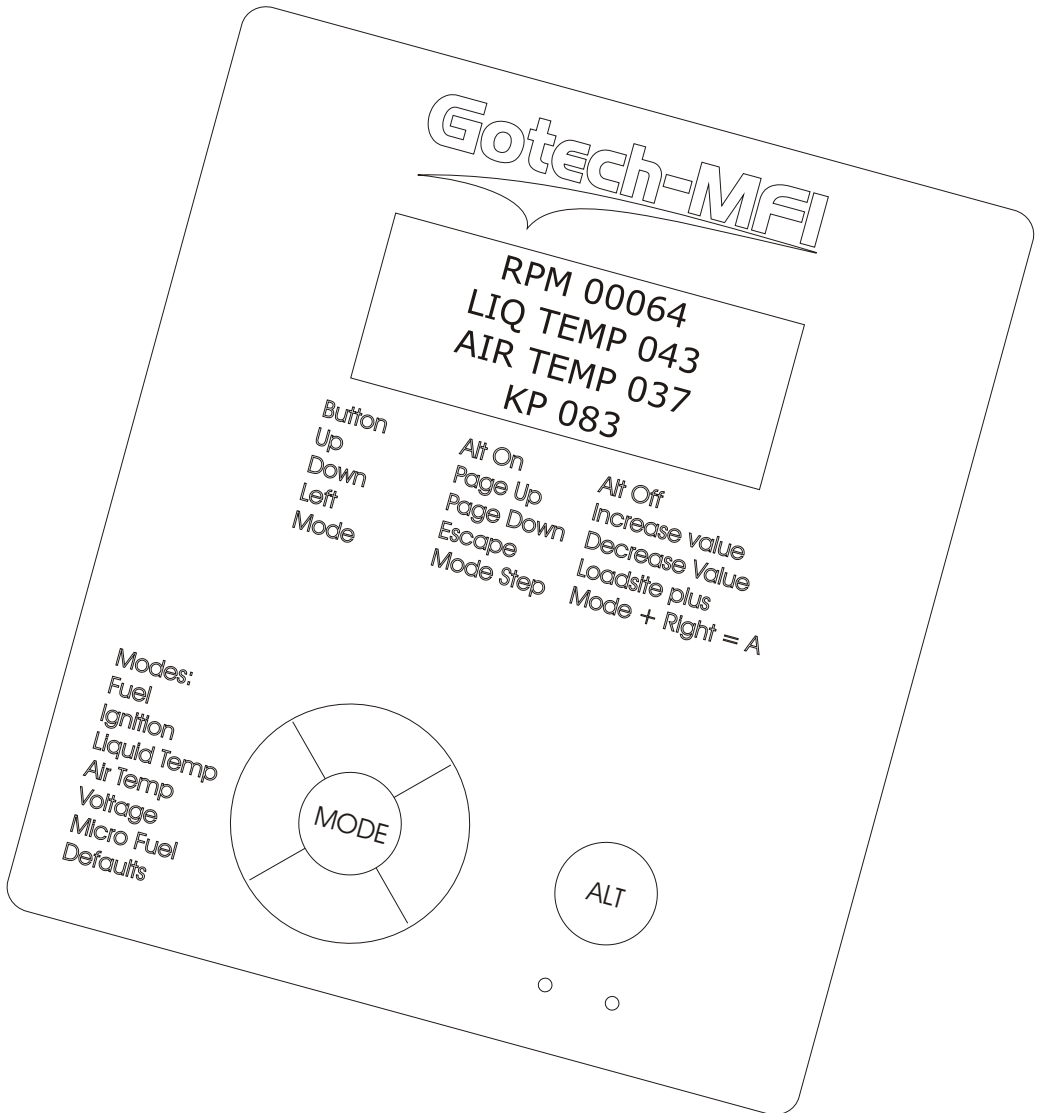


# Gotech-MFI

## Handheld Control Unit

UNIT 8, JET PARK MINI UNITS, 58 GRANIET STREET, JET PARK, JOHANNESBURG



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## Gotech handheld tuner Introduction:

Thank you for purchasing a Gotech handheld control unit. We hope that this unit will give you years of trouble free operation and hours of fun. The handheld control unit can be dash mounted or used to manage numerous vehicles.

