Product Catalogue

November 2008

1 INTRODUCTION

Perfect Power specializes in the design and manufacture of fuel injection systems for every application from your everyday streetcar to your high-tech performance car. All Perfect Power products are powerful "real time" programmable fuel injection and ignition computer systems. The Perfect Power range of products falls into two major categories: Stand Alone Systems and "Piggy Back" or Add-on Systems. Perfect Power is marketed worldwide by Digital Data Systems (Pty) Ltd from South Africa. Visit our website, www.perfectpower.com for more information.

Stand-Alone Systems	"Piggy Back" Systems (Add-on Systems)
A stand-alone fuel injection system controls all engine functions and means that the engine does not require any other ECU to operate. A stand-alone system, such as the XMS and XMS-L from Perfect Power, can be seen as a replacement of the original ECU and uses almost all standard input sensors. The stand-alone system is totally self-sufficient and manages its own "real time" fuel and ignition outputs from various inputs from the engine.	A "piggy back" or add-on system is a unit that works off an existing ECU in the vehicle. It relies on another ECU to be present. A typical Perfect Power "piggy-back" or add-on system will manipulate the input or output signals of the existing ECU and within the constraints of the ECU will allow "real time" adjustment of fuel and ignition. This improves power or fuel consumption and drivability.

1.1   WHO WOULD USE A PERFECT POWER PRODUCT?

Anyone who needs to have "real time" control over the engines performance, and tuning fuel and ignition in order to achieve the optimized requirements of the engine via a computer.

1.2   WHY USE A PERFECT POWER PRODUCT?

Perfect Power has been involved in the fuel injection industry since 1984. Each of our products has years of experience built in, providing the best fuel injection solution for today's needs. We also have a library containing 500+ wiring diagrams for different vehicles to assist you in your installation.

1.3   HISTORY

Our founder, Klaus Ludwig, recounts how he got involved with fuel injection systems:
*"It all started back in 1984. Someone gave me a fuel injection system to repair. I was amazed at how simple the design was. The first unit I designed and manufactured was installed into a 4x4 vehicle. I got more hooked when we started to win challenges. I bought another 4x4, fitted our fuel injection system, race prepped it and entered it in "Off-Road Racing". I only managed to complete 1 out of 3 races covering more than 3000km in Southern Africa. Although we lost brakes, had the prop shaft go through the sump, had a seized fuel pump, broken shocks and buckled rims, the one thing that didn't break was the fuel injection computer! It was built to last. We have come a long way since then and now produce a wide range of engine management systems for every application. The systems produced now are so much more sophisticated, keeping in line with the latest engine technology. Back in 1984 you could set a fuel injection system, by turning 3 screws. Now, with environmental awareness and fuel economy demands coupled to performance, it is impossible to tune a car with 3 screws. You need a laptop or PC! The latest cars have engine management systems, which are tamper proof and very difficult to modify. A new type of "Piggy-back" system is used instead, which leaves the original system intact, and rather enhances the engine performance in certain areas. I believe that the street legal performance will, in future, be more technically demanding. This is where I see my challenge - clean, efficient performance - this is what **PERFECT POWER** stands for!*

Perfect Power has become an established brand name, which all professional and private vehicle performance enthusiasts have come to rely on. All our products are made from the highest quality material and the latest electronic components, resulting in extremely reliable fuel injection systems."

2   PERFECT POWER MARKETING CONCEPTS

We market our products in two domains, namely the "Public" and "Private Label" domains.

2.1   PUBLIC DOMAIN

The tuning software is free to download from the Internet. This means that the end-user can re-tune the unit (overwrite the tune map) and the wiring diagrams are obtainable. The products available in this domain are competitively priced. An example of a product in this domain is the SMT6.

2.2   PRIVATE LABEL DOMAIN

You may want to prevent someone else re-tuning a car that you have successfully tuned. You may also want your customers to return to you for continued business. You may find that it would be ideal to have the same technology with extra features, but with your own product name and corporate identity, especially if you are dealing with larger quantities. The **Private Label Domain** is for you.

The **Private Label Domain** will have certain products, which will be made available to Perfect Power Dealers only and will have the Dealer's company details, logo and product name. If you are not a Perfect Power Dealer, and are still interested in a product in this domain, you can register as a Dealer at no extra cost.

An example of a **Private Label Domain** product is the SMT6-D.
The tuning software will not be available for free from the Internet. It will be purchased as part of the Start-Up Package. The software will have your company details and logo, as well as your choice of a product name. The unit will not have a label, giving you the opportunity for you to put on a label of your choice. Your end-customer will see the product as your very own! A small reference to Perfect Power will however remain, embossed on the side of the unit. No one else will be able to tune this personalised unit; only you will be able to. The software will also have a feature known as "Software Spawning". This means that you can make a copy of the software for your end-customer but only allow parts of it to be viewed or modified with a security key.

The products in this domain will offer improved hardware and software features, to set it apart from the products in the **Public Domain**.

This domain is aimed at those Dealers who want their own product and sell large quantities. A small upfront investment fee is required for the Start-Up Package, and a minimum quantity applies for additional units.

3   PERFECT POWER NEW TECHNOLOGY PRODUCTS

3.1   LETRIPP PRODUCT RANGE

All LetRipp products are based on the latest microprocessor technology, and use a 16-bit processor with a speed of 40 MIPS (Million Instructions Per Second). Some products will be plug-and-play such as the Fuel Tuner (FT range), but other products will require some knowledge of automotive electronics and mechanics. Each product will be star rated indicating the level of difficulty with regards to installation and use.

All LetRipp products will be USB compatible and will use a universal hardware platform which will allow for future products to be developed and produced quickly.

Another feature of the LetRipp product range is the Lin Bus facility in each product. This will allow the User to add accessories such as the Dual Bank AFR to the main product. However, the products themselves, such as the Fuel Tuner and Turbo Fueller, will not be able to be connected via the Lin Bus.

3.2 LETRIPP PRODUCTS

3.2.1 SMT8 – SMART TUNER 8

Now introducing the extraordinary SMT8 Piggyback unit will guarantee an unbelievable increase in performance from your vehicle without the need to replace the existing ECU.This unique piggyback is available with a fully programmable engine protection that will ensure that your engine will stay under control by reducing engine power when it exceeds the engine specifications after a programmable time delay protection. It monitors the engines performance, and should anything exceed the specifications then it gradually reduces engine power after a programmable time delay.

