



**SMT5**

# **Dos Software Manual**

**Version: 1.2**



**Table of Contents**

**Page no:**

<b>1. SOFTWARE INSTALLATION</b> .....	<b>1</b>
<b>2. PROTECTION</b> .....	<b>2</b>
<b>3. SCREEN EXPLANATIONS</b> .....	<b>3</b>
3.1 FUEL MAP (F1) .....	3
3.2 COMMON DISPLAY .....	4
3.3 INJECTION MAP (F2) .....	5
3.4 IGNITION (F3) .....	5
3.5 GLOBAL (F4) SCREEN.....	6
3.6 GLOBAL MAP DETAILS .....	7
<b>4. CONNECTING TO THE SMT5</b> .....	<b>8</b>
<b>5. TUNING COMMANDS</b> .....	<b>9</b>
<b>6. SETTING THE ANALOG DEFLECTION (CALIBRATION)</b> .....	<b>10</b>
6.1 ANALOG DEFLECTION CALIBRATION .....	10
<b>7. SETTING THE RPM DEFLECTION (CALIBRATION)</b> .....	<b>10</b>
<b>8. MAP SWITCHING</b> .....	<b>11</b>
<b>9. SAVING A MAP FOR FURTHER REFERENCE</b> .....	<b>11</b>
<b>10. UNI MONITOR SOFTWARE MANUAL</b> .....	<b>12</b>
10.1 INTRODUCTION .....	12
10.2 GETTING STARTED .....	12
10.3 CONFIGURATION.....	14
10.4 DATA LOGGING.....	15
10.5 CONVERTING DATA FOR USE IN EXCEL. ....	15

## 1. SOFTWARE INSTALLATION

By now you should have "UN-ZIPPED" the download file from the Internet and the following files should be included:

UM.EXE	
UTUNE.EXE	Executable, tuning program
UTUNE.CFG	Configuration file
UTUGL.SCN	Global screen layout
UTUFU.SCN	Fuel screen layout
UTUIG.SCN	Ignition screen layout
UTUIN.SCN	
UTUGG.SCN	
UTUNE.HLP	Help file, short version
UTDOS.PFG	SMT5 DOS OPERATING MANUAL (This one!)
LOADUNI5.BAT	Batch file to install the software

The program starts on any PC in DOS. If not re-install it by:

```
A:loaduni5
```

The UTUNE program runs after loading. If you like to start the program again, then:

Change to the subdirectory:                    CD \TUNE

Start the program:                            UTUNE

Exit the program:                            Esc

All tuning software is installed in a  
Directory                                    C:\TUNE

Do not choose any different name or location.

File Naming conventions:

.SCN	A screen file. You may change the wording in the screen but not the location of the variables
.CFG	The configuration files. This file is protected, and no changes are allowed, except to the port numbers
.ULB	A library file
.UMP	A tune map
.EXE	This is the tuning program
.HLP	A short help file. It can be printed. Not protected
.TMP	A temporary saved library file. See <a href="#">Protection</a> .

It is suggested that the original download be saved, so that you can re-install it at any given time. New downloads are available at: [www.perfectpower.com/downloads.htm](http://www.perfectpower.com/downloads.htm) or [www.perfectpower.com/products/uni5.asp](http://www.perfectpower.com/products/uni5.asp)

## 2. PROTECTION

A complete engine setup consists of:

LIBRARY (global) section, containing:

- Technical parameters
- Throttle calibration
- RPM scale calibration

MAPS, containing:

- 128 fuel map values
- 128 injection values
- 128 ignition values

Library and Map data are stored inside the SMT5 and can be stored in separate files on your hard disk. A library file describes how the engine signals look like; the map file describes how the engine is tuned.

The SMT5 is shipped "OPEN" from PERFECTPOWER to DEALERS: That is to say the global (technical) settings (parameters) are open for access, and can be changed. That means also that such a unit can be applied to all engines, and it can be used for development of a new application.

Once a SMT5 is programmed with a library file, then the global parameters are no longer accessible. Dealers and distributors invoke this global protection when they customize the UNI5 for a specific engine. The three tune maps are not affected by this global parameter protection.

The SMT5 is shipped "PROTECTED" from DEALERS and PERFECTPOWER to END-CUSTOMERS. With this protection, the global parameters are not accessible.

A SMT5, which was customized to a particular engine, can only be changed to a different engine with the use of LIBRARY file. Library files are linked to wiring diagrams, and are protected against in adverted changes. Library files are only available from PERFECTPOWER.

