To View the graph of the Injector correction map, choose “INJ” from the drop down list on the Graph Window

#### 1-2-2-2 IGL



- Click for Screen Capture [{IGL}](#)
  - Graphical representation of the Leading Ignition map [Alt w > Alt g > choose “IGL” from the drop down list]
  - Shows a graph of the Leading Ignition map
    - To View the graph of the Injector correction map, choose “IGL” from the drop down list on the Graph Window

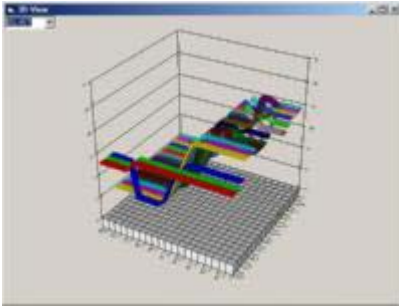
#### 1-2-2-3 IGT



- Click for Screen Capture [{IGT}](#)
  - Graphical representation of the Trailing Ignition map [Alt w > Alt g > choose “IGT” from the drop down list]
  - Shows a graph of the Trailing Ignition map
    - To View the graph of the Trailing Ignition map, choose “IGT” from the drop down list on the Graph Window

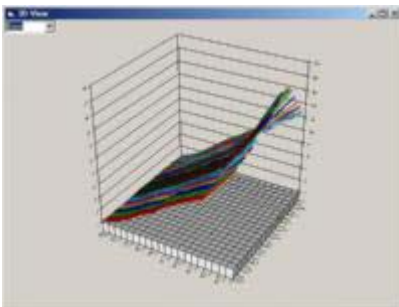
#### 1-2-2-4 IGL-IGT





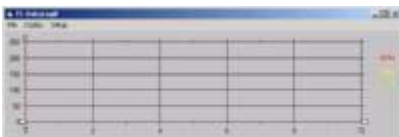
- Click for Screen Capture [{IGL – IGT}](#)
  - Graphical representation of the difference between IGT and IGL maps [Alt w > Alt g > choose “IGL-IGT” from the drop down list]
  - Shows a graph of the difference between IGT and IGL maps
    - To View the graph of the difference between IGT and IGL maps, choose “IGL-IGT” from the drop down list on the Graph Window

### 1-2-2-5 Base



- Click for Screen Capture [{Base}](#)
  - Graphical representation of the Base Injector map [Alt w > Alt g > choose “Base” from the drop down list]
  - Shows a graph of Base Injector map
    - To View the graph of the Base Injector map, choose “Base” from the drop down list on the Graph Window

### 1-2-3 Chart



- Click for Screen Capture [{FC-Datalogit Chart window}](#)
- Live Chart plotter (Alt c) [Alt w > Alt c]
- GMS Strip Chart by “Global Magic Software Inc.” Used under license by FC-Datalogit

- Plots live charts of data logging or can be used to review saved logged data
  - To open the Chart Window Click “Chart” in the drop down Window menu, once
  - Resize the chart if required
  - See {[1-2-3-4-1 Chart \(setup\)](#)} to setup the chart.
- Once you have set up the chart you can use it to view live data or review logged data.
- Open a saved log in the chart.
  - You can move the curser line along the chart with the arrow keys or scroll with a mouse
  - Set up some watches and they will display the value of the watched data where the curser line meets the plotted data line (trace)
  - You can stretch or compress time by sliding the arrows on the time line along the bottom of the chart
  - You can alter the height of each chart by dragging the top or bottom of each chart

## 1-2-3-1 File

- Drop down File menu for Charts
  - To access the following commands; Open, Save, SaveAs, and Exit
    - To open the drop down File menu, Left Click “File”, once

### 1-2-3-1-1 Open

- Open an existing Chart File
  - To Open an existing Chart file
    - Left Click “Open” in the drop down File menu, once
    - “Open” window will appear
    - Locate the file you wish to open
    - Double left click the file you wish to open
    - OR left click the file and left click the open button

## 1-2-3-1-2 Save as

- Save a Chart File under a different name
  - To Save a file
    - Left Click “SaveAs” in the drop down File menu, once
    - “Save As” window will appear
    - Left click in the “File name” box and give the file a unique name
    - OR, left click on an existing file
    - Left click on the “Save” button
      - If you choose to save a file using an existing file name, the original file will be written over

## 1-2-3-1-3 Exit

- Shut down Chart window
  - To close Chart window
    - Left Click “Exit” in the drop down File menu, once
      - Chart settings will remain and the chart will look the same when you reopen it

## 1-2-3-2 Log

- Drop down Log menu
  - To access the following windows; Start and End
    - To open the drop down Log menu, Left Click “Log”, once

### 1-2-3-2-1 Start F1

- Start logging

### 1-2-3-2-2 End F2

- Stop logging

## 1-2-3-3 Window

- Drop down Window menu
  - To access the following window; Add watch
    - To open the drop down Window menu, Left Click “Window”, once

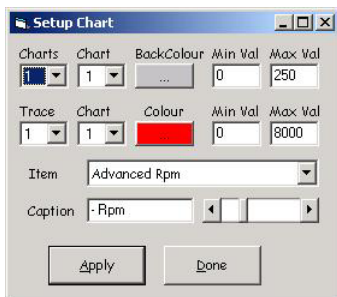
### 1-2-3-3-1 Add Watch ^ —

- Opens the Add Watch window {[1-3-4 Add Watch](#)}

### 1-2-3-4 Setup ^ —

- Drop down Setup menu
  - To access the following Chart Setup window
    - To open the drop down Setup menu, Left Click “Setup”, once

### 1-2-3-4-1 Chart (setup) ^ —



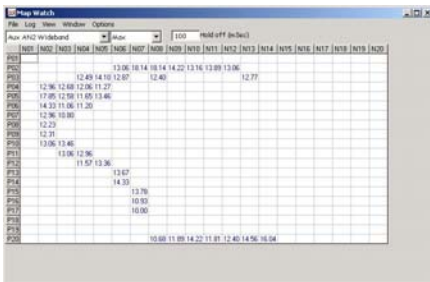
- Click for Screen Capture {[Setup Chart](#)}
  - Click “chart” in the drop down setup menu Setup chart window will appear
  - You can have up to 4 charts
    - Click “charts” drop down box and select the number of charts required
  - You can give each chart a different background colour if required. (Some trace colours are hard to see against certain background colours)
    - Click “chart” drop down box and choose the chart number then choose desired background colour for that chart
  - You can have a different scale for each chart
    - Click “chart” drop down box and choose the chart number then assign a max and min value for that chart

- Choose the number of traces you want to display and which chart you want each one on
- Do this for as many traces you require
  - You can have a maximum of 20 traces
    - Click “trace” drop down box and choose a trace number
    - Click “trace chart” drop down box and select which chart you want this trace to be displayed on
    - Choose a colour for the trace
    - Choose a max and min value for the trace
    - Click the “Item” drop down box and choose the channel you want for the trace
    - The caption will reflect which channel you have chosen but you can edit it if you wish
- Click apply to view changes to the chart
- Click Done when you are finished

## 1-2-3-4-2 Monitor

- Opens the monitor window {[1-3-1](#) Monitor (FC-Datalogit)}

## 1-2-4 Map Watcher



- Click for Screen Capture {[Map Watch](#)}
- Map logger.
  - 20 x 20 map that displays logged data in it's appropriate N & P position.
    - These are the same positions as the data and settings in your fuel and ignition maps.
    - Only works for advanced settings and the auxiliary inputs.
    - Will display live data while creating a log
  - Choose the log item you wish to analyse. {[1-2-4-2](#) Drop Down Channel Selector}



- The most common item is Wideband O2.
- Choose max, min, or average. Go for a drive... [{1-2-4-3](#) Drop down}
- As you go up and down the revs and load, o2 values will appear and fill up their relevant positions in the map. Look over the map and then adjust the fuel map accordingly.
- Once you stop logging you can change the setting to a different item and the map logger will crunch the log and fill up the map with the new setting logged data.

## 1-2-4-1 File

- Drop down File menu
  - To access the Open log window
  - To open the drop down File menu, Left Click “File”, once

## 1-2-4-1-1 Open

- Open a saved log file for analysis
  - To Open a saved log file
  - To Open a saved log file, Left Click “Open”, once

## 1-2-4-1-2 Save As

## 1-2-4-1-3 Exit

## 1-2-4-2 Log

## 1-2-4-2-1 Start

1-2-4-2-2 End      ^  
                          —

1-2-4-3 View      ^  
                          —

1-2-4-3-1 Map Trace      ^  
                                  —

- Highlight current P and N cell in use in the map window
  - Shows you which cells are used for the current live engine condition so you know which ones to edit
    - Check the “Map Trace” check box at the Bottom of the Map Watcher

1-2-4-3-2 Ghost      ^  
                          —

1-2-4-3-3 Col Width      ^  
                                  —

1-2-4-3-4 Dec. Places      ^  
                                  —

- Select Decimal points for data in map
  - Click in text box and type in desired number of decimal points.

1-2-4-4 Window      ^  
                          —

1-2-4-4-1 Monitor      ^  
                                  —

1-2-4-4-2 Chart      ^  
                          —

1-2-4-5 Options      ^  
                          —

## 1-2-4-5-1 MapRef

## 1-2-4-6 Drop down Channel selector

- Drop down selector to select channel of log data to be analyzed
  - Only works for advanced settings and the auxiliary inputs.
    - Left click on arrow
    - Left click on channel. Wait for your computer to calculate the values in the map

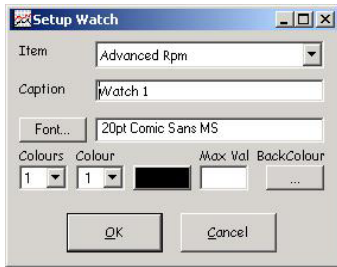
## 1-2-4-7 Drop down Filter

- Drop down selector to select method of analyzing log data
  - Choose max, min, average, number
    - The longer you drive, the bigger the log file therefore you get more samples of data for each position on the map.
    - Choose Max. Wait while your computer searches the log file to find the maximum value for each position in the map. The values displayed in the map are peak values for each N & P position.
    - Choose Min. Wait while your computer searches the log file to find the minimum value for each position in the map.
    - Choose Average. Wait while your computer searches the log file and calculates the average value for each position in the map.
    - Choose Number. Wait while your computer searches the log file and counts the number of samples for each position in the map. The values displayed in the map are total number of samples values for each N & P position.
  - Left click on arrow
  - Left click on method. Wait for your computer to calculate the values in the map

## 1-2-4-8 Hold Off (m Sec)



## 1-2-5 Add Watch



- Click for Screen Capture {[Setup Watch](#)}
- A pop up “Watch” which allows you to monitor a channel while you are logging
  - You can have as many Watches as you like
    - Choose “Add Watch” in the Window menu
    - A “Setup Watch” window will appear
    - Choose the Item (Channel) from the drop down window.
      - You can choose any channel that can be logged in the Monitor window
    - The caption will display the channel you have chosen. You can edit the channel name if you desire
    - Choose a font and font size
  - You can create a “red line” by assigning different text colours to different values
    - Colours “red line”
      - Example; RPM, text black until 6000rpm then red until 8000rpm then blue
      - Click “3” colours in the drop down “colours” box
      - Select colour 1 in the drop down colour box, click the coloured box and select black, type 6000 in the “Max Val” box
      - Select colour 2 in the drop down colour box, click the coloured box and select red, type 8000 in the “Max Val” box
      - Select colour 3 in the drop down colour box, click the coloured box and select blue

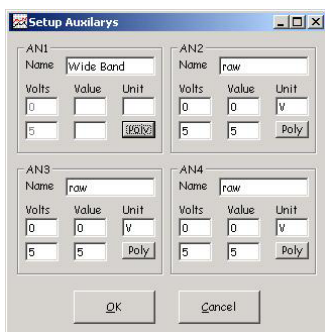
- You can drag the box and position it on your screen or drag it bigger or smaller
- Once you have made a Watch if you want to alter it you can by double left clicking it to go back to the “Setup Watch” window

## 1-3 Setup

### 1-3-1 Com selection

- Com Port selection (Alt s)
  - If the FC-Box is plugged into your computer via a “Com port”
  - Allows you to choose between Communication Ports 1, 2, 3, 4, 5, 6, 7 or 8 depending on which one you have plugged the FC-Box into
    - To open the drop down Setup menu, Left Click “PFC”, once
    - Click “Port” choose Com1 or Com2

### 1-3-2 Auxiliary



- Click for Screen Capture {[Setup Auxiliary](#)}

- AN inputs must be between 0~5 volts

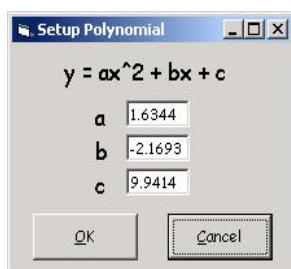
- Set up Auxiliaries
  - There are 4 Auxiliary channels and each has it's own calibration depending on what you connect to it.
    - AN1, AN2, AN3 and AN4
  - If the output of the item you are logging is linear then you only need to enter two voltages to define the slope.

- More complex outputs, where the output can be defined with a curve, require a formula (a polynomial) Click the Poly button on the AN window and enter the values for a, b and c. {[1-3-2-1](#) Polynomial}
- There is a separate scale factor box for each AN channel
  - For example; if you want to connect a particular Wideband o2 sensor controller which has a linear output. You need to define two voltages and their relative A/F values.
  - Perhaps at 0 volts the A/F is 10 and at 5 volts the A/F is 20.
  - Name the output units, in this case A/F.
  - Name the item so you can find it in your log.
  - Fill in the two voltages an A/Fs like so;

Name	Wide band	
Volts	Value	Unit
0	10	A/F
5	20	

- In this case a voltage of 2.5V will display an A/F value of 15 (:1).
  - You need to find the correct scale factor for the sensor you are using.

