

ELITE 2500

PART NUMBER: HT-151300 (ECU only)



The future of engine management is here!

Haltech's Elite 2500 ECU takes the art of engine calibration to a whole new level.

Featuring a robust environmentally sealed waterproof case, drive by wire throttle control, intake and exhaust cam control, short term and long term map learning, dual channel knock control, and much more, the Elite 2500 ECU provides engine calibrators the tools they need to get the job done right.

Alongside the Elite 2500 ECU is the Elite Software Programmer (ESP) that brings levels of functionality and user friendliness never seen before in an engine control package. Together they offer true cutting edge technology to tuners and performance enthusiasts worldwide.

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FEATURES & APPLICATIONS

OVERVIEW

- Supports 1 to 12 Cylinder engines
- 2 to 4 Rotor engines
- Normally aspirated or forced induction
- Load sensing by Throttle Position (TPS), Manifold Absolute Pressure (MAP) or Mass Air Flow (MAF)
- Staged, Sequential, semi sequential, batch or multipoint injection patterns
- Distributor ignition systems, multi-coil systems, expand CDI range or Haltech Multiplex CDI systems
- Connect to a wide range of display dashes and expansion devices via CAN.
- Waterproof Case (With Pocket Cover Fitted)
- 8 x Fuel Injection Outputs
- 8 x Ignition Outputs
- 12 x Digital Outputs
- 10 x Analogue Voltage Inputs
- 4 x Synchronised Pulsed Inputs
- 4 x Dedicated inputs (Dual Knock, ignition Switch & onboard MAP Sensor)
- 2 x Dedicated Engine Position Inputs with extensive trigger type support
 - Up to 45 channels of Input & Output (I/O) expansion (via CAN)
 - USB Laptop communication (Windows)
 - ESP Calibration Software - Intuitive and easy to use

FEATURES

- Drive by Wire Throttle Control (DBW) - Requires (2) user defined outputs & (4) user defined inputs
- Low Impedance Injector control with Programmable Injector Peak and Hold Currents & Programmable peak time
- Flex Fuel Function (Direct sensor input) - Tune your engines boost, fuel and ignition by ethanol content
- Flexible tuning setup for Petrol (Gasoline), LPG, Methanol and Ethanol allows you to simply select your fuel type

- Closed Loop O2 Control – Dual bank control for precise tuning (With optional external CAN O2 Wideband Controller Kit)
- Dual Channel Knock Control - Synchronised to engine position with high speed digital filtering for accurate detection
- Variable cam control - Independently control up to 4 camshafts - Requires a minimum of 1 user defined input & output per variable cam
- Closed Loop Idle Speed Control with learning for consistent idle stability Requires 1 or 2 user defined outputs (BAC type) or 4 user defined outputs (Stepper motor type)
- Long term learning (Auto tune) on fuel, ignition, cam, boost & idle control maps (up to 4D)
- On-board data logging - Up to 40 channels of logging at sample rates up to 5ms (200Hz) with 2MB of internal memory
- Laptop data logging –Data log all available channels directly to your laptop's hard drive for both tuning and diagnostics
- Dual CAN Bus communication for Haltech Dashes and expansion devices, Supported OEM CAN & OBDII (view live engine data & set and clear diagnostic trouble codes)
- Injection Stages 1 – 4 with individual injector flow rates per injector
- 8 Injector drivers for 2 sequential stages on 4 cylinder & 3 rotor engines and up to 4 sequential stages on 2 rotor engines
- Anti-Lag/Rotational idle – for closed course racing, rally, circuit or drift. Build and maintain boost during closed throttle conditions
- Rolling Anti-Lag – lock to your current (or pre-set) RPM or road speed for roll racing or pit lane limiting
- Launch Control – Control your engines power delivery, RPM & boost for consistent performance at the start line
- Traction Control – Control your engines power output via mappable front vs rear axle or individual wheel speed slip.

ADVANCED TUNING

- Tuning Table Resolution up to 32 x 32 x 8
 - Limitless tuning flexibility -Tune your engine by a combination of 4D tuning tables combined with 3D per cylinder compensations and multiple user definable corrections
- Example tune by a combination of manifold pressure, throttle position, cam position, ethanol content, gear, road speed, race time, EGT, shock travel, ride height or any channel for ultimate flexibility – Dual mapping is a thing of the past.
- Per Cylinder Tuning Correction - 3D
 - Wideband O2 - Connect up to 9 Channels via CAN expansion devices
 - Thermocouples/EGT (Exhaust Gas Temperature) - Connect up to 12 Channels via external CAN expansion devices
 - Engine Protection – Set advanced multi-level limits for sensors and protect your engine against common causes of failure

RACE FUNCTIONS

- Nitrous control with advanced programming of up to 6 stages of wet or dry nitrous kits with on/off delays & banked control options.