Once a new application is running, the developer can send the saved files to PERFECTPOWER for inclusion in the LIBRARY CATALOG, and will receive a complete LIBRARY setup file. This process sounds a little complicated, but the developers files must fit in with worldwide naming conventions.

In addition to the above, a SMT5 can be "BRANDED" to a dealer name. This function can only be invoked by PERFECTPOWER, by enabling the branding option in the dealer's software.

Then a "NO TUNE" option can be implemented (again enabled by PERFECTPOWER), which prevents any further tuning, and general access to the SMT5. The loaded LIBRARY and MAPS can't be viewed, copied or saved. Once invoked, the NO TUNE option can only be overwritten by a LIBRARY file and software with the NO TUNE option disabled.

### 3. SCREEN EXPLANATIONS

Once the program runs on the PC under DOS, a SCREEN is displayed (with blanks). Three screens can be selected with the FUNCTION KEYS F1 to F3, as indicated on the bottom of each screen.

The function keys select

F1	FUEL	Fuel map display.
F2	INJECT	Injection map display
F3	IGN	Ignition map display
F4	GLOBAL	Global parameters
F5	LOGG	Start recording log file
F6	F-UP	Fuel up. This works only while the engine is running. The fuel is incremented at the indicated engine operating point.
F7	F-DOWN	Fuel down. As above. Decreases the fuel.
F8	I-UP	Ignition up. As above. Increases (advances) the ignition.
F9	I-DOWN	Ignition down. As above. Decreases (retards) the ignition.
F10	QUIT	Same as pressing ESC. Exits the software

The above functions are available on all maps, except the injection (F2)!

#### 3.1 FUEL MAP (F1)

The throttle (8) and RPM (16) steps result in 128 values. If not needed, make all values zero!

```
SMART TUNER UNI(5): UNKNOWN COMPANY TESTING           WWW.PERFECTPOWER.COM
Lib: This is the library description. Set it with LI text (64)!
Map: This map description can be set with the MI (text) command      dds
```

#### Analog deflection (%)

AnaDefl:	%	4	17	31	45	58	72	85	99	FUEL
Rpm:		0	0	0	0	0	0	0	0	8027
Input #1:	V	0	0	0	0	0	0	0	0	7512
#2:	V	0	0	0	0	0	0	0	0	7017
Output#1:	V	0	0	0	0	0	0	0	0	6547
		0	0	0	0	0	0	0	0	6041
		0	0	0	0	0	0	0	0	5554
Fuelmod1:		0	0	0	0	0	0	0	0	5051
Inject:		0	0	0	0	0	0	0	0	4560
Ignmod:		0	0	0	0	0	0	0	0	4069
		0	0	0	0	0	0	0	0	3573
No Tune:		0	0	0	0	0	0	0	0	3076
Mode bad:		0	0	0	0	0	0	0	0	2581
RPM bad:		0	0	0	0	0	0	0	0	2085
Ign bad:		0	0	0	0	0	0	0	0	1590
StoreSel:		0	0	0	0	0	0	0	0	1095
Version:	0	0	0	0	0	0	0	0	0	600 RPM

Error:

The map is identified on the right hand side. The left-hand side of the screen displays the data from the UNI 5-xxx hardware.

### 3.2 COMMON DISPLAY

All units have a common display area on the left side of the screen.

<b>AnaDefl</b>	:	Analog deflection in percent. This is a measurement of the actual input.
<b>RPM</b>	:	The RPM as measured by the UNI5 unit
<b>Input # 1</b>	:	The analog input voltage, which is used for fuel tuning.
<b>Input # 2</b>	:	The oxygen sensor input. Only for display.
<b>Output # 1</b>	:	The analog output voltage, resulting from the input.
<b>Fuel Mod</b>	:	Fuel modifier, a ZERO means NO modification. This is the value, which is used from the fuel map.
<b>Inject</b>	:	The extra injector output drive from the INJECT map.
<b>Ign. Mod</b>	:	Ignition modifier. The ignition map value, which is used at present. A ZERO means NO modification.
<b>No Tune</b>	:	Shows that the SMT5 can't be tuned.
<b>Mode bad</b>	:	The operating mode is bad. Reload the library.
<b>RPM bad</b>	:	The received RPM can't be processed. It is too high or too low.
<b>Ign. bad</b>	:	The ignition calculation has resulted in an overflow. Check your ignition map!
<b>StoreSel</b>	:	The map selected (A or B)
<b>Version</b>	:	The SMT5 software version