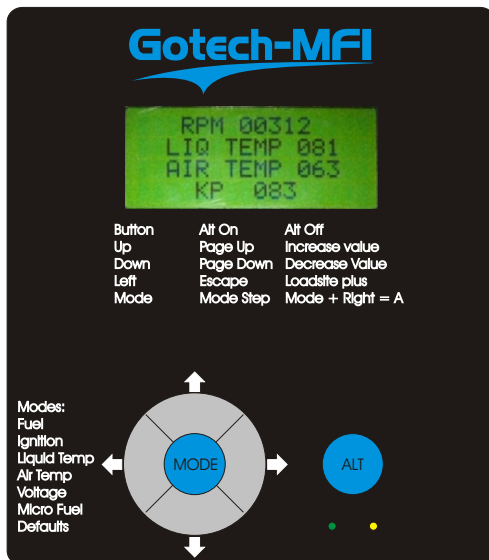
Please read this manual prior to using the Gotech handheld unit. Incorrect settings can damage the Gotech ecu and the vehicle. It is recommended to read the Gotech ecu manual before attempting anything with the handheld control unit.

If you find anything unclear in this manual please feel free to contact us with any questions concerning this unit.

The Gotech handheld controller is a purpose built unit specifically for the Gotech MFI and MFI Pro ecu's. This handheld control unit can be used on all v4 and downward ecu versions.

The keypad layout is quite basic and should be self explanatory. There is in total six buttons:

- ← Left
- Right
- ↑ Up
- ↓ Down
- ⊙ (MODE) Mode
- ⊙ (ALT) Alt



### Default Screen:

Line 1	RPM 00064
Line 2	LIQ TEMP 043
Line 3	AIR TEMP 037
Line 4	KP 083

Line 1 RPM = Current revolutions per minute  
Line 2 LIQ TEMP = Current liquid temperature  
Line 3 AIR TEMP = Current Air temperature  
Line 4 KP = Current map sensor reading

When the handheld tuner is powered up the default screen will be shown as soon as the Gotech ecu is connected. This screen will also be shown if the keypad has been locked.

### Locking and Un-Locking the keypad:

By pressing MODE and ALT at the same time the keypad will be locked and unlocked. Shortly after the keypad is unlocked the mapping screen will be displayed. When the keypad is then locked again “KEYPAD LOCKED” will briefly be displayed and the default screen will appear again.

Line 1	KEYPAD ACTIVE
Line 2	LIQ TEMP 043
Line 3	AIR TEMP 037
Line 4	KP 083

**The fuelling screen:**

Line 1	FL500*00500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

**On screen display:**

**Line 1:**

FL = Fuel maps with current increment (500rpm increment current)  
\* = Current rpm increment of tuning, 0 - 500rpm tuning active  
LS = Current active load site

**Line 2**

Site = Current load site of tuning.  
\*VL\* = Current load site of tuning injector time.

**Line 3**

F = Total current injector time with correction factors included.  
P = Current Pot Setting

**Line 4**

RPM = Current engine rpm  
KP = Current map sensor reading

### General Tuning In The Fuelling Screen:

With ALT off pressing the left and right buttons will browse between the load sites in the current RPM increment.

Line 1	FL500*00500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

ALT Off - Press right button.

Line 1	FL500*00500 LS19
Line 2	SITE02 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

To change the injector time move to the required load site with the right or left arrow button. The ALT button must still remain off. When the required load site is selected press the up button to increase the injector time and the down button to decrease the injector time.

ALT Off - Press up button

Line 1	FL500*00500 LS19
Line 2	SITE02 *VL*01.50
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

**General Tuning In The Fuelling Screen Continued:  
Moving to the next rpm range:**

To move between RPM ranges the ALT function must be on. To move to the next RPM range press the up button and to move to the previous RPM range press the down button.