Up to 2 stages of progressive control.
3D fuel and ignition corrections for all stages.

- Boost Control –Intelligent 4D Closed loop learning, with flexible user definable axis and 6 fully user definable corrections

Multiple modes – example boost by gear, road speed, race timer, shock travel, ride height etc.

- Sequential turbo control
- CO2 Boost control, wastegate pressure & position, intake air bleed control (charge pipe wastegate) functionality for the hard-core racer
- Flat shift – Optimise your shifting precision via a combination of inputs such as a clutch switch, strain gauge or closed-loop control gearbox position sensor for sequential transmissions
- Shock Travel/Ride Height inputs allow dynamic tuning and data logging to assist in chassis development and power delivery
- Timer Functions – Use the combination of the race timer and 5 additional programmable timers for time based control of multiple engine parameters, power delivery and other user definable functions
- Trans brake function allows smooth and consistent control of start line staging (Bump or Creep)
- Optional Upgrade - Advanced Torque Management

A fully integrated driveshaft RPM target race function that provides the ultimate control and consistency for the serious drag racer, eliminating the need for costly external controllers.

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SPECIFICATIONS**OUTPUTS (Total 28)****8 Injection Outputs:**

- Current controlled injector drivers
- High or low impedance injector compatible
- Programmable peak current - 0A to 8A
- Programmable hold current - 0A to 2A
- Up to 7 unused injector outputs can be re-assigned as user definable outputs (DPOs) with 1A Max output.

8 Ignition Outputs:

- Over current protected ignition drivers
- Max current 1A per driver
- Up to 7 unused ignition outputs can be re-assigned as user definable generic outputs (DPOs) with 1A Max output.

1 Dedicated Output (non re-assignable):

- Engine control relay (ECR) output - controls up to 6 relays simultaneously

11 User Definable Outputs:**2 Drive by Wire:**

- Over current protected hi / low side motor outputs
- Suits most OEM throttle bodies and pedals
- Max Current 5A per driver
- 1A Average current
- 100KHz Max frequency
- Can be re-assigned as user definable generic outputs (DPOs) with 1A Max output.

4 Stepper Motor Control:

- 1 x 4 wire stepper motor control
- Can be configured as 4 x hi / low side outputs
- Max drive current 1A per output
- Max sink current 1A per output
- Over current protected
- Can be re-assigned as user definable generic outputs (DPOs) with 1A Max output.

5 Digital Pulsed Outputs:

- Over current protected low side pulsed outputs

INPUTS (Total 20)**6 Dedicated Inputs (non re-assignable):****2 Knock:**

- Supports piezo knock sensors
- Synchronised to engine position

2 Crank & Cam Synchronised Pulsed Inputs:

- Supports variable reluctor (VR) and digital (Hall effect) inputs - 50KHz Max frequency
- Accepts up to 20V Max input voltage

1 Ignition Switch (for ECR function):

- 1 On-board 3 Bar MAP sensor
- Supports up to 200Kpa of boost (2Bar / 29psi)

14 User Definable Inputs:**10 Analogue Voltage Inputs:**

- 2 are compatible with narrowband O2 sensors
- Switchable 1K Ohm Pull-up resistor for sensors
- Accepts up to 20V Max input voltage
- Supports up to 1.5KHz input frequency

4 Synchronised Pulsed Inputs:

- Supports variable reluctor (VR) and digital (Hall effect) inputs - 50KHz Max frequency
- Accepts up to 20V Max input voltage
- Accepts up to 20V Max input voltage
- Can be also be used as Analogue Voltage Inputs

**Input & Output (I/O) expansion (via CAN)
(Total 45)****Connect up to 2 I/O Expander 12 devices**

- Up to 8 x AVI
- Up to 8 x DPI
- Up to 8 x DPO

Connect up to 5 Wideband O2 devices

- WBC1 and 4 WBC2 (9 Channels)

Connect up to 4 Thermocouple Amplifier devices

- 2 TCA2 and 2 TCA4 (12 sensors)
- K-Type thermocouple sensors can be used for EGT (Exhaust Gas Temperature) or any high range temperature measurement

POWER REQUIREMENTS & RATINGS

Input Supply Voltage: 8VDC to 16VDC

Output Sensor Supply Maximum Current Ratings:

- 5V Supply: 100mA Max
- 8V Supply: 100mA Max

DIMENSIONS

185mm (L) X 125mm (W) X 43.5mm(H)

7.28" (L) X 4.92" (W) X 1.71" (H)

WEIGHT

ECU: 590g (1.3lb)

ECU & 2.5m (8 ft) Basic Universal Wire-in Harness kit
1.95 Kg (4.3lb)

ECU & 2.5m (8 ft) Premium Universal Wire-in Harness kit
3.10 Kg (6.8lb)