### 3.3 INJECTION MAP (F2)

It shows the same number and layout as the fuel map:

```

SMART TUNER UNI (5): UNKNOWN COMPANY TESTING          WWW.PERFECTPOWER.COM
Lib: This is the library description. Set it with LI text (64)!
Map: This map description can be set with the MI (text) command      dds

                                Analog deflection (%)
AnaDefl:    %      4      17      31      45      58      72      85      99      INJECT
  Rpm:      0      0      0      0      0      0      0      0      0      8027
Input #1:   V      0      0      0      0      0      0      0      0      7512
  #2:      V      0      0      0      0      0      0      0      0      7017
Output#1:   V      0      0      0      0      0      0      0      0      6547
                                0      0      0      0      0      0      0      0      0      6041
                                0      0      0      0      0      0      0      0      0      5554
Fuelmod1:   0      0      0      0      0      0      0      0      0      5051
  Inject:   0      0      0      0      0      0      0      0      0      4560
  Ignmod:   0      0      0      0      0      0      0      0      0      4069
                                0      0      0      0      0      0      0      0      0      3573
                                0      0      0      0      0      0      0      0      0      3076
  Mode bad: 0      0      0      0      0      0      0      0      0      2581
  RPM bad:  0      0      0      0      0      0      0      0      0      2085
  Ign bad:  0      0      0      0      0      0      0      0      0      1590
  StoreSel: 0      0      0      0      0      0      0      0      0      1095
  Version:  0      0      0      0      0      0      0      0      0      600
Error:                                           RPM
  
```

### 3.4 IGNITION (F3)

The analog deflection (8) and RPM (16) steps result in 128 ignition modification sites. If not needed make all values zero! (CI command)

```

SMART TUNER UNI(5): UNKNOWN COMPANY TESTING          WWW.PERFECTPOWER.COM
Lib: This is the library description. Set it with LI text(64)!
Map: This map description can be set with the MI (text) command      dds

                                Analog deflection (%)
AnaDefl:    %      4      17      31      45      58      72      85      99      IGNITION
  Rpm:      0      0      0      0      0      0      0      0      0      8027
Input #1:   V      0      0      0      0      0      0      0      0      7512
  #2:      V      0      0      0      0      0      0      0      0      7017
Output#1:   V      0      0      0      0      0      0      0      0      6547
                                0      0      0      0      0      0      0      0      0      6041
                                0      0      0      0      0      0      0      0      0      5554
Fuelmod1:   0      0      0      0      0      0      0      0      0      5051
  Inject:   0      0      0      0      0      0      0      0      0      4560
  Ignmod:   0      0      0      0      0      0      0      0      0      4069
                                0      0      0      0      0      0      0      0      0      3573
                                0      0      0      0      0      0      0      0      0      3076
  Mode bad: 0      0      0      0      0      0      0      0      0      2581
  RPM bad:  0      0      0      0      0      0      0      0      0      2085
  Ign bad:  0      0      0      0      0      0      0      0      0      1590
  StoreSel: 0      0      0      0      0      0      0      0      0      1095
  Version:  0      0      0      0      0      0      0      0      0      600
Error:                                           RPM
  
```

Again, the SMT5 data are displayed on the left-hand side.

Only positive numbers can be entered in the range 0-255, which results in opening the external injector (drive) for  $n \cdot 0.1$  ms.

### 3.5 GLOBAL (F4) SCREEN

SMART TUNER UNI(5): UNKNOWN COMPANY TESTING

WWW.PERFECTPOWER.COM

Lib: This is the library description. Set it with LI text(64)!

Map: This map description can be set with the MI (text) command dds

#### GLOBAL PARAMETERS

AnaDefl:	%	Road speed diviation:	0	Operations mode:	1
Rpm:		Road speed limit:	0	System bit config:	2
Input #1:	V		: 0	Cylinders:	4
#2:	V	Fuel zero:	0	Teeth per revolution:	2
Output#1:	V		: 0	Teeth per firing:	1
			: 0	Ign adv limit(+):	10
Fuelmod1:			: 0	Ign ret limit(-):	-10
Inject:			: 0		: 0
Ignmod:			: 0		
		Fuel upper limit:	9.99V		
		Fuel lower limit:	0.00V		
Mode bad:			: 0		
RPM bad:			: 0		
Ign bad:		Max RPM recorded:	0		
StoreSel:		Fuel freq limit:	9 5 KHz		
Version:	0				

Error: program = 11??