3.2.1.1 SMT8 FEATURES

• 2 Maps to influence analog signals • 1 Map to influence up to three ignition signals • 1 Frequency modification map • 1 Boost control screen • Engine Protection via: Ignition cut, Ignition retard, ETC control • Setpoints drive outputs • Engine Protection by setting parameters • 2 Extra injector maps to drive two injectors • 1 Set point control with up to 3 outputs (relays)	• 1 AFR (Lambda) modification map wide/narrow • Calibration of all inputs: • Engine Temperature, • Air Temperature, • AMP (MAP) Sensor, • Throttle Position, • RPM, • Ignition cut, • Ignition retard, • ETC (Electronic Throttle Control

3.2.1.2 SMT8 KIT

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
SMT8-UKIT	1 x SMT8 Unit 1 x SMT8 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals	**Not Applicable**	Not Applicable
SMT8-KIT	1 X SMT8 UNIT 1 X SMT8 Harness	**Not Applicable**	Not Applicable

The first piggy-back unit that offers you the capability to do DUAL AFR Tuning and ETC (Electronic Throttle Control) Tuning as well.

FEATURES:
- 2 x Analog Tuning Maps
- 1 Ignition Map for Ignition Timing
- Can control 1 extra injector
- Can control Wideband OR Narrowband Lambda
- Frequency or PWM fuel Tuning OR if that's not your scene then you can do Boost Control!

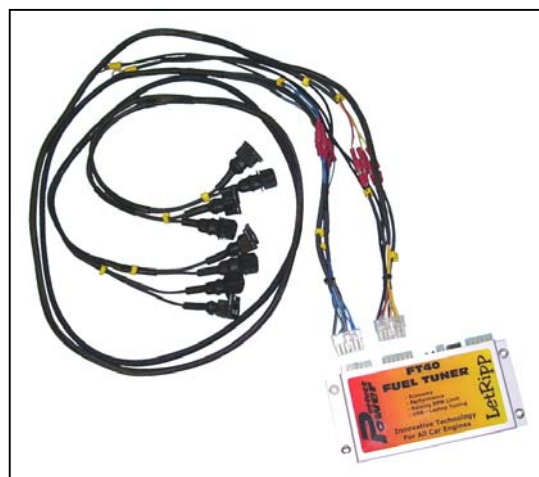### 3.2.2 FUEL TUNER (FT20, FT40 AND FT60)

The Fuel Tuner is the first product that has been launched under the LetRipp brand.

If you want a product that can increase your performance but save you fuel at the same time, the Fuel Tuner is for you.

The Fuel Tuner is a piggyback system and is completely plug-and-play. It comes in three models; the FT20, FT40 and FT60 and is ideally suited for 2, 4 and 6 cylinder engines respectively. Installation of the product can be achieved in minutes, once the Bosch injectors of the engine have been located. It is as simple as unplug the existing injector clip and plug in the harness of the Fuel Tuner!

The Fuel Tuner directly controls the amount of fuel being added by opening and closing the injectors with reference to the injector signal from the ECU. The basic installation achieves a one dimensional map with injector trimming capabilities. This allows you to have 24 fuel sites against the RPM that could affect fuelling.   The advanced installation requires connection to the Throttle Position and achieves a two dimensional map with 384 sites.   By further installing Engine and Air Temperature and Manifold Pressure inputs, this will achieve a five dimensional map with 456 sites as well as full calibration of these sensors. Connecting to these sensors will require wires to be cut and tee-ed in.

3.2.2.1   FEATURES OF THE FUEL TUNER

• Plug-and-Play
• USB Communication
• Ability to fully calibrate all sensors
• "Five" dimensional tuning capability with 456 sites
• Two maps A or B, switchable while the engine operates
• Ability to trim individual injectors
• RED and GREEN LED lights
• On-line help on all functions
• Windows Tuning Software
	• Comprehensive MAPS with
	   o 384 Main Fuel Sites
	   o 16 TPS Sites
	   o 24 RPM Sites
	   o 24 Air Temp Sites
	   o 24 Engine Temp Sites
	   o 24 AMP Sites
	   o 8 Fuel Trim Sites
	• Optional MAPS with:
	   o 384 AFR Limit Sites
	   o 16 AFR Target Sites

3.2.2.2   FUEL TUNER KIT

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
FT20	1 x Fuel Tuner 2 cylinder Unit 1 x Fuel Tuner Connector Harness 1 x Fuel Tuner Wiring Harness (for optional connections) 1 x LetRipp USB Cable 1 x CD with Software & Manuals	**Not Applicable**	Not Applicable
FT40	1 x Fuel Tuner 4 cylinder Unit 1 x Fuel Tuner Connector Harness 1 x Fuel Tuner Wiring Harness (for optional connections) 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
FT60	1 x Fuel Tuner 6 cylinder Unit 1 x Fuel Tuner Connector Harness 1 x Fuel Tuner Wiring Harness (for optional connections) 1 x LetRipp USB Cable 1 x CD with Software & Manuals		

3.2.3 TURBO FUELLER (TF10)

The Turbo Fueller (TF10) is a piggy-back system designed for use on an engine with a turbocharger or supercharger. The Turbo Fueller is ideally suited when the user wants to:

- Add fuel via extra injectors
- Clamp the existing airflow meter
- Control the boost pressure (for turbochargers only)

The Turbo Fueller can control the amount of fuel being used, control the ignition by retarding the signals, allow boost control (on turbos only) via the turbo's waste gate, and can control launch as well as the air flow meter.

The Turbo Fueller is not plug-and-play and requires some knowledge about automotive electronics and mechanics. Knowledge of using a voltmeter or multimeter to trace wires is essential. The manuals supplied with the product will give detailed step-by-step instructions for a successful installation.

3.2.3.1 FEATURES OF THE TURBO FUELLER

• Two power injector drives	• Launch control
• USB Communication	• Fuel Injector control
• 2A Boost control valve drive	• Turbo Boost control
• On-line HELP on all functions	• Air flow mapping or limiting
• Windows Tuning Software	• Retarding of one crank and two CAM signals

3.2.3.2 TURBO FUELLER KIT

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
TF10	1 x Turbo Fueller Unit 1 x Turbo Fueller Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals	**Not Applicable**	Not Applicable

3.2.4 XMS4 STAND-ALONE RANGE

This XMS4 range is the most significant and easy-to-use range on the market. With the ability to blend the maps for easy tuning and many more outstanding features all that this product can't do is physically drive your car!
Our XMS4 stand-alone systems consists of twelve fully comprehensive stand-alone engine management systems and is available in 3 groups (A, B, C) especially designed to suit every individual's needs and best on your pocket!

The XMS series is a result of many years of development. What started in 1986 as a hobby has turned into a company that thrives on innovation and performance. With the latest technology backing our products and new features continuously being added the XMS4 surpasses any price or performance comparison.

We normally recommend a Blue-Fire ignition amplifier as additional item with our XMS4 range if your vehicle doesn't have coils with built-in amplifiers.