### 1-3-2-1 Polynomial (Setup)

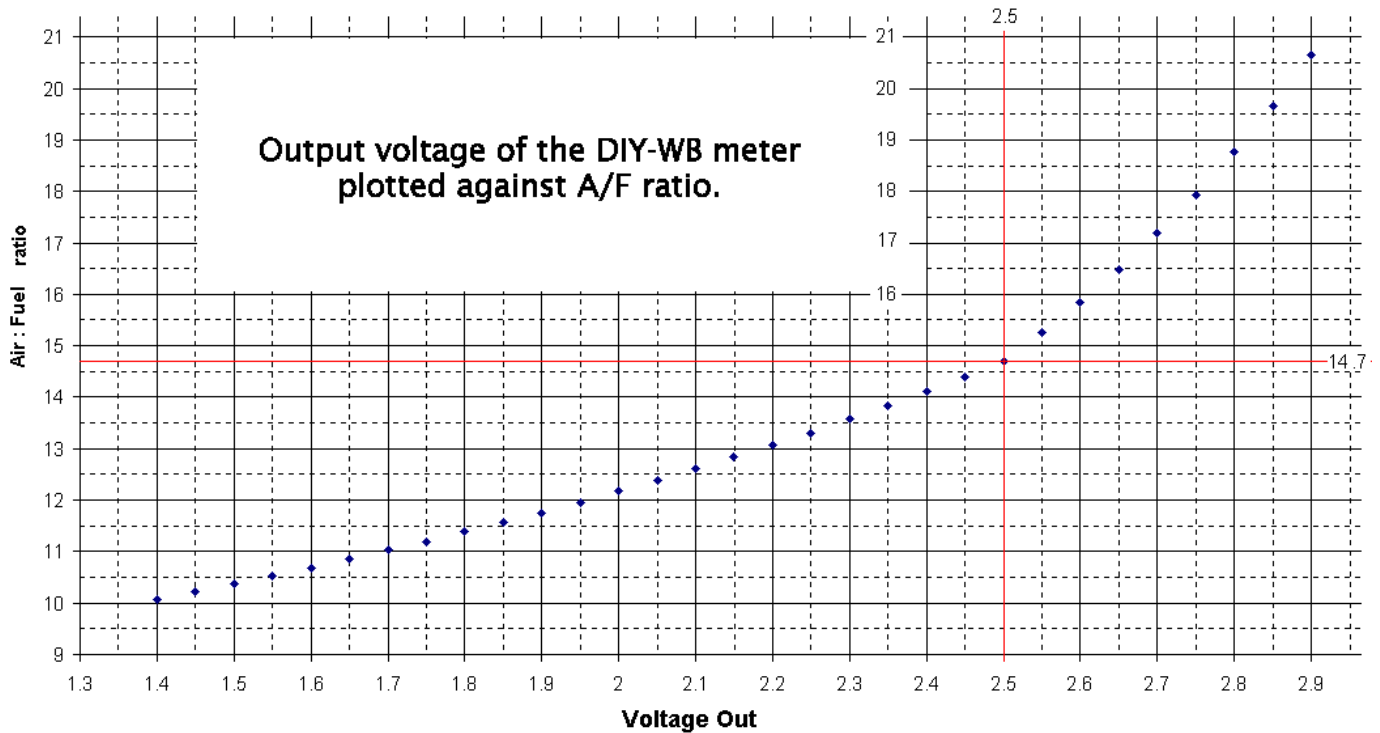


- Click for Screen Capture {[Setup Polynomial](#)}

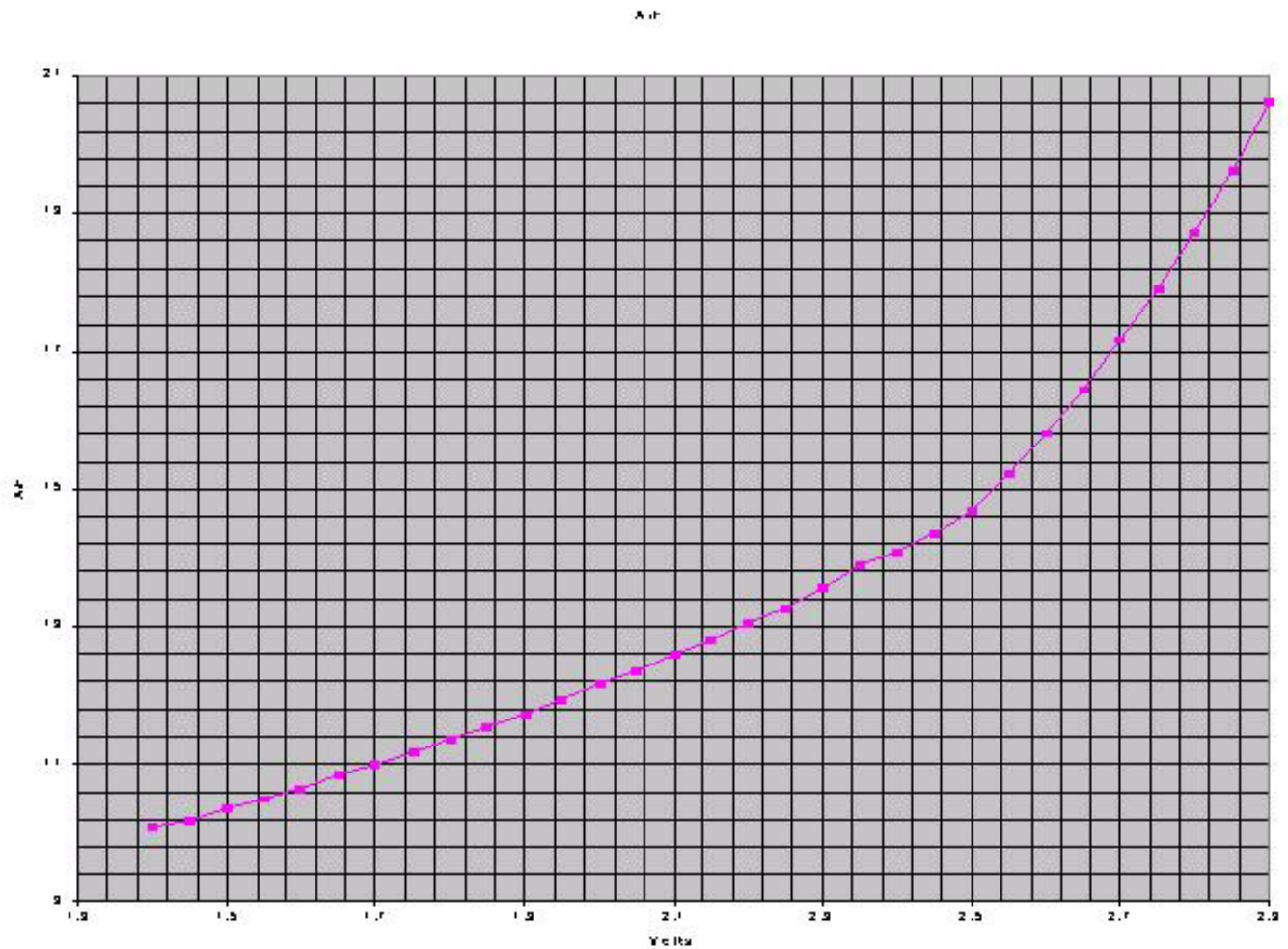
■ AN inputs must be between 0~5 volts

- Pop up window where you can input the values of a, b and c to define a curve to calibrate an AN input to be logged.
  - More complex inputs, ones that can be defined by a curve, require a formula (a polynomial).
    - Click the Poly button on the AN window and enter the values for a, b and c.

- For example. DIY Wideband set up. The graph of A/F vs. Output voltage is not a straight line.

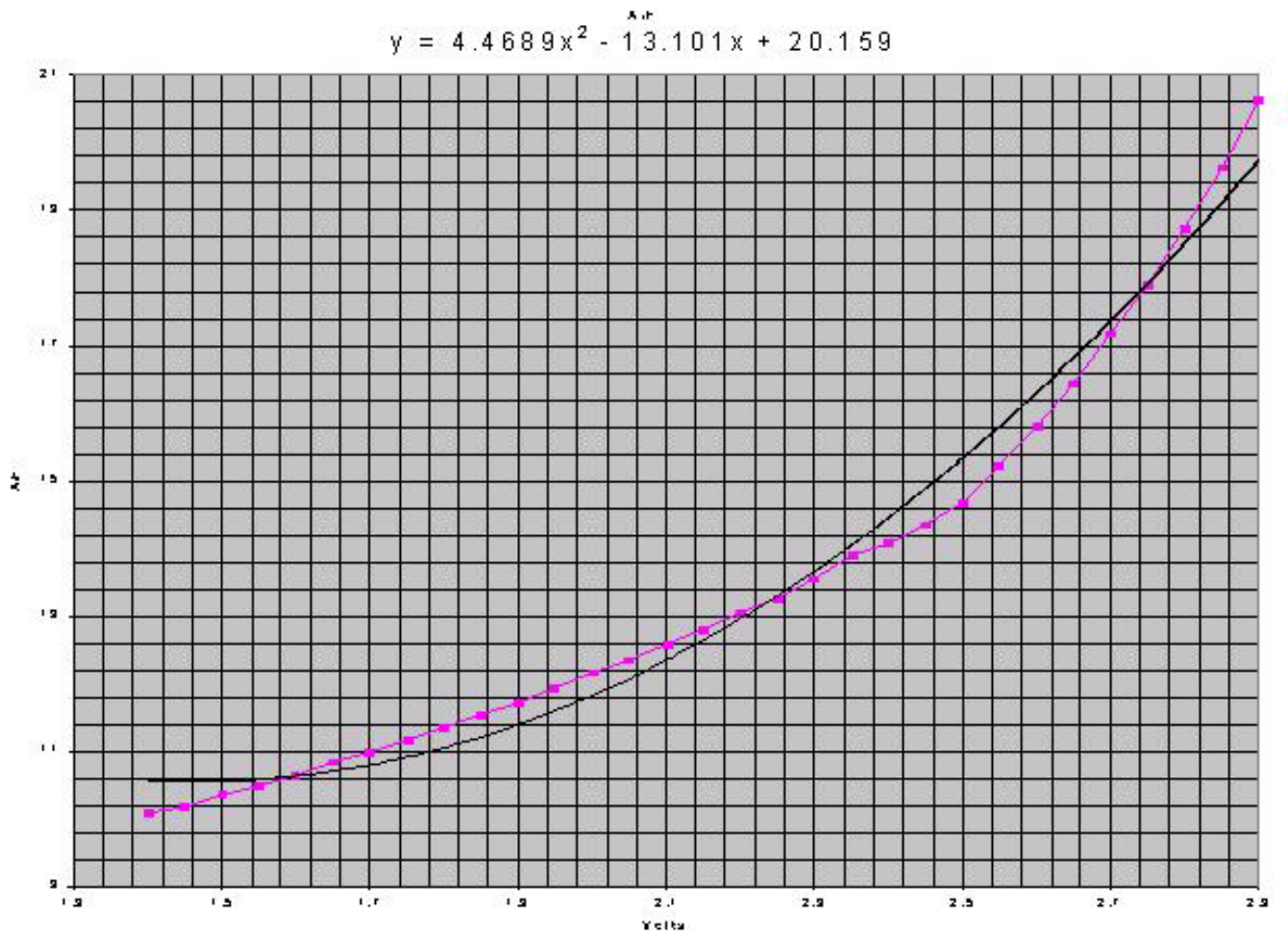


- The easiest way to create the polynomial is to plot the values from the graph in to excel then use the “trend line” function. The “trend line” function will create a “best fit” curve by using a polynomial formula.

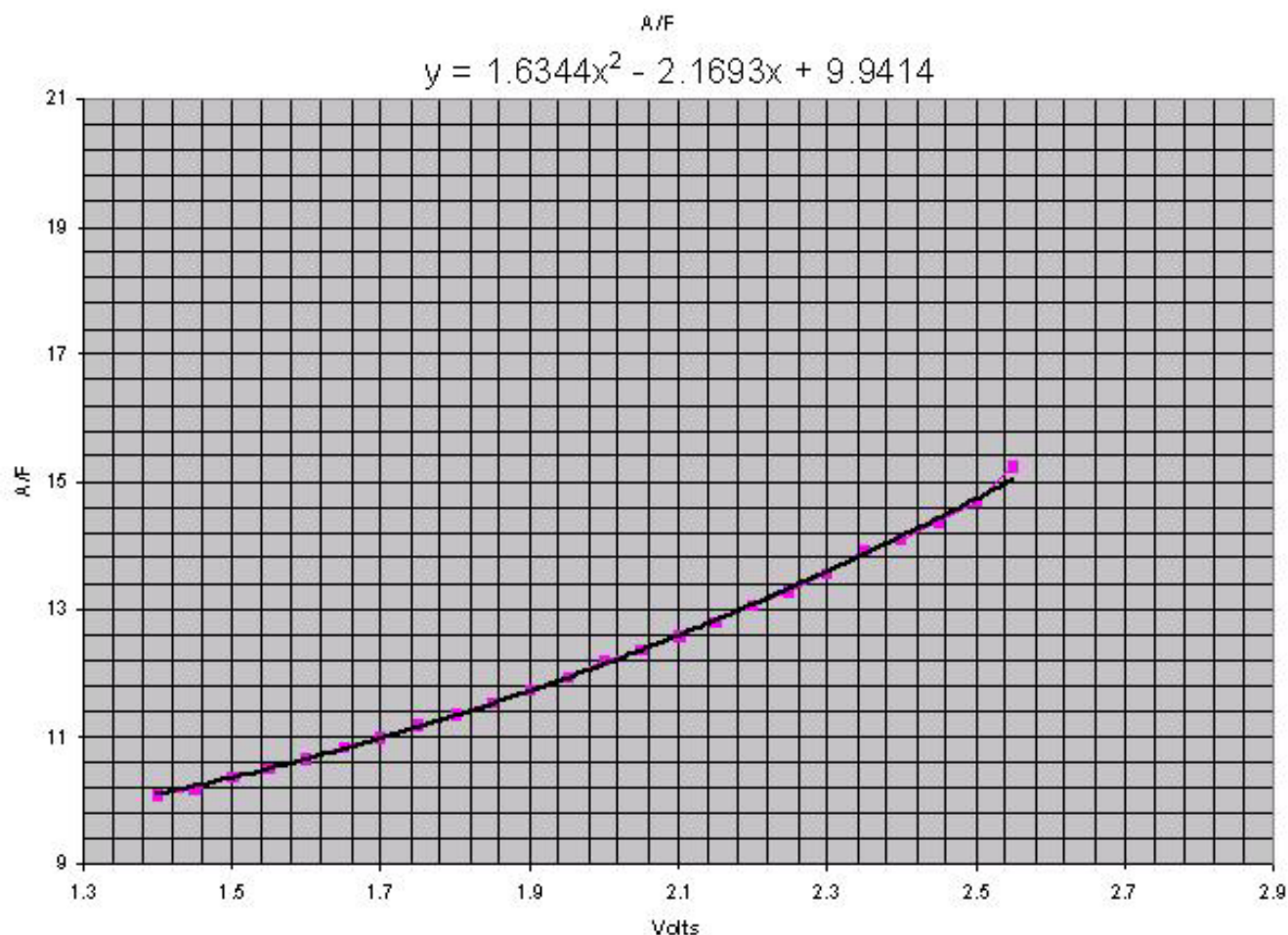


- Above is a picture of an xy graph on the values from the DIY A/F vs. Voltage graph.
- Unfortunately the curve of this graph doesn't allow for a very nice polynomial.





- Above is a picture of the same values from the DIY A/F vs. Voltage and the resulting polynomial. The values for a, b and c are unusable because the curve they describe is not close enough to the actual curve of the plotted values.
- Luckily we are really only interested in the values that represent the A/F ratio between 10:1 ~15:1. If we limit the graph to that range and create the polynomial we get the following graph;



- This graph gave us the values we use for our DIY wideband.
- $A=1.6344$   $b=2.1693$  and  $C= 9.9414$
- You can follow the same procedure to create a polynomial for other sensors.

1-3-2-2 Delta AN1- AN2



1-3-2-3 Delta AN3 - AN4



1-3-2-4 ReCalculate Log



1-4 Tools



## 1-4-1 ReCalc Base

## 1-5 Read All

- Copy ALL SETTINGS AND MAPS from a Power FC to FC-Edit (Alt r)
  - Read ALL SETTINGS AND MAPS held in the Power FC memory and copy ALL to the appropriate windows in FC-Edit so they can be saved and edited
    - Click the “Read All” Button on the Bottom of FC-Edit
      - There is no auto save so “Read All” will delete the current settings in FC-Edit
      - Save files or you will loose the data!

## 1-6 Write All

- Transfer ALL SETTINGS AND MAPS from FC-Edit to a Power FC (Alt a)
  - Copy ALL SETTINGS AND MAPS held in FC-Edit and write ALL to the Power FC memory
    - Click the “Write All” Button on the Bottom of FC-Edit
      - We suggest you “Read all” the settings and maps and save the file before you start editing
      - Save files or you will loose the data!
      - Before you “Write All”, We suggest you Switch Off the engine and turn the ignition to “on”

## 1-7 Update

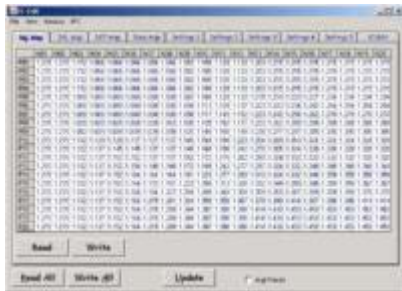
- Transfer altered SETTINGS and INDIVIDUAL CELLS from FC-Edit to a Power FC (Alt u)
  - Copy SETTINGS and INDIVIDUAL CELLS from Maps that have changed recently and in FC-Edit and write them to the Power FC memory
    - Click the “Update” Button on the Bottom of FC-Edit
      - We suggest you “Read all” the settings and maps and save the file before you start editing
      - Save files or you will loose the data!

- Before you “Update”, We suggest you Switch Off the engine and turn the ignition to “on”

## 1-8 Map Tracer

- Highlight current P and N cell in use in the map windows
  - Shows you which cells are used for the current live engine condition so you know which ones to edit
    - Check the “Map Tracer” check box at the Bottom of FC-Edit

## 2- Fuel Correction Map (Inj Map).



Click for Screen Capture {[INJ Map](#)}

- {[5](#) The Base fuel map} represents the theoretical ideal mixture (14.57:1) for a stock 13B-REW engine. The Fuel Correction Map is used to achieve a more suitable mixture
- The Values in the Fuel Correction Map theoretically equal  $14.57 / \text{desired mixture}$ 
  - i.e. If you want a mixture of 12:1 then the correction value would be  $14.57 / 12 = 1.214$ .
  - This is the theory but you really need to confirm the mixture with a wideband O2 sensor
- Altering values in the Fuel Correction Map
  - You can enter a new value directly into a cell (or a range of cells) in the map. Left click on the desired cell (left click drag, release, to select a range of cells) then type in the new value and hit “enter”.
  - You can increase or decrease the value of one cell (or a range of cells) by left clicking on a cell (left click drag, release, to select a range of cells),
    - “+” or “-“ The value will increase or decrease by 0.0039.
    - “Ctrl +” or “Ctrl -“ and the value will increase or decrease by 0.039
  - You can copy (Alt c) or paste (Alt v) values to and from or around the map
    - Tuning required for a modified engine may exceed the range of the Fuel Correction Map. You might need to adjust the values in the {[5](#) Base Fuel Map}
    - P01~P20 {[N-3](#) Pressure Value} in the Fuel and Ign Maps
    - N01~N20; RPM. See {[C-1](#) Map Reference}
      - Scales for P and N can be adjusted, see section {[C-1](#) Map Reference} for more information

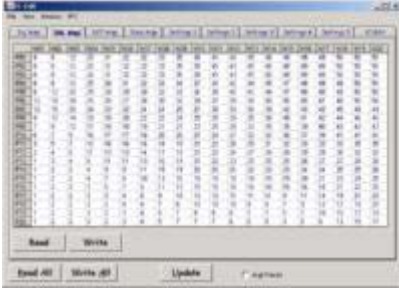
## 2-1 Read Injection Map

- Copy the Fuel Correction Map from a Power FC to FC-Edit
  - Read the Fuel Correction Map held in the Power FC memory and copy it to the “Injector Map” window in FC-Edit so it can be saved and edited
    - Click the “Injector Map” Tab to bring the Injector Map window to the front
    - Click the “Read” Button on the Injector Map window

## 2-2 Write Injection Map

- Transfer the Fuel Correction Map to a Power FC from FC-Edit
  - Copy the Fuel Correction Map from the “Injector Map” window in FC-Edit and write it in the Power FC memory
    - Click the “Injector Map” Tab to bring the Fuel Correction Map window to the front
    - Click the “Write” Button on the Fuel Correction Map window