On the left-hand side the UNI5 data are displayed.

The following map details may not be accessible to you: See [Protection](#).



## 3.6 GLOBAL MAP DETAILS

### **Cylinders:**

3,4,5,6,8,10 cylinders are allowed. Note that change in cylinders also changes the RPM scale.

### **Fuel zero calibration:**

A number, normally 0, which must be changed up or down so that the fuel input equals the fuel output. This is done by connecting a voltmeter BETWEEN the terminals and changing the number until the voltmeter reads zero.

### **Operations mode:**

A number, which specifies the operating mode for the SMT5 only. See SMT5 technical manual.

### **Teeth per turn:**

Enter the amount of teeth per revolution, e.g. 60. **Note: The number must be even divisible by 4!**

### **Road speed deviation:**

The number typed in specifies the percent deviation between the input and output signal (frequency!). A -10% entry results in a 10% slower output signal than the input.

### **Teeth per firing:**

The number of input pulses (teeth) per firing. It influences the RPM indication.

### **Fuel upper/lower limit:**

The fuel output can be limited between the specified voltage settings. The range is limited from 0.0 to 10 volts.

### **Upper frequency limit:**

The output frequency can be limited to this value.

### **Ignition limit:**

The amount by which the ignition can be retarded or advanced. Advance requires a positive limit, retard is specified with a negative limit.

### **Road Speed limit:**

A number, which restricts the speed governor, output frequency. The lower the number, the higher the speed is. The speed limit can be set by driving the car close to the ECU road speed governor limit and pressing SL.

### **Max. Rpm experienced:**

The highest rpm encountered.

#### **4. CONNECTING TO THE SMT5**

You need a UNI 5 tune cable, which is available from your distributor.

In order to work (initially) with the SMT5, connect power to it.

BLACK WIRE Ground, or NEGATIVE (-) of battery  
RED WIRE +12 Volt, POSITIVE (+) if battery

Connect the tune cable and start the SMT5 program. You should see the top left hand side of the screen fill with numbers (may be zeros). If this does not happen, then the COMMS PORT must be changed. That is to say, you have connected the cable to port #2, but the software "talks" on port #1 (or vice versa). You can plug the cable in to the other port (if you have one) or you can tell the software to select the other port. Ask your PC laptop supplier if the internal mouse is installed on port #1, and let him solve a port conflict problem.

To change the software port: open the UTUNE.CFG file with a text editor and change the port number on the file.

**DO NOT CHANGE ANYTHING BEFORE THIS! IT RENDERS THE FILE USELESS AND REQUIRES RE-INSTALLATION.**

## 5. TUNING COMMANDS

Start the program	UTUNE
Exit the program	F10, or ESC
Loading a map from the hard disk	LF name
Saving a map to the hard disk	SF name

**Note1: do not use any file extension!**

**Note2: Do not use any disk directives!**

Downloading a map to the SMT5	DL (or PG)
*Uploading a map from the SMT5	UP
*Tuning a column (pointed at by cursor)	TC fact (0.1-3)
Reset the SMT5	XX
*Set the RPM scale start	RS nnnn (no less than 600rpm)
*Set the RPM scale end	RE nnnn
*Set the analog deflection scale start	AS %
*Set the analog deflection scale end	AE %
Set column to value	SC val
Set speed governor maximum	SS nnn
Set the SMT5 to map A	MA
Set the SMT5 to map B	MB
Set map indication	MI (text) 64
Load library file	LL name
*Set library identification	LI (text) 64

\* See [Protection](#)

## 6. SETTING THE ANALOG DEFLECTION (CALIBRATION)

This function may not work on your SMT5, if you are having a pre-programmed unit: See [Protection](#).

The analog deflection input (brown wire) has a range of 0 to 5V. It can be connected to any voltage source (DC), which changes with the engine load. The change can be less than 5 volts, and the unit can be calibrated to the input. If the input is larger than 5 volts, then a suitable resistor divider must be used.

### 6.1 ANALOG DEFLECTION CALIBRATION

This procedure is required to link the analog deflection detection to the cursor row movement. The analog voltage for this movement may come from:

ANALOG AIRFLOW METER  
Throttle sensor  
Other

The voltage is normally LOAD dependant, but anything can be used.