3.2.4.1   XMS4 STAND-ALONE RANGE FEATURES

• User-Friendly LetRipp Software
• On-board MAP (AMP) Sensor (on some modules)
• USB 2.0 Communication
• Separate CRANK (CB1) and CAM (CB2) Inputs
• Partial or Complete Closed Loop Lambda Operation
• +5 Volt Output to power: Manifold Pressure, Temperature Sensors, TPS, etc.
  • Electronic Boost   Control
  • Each Setpoint has a High/Low Limit
  • Each setpoint can be AND/OR to ONE other Setpoint
  • Automatically Switch Maps via Setpoint Condition
  • Seamless Map Switching while you Drive
	• +5 Volt Output to power: Manifold Pressure, Temperature Sensors, TPS, etc.
	  • Electronic Boost Control
	  • Each Setpoint has a High/Low Limit
	  • Each setpoint can be AND/OR to ONE other Setpoint
	  • Automatically Switch Maps via Setpoint Condition
	  • Seamless Map Switching while you Drive
	  • All Inputs can be Calibrated to suit the Factory Sensors
	  • A Tuned Value will have an immediate effect (Live)
	  • All Inputs can be Calibrated to suit the Factory Sensors
	  • A Tuned Value will have an immediate effect (Live)

3.2.4.2   XMS4 GROUPS

XMS4A GROUP
The XMS4A group is our standard range and also affordable. This group is ideal for 4 to 8 (batch injection only) cylinder engines (batch injection only). The XMS4A group is also suitable for 2, 3, 5 and 6 cylinder vehicles. This group also offers an optional onboard MAP sensors and dependent on the amount of cylinders and availability the Ignition and Injection can be run in sequential mode.

- XMS4A FEATURES:
- 2 to 4 x 2Amp Direct Injector Drivers
- 2 to 4 x Ignition Signal Outputs
- 2 x Setpoint Outputs

XMBS4B GROUP

This group is known as our mid-range and if you would like to do wideband lambda control then this group is for you. This group consist of 4 different modules and also has the option of an onboard MAP sensor. This group offers a LSU4 Wide Band Controller included with short-term and long-term tuning capabilities. If you are running a powerful engine then we recommend this group. This group is compatible with 2, 3, 4, 5, 6, 8, 10, 12 cylinder engines.

- XMS4B FEATURES:
- 4 to 8 x 2Amp Direct Injector Drivers
- 4 to 8 x Ignition Signal Outputs
- Sequential ignition and injection for 4 to 8 cylinders
- 4 x Setpoint Outputs
- Built-in Wide Band Lambda circuit for the Bosch LSU4

XMS4C GROUP

The XMS4C Group is the top of the range and is especially designed for 4 – 8 Cylinders engine with "fly-by-wire" Electronic Throttle Control (ETC). This XMS4C range is the best value with all the latest and amazing features and offers the option of running sequential or batch depending on the installed hardware and the availability of a CAM trigger input. This XMS4C is ideal for 2, 3, 4, 5, 6, 8, 10, 12 cylinder engines. ALL the features of the other groups (XMS4 A and XMS4B), but includes an ETC controller with simple "straight-line" traction control.

- XMS4C Features
- 4 to 8 x 2Amp Direct Injector Drivers
- 4 to 8 x Ignition Signal Outputs
- Sequential ignition and injection for 4 to 8 cylinders
- 8 x Setpoint Outputs
- Built-in Wide Band Lambda circuit for the Bosch LSU4
- ETC (Electronic Throttle Control) Controller.

3.2.4.3 XMS4 Kits Available

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
XMS4A-2	1 x XMS4A-2 Unit 1 x XMS4A-2 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals	**Not Applicable**	Not Applicable
XMS4A-2A	1 x XMS4A-2A Unit 1 x XMS4A-2A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4A-4	1 x XMS4A-4 Unit 1 x XMS4A-4 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4A-4A	1 x XMS4A-4A Unit 1 x XMS4A-4A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		

XMS4B-4	1 x XMS4B-4 Unit 1 x XMS4B-4Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4B-4A	1 x XMS4B-4A Unit 1 x XMS4B-4A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4B-8	1 x XMS4B-8 Unit 1 x XMS4B-8 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4B-8A	1 x XMS4B-8A Unit 1 x XMS4B-8A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4C-4	1 x XMS4C-4 Unit 1 x XMS4C-4 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4C-4A	1 x XMS4C-4A Unit 1 x XMS4C-4A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4C-8	1 x XMS4C- 8 Unit 1 x XMS4C- 8 Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		
XMS4C-8A	1 x XMS4C- 8AUnit 1 x XMS4C- 8A Harness 1 x LetRipp USB Cable 1 x CD with Software & Manuals		

