

The **PE3** engine control unit is a compact, adjustable system that handles fuel and ignition responsibilities for almost any engine. The long features list, ease of use and small size make it a great addition to any vehicle, on or off-road.



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General System Features

- Completely adjustable via a laptop. •
- *Plug-and-Play* versions available for some • applications.
- Lightweight and compact with a waterproof option (4.25"x 4.80" x 1.00" and less than 1 lb).
- Dedicated CAN bus that allows communication with external devices.
- Standard 1MB of on-board data logging for engine parameters and external inputs (Approx 5 hrs of data with 10 channels at 20 Hz).
- 25,000+ max RPM.
- Adjustable rev limits including Primary, Secondary and Boost limits.
- Password protected access. •
- Fast and reliable communication via Ethernet. Allows for easy wireless tuning with routers.
- Real-time tuning.
- Extensive error and diagnostic functions. •
- Save and load tuning files, or parts of tuning • files, to and from disk.
- Primary/Secondary main fuel and ignition tables.

Fuel Specific Control

- 25x26 Main fuel table with adjustable indices and an option to reduce table size to 13x13.
- Barometric Pressure, Acceleration, Deceleration, Battery, Air Temp, Coolant Temp and Starting compensations.
- Individual cylinder trims.
- Closed loop control with adaptive learning.
- Sequential, batch or semi-sequential injector • firing.

- Adjustable injection timing control.
- Saturated or peak-and-hold injector drivers. Adjustable peak current and adjustable hold
- current for low impedance injectors.
- Staged injection.

Ignition Specific Control

- Coil-on-plug, wasted spark or distributor based ignition.
- No external igniters required. Inductive igniters are built in the ECU.
- 25x26 Main Ignition table with adjustable indices and an option to reduce table size to 13x13.
- Starting, Air Temp, Coolant Temp and Barometric Pressure compensations.
- Individual cylinder trims.
- Adjustable dwell as a function of Battery Voltage.

System Inputs

- MAP, TPS, Barometric Pressure, Air Temp, Coolant Temp, Battery Voltage, Crank, Cam, Thermistors, EGO.
- Up to *8 generic analog inputs* that can be used to modify fuel, modify timing, cut fuel, cut timing or simply be logged.
- 2 additional thermistor inputs.
- Up to 7 user configurable digital inputs that can stop fuel, stop ignition, measure speeds, initiate secondary rev limit, start/stop data logging, etc.

System Outputs

- Fuel pump driver.
- 8 peak-and-hold or saturated injector drivers.
- 4 ignition coil drivers with internal igniters.
- Dedicated tachometer driver.
- Idle air stepper motor driver. •
- Up to 10 user configurable digital outputs.
- Up to 8 Pulse Width Modulated outputs with adjustable duty cycles based on 3-D tables.

PE reserves the right to change the specifications without notice.





Plastic

Waterproof

Enclosure

Advanced Tuning Software

 All features are completely adjustable using the advanced software that communicates to the ECU via an Ethernet connection.

Engine	Fuel	Ignition	Define TDC	Rev Limit			
Cylinders	Trigger Inpu	020203334335		Input(cam)		onfiguration	
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.oad Control		2-0 Wheel	•	1 Pulse per rev	I		
MAP 💌	1						
BLAF 1	<u>'</u>		Sync	c Tooth 4			
fach Pulses per Re	ר Reverse	Polarity					
2 🔻	🛛 🗌 🗖 Peak Tri	ack Low					
etup Engine							3
ietup Engine Engine	Fuel	Ignition	Define TDC	Rev Limit			<u>?</u>
Engine heck to Enable —	Fuel	Ignition		Rev Limit	Peak & Hold		Staged Injection
Engine heck to Enable — Fuel			n Type	Open Time Range-	Peak & Hold		
Engine Check to Enable — Fuel Air Temperature	Compensation	Injection	n Type	1	100000000000000000000000000000000000000	4.0	Staged Injection
Engine Check to Enable — Fuel Air Temperature Coolant Tempera	Compensation ture Compensation	Injection	n Type	Open Time Range-	Enable	4.0	Staged Injection
Engine Check to Enable — Fuel Air Temperature Coolant Tempera Barometer Comp	Compensation ture Compensation ensation	Injection	n Type	Open Time Range-	Peak Current	1.0	Staged Injection
Engine Check to Enable — Fuel Air Temperature Coolant Tempera Barometer Comp Battery Voltage (Compensation ture Compensation ensation Compensation	Min Opt	n Type	Open Time Range-	Enable Peak Current Hold Current	1.0	Staged Injection
Check to Enable — 7 Fuel 7 Air Temperature 7 Coolant Tempera 7 Barometer Comp	Compensation ture Compensation ensation Compensation staton	Injection	equential equential en Time (ms) 1.40 Clear	Open Time Range-	F Enable Peak Current Hold Current	1.0	Staged Injection

• Huge 25x26 main fuel and ignition tables provide ample resolution for even the most difficult to tune engine. User adjustable RPM and Load indices make the system even more versatile.

