WOLF V500
ECU SPECIFICATIONS

INTRODUCTION

The Wolf V500 ECU offers 5th generation design from over 14 years of research and development, made specifically for serious race and performance applications.

Fast to install and quick to tune, with many quick setup methods, the Wolf V500 supports virtually all engine types. Incredibly versatile auxiliary control and sensor systems allow direct connection and operation of all sensor and control needs.

High resolution 3D maps, Datalogging PC Software, Internal MAP Sensor and a great value Wolf V500 Dash option complete the package.

GENERAL SPECIFICATIONS

Latest 32 bit 40MHz CPU with Dual Time Co-Processors and dedicated injector drive system.	✔
Dual Memory. Switch any maps or control parameters to a secondary setup from external signal or internal ECU value. Often used for tuning, speed/gearshift mapping, performance, boost level, fuel type or control system changes at the flick of a switch.	✔
Lifetime Warranty (to Original Purchaser)	✔
PCB's Manufactured to Quality Standard ISO9002	✔
Standard kit package includes wiring harness and other components, reducing extra purchases	✔
8 Full sequential Injector Outputs, Sequencing and Patterns adjustable	✔
Smart Injector Driver, Low Heat, Drives down to 0.5 ohm injectors	✔
8 Full sequential Ignition Outputs, Sequencing and Patterns adjustable	✔
Control up to 27 auxiliary output pins with many 3D, linear, PWM, switched and dedicated functions for any possible requirement	✔
High resolution 3D maps with quick adjustment modes, on-screen performance trims	✔
Latest 3D graphing, live dashboards and Datalogging software	✔
Internal MAP Sensor reads up to 30psi boost. (External higher), reducing extra purchases	✔
Supports most original engine and vehicle sensors, reducing extra purchases	✔
Maximum RPM	25,000+
1,2,3,4,5,6,8,10,12,16 Cylinder operation, 1,2,3,4 rotor operation, odd cylinder and odd fire supported	✔
ECU Case Size (mm), Very Compact	126 x 104 x 39
ECU Weight (grams), Light Weight	500
Waterproof connector with gold plated contacts	✔

CONTROL FUNCTIONS

The Wolf V500 includes many dedicated control functions, plus the versatility of many auxiliary control pins driven by the 3D mapped MCO system for variable outputs and maths functions, plus a 16 channel GPO system for any switched or windowed operation control.

THERMO FAN	Temperature and hysteresis selectable thermo fan operation. (dedicated pin)	✔
FUEL PUMP	EFI Fuel Pump control with prime and no-run cutoff. (dedicated pin)	✔
TURBO TIMER	Programmable activation and special Rev Limit when engaged. (dedicated pins)	✔
IDLE LOCK	Stabilise idle conditions on light flywheel race and performance engines.	✔
REV LIMIT	Soft Cut, Hard Cut and Staged Cut programmable dual Rev Limiter. Fuel and/or Ignition Cut options.	✔
AIR CON	Respond to idle speed control and tuning needs as engine load changes. (dedicated pin)	✔
SHIFT LIGHT	Use any auxiliary pins as programmable 1 to 6 stage shift light with adjustable flash rpm.	1-6 Stage
STEPPER MOTOR	Control stepper motor for idle speed control or from any 3D MCO controller channel.	✔
IDLE SPEED	Versatile Idle Speed Controller, single PWM, master/slave PWM and stepper motor drive. 128 point Target RPM vs. Engine Temperature, Fast Idle, Special Trims, Air Con Request and more.	✔
CLOSED LOOP	Stoichometric tracking closed loop control for catalytic converter systems.	✔
BOOST CONTROL	Versatile mapped Boost Controller system with Over Boost Cut. 128 point user defined boost level vs. RPM, every 125 RPM. 128 point Engine Temp, Air Temp and Throttle Position Trims 128 point Special Trim, desired boost can be mapped against any sensor or ECU value.	✔
MULTICONTROLLER	6 MCO Channels each support multi-axis 3D control tables for variable, maths or switched output functions. Each MCO channel can be operated by any sensor, input or internal ECU value, and trimmed by 4 further 2D tables. Common uses: VTEC/VVT, Special Fuel and Ignition Trims, NOS, PWM Solenoid Valves, Stepper Motor operation, Fuel Used pulses, custom and OEM control operations and more.	6 MCO Channels
GPO CONTROLLER	General Purpose Output System (GPO). 16 GPO Channels each support multi-input switched or windowed switching operation from any sensor, input, or ECU internal value. Common uses: Cam Switching, NOS, Intercooler Spray, Emmisions solenoids, Warning lights, custom and OEM control operations.	16 GPO Channels