3.2.4.3 The XMS4 LETRIPP Tuning Software Main Screen:
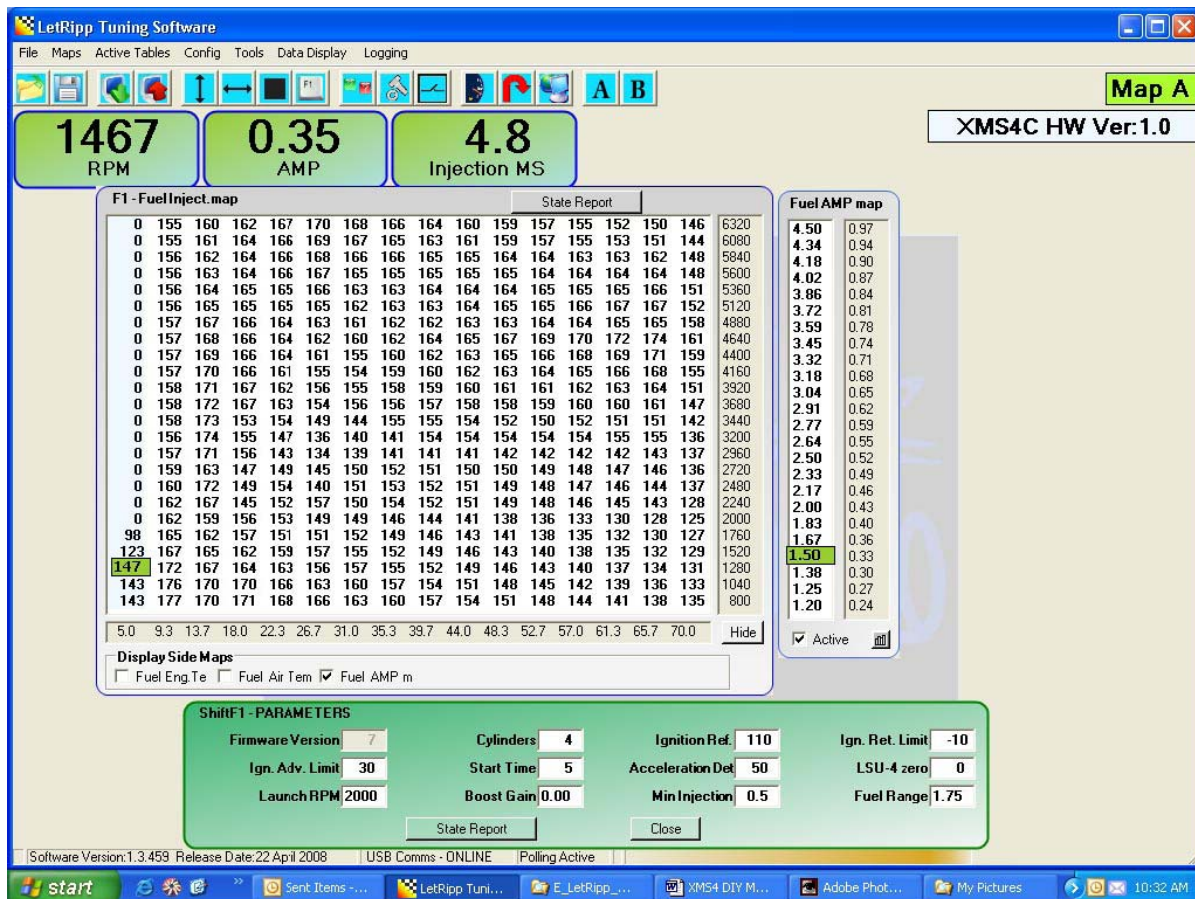
4 PERFECT POWER PRODUCTS

4.1.1 XMS-L – XTREME MANAGEMENT SYSTEM - LIGHT

The XMS-L is a more affordable stand-alone system under the XMS product range. The XMS-L has been designed to work on 4 cylinder engines only. The XMS-L has 2 ignition outputs with on-board drivers ideal for wasted spark applications, and 2 direct injector drives. There are 3 auxiliary outputs, which allow for the control of various engine functions, such as the rev counter, boost control, etc. The XMS-L also has a built-in 2.5 bar MAP sensor.

The XMS-L uses a narrow band lambda input sensor for closed, open or partially closed loop operations. It also simultaneously monitors the engine temperature, air temperature, RPM and Manifold Pressure.

The XMS-L comes with the latest Windows Tuning Software with two maps, which can be switched while driving.

4.1.1.1 FEATURES OF THE XMS-L

• 2 Direct injector drives, up to 6 Amps each	• Allows for Turbo boost solenoid control
• 16 Sites for Manifold Pressure	• 2 Complete maps of all parameters and their programmed variables.
• 16 Sites for Engine Temperature	• Maps can be switched while driving
• 2 Ignition outputs direct drive up to 12 Amps	• Can record the max. RPM, max. Engine Temp, max. Air Temp and max. Manifold pressure
• All inputs balanced (floating) for highest noise immunity	• Firmware can be upgrade in the field
• Narrow band AFR display	• Has fault reporting available in Tuning software
• All inputs can be calibrated to adapt to the existing sensors of your engine	

4.1.1.2 XMS-L KIT & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
XMSL –KIT	1 x XMS-L Box with electronics 1 x XMS-L Harness 1 x XMS-L Comms Cable 1 x CD with Software & Manuals 2 x Ignition Amplifiers	**AIR-TEMP** **ENG-TEMP** **WBC** **MEGA-SPARK**	Air Temperature Sensor Engine Temperature Sensor Wide Band Lambda Controller Blue Fire Ignition Amplifier

The XMS-L Windows Tuning Software Main Screen:
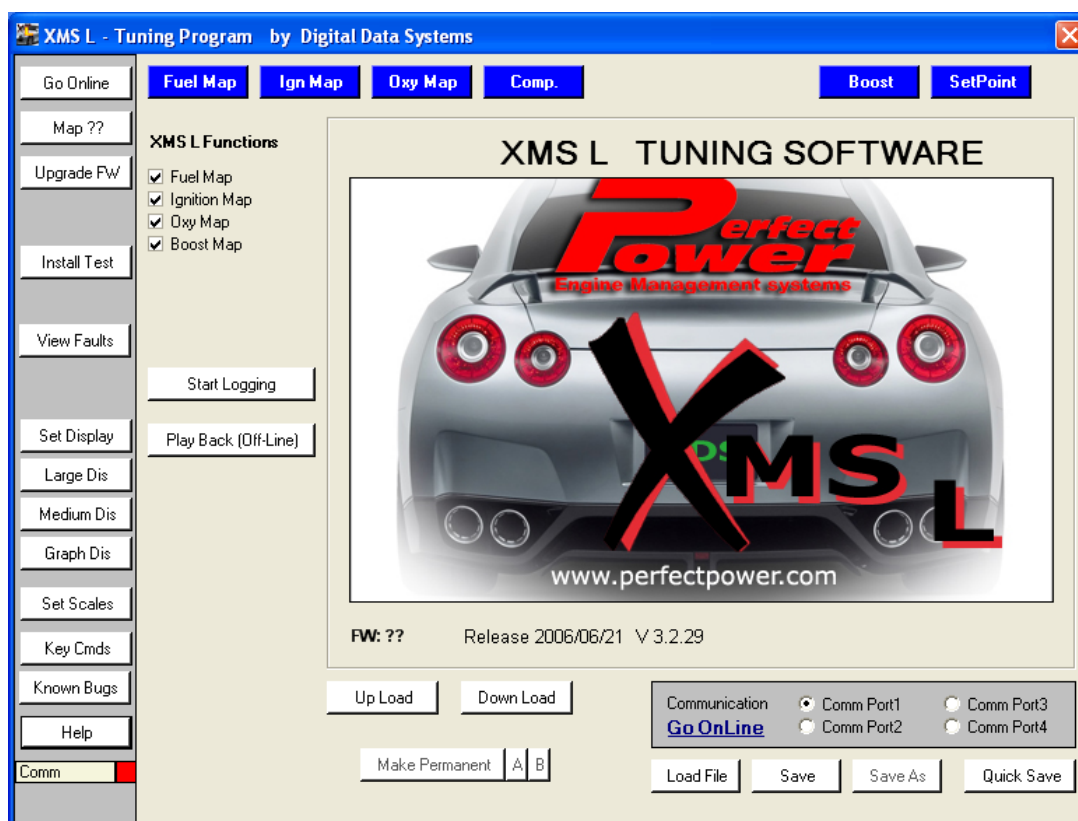
4.2 "PIGGY BACK" OR ADD-ON SYSTEMS

4.2.1 SMT6 – SMART TUNER 6

The Smart Tuner 6 (SMT6) is a "piggy back" or add-on system, which needs to be added to an existing Engine Management System or ECU (Engine Control Unit). Its purpose is to make the existing system "tunable", without any chip changes and without touching the original ECU. To revert the vehicle back to its original state and thus making the "piggy back" or add-on system undetectable, a shorting strap or bridging plug can be used. The SMT6 has been designed to allow you to tune any engine. Signals are modified on maps found within the unit. With the Windows Tuning Software, the SMT6 can be tuned on either a 2D or 3D map. Tuning is simple and fun and, once the SMT6 is installed it can be re-tuned by anyone with a laptop, SMT6 Comms cable and the Tuning software. If the original installer does not want the unit to be re-tuned, the "No-Tune" option can be activated in the software, which means that the settings will be locked and hidden. Tuning can be done "real time", while the car is running and it is not necessary to send the SMT6 unit back if a tune map needs to be changed.

