

## ECU Overview

Engine Size Support	E420	E440	E1280
Max Sequential Cylinders	4	4	12 Fuel /8 Ignition
Max Cylinders Supported	8	8	16
Max Rotors Supported	2	2	4
High Or Low Impedance Injectors	Yes	Yes	Yes
Injectors Per Channel	2	2	2

Sensors & Inputs	E420	E440	E1280
Digital inputs	8	8	8
Extra 0-5v inputs	1	1	8

Auxillary Output	E420	E440	E1280
High Current PWM	3	3	8
High Current	1	1	0
Low Current	4	4	0

Major Features Supported	E420	E440	E1280
Closed Loop Continious VVTi Channels	2	2	4
Electronic Throttle Control	No	No	Yes, Max: 4 Default: 1
Closed Loop Wastegate Control	Yes	Yes	Fully Configurable
PID Idle Control w/ Advanced Ignition Advance Stabilizer	Yes	Yes	Fully Configurable
Traction Control / Launch Control	Yes, 4 Wheel	Yes, 4 Wheel	Fully Configurable
Headphone Jack for Listening to Knock Sensor	No	Yes	Yes
Connection Method	Serial Port	USB	USB
Datalogging	Computer	Computer	USB Stick / Computer

## Fuel System

Fuel System:	E420	E440	E1280
Fuel Maps	2	2	Fully Configurable

Injection Modes	E420	E440	E1280
Sequential	4 Cyl	4 Cyl	12 Cyl
Semi-Sequential	8 Cyl	8 Cyl	16 Cyl
Batch	8 Cyl	8 Cyl	16 Cyl
All fire	8 Cyl	8 Cyl	16 Cyl

Injector Types	E420	E440	E1280
Saturation Injectors	Yes	Yes	Yes
Number of Injectors per Output	2	2	2
Low Impedance Injectors	Yes	Yes	Yes
Number of Injectors per Output	2	2	2
Peak Current Selectable			
.9 amp	Yes	Yes	Yes
1.4 amp	Yes	Yes	Yes
1.9 amp	Yes	Yes	Yes

Ethanol Fuel	E420	E440	E1280
Sensor Support	No	Yes	Yes
Scales fuel by % Ethanol	No	Yes	Configurable
Scales ignition advance by % Ethanol	No	Yes	Configurable
Sensor failure detection	No	Yes	Yes

Fuel Learning Modes	E420	E440	E1280
PID Learning	Yes	Yes	Yes
Selectable P I & D parameters	Yes	Yes	Yes
Turn Learning off by RPM	Yes	Yes	Yes
Turn Learning off by Load	Yes	Yes	Yes
Turn Learning off by Water Temp	Yes	Yes	Yes

Trims & Corrections	E420	E440	E1280
Coolant Trim	Yes	Yes	Yes
Air Temperature Trim	Yes	Yes	Yes
MAP Based Trim	Yes	Yes	Yes
Dead Time Correction	Yes	Yes	Yes

Transient Throttle Fuel	E420	E440	E1280
MAP based Trim	Yes	Yes	Yes
TPS Based Trim	Yes	Yes	Yes
Asynchronous Pulse	Yes	Yes	Yes
MAP Prediction Table Mode	Yes	Yes	Yes

## Ignition

Ignition System:	E420	E440	E1280
Ignition Maps	2	2	Configurable

Ignition Modes:	E420	E440	E1280
Sequential	4 Cyl	4 Cyl	8 Cyl
Batch	8 Cyl	8 Cyl	16 Cyl
All Fire (Distributor)	8 Cyl	8 Cyl	16 Cyl

Ignition Coil Interface:	E420	E440	E1280
Maximum Current	0.1 Amp	0.1 Amp	0.1 Amp
Internally Driven Coils (4 or 3 wire)	Yes	Yes	Yes
Externally Driven Coils (2 wire)	Driver Req'd	Driver Req'd	Driver Req'd

Closed Loop Ignition	E420	E440	E1280
Closed Loop Knock Detection	Yes	Yes	Yes
Configurable Closed Loop Ignition Advance Control	Yes, Basic	Yes, Basic	Yes, Advanced

Trims & Corrections	E420	E440	E1280
Coolant Trim	Yes	Yes	Yes
Air Temperature Trim	Yes	Yes	Yes
MAP Based Trim	Yes	Yes	Yes
Dwell Control	Yes	Yes	Yes
Ability to Create New Trims Corrections	No	No	Yes