### 3- Leading Ignition Map. ^ \_



- Click for Screen Capture {[IGL Map](#)}
  - Altering values in the Leading Ignition Map
    - You can enter a new value directly into a cell (or a range of cells) in the map. Left click on the desired cell (left click drag, release, to select a range of cells) then type in the new value and hit “enter”.
    - You can increase or decrease the value of one cell (or a range of cells) by left clicking on a cell (left click drag, release, to select a range of cells)
      - “+” or “-“ The value will increase or decrease by 1 deg
      - “Ctrl +” or “Ctrl -“ The value will increase or decrease by 10 degrees
    - You can copy (Alt c) or paste (Alt v) values to and from or around the map
      - P01~P20 {[N-3](#) Pressure Value} in the Fuel and Ign Maps
      - N01~N20; RPM. See {[C-1](#) Map Reference}
        - Scales for P and N can be adjusted, see section {[C-1](#) Map Reference} for more information

#### 3-1 Read IGL Map ^ \_

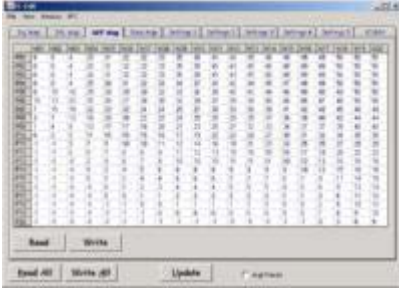
- Copy the Leading Ignition Map from a Power FC to FC-Edit
  - Read the Leading Ignition Map held in the Power FC memory and copy it to the “IGL Map” window in FC-Edit so it can be saved and edited
    - Click the “IGL Map” Tab to bring the Leading Ignition Map window to the front
    - Click the “Read” Button on the IGL Map window

## 3-2 Write IGL Map

- Transfer the IGL Map to a Power FC from FC-Edit
  - Copy the Leading Ignition Map from the “IGL Map” window in FC-Edit and write it in the Power FC memory
    - Click the “IGL Map” Tab to bring the Leading Ignition Map window to the front
    - Click the “Write” Button on the Leading Ignition Map window



## 4- Trailing Ignition Map.



Click for Screen Capture {[IGT Map](#)}

- Altering values in the Trailing Ignition Map
  - You can enter a new value directly into a cell (or a range of cells) in the map. Left click on the desired cell (left click drag, release, to select a range of cells) then type in the new value and hit “enter”.
  - You can increase or decrease the value of one cell (or a range of cells) by left clicking on a cell (left click drag, release, to select a range of cells)
    - “+” or “-“ The value will increase or decrease by 1 deg
    - “Ctrl +” or “Ctrl -“ The value will increase or decrease by 10 degrees
  - You can copy (Alt c) or paste (Alt v) values to and from or around the map
    - P01~P20 {[N-3](#) Pressure Value} in the Fuel and Ign Maps
    - N01~N20; RPM. See {[C-1](#) Map Reference}
      - Scales for P and N can be adjusted, see section {[C-1](#) Map Reference} for more information

### 4-1 Read IGT Map

- Copy the Trailing Ignition Map from a Power FC to FC-Edit
  - Read the Trailing Ignition Map held in the Power FC memory and copy it to the “IGT Map” window in FC-Edit so it can be saved and edited
    - Click the “IGT Map” Tab to bring the Trailing Ignition Map window to the front
    - Click the “Read” Button on the IGT Map window

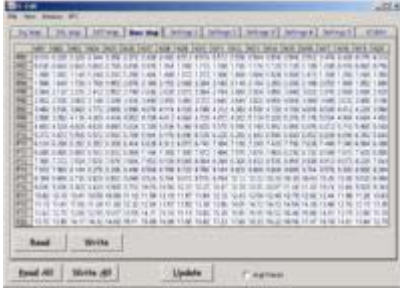
## 4-2 Write IGT Map

- Transfer the IGT Map to a Power FC from FC-Edit
  - Copy the Trailing Ignition Map from the “IGT Map” window in FC-Edit and write it in the Power FC memory
    - Click the “IGT Map” Tab to bring the Trailing Ignition Map window to the front
    - Click the “Write” Button on the Trailing Ignition Map window

## 4-3 Display IGL-IGT (Split)

- Check “ Display IGL-IGT (Split)” box to change IGT absolute values to differential values
  - When “ Display IGL-IGT (Split)” box is checked, you can enter the desired ign split into the map
  - You can toggle between split values and absolute values

## 5- Base Fuel Map.



Click for Screen Capture {[Base Map](#)}

- The Base fuel map represents the theoretical ideal mixture (14.57:1) for a stock 13B-REW engine
- Values are Injector pulse width in mil/sec
- Tuning required for a modified engine may exceed the range of the {[2 Fuel Correction Map](#)} You might need to adjust the values in the Base Fuel Map
  - Altering values in the Base Fuel Map
  - You can enter a new value directly into a cell (or a range of cells) in the map. Left click on the desired cell (left click drag, release, to select a range of cells) then type in the new value and hit “enter”.
  - You can increase or decrease the value of one cell (or a range of cells) by left clicking on a cell (left click drag, release, to select a range of cells)
    - “+” or “-“ The value will increase or decrease by 0.0039.
    - “Ctrl +” or “Ctrl -“ and the value will increase or decrease by 0.039
  - You can copy (Alt c) or paste (Alt v) values to and from or around the map
    - P01~P20 {[N-3 Pressure Value](#)} in the Fuel and Ign Maps
    - N01~N20; RPM. See {[C-1 Map Reference](#)}
      - Scales for P and N can be adjusted, see section {[C-1 Map Reference](#)} for more information

### 5-1 Read Base Map

- Copy the Base Fuel Map from a Power FC to FC-Edit
  - Read the Base Fuel Map held in the Power FC memory and copy it to the “Base Map” window in FC-Edit so it can be saved and edited

- Click the “Base Map” Tab to bring the Base Fuel Map window to the front
- Click the “Read” Button on the Base Map window

## 5-2 Write Base Map

- Transfer the Base Fuel Map to a Power FC from FC-Edit
  - Copy the Base Fuel Map from the “Base Map” window in FC-Edit and write it in the Power FC memory
    - Click the “Base Map” Tab to bring the Base Fuel Map window to the front
    - Click the “Write” Button on the Base Map window

## A- Settings One.



- Click for Screen Capture {[Settings 1](#)}
- Page one of the setting windows
  - The following settings are on “Settings 1” and can be edited and transferred between FC-Edit and the Power FC
    - Boost Control
    - Rev / Idle
    - Turbo Transition Control
    - Function Select
    - Injector Warning
    - Knock Warning
    - O2 Feedback
    - Idle Control
    - Map / Settings Protection
  - Click the “Settings 1” Tab to bring Page one of the setting windows to the front

### A-1 Boost Control

- Boost Control Setting
  - Boost settings for Stock Sequential Twin Turbo system; There are two setting groups , “1” and “2”
    - You could set one for low boost (cruising?) and the other for a higher boost (Overtaking?).
    - Single Turbo with Apexi Boost Control Kit; Only setting group “1” is used, Also switch off {[A-4-1](#) Seq. Turbo Cont}
  - Use mouse to select which boost setting group you want to use, Click the appropriate switch (Single turbo control only uses setting 1)
  - Or you can use the FD-Box Remote Boost Switch {[E-5-2](#) Remote boost switch} to switch between settings “on the fly” (feature doesn’t work with Single turbo applications)

- Each setting group has a separate boost setting and a duty setting for Primary and the Secondary turbos, respectively
- Boost; Boost value is the target boost value the Boost Control System tries to reach and hold for each turbo
  - Click in the box and type in the desired Value
    - {[W-2 BOOST CUT](#)}, Fuel cut will occur if boost reaches 0.25 Bar above the Target Boost value
    - {[W-3 Exhaust Temp Light flashing!](#)} Over 1.2 Bar the factory Map sensor will not be accurate. Exhaust Temp Light will flash when Boost is over 1.1 Bar {[N-1](#) Factory Boost Sensor}
- Duty; Duty setting determines the Waste Gate Control Solenoid's initial position (% opening) before the Boost Control system starts to control boost
  - Click in the box and type in the desired Value
    - If the number is too LOW, boost will lag and take more time to reach the desired Boost level. This will cause no damage but may make the car feel sluggish
    - If the number is too HIGH, boost may spike and overshoot the desired boost level before settling back down
    - A Boost Spike out of the range of your INJ and IGN maps may cause engine damage. Be careful!
    - Standard Settings

		Boost	Duty
☉	1. Primary	0.80	56
	Secondary	0.70	64
○	2. Primary	0.90	62
	Secondary	0.80	70

## A-2 Rev / Idle

- Adjust Engine speed
  - For all Rev Idle Settings, Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

Rev Limit	8100
F/C A.E	1000
F/C E/L	1100
F/C A/C	1200
Idle A.E	720
Idle E/L	800
Idle A/C	900

## A-2-1 Rev Limit

- Max Rev Limit. HARSH! Not a very nice way to cut revs...
- If you use an auxiliary Rev Limiter, increase A-2-1 Rev limit to a higher value than you set the auxiliary Rev Limiter so Power FC Rev limiter doesn't function
  - The commander will only let you set the rev limiter to a maximum of 9999 rpm...  
With Datalogit you can set the rev limit to values greater than 9999.
  - If you set the limit to 12,000 the commander will show 2000 rpm because it can only display 4 numbers.

## A-2-2 F/C A.E

- Deceleration Fuel cut recovery when no Electric Load present and Air conditioning is off

## A-2-3 F/C E/L

- Deceleration Fuel cut recovery when Electric Load present

## A-2-4 F/C A/C

- Deceleration Fuel cut recovery when Air Conditioning is on

## A-2-5 Idle A.E

- Idle when no Electric Load present and Air conditioning is off

## A-2-6 Idle E/L

- Idle when Electric Load present

## A-2-7 Idle A/C

- Idle when Air Conditioning is on

## A-3 Turbo Transition

- Set Sequential Turbo secondary Turbo Transition points
  - There are three rows of settings, Each Row of setting has three text boxes
    - TPS1 %; Throttle % Open
    - RPM Low
    - RPM High
  - Use mouse to select a text box, Type in a new value in the text box
    - A ported motor may need adjustment of the secondary Turbo Transition points to produce a smooth transition between turbos
    - Standard Settings

TPS1%	RMP Low	RPM High
60	3000	4080
40	3000	4280
20	3000	5600

## A-4 Function Select

- Function Selection
  - Switch on or off the following Functions;
    - Seq. Turbo Cont
    - Injector Warning
    - Knock Warning
    - O2 F/B Control
    - Idle-IG Control
  - Standard Settings



Seq. Turbo Cont	✓
Injector Warning	✓
Knock Warning	✓
O2 F/B Control	✓
Idle-IG Control	✓

### A-4-1 Seq. Turbo Cont

- Switch Stock Sequential Turbo Control {[A-1](#) Boost Control} on or off
  - Check box for normal Stock Sequential Turbo Control.
  - Uncheck box for Single Turbo applications or if you DON'T want the Power FC to try to control Boost
    - Use mouse to Check or Uncheck the “Seq. Turbo Cont” check box
      - Use; {[A-1](#) Boost Control} to edit actual Boost Control Settings
      - Switch off if you have a single turbo and wish to use the Apexi single turbo boost control kit {[N-4](#) Boost Control Kit for single turbo}

### A-4-2 Injector Warn

- Switch Injector Warning {[W-4](#) Check Engine Light Flashing Slowly! Injector Duty / Map Warning} on or off
  - Check box for Injector Warning.
  - Uncheck box if you DON'T want Injector Warning
    - Use mouse to Check or Uncheck the “Injector Warn” check box
      - Use; {[A-6](#) Injector Warning} to edit actual Injector Warning Settings

### A-4-3 Knock Warn

- Switch Knock Warning {[W-5](#) Check Engine Light Flashing Quickly! Knock Warning} on or off

- Check box for Knock Warning. Uncheck box if you DON'T want Knock Warning
  - Use mouse to Check or Uncheck the “Knock Warn” check box
    - Use; {[A-7](#) Knock Warning} to edit actual Knock Warning Settings
    - {[N-2](#) Knock Value}
    - {[W-5](#) Check Engine Light Flashing Quickly! Knock Warning}

#### A-4-4 O2 F/B Control

- Switch O2 Feedback Control on or off
  - Check box for O2 F/B Control.
  - Uncheck box if you DON'T want O2 F/B Control
    - Use mouse to Check or Uncheck the “O2 F/B Control” check box
      - Use; {[A-8](#) O2 Feedback} to edit actual O2 Feedback Settings
      - Switch off if your O2 sensor is faulty or “missing”

#### A-4-5 Idle-IG Control

- Switch Idle Ignition Control on or off
  - Check box for Idle-IG Control.
  - Uncheck box if you DON'T want Idle Ignition Control
    - Use mouse to Check or Uncheck the “Idle-IG Control” check box
      - Use; {[A-9](#) Idle Control} to edit actual Idle Ignition Control Settings
      - Switch off if you want to check ignition timing with a timing light

#### A-5 Version

- Program String
  - Displays which Model Engine the Power FC is designed to control

- Program Version

- Displays which program version is in the Power FC

- Standard Settings

Program String	13B REW 2
Program Version	2.11

## A-6 Injector Warning

- Adjust Injector Warning {[W-4](#) Check Engine Light Flashing Slowly! Injector Duty / Map Warning} Thresh hold and Setting

- Injector Warning can be switched off, see; {[A-4-2](#) Injector Warn}
  - Enter Injector Warning Thresh hold % Value. Max % Value to turn on Check Engine Light
    - Use mouse to Enter desired Injector Warning Thresh hold % Value Thresh hold in “Thresh” Box.
  - Enter Setting Value. Flashing Interval time for Check Engine Light
    - Use mouse to Enter desired Flashing Interval Time Value for Injector Warning in “Setting” Box.
    - Standard setting

98.0	Thresh
30	Setting

## A-7 Knock Warning

- Adjust Knock Warning {[W-5](#) Check Engine Light Flashing Quickly! Knock Warning} Thresh hold and Setting

- Knock Warning can be switched off, see; {[A-4-3](#) Knock Warn}
  - Enter Value Knock Warning Thresh hold Value. Peak Knock Value to turn on Check Engine Light
    - Use mouse to Enter desired Value for Knock Warning Thresh hold in “Thresh” Box.
      - {[N-2](#) Knock Value}
  - Enter Setting Value. Flashing Interval time for Check Engine Light

- Use mouse to Enter desired Flashing Interval Time Value for Knock Warning in “Setting” Box
  - Standard setting

60	Thresl
9	Settin

## A-8 O2 Feedback

- Adjust O2 Feedback Control Setting
  - Supposedly Used to (self learn) fine tune mixture at idle for emission control
  - Is used for “Lean Cruise”. Leans mixture if TPS value doesn’t change for a while. Saves gas on long trips
    - O2 Feedback Control can be switched off, see; [{A-4-4 O2 F/B Control}](#)
  - Enter Setting Value
    - Use mouse to Enter desired O2 Feedback Control in “Setting” Box
      - Switch off if your O2 sensor is faulty or “missing”
      - Standard Setting

1.04	Settin
------	--------

## A-9 Protect

- Protect or Un-Protect Maps and Settings
  - Check or Uncheck check boxes
    - Use mouse to Check the check box of the item you want to protect
    - Or Uncheck the items you want to edit
      - Stops unauthorized people from looking at or altering your settings with a commander
      - Won’t stop unauthorized people from looking or adjusting if they also have Datalogit :)
      - Lets you un-protect Maps and Settings protected with Power Exel
      - The following items can be protected (or unprotected)

- IGL Map; {[3](#)- Leading Ignition Map}.
- IGT Map; {[4](#)- Trailing Ignition Map}.
- Inj Map; {[2](#)- Fuel Correction Map (Injector Map)}.
- PIM Volts
- Injector Settings;
- Boost Settings;
- Accelerate Settings;
- Tuning Adjust Settings;
- Water Temp Settings;
- Rev / Idle Settings;
- Standard Setting

<input type="checkbox"/>	IGL Map
<input type="checkbox"/>	IGT Map
<input type="checkbox"/>	Inj Map
<input type="checkbox"/>	PIM Volts
<input type="checkbox"/>	Injector Settings
<input type="checkbox"/>	Boost Settings
<input type="checkbox"/>	Accelerate Settings
<input type="checkbox"/>	Tuning Adjust Settings
<input type="checkbox"/>	Water Temp Settings
<input type="checkbox"/>	Rev / Idle Settings

## B- Settings Two.



Click for Screen Capture {[Settings 2](#)}

- Page two of the setting windows
  - The following settings are on “Settings 2” and can be edited and transferred between FC-Edit and the Power FC
    - Water Temp Correction
    - Accelerate Injector Time
    - Cranking Time
    - Injection vs. Acceleration TPS1
    - Injection vs. Fuel Temp
    - Injection vs. TPS
    - Injection vs. Air Temp
    - Injection vs. Water Temp
  - Click the “Settings 2” Tab to bring Page one of the setting windows to the front

### B-1 Water Temp Correction

- Adjust Fuel mixture for varying engine operation temperature as engine comes up to normal operating temp
  - For each temperature range, choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
    - Standard Settings

+80C	1.000	1.000
+50C	1.141	1.000
+30C	1.281	1.188
+10C	1.500	1.438
-10C	2.016	1.875
-30C	2.813	2.578

## B-2 Accelerate Injector Time

- Fuel enrichment for sudden acceleration (Like an accelerator pump)
  - For each RPM range, choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
  - Standard Settings