The average SMT6 installation consists of 6 wires connected to the vehicle's original wiring harness or loom. Then change the settings of the unit in the setup section of the Tuning software and you will be ready to re-tune the vehicle.

4.2.1.1 FEATURES OF THE SMT6

• Throttle Sensor learning feature	• RPM Calibration with high RPM range
• Fuel, Injection and Ignition maps with 128 sites	• 0 – 10 Volt analogue range
• 6 Amp injector driver	• Various ignition outputs
• Selectable trigger points	• Programmable cylinders
• Selectable polarity	• Can handle interlaced signals
• Balanced inputs	• Missing tooth signal
• Ignition output signal	• Adjustable dwell time
• RPM/Airflow/Analogue Deflection/ Temp Switch points	• Settable fuel high/low limits
• Able to switch between two tune maps	• Signal conditioning
• Lambda tuning	• Proportional nitrous control
• Can store and playback recorded tuning run	• High speed internal computer power
• Easy Windows tuning software	• Small size
	• Low battery drain
	• Self-checking test available

4.2.1.2 SMT6 KITS & OPTIONAL ACCESSORIES

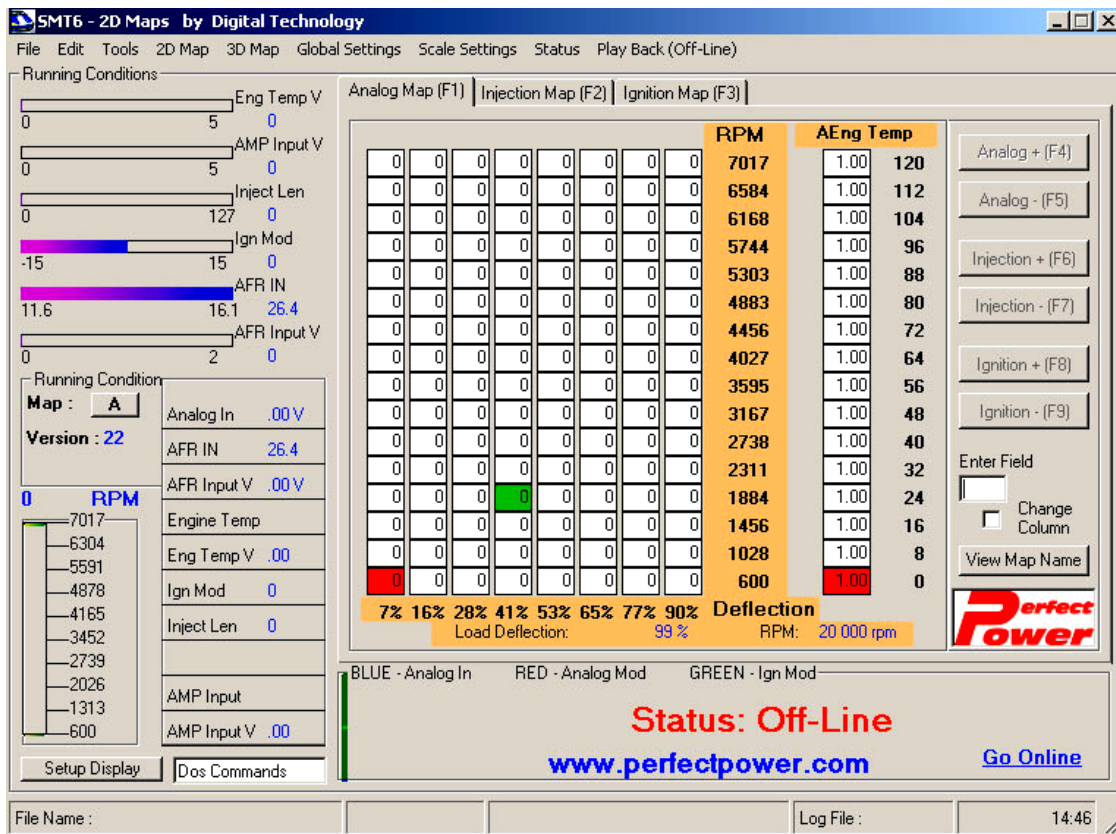| PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
SMT6-KIT	1 x SMT6 Box with injector driver 1 x SMT Harness (Wiring Loom)	SMT-COMS SMT6-SHORT	Communication Cable SMT Shorting Strap/ Bridging Plug
SMT6-UKIT	1 x SMT6 Box with injector driver 1 x SMT Harness (Wiring Loom) 1 x SMT Comms Cable 1 x SMT Shorting Plug 1 x CD with SMT6 Software & Manuals	SMT6-HARN SMT6-TEST	SMT6 Harness (Wiring Loom) SMT6 Test Jig

SMT6 Unit and Harness

**The size of the SMT6 unit is:
70mm (L) x 70mm (W) x 15mm (H)**

SMT6 User Kit

SMT6 Windows Tuning Software Main Screen:

4.2.1.3 SMT6 WINDOWS TUNING SOFTWARE FEATURES

ENGINE SPECIFIC FILES	A file describing the technical engine parameters e.g. connections, signals, polarity, etc. The map portion of the file, describes how the engine is tuned and what the fuel and ignition requirements are. The SMT6 holds TWO Tune Maps, for example Map A = Economy and Map B = Power. Each Tune Map consists of a fuel, ignition, and injection map. These sub-maps can be tuned within preset limits.
BRANDING (optional)	The SMT6 can have minimal "branding" on the software only.
WIRING DIAGRAMS	A comprehensive list of Wiring diagrams is available as a guideline.
EXTRA INJECTOR ACTIVATION	A set of injector can be activated from a special injection map in addition to the standard injectors activated by the ECU. The SMT6 holds TWO Injection Maps.
AFR (LAMBDA) DISPLAY	The SMT6 has an extra lambda input. If your engine has a four wire AFR probe, then the reading can be displayed on the Windows Tuning Software with only a narrowband sensor.
LAMBDA TUNING	Advances in the SMT6 now allow users to modify engines that run closed loop lambda.
GRAPHICAL DISPLAY	The Windows Tuning Software has a 3 channel input/output graphical display in real-time.
DATA LOGGING	All software (DOS and WINDOWS) can log the engine performance to a file for later display and analysis by other software.
AUTOMATED TESTING	The SMT6 can be tested in the field with the SMT6 Test-Jig.
TEST DATE STAMPING	All units are computer tested, and date stamped. The pre-delivery test is also recorded, and there is space for 4 more Dealer or Customer date stamping.