1. Put the engine to IDLE, or no LOAD, or throttle closed and read of the percentage displayed under: **AnaDefl: ss%**
2. Type in AS ss, where ss is the number just read from the display.
3. Put the engine under full load, or throttle wide open, and read the number displayed under: **Ana.Defl:ee%**
4. Type AE ee, where ee is the number just read from the display.
5. This completes the calibration.
6. Obviously, you can enter other analog deflection limits to achieve the desired effect. The UNI 5 will do a linear extrapolation for the 6 points in between.
7. For un-linear analog deflection: see UTUNE WIN

## 7. SETTING THE RPM DEFLECTION (CALIBRATION)

The RPM deflection input is also the IGNITION #1 input. The input level can be set later. However, before setting the RPM deflection (scale), the number of cylinders MUST be entered in the GLOBAL screen (F3). Then decide on the minimum and maximum RPM you like to TUNE. This does not have to be the range the engine is operating in, but should be the range you like to TUNE. The DOS version assumes linear steps between the minimum and maximum points. In the WINDOWS version each point can be set individual.

Set minimum (start, bottom) RPM deflection (scale)                      RS nnnn (no less than 600rpm)  
Set Maximum (end, top) RPM deflection (scale)                         RE nnnn

If the unit is connected, then the changes are transmitted and stored in the unit. If a unit is not connected, then it is best to save the map (changes). This function may not work on the unit. See [Protection](#)



## 10. UNI MONITOR SOFTWARE MANUAL

### 10.1 INTRODUCTION

The UNI monitor software gives the SMT5 user the ability to view vital input and output signals real time all at the same time. The software does this by displaying graphs derived from data received from the unit through the comm's port of a laptop or pc.

### 10.2 GETTING STARTED

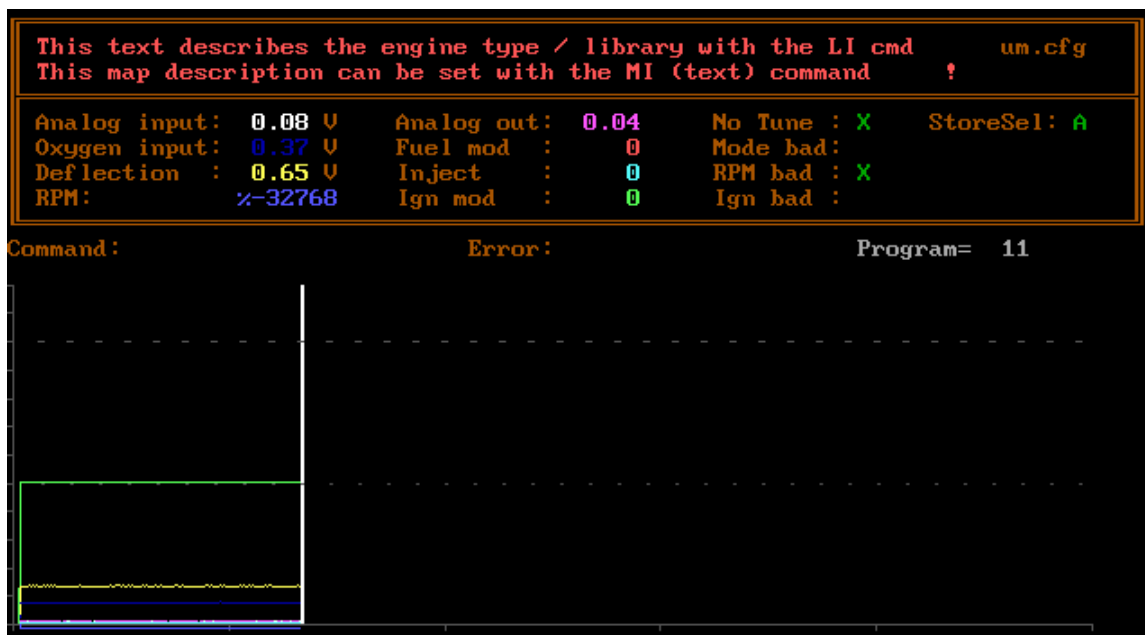
The first thing you need to do before running the UM program is connect the SMT unit under test to the comm's port of a laptop or pc. The unit must also have power in order for a signal to be read from it. The following files make up the UM software:

UM.EXE	The executable file.
UM.SCN	UM screen layout.
UM.CFG	UM configuration file.
UM.HLP	UM help file.

These files should be copied into the same directory as your UTUNE software. To start the program type:

```
UM          <ENTER>
```

Upon loading the software you should get a screen that looks similar to the following picture.



The top block on the screen shows the library and map that is currently loaded into the unit.