RPM	Amount	Decay
5000	7.200	1.000
4000	7.500	1.000
3000	8.400	1.600
2000	8.000	1.800
1000	6.000	2.000

## B-3 Cranking Time

- Injector on time while cranking the engine (ms)
  - For each temperature range, choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
  - Standard Settings

+80	12.0
+50	17.3
+30	32.0
+10	59.0
-10	87.2
-30	104.2

## B-4 Injection vs. Acceleration TPS1

- - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

Input	Setting
103	256
37	230
20	25

## B-5 Injection vs. Fuel Temp

- Adjust Fuel mixture for varying fuel rail temperature
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Setting
60	1.020
40	1.000
20	1.000

## B-6 Injection vs. TPS

- - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

TPS %	
89.8	1.000
79.7	1.000
69.9	1.000
59.8	1.000
50.0	1.000
39.8	1.000

## B-7 INJ vs. Air Temp & Load correction

- Adjust Fuel mixture for varying Manifold air temperature and Boost



- Choose the parameter and type in the new value
  - Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Settings	Boost
90	1.039	14848
80	1.016	
70	1.000	760

## B-8 INJ vs. Water Temp

- Adjust Fuel mixture for varying engine operation temperature around normal operating temp
  - For each temperature range, choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Adjustment	Boost
110	1.078	14848
95	1.000	4864

## B-9 Inj vs. Air Temp

- Adjust Fuel mixture for varying Manifold air temperature as engine comes up to normal operating temp
  - For each temperature range, choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

+80 C	0.957
+50 C	0.984
+30 C	1.012
+10 C	1.055
-10 C	1.102

-30C	1.148
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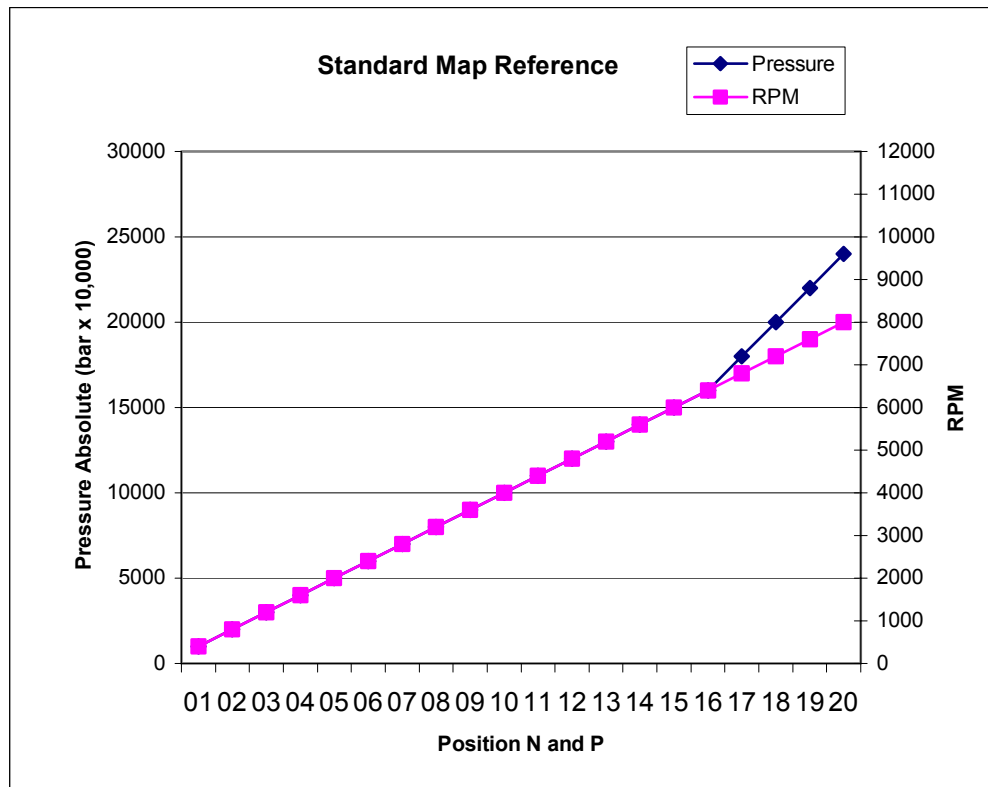
## C- Settings Three.



- Click for Screen Capture {[Settings 3](#)}
- Page three of the setting windows
  - The following settings are on “Settings 3” and can be edited and transferred between FC-Edit and the Power FC
    - Map Reference
    - PIM Scale Offset
    - Injector Adjust
    - Oil Metering Pump (OMP) vs. Water Temp
    - Fans vs. Water Temp
  - Click the “Settings 3” Tab to bring Page one of the setting windows to the front

### C-1 Map Reference

- Calibrate P and N
  - This Table allows you to recalibrate the scale of P and N for the main maps
    - Enter desired values into the Map Reference Table
      - There is only one Map reverence Calibration table for all four maps; Fuel correction, Base fuel, Ingl and Ignt
      - P01~P20 {[N-3](#) Pressure Value}
      - N01~N20; Engine RPM
      - Graph of the standard Map Reference Table Values;



## C-2 PIM Scale Offset

- Defines the relationship between Map sensor voltage and actual pressure (PIM)
- 1. Normal for Standard Map sensor
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
- Standard Settings

			Scale	Offset
⊙	1	1. Normal	35086	3947
○	2	2. Option 1	43860	3289
○	3	3. Option 2	46574	5592
○	4	4. Option 3	46574	5592
○	5	5. Option 4	46574	5592

- 2.Option 1
  - Setting for Apexi 3 bar map sensor

## C-3 Injector Adjust

- Allows you to adjust the amount of fuel in the base map for a particular Rev range or boost pressure without having to change all the points in the map its self.
- A commander function. So you could add fuel more easily than entering all the values with the commander
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
- Standard Settings

8000	100.0	1.0V	100.0
7000	100.0	1.5V	100.0
6000	100.0	2.0V	100.0
5000	100.0	2.5V	100.0
4000	100.0	3.0V	100.0
3000	100.0	3.5V	100.0
2000	100.0	4.0V	100.0
1000	100.0	4.5V	100.0

## C-4 Oil Metering Pump (OMP) vs. Water Temp

- As engine gets hotter the metering pump adds more oil
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
- Standard Settings

Temp	Setting
120	1.117
90	1.055
85	1.000

## C-5 Fans vs. Water Temp

- Temperature at which the fans turn on
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

	Temp
Fan 1 A/C	95
Fan 1 no A/C	100
Fan 2	105

## D- Settings Four.



- Click for Screen Capture {[Settings 4](#)}
- Page four of the setting windows
  - The following settings are on “Settings 4” and can be edited and transferred between FC-Edit and the Power FC
    - Boost vs. IGN S.F. (from idle)
    - Ignition vs. Water Temp (cool)
    - Ignition vs. Water Temp
    - Boost vs. IGN S.F.
    - Ignition vs. Air Temp
    - Ignition vs. TPS
    - Ignition vs. Battery Voltage
    - Ignition Leading vs. RPM
    - Ignition Trailing vs. RPM
  - Click the “Settings 4” Tab to bring Page one of the setting windows to the front

### D-1 Boost vs. IGN S.F. (from idle)

- Boost vs. Ignition scale factor
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
  - Standard Settings

RMP from Idle	Boost	S.F.
400	7936	0.0
200	7936	1.0

### D-2 Ignition vs. Water Temp (cool)

- Ignition vs. Water temperature during warm up

- For the standard setting; ignition is retarded by an extra 15 degrees until the water temperatures reaches 60 degrees C, then reduces retard until no extra retard at 65 degrees C or over

- Choose the parameter and type in the new value

- Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Retard
65	0
60	15

### D-3 Ignition vs. Water Temp

- Ignition vs. Water temperature if the engine starts getting too hot
- For the standard setting; at 95 degrees C or less ignition timing is not corrected. From 95 ~ 110 timing is additionally retarded lineally to a max of 6 degrees. All temperatures over 110 degrees are also retarded 6 degrees

- Choose the parameter and type in the new value

- Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Retard
110	6
95	0

### D-4 Boost vs. IGN S.F.

- Scale factor for {[D-5](#) Ignition vs. Air Temp} and {[D-3](#) Ignition vs. Water Temp}

- Choose the parameter and type in the new value

- Use mouse to select the desired text box and type in the new value

- Standard Settings

Boost	S.F
10752	1.0



7936	0.0
------	-----

## D-5 Ignition vs. Air Temp

- Ignition is retarded if Air temp is too high
- For the standard setting; at 60 degrees C or less ignition timing is not corrected. From 60 ~ 80 timing is additionally retarded to a max of 3 degrees. All temperatures over 80 degrees are also retarded 3 degrees
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

Temp	Retard
80	3
	1
60	0

## D-6 Ignition vs. TPS

- Ignition correction based on throttle position
- Standard Settings = no correction
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value

- Standard Settings

TPS%	
80	1.000
60	1.000
40	1.000
20	1.000

## D-7 Ignition vs. Battery Voltage

- Probably increases “dwell angle” if battery voltage is low
  - Choose the parameter and type in the new value

- Use mouse to select the desired text box and type in the new value
  - Standard Settings

0.828	16V
1.000	14V
1.266	12V
1.609	10V
1.859	9V
2.109	8V

## D-8 Ignition Leading vs. RPM

- Adjusts something to do with leading ignition (dwell?) vs. RPM
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
  - Standard Settings

Adjust	RPM
123	10000
108	8000
70	4000
34	2000
17	1000
9	480

## D-9 Ignition Trailing vs. RPM

- Adjusts something to do with trailing ignition (dwell?) vs. RPM
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
  - Standard Settings

Adjust	RPM
123	10000
120	8000
75	4000

35	2000
17	1000
9	480

## E- Settings Five.



- Click for Screen Capture {[Settings 5](#)}
- Page five of the setting windows
  - The following settings are on “Settings 5” and can be edited and transferred between FC-Edit and the Power FC
    - Injectors
    - Primary Injectors Off (uS) vs BatV
    - Secondary Injectors Off (uS) vs BatV
    - Injector Primary > Secondary Transition Overlap
    - FC-Box Custom Features
  - Click the “Settings 5” Tab to bring Page one of the setting windows to the front

### E-1 Injectors

- Injector settings
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
      - Standard primary injectors are 550cc/min (Q primary) and have a lag of 0.73 ms
        - If you change the primary injectors, obtain the correct lag value from the injector manufacturer;
        - type the new size in “Q primary”
        - enter old size / new size ratio in “Inj size adjust”.
        - Enter new lag – old lag in “Lag difference”
          - Example; new primary injectors 750cc/min lag 0.76
          - “Q Primary” = 750
          - “Inj size adjust” =  $550/750 = 73.3\%$
          - “Lag difference” =  $0.76 - 0.73 = 0.03$

- Secondary injectors. The commander will only let you set the secondary to a max of 1500cc/min. With Datalogit you can set them to larger values
- Standard secondary injectors are 850cc/min (Q secondary) and have a lag of 0.77 ms
  - If you change the secondary injectors, obtain the correct lag value from the injector manufacturer;
  - type the new size in “Q secondary”
  - Enter new lag – old lag in “Lag difference”
    - Example; new secondary injectors 1600cc/min lag 0.82
    - “Q Secondary” = 1600
    - “Lag difference” =  $0.82 - 0.77 = 0.05$
- Pri/Sec transition; threshold % of Primary injector “on time” when secondary injectors start to operate if secondary butterfly is open. If secondary butterfly is closed, transition threshold is 70% primary injector “on time”
- Sec transition; initial Secondary injector “on time”. Primary injector “on time” will reduce so the total fuel injected remains correct
- Pri/Sec transition & Sec transition are used in conjunction with {[E-4](#) Injector Primary > Secondary Transition Overlap}
- Standard Settings

	Inj size adjust	Lag difference
Front Primary	100.0%	0.0ms
Front Secondary	–	0.0ms
Rear Primary	100.0%	0.0ms
Rear Secondary	–	0.0ms
Q Primary	550cc/min	
Q Secondary	850cc/min	
Pri/Sec transition	40.0 %	
Sec transition	1.500 ms	

## E-2 Primary Injector lag (uS) vs BatV

- Corrects primary injector lag time vs. battery volts
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
- Standard Settings

0.528	16V
0.728	14V
1.008	12V
1.368	10V
1.968	9V
2.800	8V

## E-3 Secondary Injector lag (uS) vs BatV

- Corrects secondary injector lag time vs. battery volts
  - Choose the parameter and type in the new value
    - Use mouse to select the desired text box and type in the new value
- Standard Settings

0.568	16V
0.768	14V
1.048	12V
1.408	10V
2.008	9V
2.840	8V

## E-4 Injector Primary > Secondary Transition Overlap

- Settings for Primary to Secondary injector Transition Overlap
- Used in conjunction with {[E-1](#) Injectors}
  - During the injector transition period, the secondary injectors start before the primary injectors reduce
  - As boost increases secondary injectors start earlier

- Settings are 1/12 of a revolution of the eccentric shaft
- Choose the parameter and type in the new value
  - Use mouse to select the desired text box and type in the new value
  - 
  - Standard Settings

Boost	Setting
14848	3
9984	2
4864	1

## E-5 FC-Box Custom Features

- Enables and input settings for custom features
  - Check the enabled check box to activate the FC-Box special features

### E-5-1 Anti lag ☺ (AKA Stutter box, Launch box, Pro start and “Bang bang”)

- Spools up your turbo for a quick drag launch
  - Assuming you will use the standard clutch switch (+ arming switch)
    - Cut clutch switch wires
    - Connect one wire through an additional (arming) switch from the standard clutch switch to terminal “SW3” on the FC-Box {[FC2](#) FC-Box 4 Switches}
      - The additional switch is used to turn anti lag on and off (arm the system). Mount this within easy reach of your driving position
    - Ground the other clutch switch wire
    - Check the enable Anti lag Switch (SW3) “check box” to enable Anti lag
    - Enter the amount of ignition retard you want in the “IGN Anti lag retard” text box
      - We found 40 degrees (= 40 degrees of retard) to be quite good but you might want to experiment

- Enter the amount of extra fuel you want in the “INJ Anti lag” text box
  - We found 1.50 (= add 50% more fuel to base map) to be quite good but you might want to experiment
- Push the “Update” button on FC-Edit
- Turn the ignition key off and then back on
- Arm the system with the additional arming switch
- When the clutch is depressed the FC-Box will retard the ignition and add fuel to the values you have entered in the appropriate text boxes. RPMs will drop so you need to depress the accelerator to compensate. More boost will be created
- When the clutch is released the timing and fuel will return to normal
  - DANGER! Anti lag has a tendency to foul spark plugs
  - Extra heat will be generated in the exhaust manifold which may shorten the life of turbos and the exhaust system
  - Anti lag creates A LOT OF NOISE! And flames out the exhaust 😊

## E-5-2 Remote boost switch

- Change boost settings “on the fly”
  - Check the Boost Switch (SW4) “check box” to enable the switch
  - You must connect a switch to terminal “SW4” on the FC-Box {[FC2](#) FC-Box 4 Switches}
  - Connect the switch between “SW4” and ground
    - When switch is open boost setting one will be selected
    - When switch is closed boost setting two will be selected
    - Switch will not function if a single turbo boost kit is in use
    - If you enable the feature but don’t connect a switch, {[A-1](#) Boost Control} will be set to Boost setting one

## E-5-3 Tuner String 8 characters (read only)

- Power Excel Dealer id



- There is an 8 character string in the Power FC used for tuner details or something. We have used the string to store the FC-Box custom features data. There is a remote chance that a combination of characters used for an Excel dealer id could be the same as the characters we have use to enable the custom features.
  - We suggest you plug in the FC-Box then turn on the ignition (two clicks) and “Read All” before starting the engine. Check that a stray string hasn’t enabled the custom features. If it has, disable it by unchecking the “enabled” check box and “Update”.
  - Set the value of “IGN Anti lag retard” and “INJ Anti lag” to zero until you wish to use the function {[E-5-1](#) Anti lag ☺}
    - When you are ready to use the custom features check the enable box
    - [W-1](#) “Read all” the settings and maps and save the file!
    - Standard Settings

12345678	Tuner string (8 char)			
<input type="checkbox"/>	Enabled		40	IGN Anti lag retard
<input type="checkbox"/>	Boost Switch (SW4)		1.50	INJ Anti lag
<input type="checkbox"/>	Anti lag switch (SW3)			

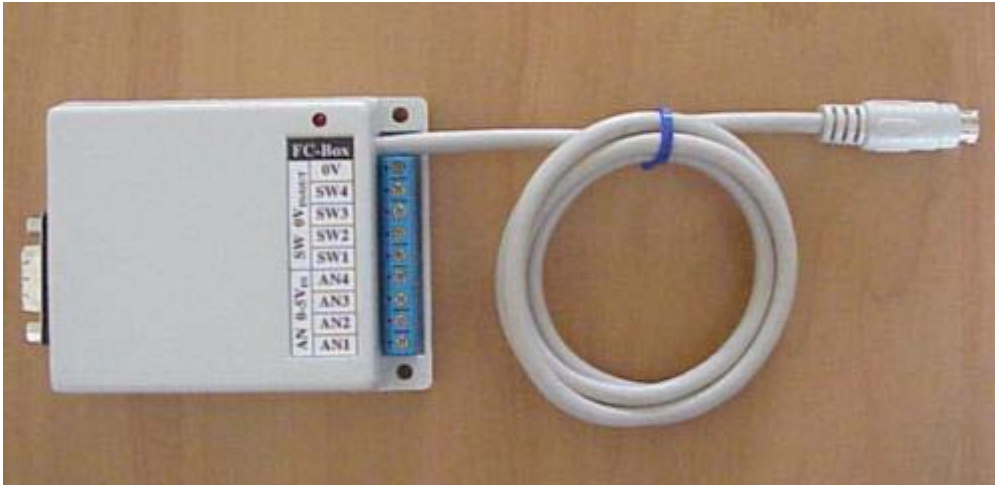
## E-6 Notes

- Notes
  - This text box is where you type information you want to save with your settings
    - Just click in the box and type in what you like
      - The text will be saved with the other settings and Data
      - If you wish to share your settings, you might like to list your mods in “notes text box”
      -