EXTENDED ANALOGUE INPUT/OUTPUT RANGE	The SMT6 has a 0-10 volt analogue input and output range.
TUNE MAP IDENTIFICATION	The name of the tune map can be stored with the tune map onto the SMT6 unit.
MAP SWITCHING	The Two tune maps can be switched while driving via an external toggle switch.

4.2.1.4 SMT6 FACTS

- A certain amount of electronics and technical knowledge is required when installing any SMT6 unit.
- A Wiring Diagram or Schematic is required to install an SMT6 unit. Consult with Perfect Power when creating your own Wiring Diagram or Schematic.
- The units are shipped "blank", without any file or maps loaded.
- A SMT6 Test Jig is available, which is useful to confirm whether your SMT6 is working or not at any point in time.

4.2.1.5 DETAILS OF ACCESS TO YOUR SMT6 UNIT

The SMT6 unit is sold as an open unit, which can be tuned by anyone with the Windows Tuning Software, SMT6 Comms cable and a laptop

GLOBAL SETTINGS: Specifies the engine setup

MAP "A"   **:**   Fuel "A"   **MAP "B"**   **:**   Fuel "B"
                               Ignition "A"   Ignition "B"

4.2.2 SMT7 – SMART TUNER 7

The Smart Tuner 7 (SMT7) is a "piggy back" or add-on system that can be added to an existing engine management system to fine tune fueling and ignition signals. Running parallel to the renowned SMT6, together they will both cover a wide range of engines. Some new features of the SMT7 include more user friendly Tuning software (Windows XP), boost control, three analog maps, wide band lambda, extra injection maps, launch control, onboard logging and is field upgradeable.

The Tuning software includes on-line Help keys on every screen. A unique way of computing crank signals allows the SMT7 to do crank signals that could never be done before. Fuel tuning is done via the air flow meter or MAP sensor. For aftermarket turbo conversions, fine-tuning factory settings, mapping boost, tuning lambda and performance engine mapping, you will need the SMT7.

4.2.2.1 SMT7 KITS & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
SMT7-KIT	1 x SMT7 Box with two drivers 1 x SMT7 Harness (with loose wires)	**SMT7-COMS** **SMT7-WIRE**	Communication Cable SMT7 Harness bundle of 10 wires, crimped
SMT7-UKIT	1 x SMT7 Box with two drivers 1 x SMT7 Harness (with loose wires) 1 x SMT7 Comms Cable 1 x CD with Tuning software & Manuals 1 X Printed Installation Guide		

4.2.2.2 SMT7 FEATURES

All the SMT7 features can be operated simultaneously. Features can be switched off, and individual side maps can be disabled. In addition, all inputs and scales can be calibrated and adjusted to suit the user.

- AFR Modification - can operate in two modes: Narrow Band and Wide Band
- Can operate in 16 modes relating to trigger patterns
- AFR Loop
- Boost Control - allows the control of the turbo boost pressure in a previously non-boost controlled car.
- An extra input allows traditional launch control
- Has two COMPLETE Maps, which allows for different calibration and different global setting between Map A and Map B

- Transmits 28 inputs and computed variables
- Communications protocol has changed to be compatible to Windows XP
- Can log the time operated in the main map
- Help is on-line and consists of subject orientated help pages
- Records: Maximum RPM, Maximum MAP, Maximum Engine temperature, Maximum Air temperature
- Field upgradeable
- 2 Analog modifications
- Can drive one 13 ohm injector directly

5 PRIVATE LABEL PRODUCTS

5.1   SMT6-D – SMART TUNER 6 – DEALER

The SMT6-D is a product in the Private Label domain. Perfect Power designs and manufactures this product, but you have the choice of giving it your own product name and including your company logo and details on the product, including the software.

A Start-up Package needs to be purchased first and thereafter, additional units can be purchased in quantities of 5 or more kits. The SMT6-D has all the current features of the SMT6, PLUS additional features.

5.1.1 ADDITIONAL FEATURES OF THE SMT6-D

• Your own Product Name • No Public software • No Public access • Neutral grey housing to match any colour label • Private labels • Software Spawning – Sell Tuning Software versions • Installation wizard	• No recommended retail price • Lambda loop control, with narrow band lambda option • History recording • Quick start • Can be used as a free standing ignition controller • Can be used as a Turbo fueller

A DEMO VERSION of the SMT6-D is available on CD. This version will give you an idea of what this product is all about. Please contact info@perfectpower.com should you be interested in obtaining a copy of the DEMO VERSION.

SMT6-D Additional Unit Kit

SMT6-D Unit Size:
70mm (L) x 70mm (W) x 15mm(H)

5.1.2 SMT6-D KIT & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
SMT6D-STAR **SMT6D-KIT**	5 x SMT6-D Grey box with injector driver 5 x SMT Harness (Wiring Loom) 1 x SMT Comms Cable 1 x SMT6 Test-Jig 5 x SMT Shorting Plugs 1 x CD with Software (Updates included in price for 1 year from date of purchase) 1 x CD with Manuals & Spawning Software 1 x Security Key 1 x Printed Installation Guide 1 x SMT6-D Grey box with injector driver 1 x SMT Harness (Wiring Loom)	**SMT-COMS** **SMT6-SHORT** **SMT6-HARN**	Communication Cable SMT Shorting Strap/ Bridging Plug SMT Harness (Wiring Loom)

6   PERIPHERAL PRODUCTS

6.1   THE WIDE BAND CONTROLLER (WBC)

The function of the Wide Band Controller (WBC) is to "operate" a BOSCH LSU4 wide band lambda sensor for the acurate measurements of AFR values. The WBC indicates AFR via an LED bar graph. This LED shows AFR from 10.8 to 20.0 and AFR via a linear 5V output. Indicated with three different colours for quick and accurate readings. The WBC is supplied with a harness and the BOSCH LSU4 probe is available as an additional item. The WBC's on-board processor ensures excellent response and accuracy across the entire range and under most operating conditions. With processor controlled LED fault warning indications, this unit is a must for all performance installations.

6.1.1 FEATURES OF THE WBC

• Small size • Temperature controlled heater circuit • Indication of heater and sensor malfunction • External fault reporting	• Linear 0-5 volt output reporting AFR • High-resolution lambda conversion • Bar graph AFR indication • Low power consumption

6.1.2 WBC KIT & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
WBC-KIT	1 x WBC box 1 x WBC Harness 1 x LSU4 Probe	**LSU4-PROBE** **LSU4-CON**	Wide Band lambda probe/sensor LSU4 LSU4 connector with pins

6.2 BLUE-FIRE DUAL CHANNEL IGNITION AMPLIFIER

The Blue-Fire (previously known as the Mega-Spark) is a powerful, microprocessor controlled dual channel ignition amplifier. It is an important addition to any stand-alone engine management system, such as the XMS.