Line 1	FL500*01000 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

ALT On - Press UP (See line 1)

Line 1	FL500*01500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

**All Ranges On and Off:**

The All ranges up the same function copies the injector time of the load site that is adjusted to all the RPM ranges upwards on the same load site. To switch all ranges on and off ALT must be off, the MODE and right button should be pressed at the same time for activation and de-activation. An A will appear next to the KP on line 4 when all ranges up is activated.

Line 1	FL500*01500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KPA083

### Switching Between The Ignition And Fuel Maps:

To switch between the ignition and fuel maps the ALT function must be switched on, then press the right button.

Line 1	FL500*01500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

ALT On - Press right button

Line 1	IG500*01500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

So switch back to the fuel maps press the right button again with ALT on.

## Ignition Management Screens:

The procedure to use the ignition management screens is very much the same as the fuelling screen.

Line 1	IG500*01500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

### Line 1:

- IG = Ignition maps with current increment (500rpm increment current)
- \* = Current rpm increment of tuning, 0 - 500rpm tuning active
- LS = Current active load site

### Line 2

- Site = Current load site of tuning.
- \*VL\* = Current load site of tuning ignition angle..

### Line 3

- IG = Current Active Ignition Angle
- P = Current Pot Setting

### Line 4

- RPM = Current engine rpm
- KP = Current map sensor reading

## General Tuning In The Ignition Screen:

With ALT off pressing the left and right buttons will browse between the load sites in the current RPM increment.

Line 1	IG500*01500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

ALT Off - Press right button.

Line 1	IG500*01500 LS19
Line 2	SITE02 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

To change the ignition angle move to the required load site with the right or left arrow button. The ALT button must still remain off. When the required load site is selected press the up button to increase the ignition angle and the down button to decrease the ignition angle.

ALT Off - Press up button

Line 1	IG500*01500 LS19
Line 2	SITE02 *VL* 005
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

**General Tuning In The Ignition Screen Continued:  
Moving to the next rpm range:**

To move between RPM ranges the ALT function must be on. To move to the next RPM range press the up button and to move to the previous RPM range press the down button.

Line 1	IG500*01500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

ALT On - Press UP (See line 1)

Line 1	IG500*02000 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

**All Ranges On and Off:**

The All ranges up the same function copies the ignition angle of the load site that is adjusted to all the RPM ranges upwards on the same load site. To switch all ranges on and off ALT must be off, the MODE and right button should be pressed at the same time for activation and de-activation. An A will appear next to the KP on line 4 when all ranges up is activated.

Line 1	IG500*02000 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KPA083

## General Tuning In The Ignition Screen Continued: Changing The Ignition Factor:

To change the ignition factor the active load site of tuning in the ignition screen must be moved to load site 1. ALT Off Press left button till load site 1 is reached.

Line 1	IG500*01500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

Then move the active RPM range of tuning to 0-500 RPM in the ignition screen. ALT On, press the down button till 0-500 RPM is reached.

Line 1	IG500*00500 LS19
Line 2	SITE01 *VL* 004
Line 3	DC00% IG012 P 3.0
Line 4	RPM00313 KP 083

The ignition factor screen can now be accessed by moving to the ignition factor screen as indicated on the next page. When the ignition factor screen is active, the up and down arrow buttons are used to change the ignition factor.