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	ie Tuel		Lightene	- uptin									RAI													E Fuel Table	
_	0	450	900	1360	1900	2250	2700	3150	3800	4060	4500	4950	6400	5850	6300	6750	7200	7850	8100	8550	9000	9450	9900	10350	10800		
5.0	4.55	4.05	4.65	4.94	4.94	4.94	4.94	4.94	4.94	4.94	5.69	5.02	6.22	6.72	6.59	7.50	7.50	7.50	6.94	6.44	6.44	6.25	6.25	5.44	5.44	1997 ASSO 1995	
4.6	4.00	4.00	4.66	4.94	4.94	4.94	4.94	4.94	5.13	5.13	\$.01	\$31	5.78	4.50	6.66	7.34	7.50	7.50	7.13	6.59	6.59	6.25	6.25	5.44	5.44		200-
4.0	4.75	4.75	5.03	6.31	5.31	4.94	4.72	4.72	5.13	5.13	5.31	5.47	5.78	6.31	6.28	7.50	7.50	7.50	7.13	6.59	6.59	6.22	6.22	6.31	5.31		
3.5	4.75	4.75	5.03	5.31	5.31	4.55	5.13	5.00	5.31	5.35	5.31	5.50	5.00	6.25	6.44	6.54	6.84	6.24	6.50	6.41	6.31	5.81	5.63	5.50	5.31		
3.0	4.00	4.05	4.05	5.28	5.28	4.72	5.00	4.04	5.16	5.38	5.31	5.50	5.01	4.59	6.72	7.06	7.05	7.06	6.59	6.22	6.05	5.63	5.47	5.31	5.25		
2.5	4.88	4.68	4.88	5.13	5.13	4.72	5.00	4.75	5.00	5.56	5.56	5.59	6.22	7.03	6.72	6.72	6.72	6.31	6.25	5.69	5.50	5.44	5.31	5.25	5.03		
2.0	4.44	4.44	4.44	4.66	4.65	4.25	4.63	4,44	4.63	4.75	5.03		5.66	6.44	8.22	6.31	6.22	5.81	5.44	5.50	5.38	5.00	4.55	5.03	4.94		
1.5	4.05	4.05	4.05	4.05	4.05	4.22	4.44	4.35	4.63	4.09	5.00	5.25	5.38	6.05	5.75	5.91	5.81	5.31	5.25	5.28	5.15	4.04	4.72	4.85	4.75	\sim	
1.0	4.05	4.06	4.05	3.94	3.94	4.06	4.44	4.31	4.44	4.63	5.00	5.13	\$.31	5.94	5.00	5.69	5.66	5.16	5.38	\$.31	\$.25	4.00	4.84	4.72	4.66		
0.5	3.94	3.94	3.94	3.81	3.75	3.94	4.06	4.96	4.22	4.34	4.94	5.03	5.13	5.91	5.50	5.47	5.47	6.00	5.25	6.13	5.03	4.72	4.66	4.63	4.53	Arran kana ta rateta view.	
0.0	3.81	3.51	3.61	3.75	3.75	3.85	3.94	3.94	4.22	4.25	4.54	5.00	5.13	5.31	5.00	4.72	4.72	4.55	4.44	4,38	4.34	4.34	4.25	4.25	4.35	Right click for options.	
9.6	3.81	3.75	3.75	3.75	3.69	3.81	3.94	3.94	4.13	4.22	4.34	4.53	4.34	4.63	4.63	4.31	4.31	4.31	4.09	4.00	4.00	4.00	3.94	3.91	4.09	Fuel Compensation Factors	2
9.0	3.75	3.75	3.69	3.56	3.58	3.75	3.81	3.88	4.06	4.22	4.25	4.44	4.34	4.50	4.66	4.25	4.25	4.25	3.91	3.91	3.91	3.91	3.91	3.91	4.09	Select Factor Renge V- 5% + Batter	ry Comp I
1.5	3.75	3.69	3.56	3.44	3.44	3.69	3.61	3.81	3.94	4.13	4.22	4.34	4.31	4.34	4.50	4.05	4.05	4.05	3.75	3.75	3.61	3.51	3.81	3.81	4.05		125
8.0	3.69	3.56	2.44	3.38	3.16	3.56	3.69	3.81	3.94	4.09	4.22	4.25	4.22	434	4.44	3.68	3.88	3.91	3.59	3.59	3.72	3.72	3.75	3.81	4.00		