{FC1 FC-Box 4 Additional inputs}

{FC2 FC-Box 4 Switches}

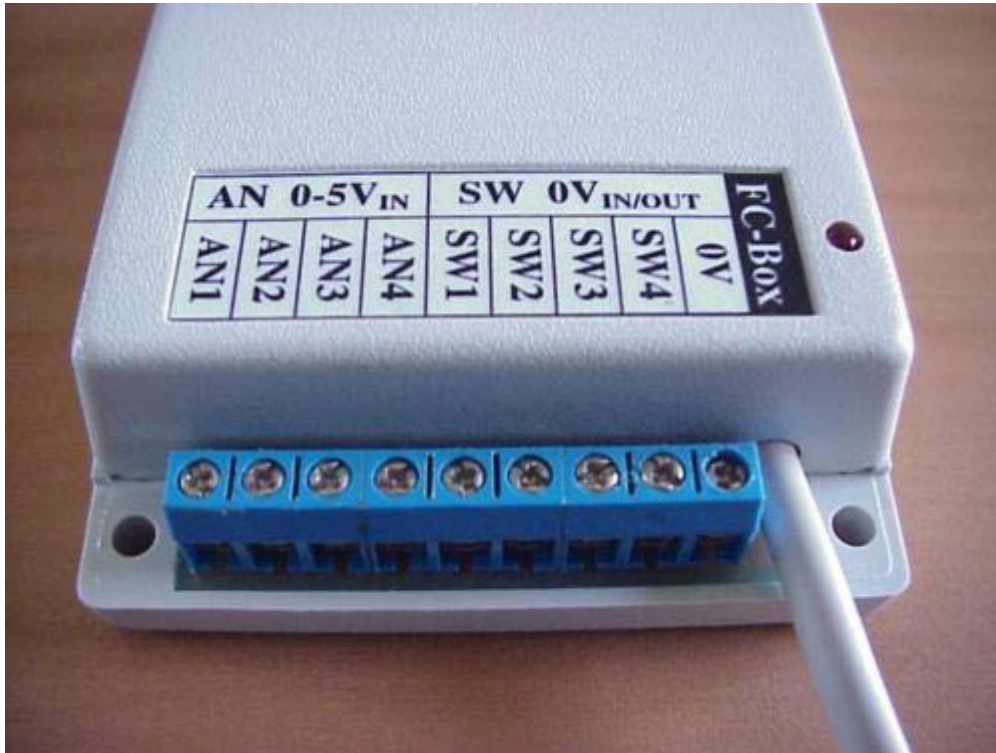
{FC3 Mini din cable}



Left; mini din socket for Power FC Commander {FC4 Mini din Socket}

Right; Serial socket for serial cable to a Laptop {[FC5](#) Serial Socket}





### • FC1 FC-Box 4 Additional inputs “AN 0–5V in”

- See {[1-3-1-3](#) Auxiliary AD Zone} for info on logging additional inputs
- {[1-4-2](#) Auxiliary (set up)} set up scale and values for A/d

### • FC2 FC-Box 4 Switches “SW 0V in/out”

- SW1; Switch one unused
- SW2; Switch two unused
- SW3; Switch three anti lag trigger
  - The standard clutch switch with an additional series switch to ground is appropriate
  - See {[E-5-1](#) Anti lag ☺} for additional settings
- SW4; Switch four is boost select switch
  - {[E-5-2](#) Remote boost switch}
  - Connect the switch between SW 4 and ground
    - When switch is open boost setting one will be selected
    - When switch is closed boost setting two will be selected
    - Switch will not function if a single turbo boost kit is in use

### • FC3 Mini din cable

- Connect “Mini din cable” to Power FC’s Commander socket to allow FC-Datalogit to communicate with Power FC

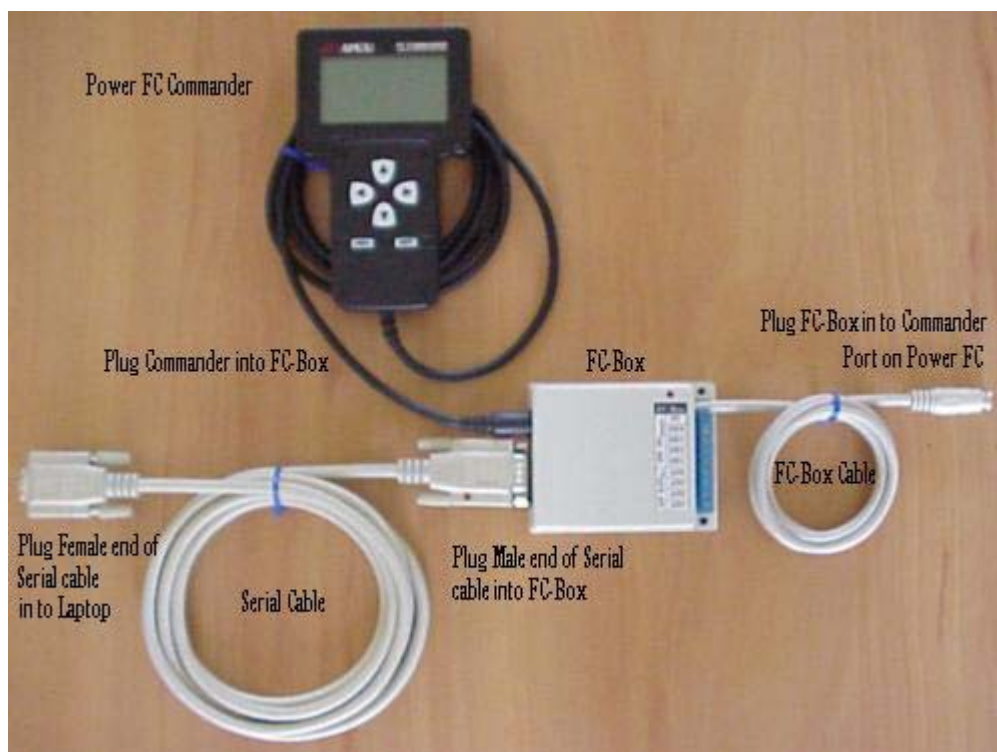
- **FC4** Mini din Socket

- Plug Power FC commander into “Min din Socket” so commander will function
- Note; Commander will pause while FC-Edit or FC-Datalogit is communication with the Power FC. Commander doesn’t update while you are data logging.

- **FC5** Serial Socket

- Serial socket for serial cable to connect to a Laptop

## Datalogit FC-Box; Connection



## N- Notes

### N-1 Factory Boost sensor

- Factory Boost sensor is only accurate to 2.2 bar absolute.
- If you plan to exceed 1.2 bar boost then you will need another sensor.
- Apexi single turbo boost control kit for Power FC comes with a 3 bar Absolute sensor
- {[N-4](#) Boost Control Kit for single turbo}
- {[W-3](#) Exhaust Temp Light flashing!}

### N-2 Knock Value is Arbitrary.

- Sensor is just a microphone and picks up a range of frequencies.
- Values under 60 are considered “Safe”. Small values are desirable :)
- {[W-5](#) Check Engine Light Flashing Quickly! Knock Warning}
- Knock Warning can be switched off, see; {[A-4-3](#) Knock Warn}
- Or Thresh hold adjusted, see; {[A-7](#) Knock Warning}

### N-3 Pressure Value in the Fuel and Ign Maps

- P01~P20; Manifold pressure. P is absolute pressure, Bar (kg/cm<sup>2</sup>) x 10,000.
- i.e. P = 10000 = Zero Manifold pressure. P = 20000 = 1 Bar Boost. P < 10000 = Vacuum
- Scales for P and N can be adjusted, {[C-1](#) Map Reference}

### N-4 Boost Control Kit for single turbo

- Switch off {[A-4-1](#) Seq. Turbo Cont}
- Only setting group “1” from {[A-1](#) Boost Control} is used. {[E-5-2](#) Remote boost} switch is disabled
- If you are using a single turbo and are relying on the pressure of a waste gate spring to control boost, make sure you set the boost in setting group “1” from {[A-1](#) Boost Control} to a value higher than the waste gate spring allows, so you don't hit the Power FC Over Boost Fuel Cut {[W-2](#) BOOST CUT}

- Apexi single turbo boost control kit for Power FC comes with a 3 bar Absolute sensor {[N-1](#) Factory Boost Sensor}

## N-5 Mac Laptop & FC-Datalogit

- FC-Datalogit take no responsibility for the accuracy of the following installation and procedure
- Mac installation and procedure created by Michel, Thank you Michel
- If anyone needs any assistance, feel free to contact me. [rx7tt95@aol.com](mailto:rx7tt95@aol.com)
- First, you'll need a Mac laptop, at the very least 400mhz Powerbook (Bronze Keyboard, otherwise known as Lombard, or the later Pismo model with built-in Firewire). Any of the newer I-books (magnesium case, all white) should work even better. My system configuration is: 400mhz G3, 320mb of ram, and a 6Gig hard drive and a swappable SuperDrive so I can read floppies. Virtual PC requires at least 192mb to run in OSX, 128mb in OS9. The Serial to USB adapter comes with it's own driver, on a 1.44mb floppy. You will have to either download the disk to a hard drive and transfer it somehow, or purchase your own adapter that utilizes a more modern disk to store the driver on. Most Wintel-based PC's still come with a floppy drive.
- Second, I'd recommend that you have OSX installed (10.1) instead of OS9.2. Why? Virtual PC version 5.0 (what I recommend) is much snappier on OSX and has more functionality. You loose a bit of function when running in "classic" mode. However, it'll work with both.
- Third, you'll need Virtual PC 5.0 with either Windows98 or Win2000. I recommend Windows98 as it's less problematic than Win2000 and it's a bit cheaper to boot. Virtual PC is pre-packaged with either one, and several other Windows packages for that matter.
- Fourth, you will need a serial to USB adapter. I'd imagine you could purchase these at most larger computer stores. (The FC-Datalogit optional version requires either Windows 98 or Windows 2000. See "Third")
- Fifth, you'll need FC\_Edit v1.04 (or later) as it has settings for Com1-Com4. (Com is short for communications port in Windows 98) For some reason, Windows 98 assigns Com1 and Com2 to something else (it may be Virtual PC doing this too, or the Mac OS). The point being that in v1.03 of FC\_Edit, you only had the choice of Com1 or Com2, which are taken. In v1.04, there are two additional Com ports, 3 and 4.
- After you have all of the above, you'll need to install Virtual PC on your Mac. Follow the instructions and read the manual first as there's some new lingo. I named my virtual pc engine "FC\_Edit". I would recommend that you choose the easy install option. Once installed, quit the installer and go through the steps. There's one section of the set-up where it allows you to



choose the "parameters" of your Virtual PC. Think of it like you're actually setting up preferences on a PC. In it, it'll allow you to choose how much RAM is allocated to the program. Give it all the ram you can as it'll speed things up a bit. I believe I'm running a 144mb allocation of RAM, per the Virtual PC program. Install the FC\_Edit program and then update it with v1.04 available from the Datalogit web site. Simply download it and drop the program into the "Program Files" located on your "C" drive (hard drive to you and me) and then in FC Edit. It looks something like this; C:\Program Files\FCEdit. I then dragged it to the Windows Desktop which created an automatic shortcut so you don't have to go digging on the hard drive.

For the following, you must do it just as I specify (and the adapter directions specify). Once you have Virtual PC installed and running, shut down Windows 98 and Virtual PC. Install the Serial to USB adapter in USB port #2 (#1 may work as well). Once it's hooked up, boot Virtual PC and your "virtual" machine (whatever you named it) which will launch Windows 98. Once it's up and running, it'll auto detect a new device and search for the appropriate driver. The install new hardware program will launch and you should insert the floppy (or CD) which contains the driver. Follow the instructions and complete the installation.

Once the driver is installed, and with the adapter still plugged into the back of the computer, connect the serial end to the Datalogit box with the car off. Turn the car on and launch FC\_Edit which you should have installed already. It may say "Error opening Com2" or something stupid like that. Click "ok". You'll have to go under the menu at the top to "Setup" and choose Com3. Once that's done, try "reading" your PFC. If you get an "interface not responding", try quitting FC\_Edit and launching it again. If that doesn't work, shut down Windows 98 and restart it with everything plugged in and the car off. Once it's fully boots, turn the car on to accessory (engine not running) and launch FC\_Edit again. If that doesn't work yet again, go down to the USB symbol at the bottom of Virtual PC and click on it, then USB Settings. Once the "Settings" window for your Virtual PC pop up, click on USB and make sure the driver for the Serial to USB adapter is enabled as well as the USB itself. Once it's enabled, close the window and you should be able to read and write to the Power FC and to of course, Datalog!

## T-Tips

### T-1 To view the settings in two files simultaneously

- Open two sessions of FC-Edit
- Opening a session without the interface plugged in (or a second session, while the interface is already in session) will cause an “Interface not responding!” prompt, in this case ignore and click OK
- Opening a second session will cause an “Error opening Com1” prompt, in this case ignore and click OK
- Open one of the files you want to compare in one FC-Edit session and the other file in the other session
- Use Compare on the first session to find which settings are different, then switch between the two sessions of FC-Edit (Alt Tab) to view the different values
- OR size the two session windows so you can see both at the same time

### T-2 How to add a pair of additional 550 secondary injectors

- Plumb 2 extra series 5 (Gen2 T2 FC3S) – 550 cc injectors into a spacer between the inlet manifold and the plenum chamber, position them to inject into the secondary runners. This Spacer /Auxiliary injector holder will be available from FC-Datalogit soon.
- The series 5 (Gen2 T2 FC3S) 550's are high impedance (15 ohm) so they can be driven in parallel with the existing 850 secondaries.
- The injector drivers in the PFC are FETs. The IC contains 4 separate FETs, rated at 0.25ohm on resistance and 3W max power dissipation for all 4.
- Driving 1 x 15 ohm injector at (say) 15V BatV is 1A, so power per FET is  $I^2R = 0.25W$ . Therefore the total power on the driver chip is 1W (at 100% injector duty) To drive the 2 secondaries together will be 2A, and therefore power will be  $I^2R = 2^2 * 0.25 = 1W$ . So the total power for 2 primaries + 4 secondaries will now be  $0.25+0.25+1+1 = 2.5W$  which is ok for the chip.



- Parallel each aux injector up with it's corresponding (F/R) secondary injector. On FC-Edit, dial up 1400cc secondaries, and a transition setting of 0.91msec.
- The result (FC-Datalogit team road test) was excellent. No noticeable injector transition glitch's. Same smooth power at 1.0bar, and injector went duty from 95% to 70%
- Note at 70%, the injector driver chip will only be dissipating  $0.7 \times 2.5W = 1.75$ , which is fine. We plan to add a clip on heat-sink to the chip though – all the same. You may wish to do that also.
- We also intend to scope the injector circuit – since you should really modify the snubber circuit also. This consists of 33ohm in series with 0.47uF capacitor to ground. In theory we should halve the resistor and double the capacitor to achieve the same. This could be modified in the PFC, or added externally. We will explain more latter.