Line 1	GEN-LT 072AT -008
Line 2	INJ02.204 TP 100
Line 3	DCI 00% DCF B = 0
Line 4	IFACT -014 IGN004

## Changing Between Modes:

To switch between the mode screens the ALT function must be on. Press the MODE button to switch to the next mode screen. The following screens can be found in the modes:

1. Liquid temperature correction
2. Air temperature correction
3. Battery voltage correction
4. Micro staged fuel maps
5. Default settings
6. Ignition factor

Line 1	FL500*01500 LS19
Line 2	SITE01 *VL*01.45
Line 3	F06.554G** P3.0
Line 4	RPM00313 KP 083

ALT On - Press Mode

Line 1	LIQ TEMP 066LS19
Line 2	SITE*032C*VL03%
Line 3	F06.554G012 P3.0
Line 4	RPM00313 KP 083

ALT On - Press Mode

Line 1	AIR TEMP LS032
Line 2	SITE*038C*VL00%
Line 3	F06.554G012 P3.0
Line 4	RPM00313 KP 083

### Changing Between Modes Continued:

ALT On - Press Mode

Line 1	VOLTAGE 08.5v
Line 2	SITE*00.8VL 02.1
Line 3	F06.554G012 P3.0
Line 4	RPM00313 KP 083

ALT On - Press Mode

Line 1	MICRO FUEL LS12
Line 2	SITE25 *VL*0.058
Line 3	F04.988G** P 2.4
Line 4	RPM00069 KP 083

ALT On - Press Mode

Line 1	DEFAULTS C/SET4
Line 2	NO OF CYL 004
Line 3	DC00% 2G012P 9.9
Line 4	RPM00736 KP 083

ALT On - Press Mode

Line 1	GEN-LT 072AT -008
Line 2	INJ02.204 TP 100
Line 3	DCI 00% DCF B = 0
Line 4	IFACT -014 IGN004

## Liquid Temperature Correction:

Line 1	LIQ TEMP 066LS19
Line 2	SITE*032C*VL03%
Line 3	F06.554G012 P3.0
Line 4	RPM00313 KP 083

### Line 1:

LIQ TEMP = Current Engine Liquid Temp  
LS = Current active load site

### Line 2

Site = Current load site of tuning.  
\*VL\* = Current load site of tuning enrichment percentage.

### Line 3

F = Current total fuelling MS.  
P = Current Pot Setting

### Line 4

RPM = Current engine rpm  
KP = Current map sensor reading

## General Tuning In the Liquid Temp Screen:

With ALT Off press the right button to move to the colder load sites and the left button to move to the hotter load sites. The same goes for enrichment, with ALT off press the up button to increase the enrichment percentage and the down button to decrease the enrichment percentage.

### Air Temperature Correction:

Line 1	AIR TEMP LS032
Line 2	SITE*038C*VL00%
Line 3	F06.554G012 P3.0
Line 4	RPM00313 KP 083

#### Line 1:

AIR TEMP = Current Air Temp  
LS = Current active load site

#### Line 2

Site = Current load site of tuning.  
\*VL\* = Current load site of tuning enrichment percentage.

#### Line 3

F = Current total fuelling MS.  
P = Current Pot Setting

#### Line 4

RPM = Current engine rpm  
KP = Current map sensor reading

### General Tuning In the AirTemp Screen:

With ALT Off press the right button to move to the colder load sites and the left button to move to the hotter load sites. The same goes for enrichment, with ALT off press the up button to increase the enrichment percentage and the down button to decrease the enrichment percentage.

### Battery Voltage Correction:

Line 1	VOLTAGE	12.1v
Line 2	SITE*00.8VL	02.1
Line 3	F06.554G012	P3.0
Line 4	RPM00313	KP 083

#### Line 1:

VOLTAGE = Current battery voltage

#### Line 2

Site = Current load site of tuning.

\*VL\* = Current load site of tuning enrichment percentage.

#### Line 3

F = Current total fuelling MS.

P = Current Pot Setting

#### Line 4

RPM = Current engine rpm

KP = Current map sensor reading

### General Tuning In the Battery Voltage Screen:

With ALT Off press the right button to move to the higher voltage sites and the left button to move to the lower voltage load sites. The same goes for enrichment, with ALT off press the up button to increase the enrichment percentage and the down button to decrease the enrichment percentage.

**Micro Staged Fuel Map:**

Line 1	MICRO FUEL LS12
Line 2	SITE25 *VL*0.058
Line 3	F04.988G** P 2.4
Line 4	RPM00069 KP 083

**Line 1:**

LS = Current Active Lod Site

**Line 2**

Site = Current load site of tuning.