Transient Throttle Ignition	E420	E440	E1280
Transient Ignition Advance/Retard	Yes	Yes	Yes
Maximum Transient Advance/Retard	Yes	Yes	Yes
Able to Create New Transient Throttle Features	No	No	Yes

## Sensors and Inputs

MAP Sensor	E420	E440	E1280
Linear Sensors	Yes	Yes	Yes
Software Calibration	Yes	Yes	Yes
Maximum Pressure	Configurable	Configurable	Configurable

  

Coolant Sensor Support	E420	E440	E1280
Non linear	Yes	Yes	Yes
Linear	Yes	Yes	Yes
Table specified	Yes	Yes	Yes
Number of Sensors	1	1	Maximum 8

  

Air Temperature Sensor Support	E420	E440	E1280
Non linear	Yes	Yes	Yes
Linear	Yes	Yes	Yes
Table Specified	Yes	Yes	Yes
Number of Sensors Supported	1	1	Maximum 8

  

EGT Sensor	E420	E440	E1280
Non linear	Yes	Yes	Yes
Linear	Yes	Yes	Yes
Table Specified	Yes	Yes	Yes
Number of Sensors Supported	1	1	8
Using Innovate TC-4	4	4	8
Total Supported	5	5	16

  

Digital off-on Inputs	E420	E440	E1280
Number	8	8	8
Act High	Configurable	Configurable	Configurable
Act Low	Configurable	Configurable	Configurable
Logic	Yes	Yes	Yes, Very Advanced

  

Oxygen Sensor Support	E420	E440	E1280
Wire into loom			
OEM, Narrowband	Yes	Yes	Yes
UEGO 0-3v	Yes	Yes	Yes
UEGO 0-5v on spare Input	Yes	Yes	Yes
Bosch Wideband 0-1v	Yes	Yes	Yes
Zeitronix .3-3v	Yes	Yes	Yes

Zeitronix on spare input	Yes	Yes	Yes
Autronic Wideband	Yes	Yes	Yes
NGK AFX	Yes	Yes	Yes
Jaycar KC5486	Yes	Yes	Yes
DynoJet Spare Input	Yes	Yes	Yes
Autometer 0-4v ES PRO on spare input	Yes	Yes	Yes
<b>Serial Port Connection</b>			
M&W UEGO	Yes	Yes	Yes
Innovate LC-1	Yes	Yes	Yes
Innovate TC-1	Yes	Yes	Yes
Innovate LM-1	Yes	Yes	Yes
AEM	Yes	Yes	Yes
Tech Edge V2	Yes	Yes	Yes
Tech Edge 2J1	Yes	Yes	Yes
ELM 327 @38400 baud	Yes	Yes	Yes
ELM 327 @ 9600 Baud	Yes	Yes	Yes
ELM 327 @ 9600 Baud once only	Yes	Yes	Yes

<b>WB02 Inputs</b>	<b>E420</b>	<b>E440</b>	<b>E1280</b>
Linear Inputs (WBO2 Sensor with Driver)	1	1	8
Serial Inputs	1	1	2
Error detection on Serial Ports	Yes	Yes	Yes
Number of Inputs supported Total	1	1	10

<b>Vehicle Speed Sensors</b>	<b>E420</b>	<b>E440</b>	<b>E1280</b>
Digital Input Supported	Yes	Yes	Yes
Number of Sensors	2	4	4

<b>Knock Sensor</b>	<b>E420</b>	<b>E440</b>	<b>E1280</b>
Number of Sensors	1	1	2
Background Filter	Yes	Yes	Yes
Crank angle based knock Detection	No	No	Yes
Full Configurable	Yes, Basic	Yes, Basic	Yes

## Auxillary Output

Output Types	E420	E440	E1280
High Current PWM	3	3	8
High Current	1	1	0
Low Current	4	4	0

  

Output Currents	E420	E440	E1280
High Current PWM	3 Amps	3 Amps	3 Amps
High Current	3 Amps	3 Amps	N/A
Low Current	.3 Amps	.3 Amps	N/A

  

Special Output Functions	E420	E440	E1280
Fuel Pump	Yes	Yes	Yes
Air Conditioner	Yes	Yes	Yes
Purge Valve	Yes	Yes	Yes
Pressure Regulation Valve	Yes	Yes	Yes
Blow Off Valve	Yes	Yes	Yes
Enrich/Retard Switch	Yes	Yes	Yes
Turbo Timer	Yes	Yes	Yes