## W- WARNING!

### W-1 “Read all”

- We suggest you “Read all” the settings and maps and save the file before you start editing
- “Read all” the settings before you enable the FC-Box special features.
- See {[E-5-3](#) Tuner String} for a special message

### W-2 BOOST CUT...

- Fuel cut will occur if boost reaches 0.25 Bar above the Boost value set in {[A-1](#) Boost Control}

### W-3 Exhaust Temp Light flashing!

- Over 1.2 Bar the factory Map sensor will not be accurate. {[N-1](#) Factory Boost Sensor}
- Exhaust Temp Light will flash when Boost is over 1.1 Bar

### W-4 Check Engine Light Flashing slowly! Injector Duty / Map Warning

- If Injector on time is over 98% or the Map sensor is over 5V,
- Check Engine Light will Flash in 0.5 sec intervals.
- Injector Warning can be switched off, see; {[A-4-2](#) Injector Warning}
- Or Thresh hold adjusted, see; {[A-6](#) Injector Warning}

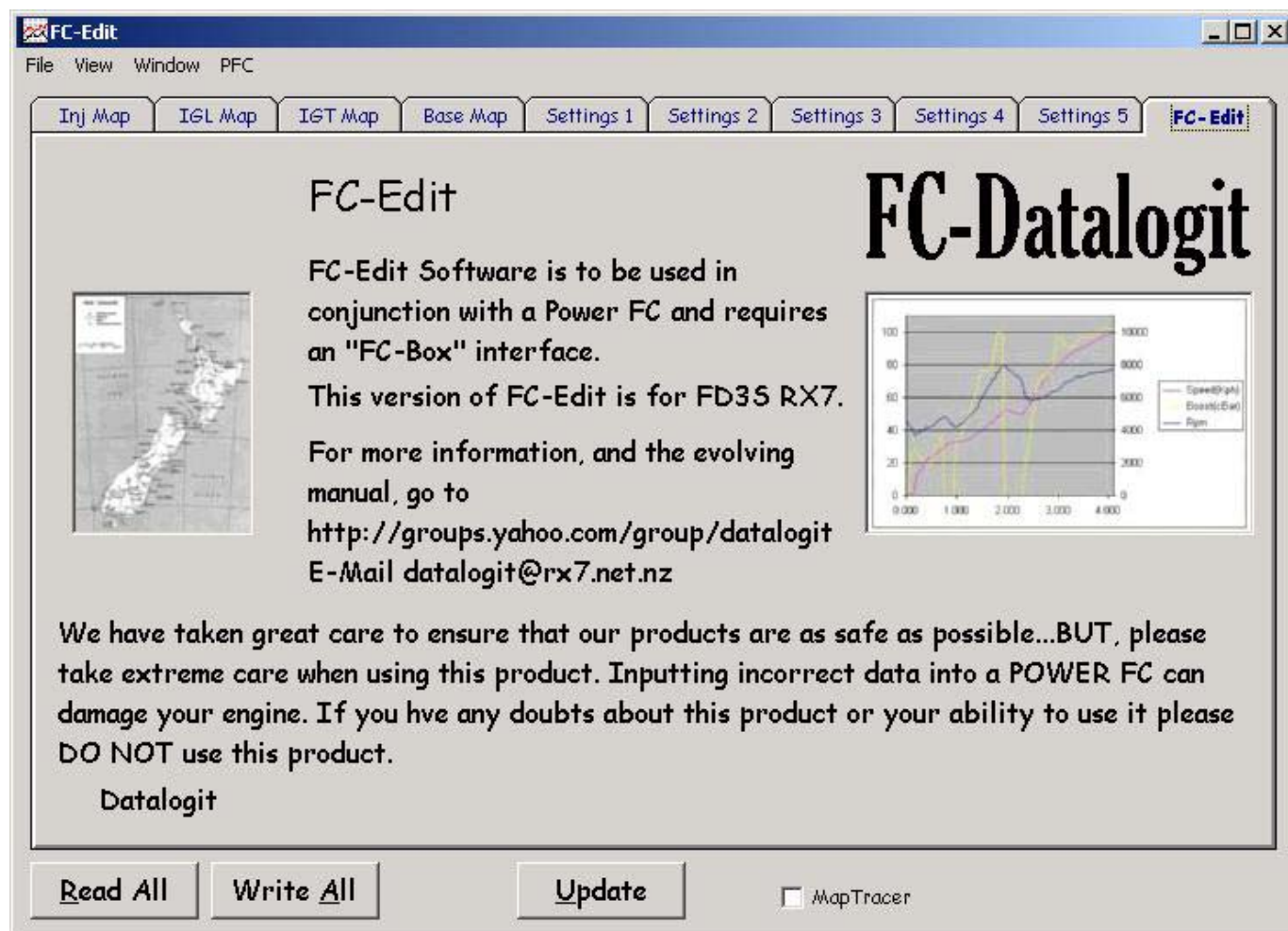
### W-5 Check Engine Light Flashing Quickly! Knock Warning

- If Detonation is over “60” Check Engine Light will Flash in 0.1 sec intervals three times
- Knock Warning can be switched off, see; {[A-4-3](#) Knock Warn}
- Or Thresh hold adjusted, see; {[A-7](#) Knock Warning}
- {[N-2](#) Knock Value}

## Z-FC-Edit Screen Captures

Pages contain standard Power FC data which may or may not be applicable to your vehicle

- [FC-Edit](#) Cover Page
- [INJ Map](#)
- [IGL Map](#)
- [IGT Map](#)
- [Base Map](#)
- [Settings 1](#)
- [Settings 2](#)
- [Settings 3](#)
- [Settings 4](#)
- [Settings 5](#)
- [Monitor Window](#)
- [FC-Datalogit Chart window](#)
- Graph windows “3D View”
  - [INJ](#)
  - [IGL](#)
  - [IGT](#)
  - [IGL – IGT](#)
  - [Base](#)
- [Set-up Watch](#)
- [Set-up Chart](#)
- [Set-up Aux](#)
- [Set-up Polynomial](#)



**FC-Edit** File View Window PFC

**Inj Map** IGL Map IGT Map Base Map Settings 1 Settings 2 Settings 3 Settings 4 Settings 5 FC-Edit

	N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
P01	1.215	1.215	1.152	1.066	1.066	1.066	1.066	1.066	1.082	1.109	1.129	1.133	1.203	1.215	1.215	1.215	1.215	1.215	1.215	1.215
P02	1.215	1.215	1.152	1.066	1.066	1.066	1.066	1.066	1.082	1.109	1.129	1.133	1.203	1.215	1.215	1.215	1.215	1.215	1.215	1.215
P03	1.215	1.215	1.152	1.066	1.066	1.066	1.066	1.066	1.082	1.109	1.129	1.133	1.203	1.215	1.215	1.215	1.215	1.215	1.215	1.215
P04	1.215	1.215	1.152	1.066	1.066	1.066	1.066	1.066	1.082	1.109	1.129	1.133	1.203	1.215	1.215	1.215	1.215	1.215	1.215	1.215
P05	1.215	1.215	1.000	1.000	1.000	1.000	1.000	1.000	1.082	1.109	1.129	1.133	1.215	1.219	1.223	1.227	1.234	1.234	1.234	1.234
P06	1.215	1.215	1.000	1.000	1.000	1.000	1.000	1.000	1.094	1.113	1.129	1.137	1.223	1.223	1.234	1.242	1.254	1.254	1.254	1.254
P07	1.215	1.215	1.000	1.000	1.000	1.000	1.000	1.000	1.098	1.117	1.145	1.152	1.223	1.242	1.258	1.262	1.270	1.270	1.270	1.270
P08	1.215	1.215	1.020	1.020	1.020	1.020	1.020	1.063	1.109	1.125	1.152	1.172	1.223	1.262	1.289	1.289	1.289	1.289	1.289	1.289
P09	1.215	1.215	1.082	1.039	1.039	1.039	1.039	1.098	1.125	1.145	1.168	1.199	1.238	1.277	1.297	1.305	1.305	1.305	1.305	1.305
P10	1.215	1.215	1.102	1.129	1.129	1.137	1.137	1.137	1.145	1.164	1.184	1.223	1.254	1.289	1.313	1.324	1.324	1.324	1.324	1.324
P11	1.215	1.215	1.102	1.137	1.145	1.145	1.137	1.137	1.148	1.168	1.199	1.242	1.270	1.305	1.324	1.328	1.328	1.328	1.328	1.328
P12	1.215	1.215	1.102	1.137	1.152	1.152	1.137	1.137	1.152	1.172	1.215	1.262	1.289	1.324	1.332	1.332	1.332	1.332	1.332	1.332
P13	1.215	1.215	1.102	1.137	1.152	1.156	1.148	1.148	1.172	1.199	1.242	1.277	1.297	1.324	1.332	1.340	1.348	1.348	1.348	1.348
P14	1.215	1.215	1.102	1.137	1.152	1.164	1.164	1.164	1.191	1.223	1.277	1.293	1.313	1.324	1.332	1.340	1.359	1.359	1.359	1.359
P15	1.215	1.215	1.102	1.137	1.152	1.164	1.172	1.191	1.223	1.254	1.313	1.328	1.332	1.344	1.359	1.348	1.359	1.359	1.367	1.367
P16	1.215	1.215	1.102	1.137	1.152	1.164	1.184	1.227	1.254	1.289	1.348	1.359	1.359	1.359	1.387	1.359	1.359	1.359	1.375	1.375
P17	1.215	1.215	1.102	1.137	1.152	1.164	1.215	1.281	1.324	1.359	1.359	1.367	1.379	1.398	1.414	1.387	1.398	1.398	1.414	1.414
P18	1.215	1.215	1.102	1.137	1.152	1.164	1.215	1.289	1.344	1.387	1.398	1.398	1.414	1.430	1.453	1.453	1.453	1.453	1.453	1.453
P19	1.215	1.215	1.102	1.137	1.152	1.164	1.215	1.289	1.344	1.387	1.398	1.398	1.414	1.430	1.453	1.453	1.453	1.453	1.453	1.453
P20	1.215	1.215	1.102	1.137	1.152	1.164	1.215	1.289	1.344	1.387	1.398	1.398	1.414	1.430	1.453	1.453	1.453	1.453	1.453	1.453

Read Write

Read All Write All Update ☐ MapTracer



**FC-Edit** File View Window PFC

Inj Map **IGL Map** IGT Map Base Map Settings 1 Settings 2 Settings 3 Settings 4 Settings 5 FC-Edit

	N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
P01	8	8	12	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P02	8	8	12	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P03	8	8	12	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P04	8	8	12	25	30	31	32	33	34	37	40	42	44	45	47	48	49	49	50	51
P05	8	12	20	25	28	29	30	32	33	36	38	40	42	44	47	48	48	49	50	50
P06	12	18	24	25	26	27	28	30	32	34	37	39	38	40	45	45	47	48	50	50
P07	12	15	20	24	23	22	24	24	25	27	30	33	36	39	42	43	43	45	49	49
P08	9	12	14	19	20	20	22	22	24	25	28	29	35	38	40	41	42	44	46	46
P09	7	9	12	17	18	18	19	21	21	23	25	28	33	35	38	39	40	43	43	43
P10	6	7	9	16	17	17	18	20	20	21	24	27	32	32	36	37	39	41	41	41
P11	3	5	7	12	16	16	16	18	19	21	22	26	29	31	32	33	33	33	35	35
P12	2	4	5	11	13	13	14	17	19	21	22	26	27	28	28	29	29	30	32	32
P13	1	3	4	8	11	11	13	16	19	21	22	23	25	25	25	26	27	27	28	28
P14	1	2	2	4	9	9	11	15	19	20	21	21	22	23	23	24	24	25	25	26
P15	1	2	2	4	7	8	10	13	16	18	18	18	18	19	19	20	21	23	24	25
P16	1	2	2	3	5	7	8	11	13	15	16	16	16	16	15	16	18	21	22	25
P17	1	2	2	3	3	4	6	9	10	12	12	11	11	11	9	11	14	19	21	23
P18	1	2	2	3	2	4	4	7	8	10	10	10	9	9	7	9	12	17	19	21
P19	1	2	2	3	2	3	4	5	7	9	9	8	7	7	5	7	10	15	17	19
P20	1	2	2	3	2	3	4	5	7	7	7	6	5	5	3	5	8	13	15	17

Read Write

Read All Write All Update ☐ MapTracer

**FC-Edit** File View Window PFC

Inj Map IGL Map **IGT Map** Base Map Settings 1 Settings 2 Settings 3 Settings 4 Settings 5 FC-Edit

	N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
P01	0	0	4	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P02	0	0	4	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P03	0	0	4	20	31	32	32	33	35	38	41	43	45	46	48	49	49	50	50	51
P04	0	0	4	25	30	31	32	33	34	37	40	42	44	45	47	48	49	50	50	51
P05	0	10	18	25	28	29	30	32	33	36	38	40	42	44	46	48	48	49	50	50
P06	10	13	23	25	26	27	28	30	32	34	37	39	38	40	44	46	47	48	50	50
P07	7	11	19	22	23	22	24	24	25	27	30	33	36	39	41	42	43	45	48	48
P08	3	7	13	18	20	20	22	22	24	25	28	29	35	37	38	38	40	42	44	44
P09	1	4	9	13	17	17	18	20	21	23	25	27	32	33	34	37	37	39	40	40
P10	0	2	5	11	15	15	15	16	17	19	22	22	28	27	30	31	32	34	35	35
P11	-1	-1	3	7	9	10	10	11	12	14	16	18	21	23	24	25	25	27	29	29
P12	-1	-1	0	5	7	8	8	9	11	12	13	15	15	15	15	17	18	20	22	23
P13	-1	-1	-1	2	4	6	7	8	10	10	10	11	11	11	10	12	13	16	18	18
P14	-1	-1	-1	0	2	4	5	6	8	8	8	9	9	9	9	10	12	15	16	16
P15	-1	-1	-1	0	1	2	4	4	6	6	6	7	7	7	6	7	9	11	14	15
P16	-1	-1	-1	-1	0	1	2	3	4	4	4	5	5	5	4	5	6	9	13	14
P17	-1	-1	-1	-1	0	0	1	1	2	2	2	2	2	2	1	1	3	6	11	12
P18	-1	-1	-1	-1	-1	-1	0	0	1	1	1	1	1	1	0	0	2	5	10	11
P19	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	1	4	9	10
P20	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	3	8	9

Read Write

Read All Write All Update ☐ MapTracer



**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map **Base Map** Settings 1 Settings 2 Settings 3 Settings 4 Settings 5 FC-Edit

	N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
P01	0.316	0.328	0.328	0.344	0.356	0.372	0.420	0.492	0.512	0.516	0.512	0.536	0.544	0.516	0.516	0.512	0.476	0.428	0.376	0.316
P02	0.636	0.660	0.660	0.680	0.768	0.836	0.976	1.064	1.108	1.116	1.108	1.156	1.176	1.128	1.128	1.108	1.088	0.976	0.868	0.756
P03	1.008	1.092	1.148	1.248	1.292	1.396	1.444	1.488	1.572	1.572	1.508	1.608	1.684	1.524	1.508	1.472	1.368	1.256	1.148	1.056
P04	1.508	1.648	1.728	1.768	1.952	2.076	2.160	2.152	2.168	2.204	2.160	2.148	2.164	2.260	2.208	2.188	2.052	1.908	1.852	1.600
P05	2.068	2.132	2.276	2.412	2.552	2.740	2.836	2.820	2.872	2.864	2.764	2.880	2.924	3.056	3.040	3.032	2.976	2.868	2.688	2.420
P06	2.852	2.936	3.060	3.144	3.244	3.404	3.480	3.456	3.440	3.372	3.440	3.648	3.820	4.056	4.004	3.960	3.848	3.632	3.408	3.196
P07	3.460	3.536	3.660	3.772	3.888	3.996	4.076	4.116	4.128	4.188	4.312	4.360	4.536	4.728	4.708	4.616	4.500	4.412	4.220	3.960
P08	3.908	3.992	4.136	4.300	4.404	4.552	4.708	4.812	4.668	4.728	4.872	4.932	5.124	5.328	5.276	5.176	5.084	4.984	4.684	4.492
P09	4.492	4.524	4.608	4.636	4.880	5.024	5.300	5.504	5.348	5.420	5.576	5.596	5.748	5.992	6.056	6.076	6.012	5.716	5.400	5.168
P10	5.372	5.472	5.556	5.572	5.592	5.788	5.944	6.176	6.096	6.128	6.220	6.280	6.492	6.596	6.820	6.852	6.828	6.696	6.352	5.848
P11	6.124	6.288	6.392	6.352	6.308	6.464	6.628	6.912	6.872	6.740	7.004	7.108	7.240	7.420	7.716	7.628	7.440	7.240	6.984	6.388
P12	6.688	6.800	6.880	6.932	6.932	6.960	7.144	7.368	7.300	7.472	7.484	7.576	7.676	7.860	8.236	8.192	8.080	7.872	7.420	6.880
P13	7.300	7.372	7.524	7.576	7.576	7.684	7.952	8.128	8.048	8.064	8.284	8.300	8.432	8.536	8.816	8.928	8.812	8.672	8.220	7.644
P14	7.832	7.960	8.184	8.276	8.336	8.496	8.568	8.788	8.720	8.760	9.104	9.420	9.668	9.604	9.680	9.764	9.576	9.300	8.800	8.204
P15	8.384	8.488	8.736	8.828	8.892	9.040	9.524	9.784	9.672	9.576	9.764	10.12	10.32	10.28	10.30	10.43	10.26	10.08	9.520	8.984
P16	8.836	9.036	9.260	9.420	9.568	9.752	10.15	10.56	10.31	10.21	10.47	10.74	10.91	10.87	11.04	11.02	10.74	10.44	9.920	9.344
P17	10.02	10.18	10.41	10.58	10.88	11.12	11.58	12.10	11.97	11.84	12.10	12.43	12.54	12.48	12.70	12.82	12.44	11.98	11.28	10.63
P18	11.19	11.41	11.56	11.64	11.88	12.32	12.84	13.57	13.50	13.38	13.56	14.01	14.72	14.72	14.54	14.28	13.48	12.76	12.10	11.35
P19	12.42	12.70	12.86	12.95	13.07	13.55	14.31	15.16	15.19	15.02	15.28	15.81	16.55	16.52	16.44	15.86	14.81	13.79	12.88	11.78
P20	13.70	13.98	14.17	14.32	14.60	15.11	15.89	16.89	17.00	16.82	17.23	17.68	18.33	18.22	18.16	17.47	16.10	14.81	13.84	12.78

Read Write

Read All Write All Update ☐ MapTracer



**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map Base Map **Settings 1** Settings 2 Settings 3 Settings 4 Settings 5 FC-Edit

**Boost Control**

	Boost	Duty
<input checked="" type="radio"/> 1. Primary	0.80	56
Secondary	0.70	64
<input type="radio"/> 2. Primary	0.90	62
Secondary	0.80	70

**Rev / Idle**

Rev Limit	8100
F/C A/E	1000
F/C E/L	1100
F/C A/C	1200
Idle A/E	720
Idle E/L	800
Idle A/C	900