The next block contains all the inputs and outputs that are measured, notice that the data next to the variables are color coded to match the graphs being drawn on the screen below. The input/outputs measured by the software are:

Input/Output	Description
Analog in.	Analog input, blue wire.
Analog out.	Analog output, violet wire.
Oxygen input.	Analog oxygen reading, black/brown
Deflection.	Analog deflection, brown.
RPM.	RPM reading, yellow.
Ignition mod.	Ignition modification from map.
Fuel mod.	Fuel modification from map.
Injector mod.	Injector modification from map.

Other variables found within the second block are:

No tune:	No tune function enabled.
Mode bad:	Unit is set with incorrect UNI mode.
RPM bad:	No rpm signal detected.
Ign bad:	No IGN1 signal detected.

The software has the following keyboard commands:

F1	Enable logging
F2	Disable logging
F10	Quit, same as ESC
QU	Quit

### 10.3 CONFIGURATION

You also have the option of re-configuring the UM software by modifying the configuration file. Using a standard dos text editor to open the um.cfg file does this. Once opened you should get something that looks similar to the following.

File data	Description
0 port =1	Computer comm's port.
1 Analog input =15, 10.0	Analog input pin.
2 Oxygen input = 1, 5.0	Oxygen input reading.
3 Deflection in =14, 5.0	Analog deflection reading.
4 Analog output =13, 10.0	Analog output pin.
5 RMP = 9, 5000.0	Rpm reading.
6 Fuel mod =12, 256.0	Fuel modification from map.
7 Inject =11, 255.0	Injector modification from map.
8 Ignition mod =10, 256.0	Ignition modification from map.
9 Deflection pos =	
10 RPM position =	
11 Status =	
12 Spare =	
13 Spare =	
14 Spare =	
15 screen = 6	Box color.
16 error = 7	Error text color.
17 grating = 8	Grating color.
18 variable = 2	Color of status flags.
19 id text =12	Id text color.
20 backgr = 0	Background color.
21 End of UM.CFG	

You can modify these functions by changing the text after the equals signs but bear in mind that the positioning of the numbers and commas are set, moving them would result in that variable not functioning correctly. The very first line is the port line changing the number after the equals sign will change the comm. port number used by the software, for example: Port = 2 will result in comm. 2 being used instead of the defaulted comm. 1.

Lines 1-8 deal with the inputs/outputs being measured by the software. The number before the comma represents the color of the measured variable as well as its graph's color, the following table shows which number represents which color.

#### Colours

0 black	4 red	8 gray	12 light red
1 blue	5 magenta	9 light blue	13 light magenta
2 green	6 brown	10 light green	14 yellow
3 cyan	7 white	11 light cyan	15 high-intensity white.

The variable after the comma represents the scale of the variable, this number is the largest number the drawn graph will go to for example in line 1 you have the line:

```
1 Analog input =15, 10
```



The 10 will mean that the graph will display all values up to 10 volts; any value above this will result in the graph flat lining at the 10 volt level. Modifying the scale of the graph makes it more readable. Another thing to note is that not all measured variables are in voltage, the fuel, ignition and injector mods represent modification numbers obtained from the unit's maps. Rpm is measure in revolutions per second.

Lines 15 – 20 are cosmetic changes you can make to the display, such as grid color, screen color and background color, you can use the same color table here that was used in the color of the graphs.

## 10.4 DATA LOGGING

One of the extra features of this software is the data logging function, this allows the user to record data and save it to a file so that it can be viewed later. You can start the logging process by pressing the F1 button, the program will then start logging the data, when you press F2 it will stop logging and save the data to a file. Logging is saved to a file called UNI5.XXX, the extension XXX represents a number between 000 and 999, and the program will automatically increment this extension thus allowing for more than one log file. The UM software will display what the log file has been saved as, remember this name for when you want to read the file later.

The log file looks like this:

PERFECT POWER: UNI5 data log: 09-02-2001 11:32:44  
File name: UNI5.000

Time	rpm	A-defl	AIN	F.mod	AOUT	OXYIN	IGN	APOS	RPOS	INJ
11:32:44,	2965,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:44,	2965,	1.73,	0.08,	0.00,	0.08,	0.35,	0,	3,	5,	0
11:32:45,	2964,	1.73,	0.04,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:45,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:45,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:46,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:46,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:46,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:46,	2964,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:47,	2964,	1.73,	0.08,	0.00,	0.04,	0.37,	0,	3,	5,	0
11:32:47,	2964,	1.73,	0.04,	0.00,	0.04,	0.37,	0,	3,	5,	0
11:32:47,	2965,	1.73,	0.08,	0.00,	0.08,	0.35,	0,	3,	5,	0
11:32:48,	2965,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:48,	2965,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0
11:32:48,	2965,	1.73,	0.08,	0.00,	0.08,	0.37,	0,	3,	5,	0