The continuous current rating is an amazing 30 amps per channel at 25 deg C. This ignition amplifier was specifically designed to cater for the extreme demands by high current coils in performance applications. For the ultimate in protection, this unit comes totally encapsulated, preventing ingress of water spray, oil and the like.

The housing of the Blue-Fire has 6 pre-cut grooves allowing for ease of mounting and its lightweight aluminium body also serves as a heat sink to dissipate heat during peak demands. The power connections consist of solid, plated brass terminals, using lugs with 4 mm screws to achieve quality contacts. The supplied crimp lugs make termination an easy task.

The Blue-Fire has been designed for installation inside the engine bay, keeping power cable length to a minimum.

6.2.1 FEATURES OF THE BLUE-FIRE

• 2 channels in one unit • Processor controlled • Over-current protection • Reverse polarity protection • Built-in Temperature cut-out • Bright LEDs to monitor functions • In and outputs can be paralled to double the power	• Completely encapsulated • Easy to mount • Lightweight aluminum body • Small size • Extremely rugged • Ideal for high revving or high boost turbo/compressed engines • Can be used with 24V battery systems

6.2.2 BLUE-FIRE KIT & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
MEGA-SPARK	1 x Blue-Fire Ignition Amplifier with 2 outputs		

6.2.3 SPECIFICATIONS OF THE BLUE-FIRE

Supply voltage range:	9 to 28 VDC
Current demand from battery:	Typically below 20 mA
Input voltage to trigger:	Above 1.0 V to 1.5 V (Above 5 V recommended)
Input/Output relationship:	A positive input voltage will turn the power switch ON
Max switching current:	30 amps continuous per channel at 25 deg C. 20 amps continuous per channel at 80 deg C.

6.2.4 BUILT-IN PROTECTION IN THE BLUE-FIRE

Supply voltage polarity reversal:	Yes
Output terminal polarity reversal:	Yes
Max output current:	Self limiting, temperature dependant.
Overload:	Yes, magnitude and time depending will eventually bring up over temperature.
Short circuit protection:	Yes, pulse by pulse monitoring with instant shutdown.
Operating temperature range:	Above 80 deg C, cut-out with auto-reset function once temperature has dropped to below 80 deg C.

6.2.5 INDICATIONS ON THE BLUE-FIRE

Input signal present:	Yes, one green LED per channel
Output overloaded / shorted:	Yes, one red LED per channel
Over temperature:	Yes, both red LEDs flashing
System fault:	Yes, both red LEDs ON continuously.

6.3   FOUR CHANNEL INVERTER

The 4 Channel Inverter can be used with any type of switching signal.

The inverter is used to INVERT an ignition signal. A large variety of ignition coils and amplifiers are available on the market at present and they do not always trigger on the same polarity.Therefore, Perfect Power has included a four channel Inverter in its product range.

There are two drivers on board for driving auxiliary functions. These can also be driven from the SMT or even the XMS range of products. The drivers have a current rating of 6 amps and should not be used to drive ignition coils directly. The Inverter can be used to switch on relays or drive shift lights directly.

The four inverting channels have a current limit of 100mA, only sufficient to trigger an amplifier or relay. These four channels cannot drive any type of coil or injector.

6.3.1 FEATURES OF THE INVERTER

• 4 channels in one unit • On-board power drivers to drive auxiliary functions	• Small size

6.3.2 INVERTER KIT & OPTIONAL ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	ACCESSORY CODE	ACCESSORY DESCRIPTION
AUINVERTER	1 x 4 Channel Inverter with 2 auxiliary drivers		
INVERT-HARN	1 x 16 Way Harness		

7 ACCESSORIES
(Please note the photos shown are <u>not</u> to scale)

7.1 SENSORS
<u>AIR-TEMP - Air Temperature Sensor</u>

Normal NTC temperature sensor specially encased for easy airflow and threaded for easy installation. Complete with 1m harness and connector.

<u>ENG-TEMP - Engine Temperature Sensor</u>

Normal NTC temperature sensor specially inserted into brass case and threaded for easy installation. Complete with 1m harness and connector.

<u>AMP-2 - Manifold. Press 2.5 bar (MAP Sensor)</u>

Available in 2.5 bar. 12volt or 5volt power supply. Complete with harness. Suitable for applications requiring a 1.5 bar boost or for use on normally aspirated engines.


<u>AMP-3 - Manifold. Press 3 bar (MAP Sensor)</u>

Available in 3 bar. Complete with harness. Suitable for applications requiring up to 2.0 bar boost

7.2 AMPLIFIERS
### <u>IGN-AMP - Ignition Amplifier</u>

4 Wire, 7A ignition amplifier for inverting and non-inverting applications. Fully sealed and mounted on heat sink with mounting holes. Complete with harness. Can also be used to drive injectors.
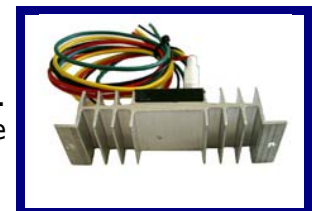
7.3 HARNESSES AND COMMUNICATION CABLES

<u>SMT6-HARN – SMT6 Harness (Wiring Loom)</u>

Harness is 600mm long. Special orders can be placed for longer harnesses.
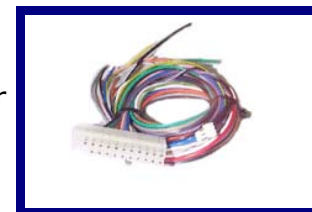
<u>SMT7-HARN – SMT7 Harness with Loose wires (Wiring Loom)</u>

Harness is 310mm long. The harness comes with loose wires, so that you only wire in the inputs you need. Special orders can be placed for longer harnesses.

XMS-L-HARN – XMS-L Harness

Harness is 1m Long.

XMS-HARN – XMS Harness

Harness is 1.0m or 1.5m Long.

Image Coming Soon

XMS-HARN-2 – XMS Harness 2.5M

Harness is 2.5m long.

Image Coming Soon

SMT6-COMS – SMT6 Communication Cable

Special RS232 communication cable with a special adaptor on one end for use with the SMT6 unit.
WARNING: Do not use other RS232 cables with the SMT6 units.

SMT7-COMS – SMT7 Communication Cable

Special RS232 communication cable with a special adaptor on one end for use with the SMT7 unit.
WARNING: Do not use other RS232 cables with the SMT7 units.

