



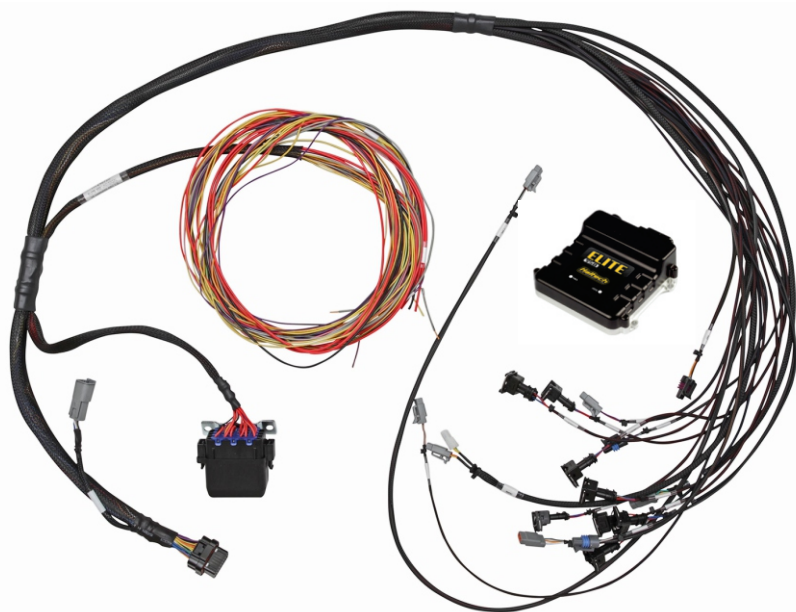
ELITE 950

V8 Big Block / Small Block Terminated Engine Harness

(Suits EV1 Injector Connectors)

HT - 140720

QUICK START GUIDE



Haltech Off-Road Usage Policy

It is unlawful to tamper with your vehicle's emissions equipment.

Haltech products are designed and sold for sanctioned off-road/competition non-emissions controlled vehicles only. Using Haltech products for street/road use on public roads is prohibited by law. It is the responsibility of the installer and/or user of this product to ensure compliance with all applicable local and federal laws and regulations. Please check with your local vehicle authority before using any Haltech product

Installation of Haltech Products

No responsibility whatsoever is accepted by Haltech for the fitment of Haltech Products. The onus is clearly on the installer to ensure that both their knowledge and the parts selected are correct for that particular application. Any damage to parts or consequential damage or costs resulting from the incorrect installation of Haltech products are totally the responsibility of the installer.

Always disconnect the battery when doing electrical work on your vehicle. Avoid sparks, open flames or use of electrical devices near flammable substances. Do not run the engine with a battery charger connected as this could damage the ECU and other electrical equipment. Do not overcharge the battery or reverse the polarity of the battery or any charging unit. Disconnect the Haltech ECU from the electrical system whenever doing any welding on the vehicle by unplugging the wiring harness connector from the ECU. After completing the ECU installation, make sure there is no wiring left un-insulated. Uninsulated wiring can cause sparks, short circuits and in some cases fire. Before attempting to run the engine ensure there are no leaks in the fuel system. All fuel system components and wiring should be mounted away from heat sources, shielded if necessary and well ventilated. Always ensure that you follow workshop safety procedures. If you're working underneath a jacked-up car, always use safety stands!

Haltech Limited Warranty

Unless specified otherwise, Haltech warrants its products to be free from defects in material or workmanship for a period of 12 months from the date of purchase, valid in the original country of purchase only. Proof of purchase, in the form of a bill of sale or receipted invoice, which indicates that the product is within the warranty period, must be presented to obtain warranty service. Haltech suggests that the purchaser retain the dealer's dated bill of sale/receipt as evidence of the date of retail purchase. If the Haltech product is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of purchase. This shall constitute the sole liability of Haltech. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations, either expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Haltech, be liable for special or consequential damages.