AIR FUEL RATIO (LAMBDA) INPUTS

Wideband Lambda Sensor inputs, supporting readout in Lambda, AFR Petrol, LPG, Diesel, Alcohol.	2
Bosch LSU4 and NTK UEGO Wideband Sensors supported	✔

DEDICATED INPUTS (SENSOR AND CONTROL)

These dedicated inputs support full calibration, and do not require Auxiliary I/O pins to be used.

INTERNAL MAP	Reads Naturally Aspirated, Super and Turbo charged engines to 30psi boost at no extra cost. External MAP sensor allows > 30psi.	✔
EXTERNAL MAP/MAF	ECU will also operate from external MAP or MAF (Mass Air Flow) Sensors.	✔
AIR TEMPERATURE	Any Factory/OEM or aftermarket sensor. Full Software Calibration.	✔
ENGINE TEMPERATURE	Any Factory/OEM or aftermarket sensor. Full Software Calibration.	✔
THROTTLE POSITION	Factory/OEM or aftermarket variable resistance sensor. Full Software Calibration.	✔
AIR CON REQUEST	Respond to idle speed control and tuning needs as engine load changes.	✔
LAMBDA	Wideband and Narrow Band Sensors supported.	2
TURBO TIMER	Inbuilt Turbo Timer control function. (requires external relay attached)	✔

DEDICATED OUTPUTS

These dedicated outputs are always available, and do not require Auxiliary I/O pins to be used.

IDLE AIR (PWM)	Idle Air Valve Solenoid, PWM Drive (Master)	✔
BOOST CONTROL	Boost Control (Turbocharger wastegate control)	✔
TACHO	RPM pulse signal to support Factory/OEM or aftermarket tachometer	✔
THERMO FAN	Control signal for thermo fan operation	✔

AUXILIARY INPUTS AND OUTPUTS

Auxiliary Input Pins can be renamed and scaled for Dash, Control and Logging, allowing real world names and values to be referenced. Auxiliary Output pins can be attached to the many control functions available in the V500 ECU.

AUX INPUTS	Auxiliary Input Pins	13
AUX OUTPUTS LS	Auxiliary Output Pins, Low Side Driver. Unused Injector and Ignition Pins can be controlled, giving up to 14 extra.	7 to 21
AUX OUTPUTS HL	Auxiliary Output Pins, High/Low/Push-Pull Driver	6
STEPPER MOTOR	Stepper Motor Drive (4 wire)	✔
SPEED/FREQUENCY	Speed / Wheel Speed / Frequency Inputs	4
PIN CONTROL	Programmable Pullup Resistors	✔

TRIGGER INPUTS

The Wolf V500 Input Trigger System allows the use of most original Crank, Cam and Distributor triggers. Optical, Hall and Reluctor type sensors are supported by an internal trigger processor board within the ECU.

Independently Configurable: Optical, Hall or Reluctor on both REF and SYNC	✔
Dedicated, adjustable internal Trigger Processor unit within ECU	✔
Software adjustable filtering, High interference immunity	✔
Custom trigger tooth and pattern configurations	✔

FUEL DELIVERY SYSTEM

The Wolf V500 Fuel Map and Delivery system is designed for Factory/OEM levels of detail and resolution, while retaining easy tuning and setup with any race and performance applications.