\*VL\* = Current load site of tuning enrichment MS.

**Line 3**

F = Current total fuelling MS.

P = Current Pot Setting

**Line 4**

RPM = Current engine rpm

KP = Current map sensor reading

**General Tuning In the Micro Staged Fuel Screen:**

With ALT Off press the right button to move to the next load site and the left button to move to the previous load sites. The same goes for enrichment, with ALT off press the up button to increase the enrichment MS and the down button to decrease the enrichment MS.

**Defaults:**

**Available options In The Defaults Screen (v4 chipset):**

NO OF CYL	=	Number of cylinders
IGN DIVIDE	=	Ignition divide
CL CHG TIM	=	Coil charge time
MODE	=	Engine mode
RPM LIMIT	=	RPM limit
OP ON RPM	=	Optional Output On RPM
OPOFF RPM	=	Optional Output Off RPM
AFR PRESET	=	Air / Fuel ratio mv preset
THROT TYPE	=	Throttle input signal type
LC RETARD	=	Launch retard
TRIG TOOTH	=	Trigger tooth
MF MODE	=	Micro fueller mode
LOAD START	=	Load start
LOAD INCR	=	Load increment
ACC SEN%	=	Accelerator Sensitivity Percentage
ACC DVDT	=	Accelerator DVDT
ALT CORR	=	Altitude correction
LC INIT TIM	=	Launch Init Time
COLD DEBU	=	Cold Debur
LMB RMP IN	=	Lambda ramp interval
LMB LIMIT	=	Lambda limit
LMB OFF LD	=	Lambda off load
LMB RPM	=	Lambda RPM
INV TRIGGER	=	Invert trigger
LC DRDT	=	Launch DRDT
MAX BOOST	=	Maximum boost level
TRL SPLIT	=	Rotary trail degrees
LC RPM LIM	=	Launch RPM limit
DR/EX FIRE	=	Direct or external firing of ignition coil
SOF RPM LC	=	Soft RPM Launch
OPOUT RPM	=	Fuel pump or shift light RPM on
NOISE FILT	=	Noice filter

**Defaults Continued:  
General Tuning In The Defaults Screen:**

Line 1	DEFAULTS C/SET4
Line 2	NO OF CYL 004
Line 3	DC00% 2G012P 9.9
Line 4	RPM00736 KP 083

With the ALT function Off the left and right button is used to scroll between the options and the up and down buttons to change the values.

**NO OF CYL:**

Number of cylinders - This setting should be the same as the number of cylinders on the engine, except on the five cylinder Audi and v8 Lexus engines.

**IGN DIVIDE:**

Ignition Divide - The ignition divide is used to divide the input signals. With the ignition divide half the about of the number of cylinders the ecu will receive two signals before firing the injectors once. Suggested value on ignition divide is half of the cylinders.

**CL CHG TIM:**

Coil charge time - This is the amount of Ms that the coil is going to be charged when running internal fire (direct fire - no tp100 used). Recommended value 2.204 MS.

**MODE:**

This setting is used to configure your input signal.

Mode 0 - Single coil with distributor, no tdc required.

Mode 1 - Single coil with distributor, tdc required.

Mode 2 - Multi coils, trigger per event, tdc required

Mode 3 - Rotary engines 24 teeth with tdc required

Mode 4 - Multi coils, 60 -2 trigger input, no tdc input

Mode 5 - Signle coil, 60 -2 trigger input, no tdc required

## **Defaults Continued: General Tuning In The Defaults Screen:**

### **RPM LIMIT:**

Rev limiter - The RPM limiter is fully configurable, the soft RPM limiter will start approx 200RPM before the RPM limiter as set.

### **OPON / OFF RPM:**

Optional output on and off rpm - The optional output will be switched on at the on RPM and switched off again on the off RPM. If the optional output is not used it is recommended to set these values to 15337

### **AFR PRESET:**

Air / Fuel ratio preset - This is the MV to which the ecu should try and set the fuel maps.