Product Returns

Please include a copy of the original purchase invoice along with the unused, undamaged product and its original packaging. Any product returned with missing accessory items or packaging will incur extra charges to return the item to a re-saleable condition. All product returns must be sent via a freight method with adequate tracking, insurance and proof of delivery services. Haltech will not be held responsible for product returns lost during transit. The sale of any sensor or accessory that is supplied in sealed packaging is strictly non-refundable if the sealed packaging has been opened or tampered with. This will be clearly noted on the product packaging. If you do not accept these terms please return the sensor in its original unopened packaging within 30 days for a full refund.

Returning a sensor or accessory product within 30 days of purchase: Product may be returned for credit or full refund. (Any sealed packaging must not have been opened or tampered with)

Returning a sensor or accessory product after 30 days of purchase: Product may be returned for credit only (no refunds given) and is subject to a 10% Restocking fee. (Any sealed packaging must not have been opened or tampered with)

Elite 950 V8 Big Block / Small Block

Terminated Engine Harness

Quick Start Guide

Congratulations on purchasing a Haltech Engine Management terminated engine harness. This *Plug and Play* product allows you to be up and running in a few hours.

This Harness when installed in conjunction with a Haltech Elite 950 ECU opens the door to virtually limitless performance modification and tuning of your vehicle. Programmable systems allow you to extract all the performance from your engine by delivering precisely the required amount of fuel and ignition timing that your engine requires for maximum output under all operating conditions.

This quick start guide will walk you through the installation of the Haltech 950 terminated engine harness into a vehicle. This guide is accompanied by the comprehensive help menu located within the ESP software that you or your tuner will need to refer to before completing your installation and configuration. The ESP software is located on the Haltech Resource Centre CD/USB provided with the ECU. The latest version of the software can also be downloaded from the Haltech website www.haltech.com

Supported Engine

The Haltech V8 Big Block / Small Block terminated engine harness supports the following engine configurations:

- GM Small Block / Big Block Engines (8 Injector)
- Ford Small Block / Big Block Engines (8 Injector)
- Chrysler Small Block / Big Block Engines (8 Injector)

Supported ECU

- Haltech Elite 950

Included in this package

- Haltech V8 Big Block / Small Block terminated engine harness
- Connector pack

Optional Accessories (Sold Separately)

- Dual Channel Wideband Controller Kit (HT-059986)
- Single Channel Wideband Controller Kit (HT-059976) *For single turbo applications.
- DTM4 CAN Cable 600mm (HT-130006) *other lengths available
- Boost Control Solenoid (HT-020400)
- High Output Inductive Coils (HT-020114 Qty8)

Harness Overview

The Haltech V8 Big Block / Small Block terminated engine harness is a plug and play solution for wiring V8 engines made for racing applications.

Installation is simple and easy as the harness is designed for the engine and all wires are clearly labelled.

Notes on installation:

- Make sure your engine is grounded to the battery. A ground wire / earthing strap should be used to ground your engine to the battery of the vehicle. The Haltech terminated engine harness **does not** ground your engine.

WARNING!

Damage can occur to your harness and / or ECU if you do not ground your engine properly. Please ensure heavy gauge cable is used.

Other Notes:

- Due to the universal nature of this terminated harness the terminated connections may not plug in directly to your devices, accessories or sensors. If you have any question about a particular connection please first reference manufacturer documentation for the device you are attempting to connect.

If you are unable to confidently make the connection, then please forward the reference material to Haltech technical support staff and a support team member will be able to assist you in determining the proper connections.

Main Power Connections

Main Power

The main power connections supply power through the harness. The wires are bundled and labelled as **"BATTERY"**. Please ensure these connections are connected only after all other connections have been completed and all unused in-cabin wiring has been insulated.

The ECU main power consist of the following connections:

Fuel Pump Battery + (R)

The Fuel Pump Battery + (Red) connection will supply the 12V DC to the fuel pump relay within the harness. Please connect this wire directly to the battery (+) terminal.