End

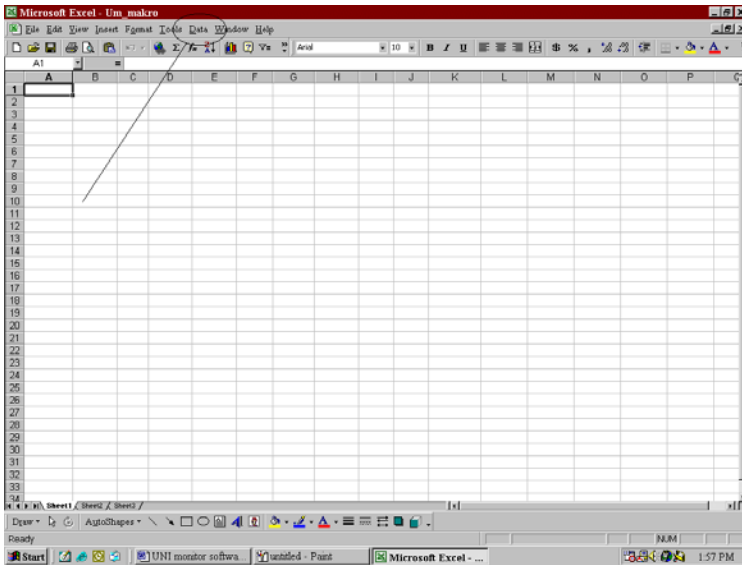
## 10.5 CONVERTING DATA FOR USE IN EXCEL.

The first step in this process is to extract the data from the file into excel.

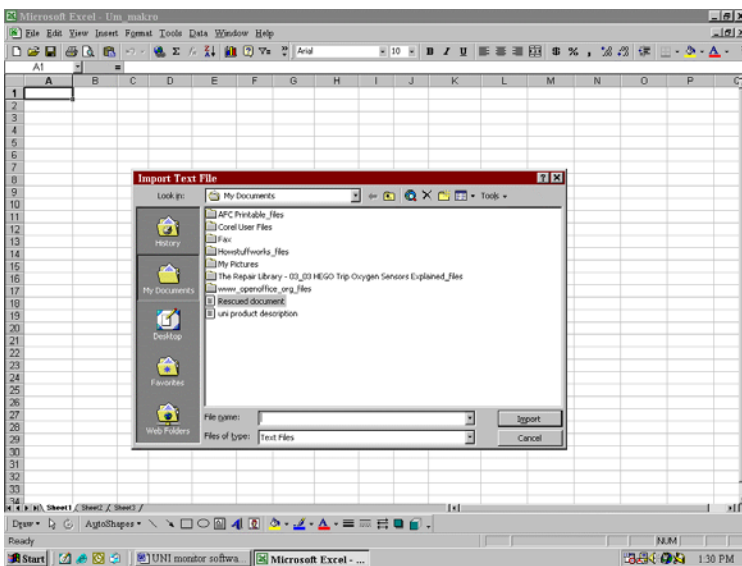
### Step 1:

Open the excel file Um\_makro.xls included in the DOS Monitor software, the screen will then ask you if you want to enable macro's, click on **Enable macro's** .

Select **Data** from the upper menu on the excel screen (highlighted in the picture on the next page).