## Logic

Logic Capability	E420	E440	E1280
<b>Dependent Logics</b>			
Any Dependent Red'D	No	No	Yes
Water Temperature	Yes	Yes	Yes
Coolant Temperature	Yes	Yes	Yes
EGT Temperature	Yes	Yes	Yes
RPM	Yes	Yes	Yes
MAP	Yes	Yes	Yes
Blowoff Valve	Yes	Yes	Yes
Turbo Timer	Yes	Yes	Yes
Air Conditioner	Yes	Yes	Yes
Turbo Temp	Yes	Yes	Yes
Idle Control	Yes	Yes	Yes
Purge Valve	Yes	Yes	Yes
Wastegate	Yes	Yes	Yes
PRCV	Yes	Yes	Yes
Launch Control Status	Yes	Yes	Yes
Traction Control Status	Yes	Yes	Yes
Battery Voltage	Yes	Yes	Yes
Ext based	Yes	Yes	Yes
VSS Based	Yes	Yes	Yes
Knock	Yes	Yes	Yes
AFR (WBO2)	Yes	Yes	Yes
VVT1	Yes	Yes	Yes
VVT2	Yes	Yes	Yes
EGT 1	Yes	Yes	Yes
EGT 2	Yes	Yes	Yes
EGT 3	Yes	Yes	Yes
EGT 4	Yes	Yes	Yes
Idle Stepper 1 Hold	Yes	Yes	Yes
Idle Stepper 2 Hold	Yes	Yes	Yes
Idle Stepper 3 Hold	Yes	Yes	Yes
Idle Stepper 4 Hold	Yes	Yes	Yes
Idle Stepper 1 Pulse	Yes	Yes	Yes
Idle Stepper 2 Pulse	Yes	Yes	Yes
Idle Stepper 3 Pulse	Yes	Yes	Yes
Idle Stepper 4 Pulse	Yes	Yes	Yes
<b>Other Special Logics</b>			
And	Yes	Yes	Yes

OR	Yes	Yes	Yes
Inverse	Yes	Yes	Yes
Fully Conditional	No	No	Yes
Full Mathematics Library	No	No	Yes
Create New PID Controls	No	No	Yes
Remap Fuel and Ignition Calculations	No	No	Yes

## VVTi & Fly by Wire

VVTi Output Controls	E420	E440	E1280
Number of Channels	2	2	4
PID Controller	Yes	Yes	Yes
P Configurable	Yes	Yes	Yes
I Configurable	Yes	Yes	Yes
D Configurable	Yes	Yes	Yes
Min Duty Cycle	Yes	Yes	Yes
Maximum Duty Cycle	Yes	Yes	Yes
RPM Based PID Controls	4 Points	4 Points	Configurable
3D (RPM & MAP Based VVTi Angle Reference Angle Specifiable	16X32	16X32	Configurable
	Yes	Yes	Yes

Fly by Wire	E420	E440	E1280
Number Supported	0	0	Default: 1 Max: 4
Configurable w/Traction Control	No	No	Yes
Configurable w/Launch Control	No	No	Yes
Configurable w/Vehicle Speed	No	No	Yes

## Wastegate & Idle Control

Electronic Wastegate Control	E420	E440	E1280
Base PWM output	1X16	1X16	Configurable
Target Map by RPM	1X16	1X16	Configurable
PID Control	Yes	Yes	Yes
P Configurable	Yes	Yes	Yes
I Configurable	Yes	Yes	Yes
D Configurable	Yes	Yes	Yes
Max Duty Cycle	Yes	Yes	Yes
Min TPS Activation	Yes	Yes	Yes
Min MAP Activation	Yes	Yes	Yes
Delay for TPS and MAP Activation	Yes	Yes	Yes
Max PID	Yes	Yes	Yes
Multiply Base duty cycle by TPS	Yes	Yes	Yes
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Idle Control	E420	E440	E1280
<b>Idle Valve Setup</b>			
Minimum Duty Cycle	Yes	Yes	Yes
Maximum Duty Cycle	Yes	Yes	Yes
Stepper Period (for stepper motors)	Yes	Yes	Yes
PID Timeslice	Yes	Yes	Yes
<b>Idle Control Valve Open Loop</b>			
Idle Duty Cycle vs Coolant	Yes	Yes	Yes
Correction for Air Temperature	Yes	Yes	Yes
Extra Effort after Cranking	Yes	Yes	Yes
Extra Effort for A/C	Yes	Yes	Yes
Extra Effort for Load 1	Yes	Yes	Yes
Extra Effort for Load 2	Yes	Yes	Yes
Extra Effort for Load 3	Yes	Yes	Yes
Extra Effort for Load 4	Yes	Yes	Yes
Throttle Cracker (Extra effort on Tip in)	Yes	Yes	Yes
Dashpot (Extra effort on throttle off)	Yes	Yes	Yes
<b>Idle Control System</b>			
Target Idle Speed Table vs Coolant	32X1	32X1	Configurable
PID Control	Yes	Yes	Yes
P Configurable	Yes	Yes	Yes
I Configurable	Yes	Yes	Yes
D Configurable	Yes	Yes	Yes
Max Duty Cycle	Yes	Yes	Yes
Min TPS Activation	Yes	Yes	Yes
Min MAP Activation	Yes	Yes	Yes
Add Extra RPM for Load	Yes	Yes	Yes