### **THROT TYPE:**

Throttle type - This is the input for the throttle

0 - Map sensor primary input

1 - TPS primary input

2- TPS / Map mix

3 - TPS under vacuum and MAP under boost

Always use MAP sensor only as primary input for turbo or supercharged vehicles.

### **LC RETARD:**

Launch retard - This is the amount of ignition angle degrees that the timing will be retarded when the launch control is activated. If the launch control is not used it is recommended to set this value to 001.

### **TRIG TOOTH:**

Trigger tooth - The trigger tooth value is set here, this function is used for 60 -2 trigger wheels to match the timing.

## **Defaults Continued: General Tuning In The Defaults Screen:**

### **MF MODE:**

Micro fueller mode

Mode 1 - Pulse every time as per the injectors

Mode 2 - Pulse every second time the injectors pulse.

### **LOAD START / LOAD INCREMENT**

These two settings are used to calibrate your map so that all 32 load sites are used. Common settings used:

1. Load start 0, load increment 3 - Normally aspirated vehicle running map sensor only.
2. Load start 0, load increment 6 - Turbo charged vehicle running map sensor only up to 1 bar boost
3. Load start 0, load increment 8 - Turbo charged vehicle running map sensor only up to 1,5 bar boost.

### **ACC SEN% / ACC DVDT**

These two settings are used for the accelerator pumps. Recommended values:

ACC SEN%: 14

ACC DVDT: 2

### **ALT CORR:**

Altitude correction - This function is used to enrich the vehicle when the atmospheric pressure rises. For this function to work properly the vehicle must be running TPS as primary input.

### **LC INIT TIM:**

Launch control init time - The launch init time is used after the launch control has been deactivated after use. The amount of time configured will be used then to set the RPM limiter back and advance the timing again.

### **COLD DEBUR:**

Cold debur - The cold debur enriches the engine for a couple of seconds for startup.

## **Defaults Continued:** **General Tuning In The Defaults Screen:**

### **LMB RMP IN:**

Lambda ramp interval - Rate at which the Lambda corrects up and down. Increased value will slow down correction.

### **LMB LIMIT:**

Lambda limit - This is the highest load site that will be used for the closed loop lambda control

### **LMB OFF LD:**

Lambda off - Maximum load site of adjustment

### **LAMBDA RPM:**

Lambda RPM - This is the highest RPM for which the lambda will be used.

### **INV TRIGG:**

Invert trigger - This function is used to change the trigger method.

0 - Falling trigger

1 - Rising trigger

The ecu must be activated for this function to work.

### **LC DRDT:**

Launch revamp time - Elapsed time for timing to ramp back to ignition map values after launch control has been deactivated.

### **MAX BOOST:**

Maximum boost - Always keep this value to 255 as this feature is not available yet.

### **TRL SPLIT:**

Rotary trail split - Rotary trailing spark degrees.

### **LC RPM LIM:**

Launch RPM limit - When the launch control is activated this RPM limiter will

## **Defaults Continued: General Tuning In The Defaults Screen:**

### **DR/EX FIRE:**

Direct / external firing of coils - This function enables the ignition coil(s) be to fired directly from the ecu without the use of external coil drivers.

Internal fire - No ignition modules used to fire coil(s)

External fire - Ignition modules required to fire ignition coils

Please note that this setting should be set according to the engine, a wrong setting will cause severe damage to the ecu and the ignition coil(s)

### **SOF RPMLC:**

Soft RPM launch - When the launch control is activated the launch soft RPM limiter will be used.

### **OPOUT RPM:**

Fuel pump / shift light output - This setting controls the shift light / fuel pump output. When the output is used to switch a fuel pump the value must be set to -400 on a four cylinder. (This figure changes as the engine number of cylinders changes)

### **NOISE FILT:**

Noise filter - This setting is used to limit the incoming signal. Recommended setting for vehicles running fuel and ignition is 1.