**Turbo Transition**

TPS1(%)	Low	RPM	High
60	3000	4080	
40	3000	4280	
20	3000	5600	

**Function Select**

1. Seq. Turbo Cont	<input checked="" type="checkbox"/>
2. Injector Warn.	<input checked="" type="checkbox"/>
3. Knock Warning	<input checked="" type="checkbox"/>
4. O2 F/B Control	<input checked="" type="checkbox"/>
5. Idle-IG Cntrl	<input checked="" type="checkbox"/>

**Injector Warn**

98.0	Thresh
30	Setting

**Knock Warn**

60	Thresh
9	Setting

**O2 Feedback**

1.047	Setting
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**Protect**

- ☐ IGL Map
- ☐ IGT Map
- ☐ Inj Map
- ☐ PIM Volts
- ☐ Injector
- ☐ Boost
- ☐ Accelerate
- ☐ Tuning Adjust
- ☐ Water Temp
- ☐ Rev/Idle

**Version**

Program String	13B-REW
Program Version	5.08

**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map Base Map Settings 1 **Settings 2** Settings 3 Settings 4 Settings 5 FC-Edit

Water Temp Correction			Accelerate Injector (mS)			Cranking (mS)		Inj vs Accel TPS1	
+80C	1.000	1.000	RPM	Amount	Decay	+80C	12.0	Input	Setting
+50C	1.078	1.016	5000	7.500	1.000	+50C	17.3	103	256
+30C	1.297	1.219	4000	7.500	1.000	+30C	32.0	37	230
+10C	1.578	1.500	3000	7.500	1.500	+10C	59.0	20	25
-10C	2.016	1.875	2000	8.000	1.800	-10C	87.2		
-30C	2.813	2.578	1000	6.000	2.000	-30C	104.2		

INJ vs TPS		Inj vs AirTemp		INJ vs Air Temp and Boost (max)			INJ vs Fuel Temp		
TPS%	Setting	+80C	0.957	Temp	Setting	Boost	Temp	Setting	
89.8	1.000	+50C	0.984	90	1.039	14848	60	1.020	
79.7	1.000	+30C	1.012	80	1.016		40	1.000	
69.9	1.000	+10C	1.055	70	1.000	760	20	1.000	
59.8	1.000	-10C	1.102						
50.0	1.000	-30C	1.148						
39.8	1.000								

INJ vs Water Temp and Boost (max)		
Temp	Setting	Boost
110	1.078	14848
95	1.000	4864

Read All Write All Update ☐ MapTracer

**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map Base Map Settings 1 Settings 2 **Settings 3** Settings 4 Settings 5 FC-Edit

Map Reference

	Boost	RPM
01	1000	400
02	2000	800
03	3000	1200
04	4000	1600
05	5000	2000
06	6000	2400
07	7000	2800
08	8000	3200
09	9000	3600
10	10000	4000
11	11000	4400
12	12000	4800
13	13000	5200
14	14000	5600
15	15000	6000
16	16000	6400
17	18000	6800
18	20000	7200
19	22000	7600
20	24000	8000

PIA scale, offset

	Scale	Offset
<input checked="" type="radio"/> 1 1. Normal	35086	3947
<input type="radio"/> 2 2. Option1	43860	3289
<input type="radio"/> 3 3. Option2	46574	5592
<input type="radio"/> 4 4. Option3	46574	5592
<input type="radio"/> 5 5. Option4	46574	5592

Inj Adjust

8000rpm	100.0	1.0V	100.0
7000rpm	100.0	1.5V	100.0
6000rpm	100.0	2.0V	100.0
5000rpm	100.0	2.5V	100.0
4000rpm	100.0	3.0V	100.0
3000rpm	100.0	3.5V	100.0
2000rpm	100.0	4.0V	100.0
1000rpm	100.0	4.5V	100.0

Oiler vs Water Temp

Temp	Setting
120	1.117
90	1.055
85	1.000

Fan vs Water Temp

Temp	
Fan1 A/C	95
Fan1 no A/C	100
Fan2	105

Read All Write All Update ☐ MapTracer

**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map Base Map Settings 1 Settings 2 Settings 3 **Settings 4** Settings 5 FC-Edit

Boost vs IGN S.F.			IGN vs WaterT Cool		IGN vs BatV		IGL vs RPM		IGT vs RPM	
Rpm from idle	Boost	S.F.	Temp	Retard			Adjust	RPM	Adjust	RPM
400	7936	0.0	65	0	0.828	16V	123	10000	123	10000
200	7936	1.0	60	15	1.000	14V	108	8000	120	8000
					1.266	12V	70	4000	75	4000
					1.609	10V	34	2000	35	2000
					1.859	9V	17	1000	17	1000
					2.109	8V	9	480	9	480

IGN vs WaterT		Boost vs IGN S.F.	
Temp	Retard	Boost	S.F.
110	6	10752	1.0
95	0	7936	0.0

IGN vs AirT		IGN vs TPS	
Temp	Retard	TPS%	
80	3	79.7	1.000
70	1	59.8	1.000
60	0	39.8	1.000
		19.9	1.000

Read All Write All Update ☐ MapTracer

**FC-Edit** File View Window PFC

Inj Map IGL Map IGT Map Base Map Settings 1 Settings 2 Settings 3 Settings 4 **Settings 5** FC-Edit

Injectors		INJ Pr Lag (uS) vs BatV		INJ Sc Lag (uS) vs BatV		Injector Overlap		
Front Primary	100.0	0.00	0.528	16V	0.568	16V	Boost	Setting
Front Secondary		0.00	0.728	14V	0.768	14V	14848	3
Rear Primary	100.0	0.00	1.008	12V	1.048	12V	9984	2
Rear Secondary		0.00	1.368	10V	1.408	10V	4864	1
Q Primary	550		1.968	8V	2.008	8V		
Q Secondary	850		2.800	6V	2.840	6V		
Pri/Sec transition (%)	40.0							
Sec transition (ms)	1.500							

FC Box Custom Features (Key Off / Key On for changes to take effect)

Tuner string (8 char)

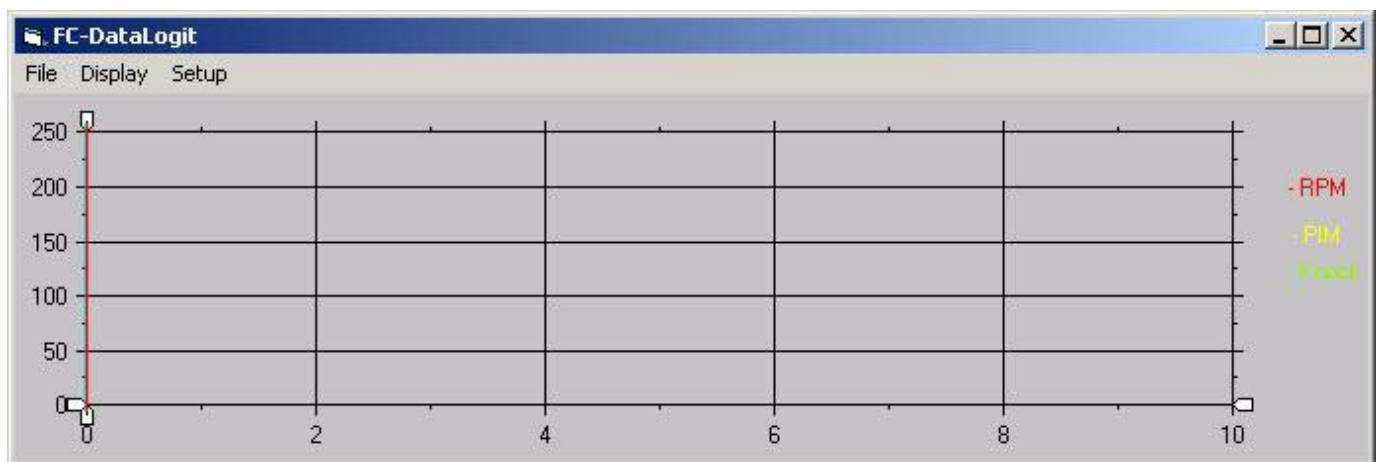
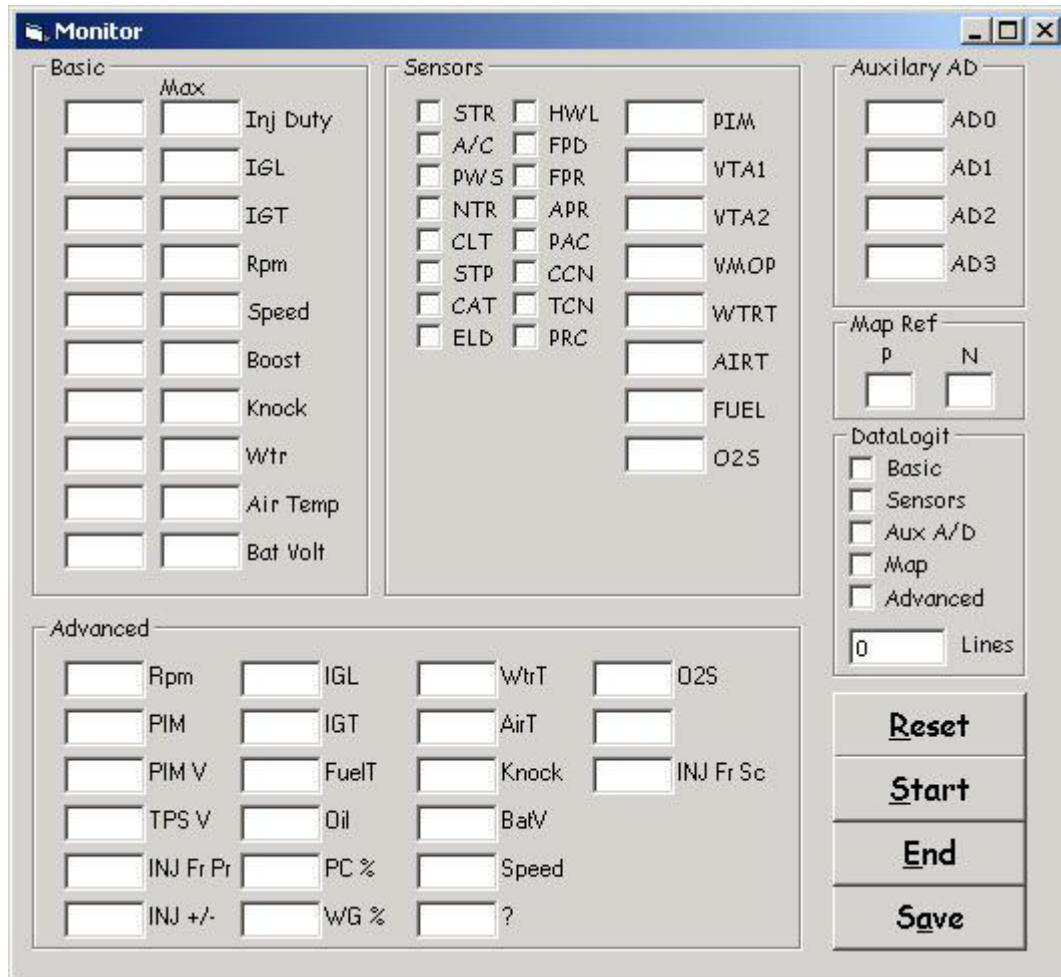
☐ Enabled  IGN Anti Lag Retard

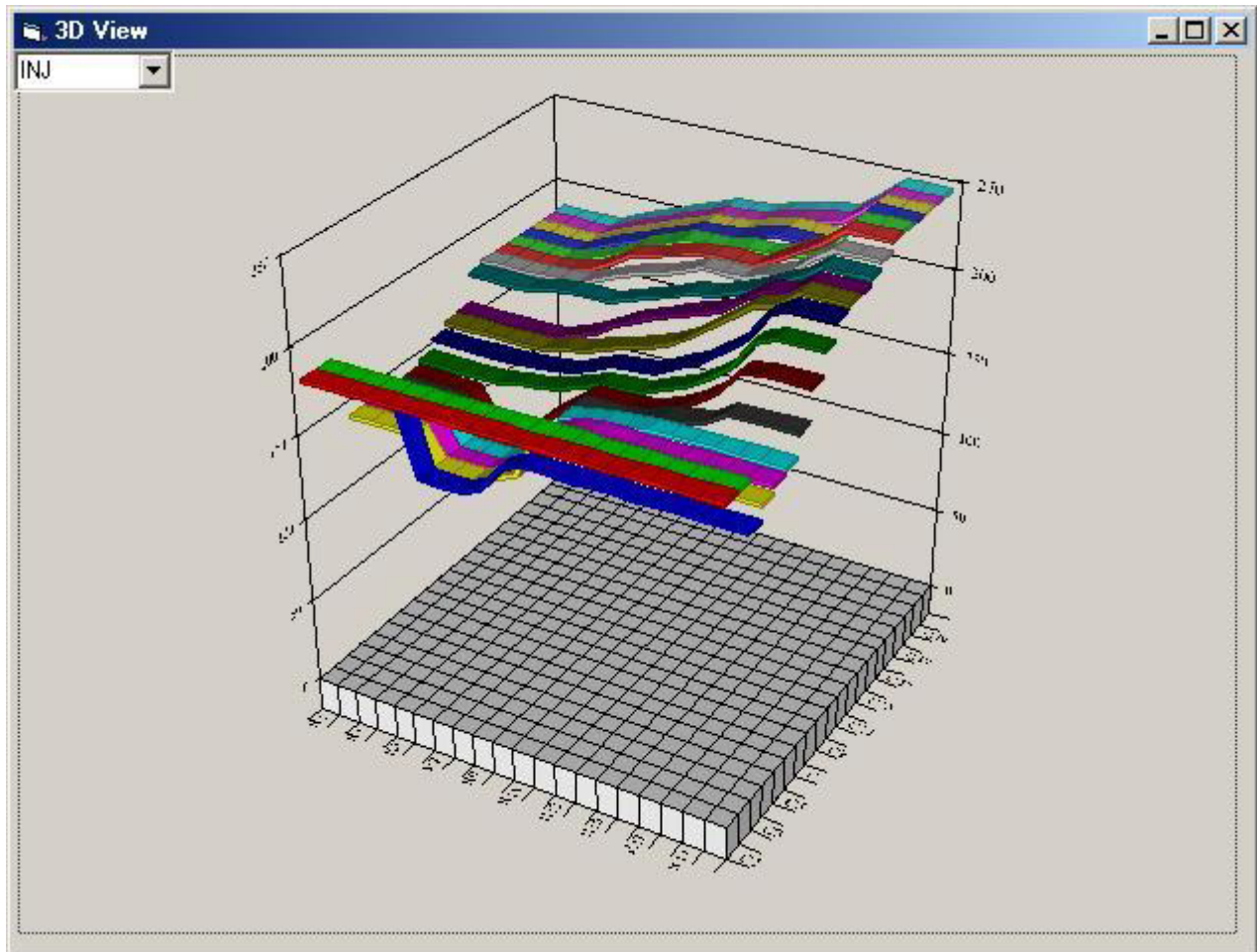
☐ Boost Switch (4)  INJ Anti Lag

☐ Anti Lag Switch (3)

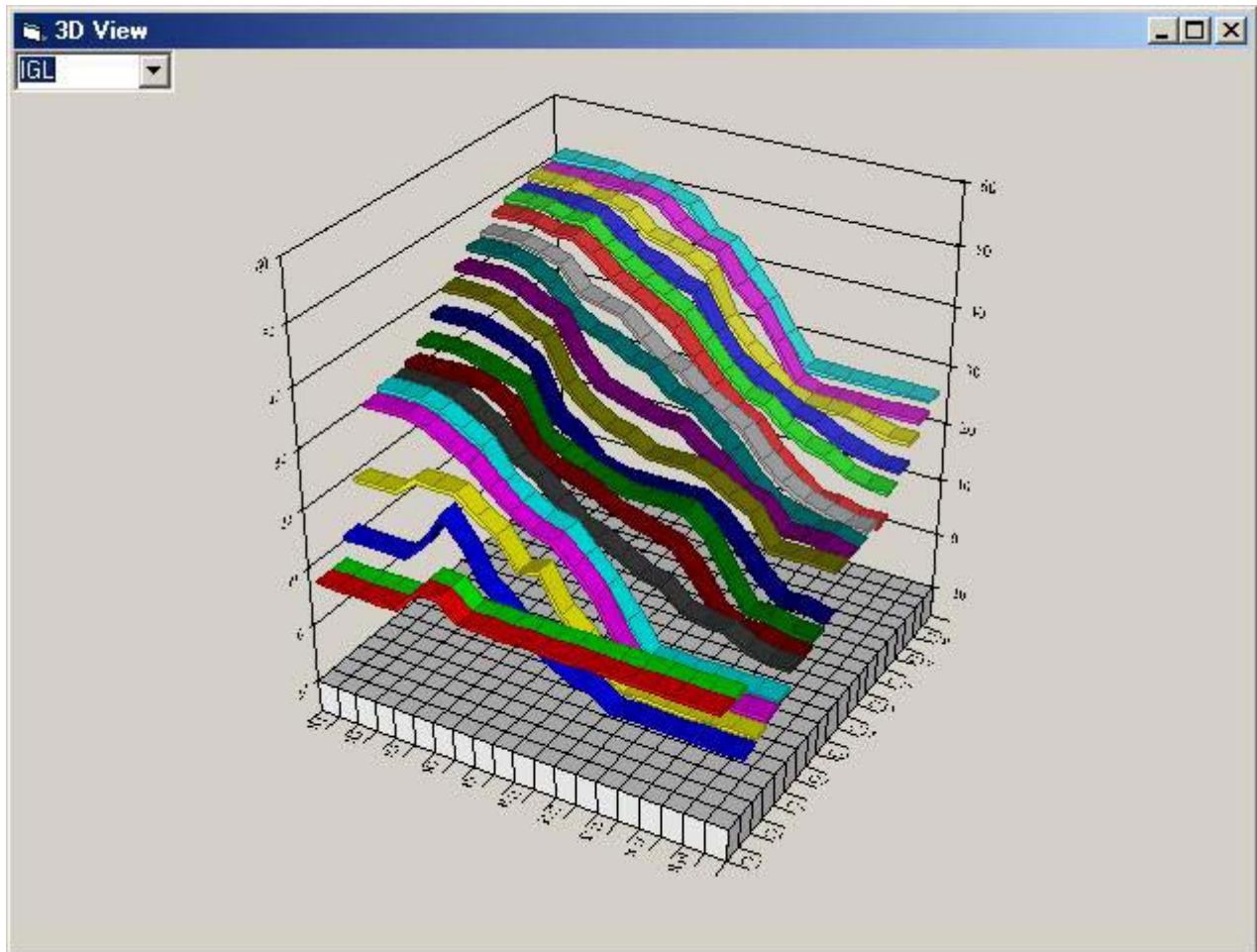
**Read All** **Write All** **Update** ☐ MapTracer