7.8	3.56	3,44	3.38	3.16	3.15	3.47	3.58	3.69	3.75	3.81	3.81	3.94	3.72	3.81	3.94	3.69	3.72	3.75	3.47	3.50	3.58	3.59	3.72	3.31	3.59	Accel 0.00 Storting 0.00	10
7.0	3.44	3.38	3.95	3.16	3.13	3.44	3.44	3.47	3.47	3.47	3.56	3.56	3.51	3.31	3.85	3.47	3.50	3.56	3.31	3.44	3.47	3.50	3.59	3.25	3.56	Ar 0.03	10
6.6	3.38	3.16	3.99	3.13	3.09	3.16	3.28	3.38	3,44	3,44	3.44	3.44	2.97	2.97	3.50	3.13	3.13	3.16	3.13	3.16	3.09	3.13	3.19	2.97	3.28	Costert 0.09	10
3.0	3.96	3.16	3.13	3.06	2.97	2.97	2.97	2.97	3.06	3.09	3.09	3.09	2.97	2.97	2.97	2.97	2.97	2.67	2.97	3.09	2.97	3.06	3.18	2.97	3.25	Acalog #1 0.00	10
5.5	3.95	3.13	3.05	2.85	2.51	2.85	2.88	2.94	2.97	2.97	3.06	3.09	2.97	2.97	2.97	2.97	2.97	3.13	3.19	3.31	3.95	3.25	3.38	3.13	2.47	Analog #2 0.00	10
9.6	3.13	3.06	2.94	2.81	2.75	2.78	2.61	2.88	2.88	2.97	2.97	3.09	2.97	2.97	2.97	2.97	2.97	3,13	3.19	3.31	3.19	3.28	3.38	3.09	3.44	Analog 23 0.00 Analog 24 0.00	10
4.5	2.75	2.66	2.50	2.38	2.25	2.31	2.66	2.66	2.78	2.78	2.88	3.98	2.97	2.97	3.28	3.13	3.44	3.31	3.44	3.50	3.28	3.38	3.47	3.13	3.44	Analog #5 0.00	10
4.0	2.35	2.19	2.13	1.91	1.51	2.19	2.34	2.56	2.66	2.65	2.75	2.55	2.97	2.97	3.16	2.97	2.97	2.97	3.05	3.09	2.97	2.97	3.09	3.13	2.44	Analog #8 0.00 Analog #7 0.00	10
1.6	2.00	1,81	1.63	1.53	1.91	2.31	2.53	2.66	2.66	2.56	2.66	2.78	2.66	2.97	3.13	2.97	2.97	2.97	2.97	3.09	3.09	3.16	3.28	3.31	3.38	Analog #8 0.00	10
3.0	1.59	1.41	1.22	1.41	1.88	2.31	2.00	2.00	2.16	2.25	2.38	2.50	2.56	2.66	2.66	2.94	2.97	2.97	2.97	2.97	2.97	3.06	3.13	3.28	3.38	Lam. 517 0.00	10
2.5	1.59	1.59	1.50	1.41	1.55	2.31	2.56	2.00	2.16	2.25	2.35	2.50	2.56	2.65	2.66	2.65	2.97	2.97	2.97	2.97	2.97	2.97	3.09	3.16	3.31	46 100	100

 In addition to the large fuel and ignition tables, the *PE3* allows you to adjust all fuel and ignition compensation terms real time.



 While tuning, individual compensation terms are represented in an easy to view bar graph. This allows instant identification of which factors are influencing fuel and ignition.



• Real-time plotting and internal data logging are included with every system. 1 MB of data can be stored in the ECU as the engine runs. Engine parameters, as well as generic analog and digital inputs, can be logged.



 Advanced diagnostic features, like error logging and crank/cam trigger scope displays, allow for easy troubleshooting.