Main Fuel Map 3D Table Points, RPM x Load, steps every 125rpm reducable to 1000rpm if desired	128 x 16 (2048)
Load index points can be calibrated via 256 point table	✔
Individual Cylinder Trims	8
Fuel Map Trim Layer with quick adjustment via Dash or PC Software	✔
Starting Parameters, Temperature mapped Starting Fuel, Post Enrichment, Initial Fuel Pulse, Flood Clear	✔
Acceleration Enrichment, Decel Enleanment, 3 x 128 point 2D mapped tables	✔
Overrun Fuel Cut	✔
Compensations, Air Temperature, Engine Temperature, MAP/MAF, Battery Voltage	✔
Special Trim Layers, Fuel can be trimmed by any available input, sensor or internal ECU value.	2
Staged Fuel Injection, 3D mapped, selectable to any combination of injector outputs.	✔

FUEL INJECTOR CONTROL SYSTEM

The Smart Injector Driver is a separate custom controller within the V500 ECU. Controlling all injector channels with software controlled peak and hold currents, fault reporting and live monitoring at high speed is a standard feature.

Sequential Injector Outputs (injectors can be paired to support more than 8 if required)	8
Software configurable Injector delivery patterns and sequencing	✔
Peak and Hold Currents individually adjustable per pin	✔
Low temperature driver system, driving injectors down to 0.5 ohms	✔
Fault and status reporting with live feedback of injector current and time dynamics	✔
Unused pins can be used as Auxiliary Outputs	✔

IGNITION DELIVERY AND CONTROL SYSTEM

The Ignition Delivery System is sequential, polarity selectable, and fault tolerant. Unused ignition driver pins can also be used as Auxiliary Outputs.

Sequential Ignition Outputs	8
Software configurable Ignition delivery patterns and sequencing	✔
Rotary Engine Leading/Trailing drive method selectable	✔
Software configurable charging Dwell time with special discharge rules for high rpm applications	✔
Unused pins can be used as Auxiliary Outputs	✔

DATA LOGGING

Laptop Data Logging supports Full Speed (nominal 60Hz), and Slow Speed 2Hz, 1Hz and 0.5Hz	✔
Log size and time limited only by disk space	✔
Wolf V500 PC Software, supplied free of charge, includes Datalog graphing and playback systems	✔

PC SOFTWARE

The Wolf PC Software is the latest, full featured PC Software package for Wolf engine management systems, and is supplied with every Wolf V500 ECU at no extra cost.

Latest 3D, 2D graphing and ECU tuning procedures	✔
Easy Setup dials and sliders with instant live adjustments to the running ECU. See and feel the changes without any delay.	✔
ECU Datalogging with Variable Speed Playback. Unique Time-Shifting function to constantly save the last 30 seconds of action even before you start recording ensures you never miss the most important events.	✔
Live, on-screen Help Text for every parameter. Instant reference to function setup and suggested values.	✔
Trace function showing you exactly where in the Fuel and Ignition Maps you have driven through on a dyno or drag run.	✔

DASHBOARD

Low cost Wolf V500 Dash available, direct ECU connection with linked monitoring and adjustments.	✔
Race specification MXL and MYCHRON3 Dash connectivity, including Race Logging and Interpreting software	✔

DIAGNOSTICS

Full diagnostic reporting systems are standard in the V500 ECU, including Factory/OEM style flash codes and error reporting log.

Injector, Ignition, Auxiliary and Dedicated Output pins short circuit protected	✔
Injectors Short Circuit, Open Circuit, Weak Load and Peak Not Reached	✔
Injectors Current vs. Time Performance Monitor	✔
Trigger Input REF and SYNC Noise detection, Error Counters and Pattern Mismatch detection	✔
Sensor and Auxiliary Inputs Short Circuit, Open Circuit and Out Of Range detection	✔
Error Logging and Error History memory	✔
Diagnostic flash-code error reporting light support (Check Engine Light)	✔

* Specifications are subject to change without notice.   Revision 2, 1st December 2006

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