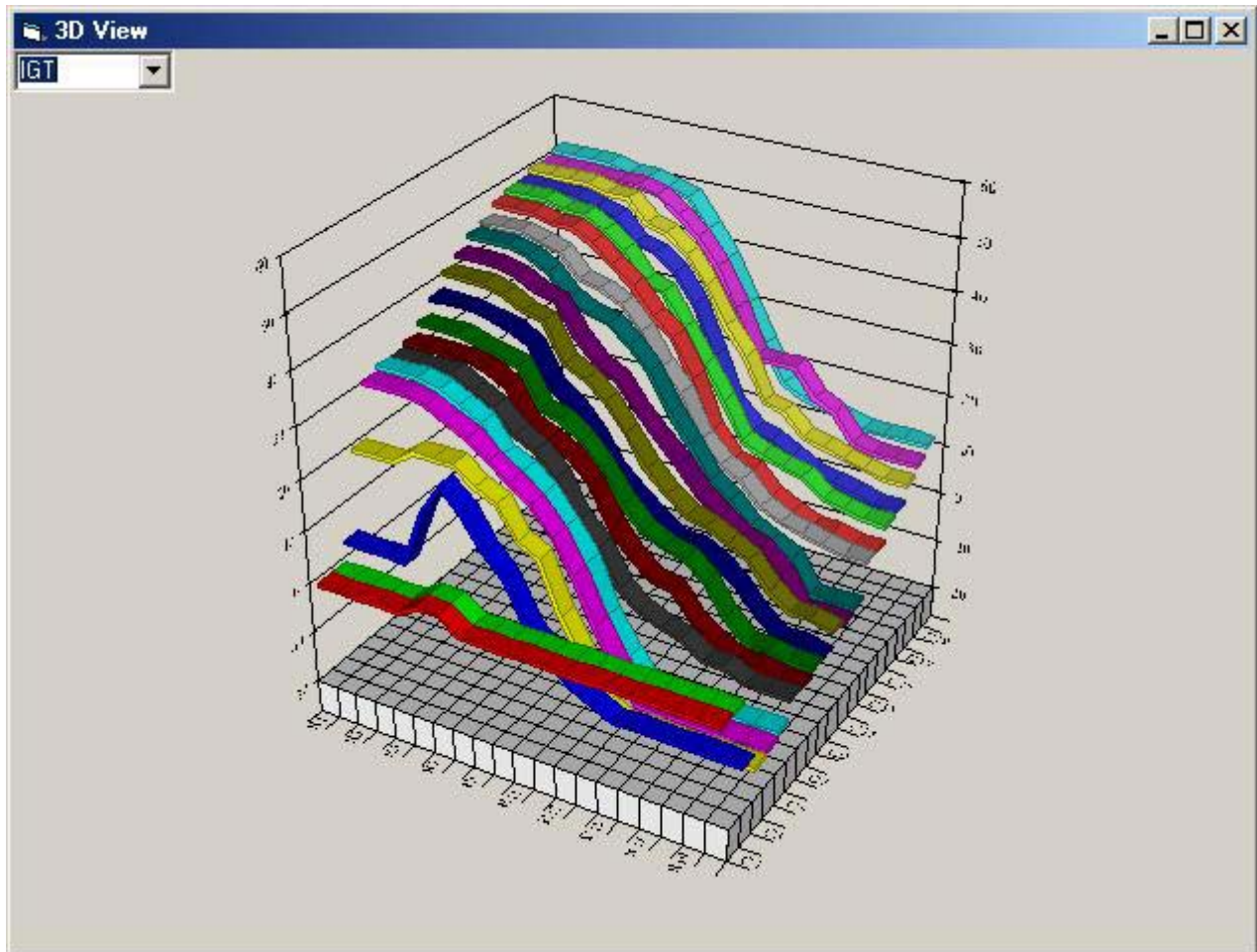


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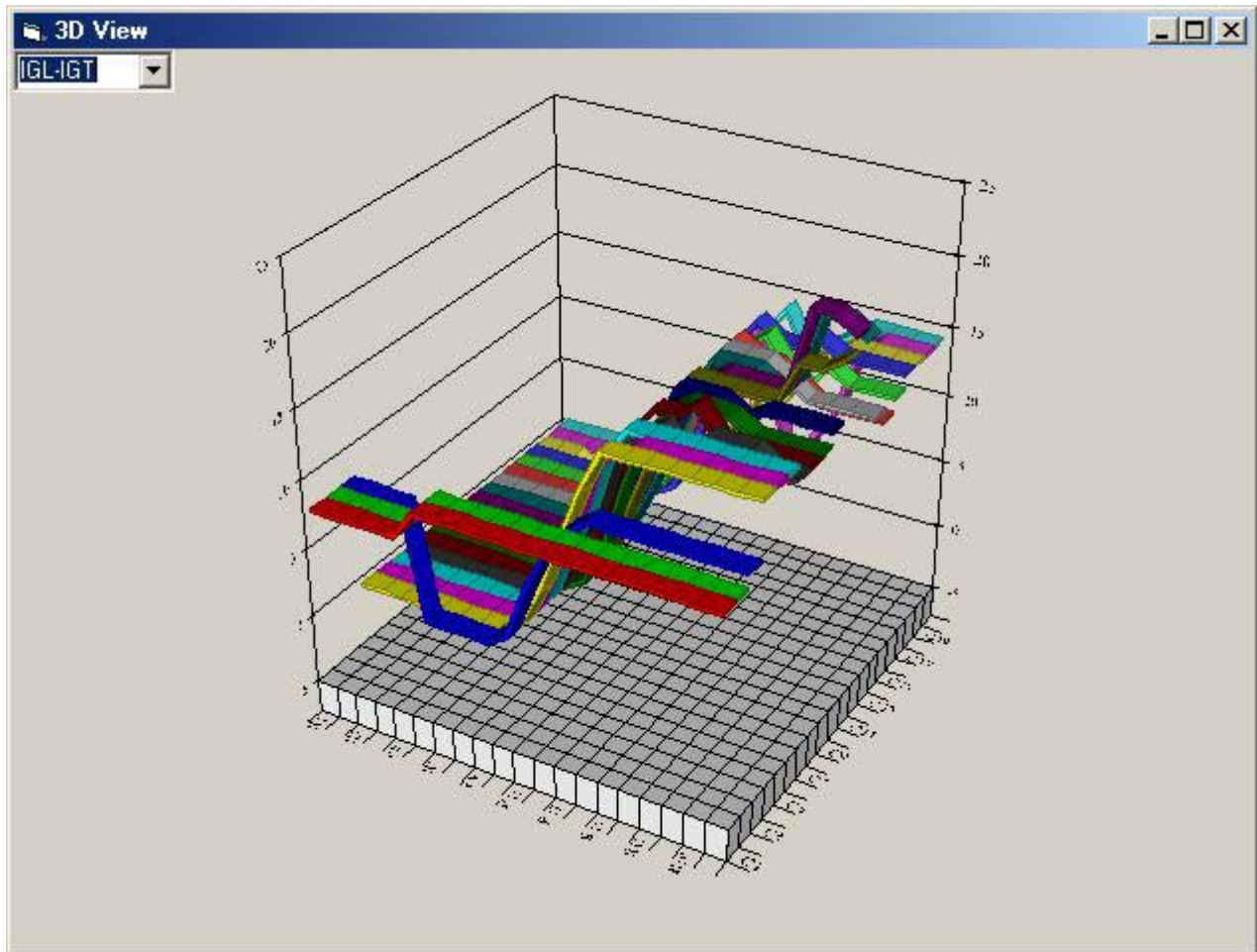


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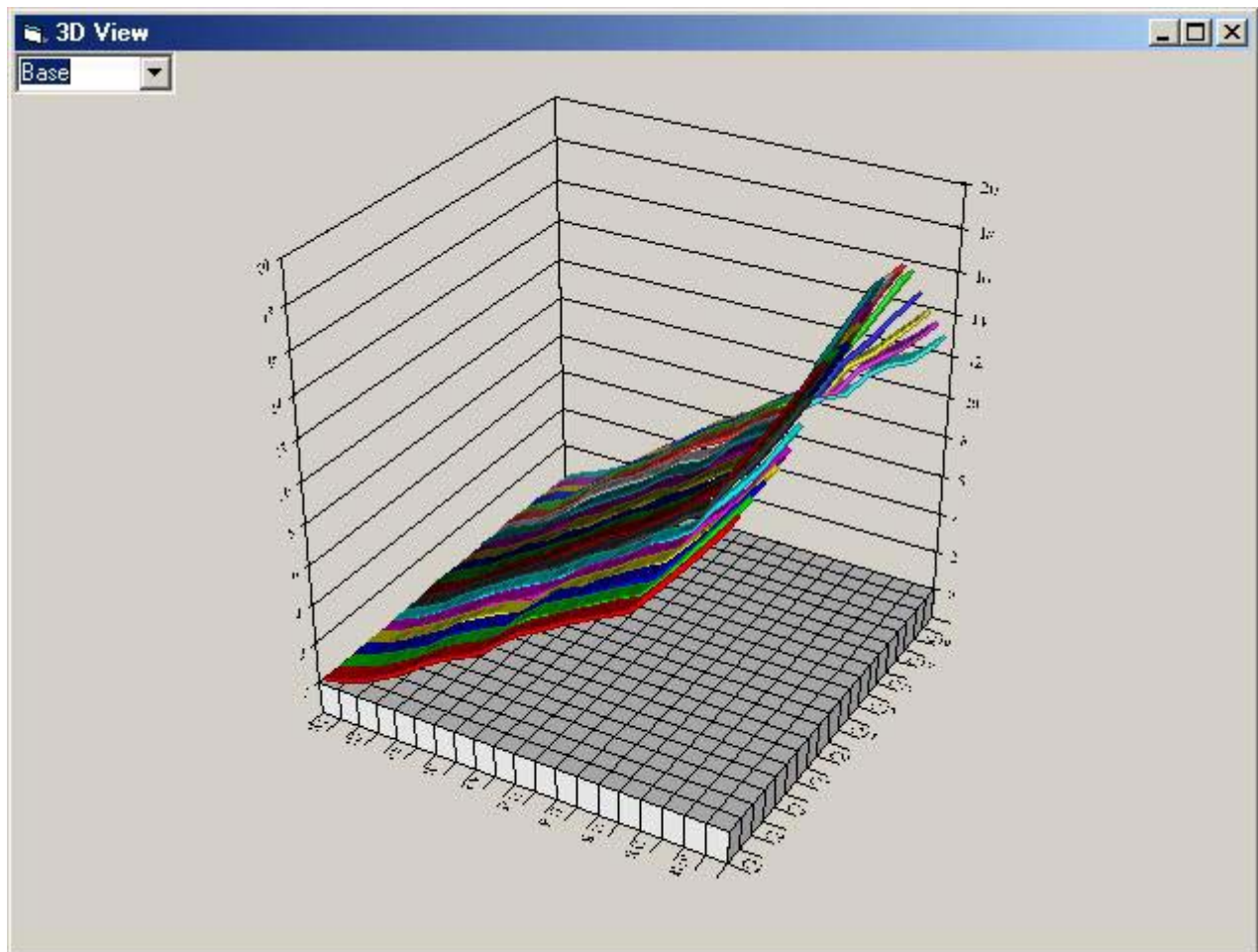




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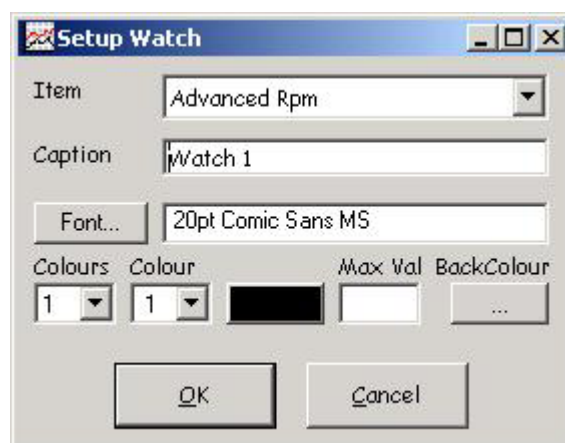


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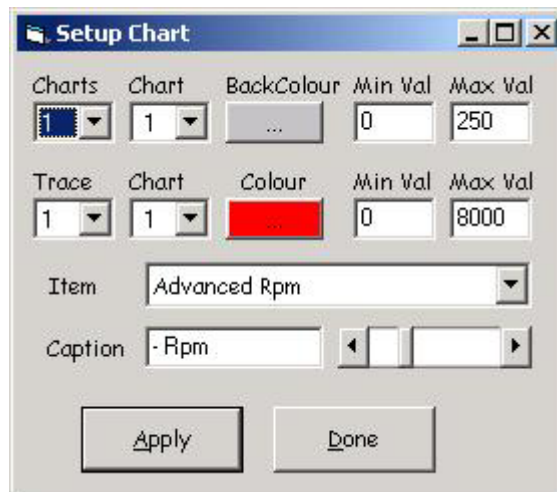
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Map Watch																				
File Log View Window Options																				
Aux AN2 Wideband Max 100 Hold off (mSec)																				
	N01	N02	N03	N04	N05	N06	N07	N08	N09	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
P01																				
P02						13.06	18.14	18.14	14.22	13.16	13.89	13.06								
P03				12.49	14.10	12.87		12.40					12.77							
P04		12.96	12.68	12.06	11.27															
P05		17.85	12.58	11.65	13.46															
P06		14.33	11.06	11.20																
P07		12.96	10.80																	
P08		12.23																		
P09		12.31																		
P10		13.06	13.46																	
P11			13.06	12.96																
P12				11.57	13.36															
P13						13.67														
P14						14.33														
P15							13.78													
P16							10.93													
P17							10.00													
P18																				
P19																				
P20								10.68	11.89	14.22	11.81	12.40	14.56	16.04						

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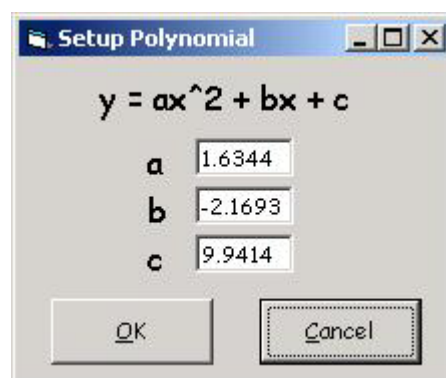


The Setup Auxiliary dialog box contains four sections for auxiliary channels AN1, AN2, AN3, and AN4. Each section has a Name field, a Volts field with a Value and Unit sub-field, and a Unit dropdown menu. AN1 and AN2 are set to 'Wide Band' with 'AF' and 'Poly' units respectively. AN3 and AN4 are set to 'raw' with 'V' and 'Poly' units respectively. At the bottom, there are three checkboxes: 'Delta AN1-AN2', 'Delta AN3-AN4', and 'ReCalculate Log'. OK and Cancel buttons are at the bottom right.

AN1	AN2	AN3	AN4
Name: Wide Band	Name: Wideband	Name: raw	Name: raw
Volts: 0, Value: , Unit: AF	Volts: 0, Value: , Unit: Poly	Volts: 0, Value: 0, Unit: V	Volts: 0, Value: 0, Unit: V
Volts: 5, Value: , Unit: Poly	Volts: 5, Value: , Unit: Poly	Volts: 5, Value: 5, Unit: Poly	Volts: 5, Value: 5, Unit: Poly

☐ Delta AN1-AN2  
☐ Delta AN3-AN4  
☐ ReCalculate Log

OK Cancel



The Setup Polynomial dialog box displays the quadratic equation  $y = ax^2 + bx + c$ . It has three input fields for coefficients a, b, and c. The values are a: 1.6344, b: -2.1693, and c: 9.9414. OK and Cancel buttons are at the bottom.

$y = ax^2 + bx + c$

a: 1.6344  
b: -2.1693  
c: 9.9414

OK Cancel