XMS-L-COMS – XMS Communication Cable

Special RS232 communication cable for use with the XMS-L unit.
WARNING: Do not use other RS232 cables with the XMS units.

XMS-COMS – XMS Communication Cable

Special RS232 communication cable for use with the XMS unit.
WARNING: Do not use other RS232 cables with the XMS units.

Image Coming Soon

7.4   OTHER ACCESSORIES

TEST-6 - SMT Test Jig (Device)

The Test Device is used to check the operation of the SMT units, especially on receipt of the SMT6 unit. If the tests pass, the date of the test is written onto the SMT6's memory.

SMT6-SHORT – SMT6 Shorting Plug (Bridging Plug)

This plug is used instead of an SMT6 unit to revert the car back to standard use. It is ideal for when you need to remove the SMT6 for a while.

LSU4-PROBE – Wide Band Lambda Probe LSU4

Wide Band Lambda Probe for LSU4. Length is 760mm. For use with the Wide Band Controller unit.

OXY-CLAMP – Oxygen Clamp Filter

Install our oxygen clamp filter into your free-flow circuit, to simulate a catalytic converter. This will slow down the signal sufficiently for the ECU to measure the AFR and function correctly once again.

CD-SOFT – CD with Tuning Software and Manuals – Product Specific

The CD with the latest Tuning Software and Manuals specific to each product. Wiring Diagrams and Application Notes are included for the SMT6 and SMT7 products.

8 DEALER OPPORTUNITIES

8.1   BECOMING A PERFECT POWER DEALER

Any company that is involved with installing and tuning fuel injection and engine management systems and who wishes to increase its bottom line, is invited to become a Dealer of Perfect Power products.

Perfect Power's quick turn around time with in-house production and software development, as well as very competitive pricing, makes being a part of the Perfect Power family a valuable asset to any business.

With ongoing research and development, new products that fit a wide range of target markets are always being designed and produced. If you want to be ahead of the pack, include Perfect Power products in your product offering.

The best part about becoming a Perfect Power Dealer is that there is no Dealership fee! Registration is easy and straightforward with minimal requirements and conditions.

Perfect Power is recognized as a leader in the Performance industry and we aim to please.

To be a part of the exciting opportunity to become a Dealer of Perfect Power product, contact us at info@perfectpower.com.

9   SHIPPING AND RETURNS POLICIES

9.1   SHIPPING POLICY

Our shipping prices are **not included** in the product prices. All shipping costs are included in the invoice to the Dealer before we ship any products. If a Dealer prefers, he may use his own shipping company on his own account. A letter from the Dealer will be required to authorize us to use his shipping company on his account.

We are experienced at shipping our products worldwide from very small to large parcels. We also ensure that you get the best rate possible.

It is possible to get shipments posted (mail). Using the postal service is cheaper, but it take much longer for the shipment to reach the customer.

9.2   RETURNS POLICY

Any return needs to be authorized in advance. Please contact us on +27 11 792 9805, or info@perfectpower.com for an authorization number.

When returning any of our products, please use either of the following methods:

For returns via the postal service: Digital Data Systems (Pty) Ltd
                                               P O Box 35872
                                               Northcliff
                                               2115
                                               South Africa

PLEASE ENSURE THAT YOU INCLUDE A ZERO VALUE AND A DESCRIPTION OF "REPAIR" FOR CUSTOMS PURPOSES.

For returns via a shipping company: Digital Data Systems (Pty) Ltd
                                               22 Arbeid Avenue
                                               Strijdom Park
                                               Randburg
                                               South Africa

PLEASE ENSURE THAT YOU INCLUDE A ZERO VALUE AND A DESCRIPTION OF "REPAIR" FOR CUSTOMS PURPOSES.

All returns must be sent pre-paid and no collect shipments will be accepted. Please insure the parcel for its full value.

Once we receive the returned products they are checked and tested for any manufacturing faults. If we determine that there is a manufacturing fault, we will refund the shipping or postal costs.

We cannot accept returns on custom made parts. We also cannot accept returns on parts that are:
- Custom made
- Used, installed or damaged by oil, coolant or fuel
- Not in their original packaging

10 WARRANTY

Perfect Power unit(s) comes with a 12-month warranty from shipment date, on the electronics, excluding the power drivers.

The warranty will fall away if:
1. The unit(s) has/have been tampered with.
2. The unit(s) has/have been abused, misused or incorrectly maintained.
3. The unit(s) has/have been incorrectly installed.
4. The unit(s) was/were not tested on receipt.

If the unit(s) was/were damaged in transit, then the Distributor or Dealer from whom the unit(s) was/were purchased, will replace it as soon as possible.

Please note that if the unit(s) has/have been working fine for a while and then fail(s), it could be because of one of the following:

- The unit(s) has/have been damaged in installation. (Not covered by warranty)
- One of the internal power driver(s) has/have been destroyed. (Not covered by warranty)
- Malfunction of electronics. (Covered by warranty)

The damaged unit(s) will need to be sent back to the factory, by your Distributor/Dealer, for inspection. A new unit(s) need(s) to be purchased to replace it. If the problem is a manufacturing fault, the unit(s) will be replaced and shipping fees will be refunded. However, Perfect Power will not be held liable for the cost of removal, re-installation, dyno time and mapping of the unit(s).

Perfect Power unit(s) need(s) to be returned to your relevant Distributor/Dealer before any claims procedure can begin.

PLEASE NOTE: The SMT, PRS and other units that are "potted" CANNOT be repaired.

10.1   WARRANTY DISCLAIMER

Under no circumstances will Perfect Power be held responsible for any incidental, indirect, specific or consequential damages arising from the use of the unit(s).

11 TECHNICAL SUPPORT & TRAINING

We offer Technical Support via telephone, fax or email and aim to respond within 24 hours during weekdays (Monday to Friday) and 48 hours over a weekend or 36 hours over a public holiday in South Africa.

If required, our Technical Support Team at Perfect Power, is available to travel to your location worldwide, to offer training and technical assistance. Fees for travelling and training can be requested by emailing info@perfectpower.com.

12 PRODUCT CATALOGUE DISCLAIMER

The material contained in this catalogue is for general information only. We take no responsibility for any loss incurred in reliance on the information contained herein. We reserve the right to alter product specifications and features without prior notice. You should always verify any information before you make any decisions by contacting us at info@perfectpower.com.

13 CONTACT INFORMATION

Visit our comprehensive website at **www.perfectpower.com** for more product information, downloads, technical information and contact details of our local and international Distributors and Dealers.

Perfect Power is marketed by:

Physical Address:

22 Arbeid Ave, Strijdom Park, Randburg

Postal Address:

P O Box 1577, Bromhoff, 2154

Tel: +27 11 792 9805

Fax: +27 11 792 9818

Email: info@perfectpower.com

URL: www.perfectpower.com