Add Extra RPM for A/C	Yes	Yes	Yes
Add Extra RPM for Low Battery	Yes	Yes	Yes
Neutral Switch Timeout to PID Activation	Yes	Yes	Yes
Recovery RPM (for low RPM condition) 1	Yes	Yes	Yes
Recovery RPM (for low RPM condition) 2	Yes	Yes	Yes
<b>Ignition Assisted Idle Control</b>			
Use P & D to vary idle ignition Timing	Yes	Yes	Yes

## Traction & Launch Control

Launch Control	E420	E440	E1280
Disable vehicle Speed Limit	Yes	Yes	Yes
Selectable cut type	Yes	Yes	Yes
Cut Fuel	Yes	Yes	Yes
Cut Ignition	Yes	Yes	Yes
Complex cut functions supported	Yes	Yes	Yes
Boost By Gear	E420	E440	E1280
Maximum Gears Supported	Yes	Yes	Yes
Auto Learn Gear Ratio	Yes	Yes	Yes
Maximum Boost Pressure	Yes	Yes	Yes
Traction Control	E420	E440	E1280
Supports external Maximum Slip Angle knob	Yes	Yes	Yes
Minimum engine speed enabler	Yes	Yes	Yes
Slave Speed Difference at Maximum Turn	Yes	Yes	Yes
Target wheel slip at Maximum Turn	Yes	Yes	Yes
Cut Fuel or Ignition	Yes	Yes	Yes
Allowable wheel slip error	Yes	Yes	Yes
PID Control	Yes	Yes	Yes
P Configurable	Yes	Yes	Yes
I Configurable	Yes	Yes	Yes
D Configurable	Yes	Yes	Yes
Below change over road speed			
Target wheel slip	Yes	Yes	Yes
Maximum retard	Yes	Yes	Yes
Effort to cut timing by maximum retard	Yes	Yes	Yes
Effort to kill half cylinders	Yes	Yes	Yes
Above change over road Speed			
Target wheel slip	Yes	Yes	Yes
Maximum retard	Yes	Yes	Yes
Effort to cut timing by maximum retard	Yes	Yes	Yes
Effort to kill half cylinders	Yes	Yes	Yes

## Power Cut

Power Cut Types	E420	E440	E1280
Fuel Cut	Yes	Yes	Yes
Ignition Cut	Yes	Yes	Yes
Half Cylinders Cut	Yes	Yes	Yes
Ignition Retard	No	No	Yes
Support playing national anthem / songs	No	No	Yes

Power Cut Conditions	E420	E440	E1280
Cold Rev Limit	Yes	Yes	Yes
Rev limit	Yes	Yes	Yes
Over Boost	Yes	Yes	Yes
Flat Shift	Yes	Yes	Yes
Throttle off Over-Run	Yes	Yes	Yes
Complex Rev Limit w/ Ignition/Wheel Speed/EGT	No	No	Yes

Flood Clear	E420	E440	E1280
Cut fuel on WOT	Yes	Yes	Yes
Cut after cranking periods	Yes	Yes	Yes
Don't reduce, but cut to DC injector	Yes	Yes	Yes

## User Interface / Tuning Interface

Datalogging	E420	E440	E1280
<b>Storage Size</b>			
Internal Memory Size (High Speed)	0k	0k	512k
USB Stick Datalogging Support	No	No	8 Gbytes
Computer Logging	Yes	Yes	Yes
<b>Datalogging Rate</b>			
Computer Datalogging Sample Rate	10hz (.1s)	20hz (.05s)	20hz (.05s)
Internal Datalogging Rage			100+hz (.001s)

  

User Interface	E420	E440	E1280
Compatible Operating Systems	Win 2000-Win 7	Win 2000-Win 7	Win 2000-Win 7
Advanced Mode	No	No	Yes
ECU Interface Name	Wari	Wari	Sekeku