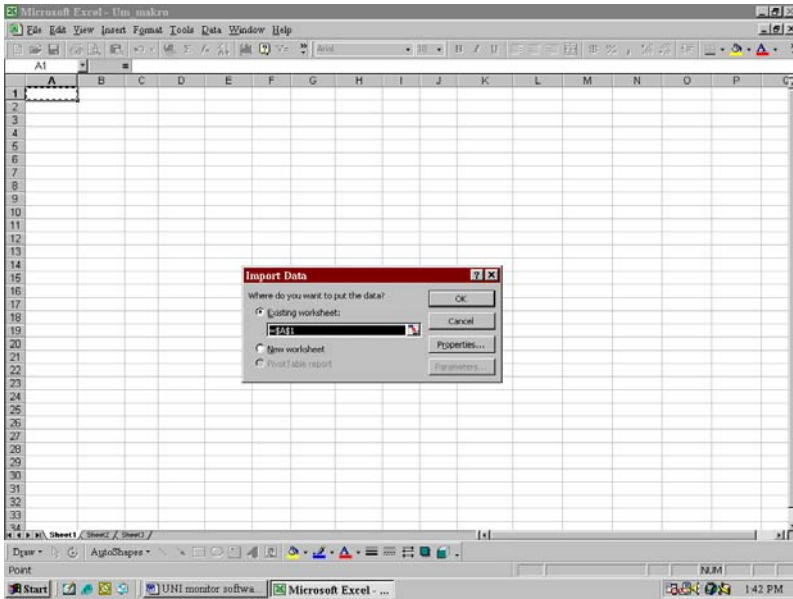


Then select **Get external data**, click on **Import text file** and you should end up with the following screen.

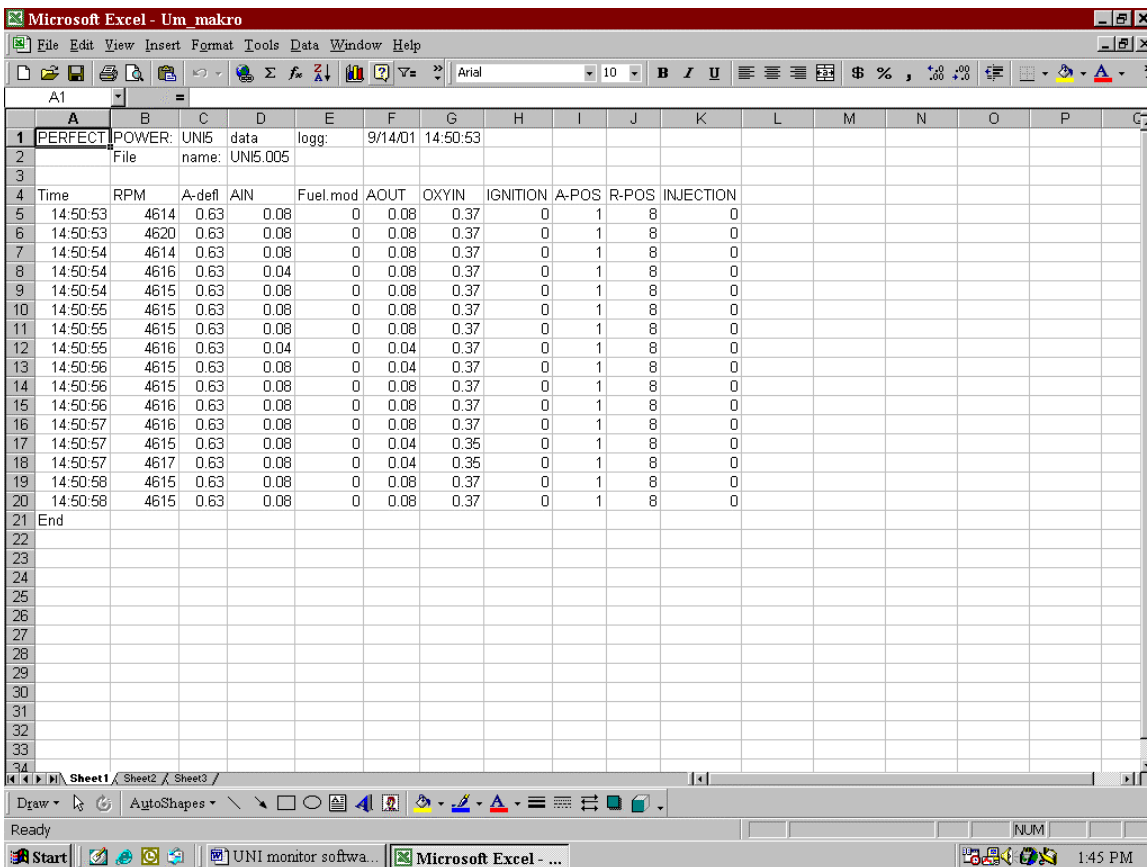


Use the menu to find the log file you want to load. Change the **Files of** type found at the bottom of the menu to "all files". Then go to the directory which has your UM software. Look for files named UNI5.XXX where XXX denotes an extension with values between 000 and 999. Select the file you want to load and click on **Import**. You should then get the following menu.





You should then end up with a screen that looks similar to this.



## Step 2:

This file contains a macro, which will automate the rest of the process, press CTRL+SHIFT+G to plot the graph and you should end up with a graph, which looks similar to this.