Main Battery + (R/G)

The Battery + (Red/Green) connection will supply the 12V DC to the ECU/Injector and Ignition relays within the harness. Please connect this wire directly to the battery (+) terminal.

Battery Ground (B)

The Battery Ground (Black) connection supplies battery ground for the harness. The battery ground consists of one wire flying lead. Please connect this cable directly to the Battery (-) Supply terminal.

WARNING!

Please make sure your engine block is grounded to the battery of the vehicle by a correctly sized grounding strap. This harness will not ground your engine. Damage can occur to this harness and / or your ECU if your engine is not properly grounded.

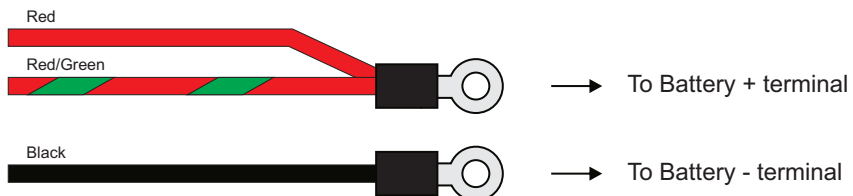


Figure 1 - Main Power Connections

Engine Connections

Injection Outputs 1 - 8 (INJ1, INJ2, INJ3, INJ4, INJ5, INJ6, INJ7, INJ8)

The injector outputs are terminated with Bosch EV1 injector connectors. Please ensure the correct injector output is connected to the corresponding injector in the engine. Refer to the label on the harness for correct injector allocation.

Ignition Outputs 1 - 4 (IGN1, IGN2, IGN3, IGN4)

The Haltech Elite 950 V8 terminated engine harness is wired such that the 4 available ignition outputs are left as flying lead bundle on the in-cabin portion of the harness.

These wires are the ignition outputs of the ECU and can be connected to the coils or ignition system. On distributor and CDI applications, all of the ignition outputs will not be used. Please see the diagrams located later in this manual for wiring instructions for various ignition systems. Unused Ignition Outputs may be re-purposed as DPOs if needed.

+12V DC Switched (R / Y)

This wire supplies a switched +12V DC to the coil from the ignition relay (R2) located inside the fusebox. This output can also be used as a “switch on” signal to a high power coil relay or to any single channel CDI system such as the M&W or MSD ignition systems.

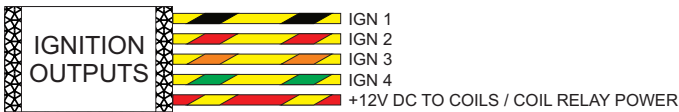


Figure 2 - Ignition Output Bundle

Camshaft Position Sensor (CAM)

The camshaft position sensor is used to determine the camshaft position. This harness comes pre-terminated with a DTM4 connector and a mating connector is included. You may wire either reductor or hall effect style sensors to this connection. Unused connections are marked with a red X.

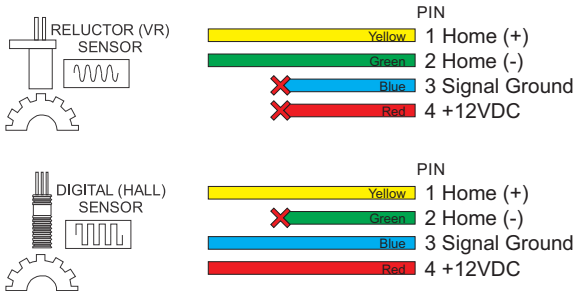


Figure 3 - Camshaft Position Sensor Connections

Crankshaft Position Sensor (CRANK)

The crankshaft position sensor is used to determine the engine speed and engine position. This harness comes pre-terminated with an MSD crankshaft position sensor connector and a DTM3 connector for hall effect sensor connections.

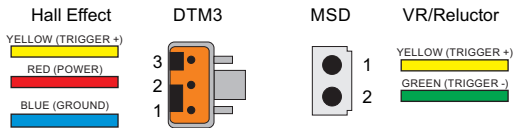


Figure 4 - Crankshaft Position Sensor Connections

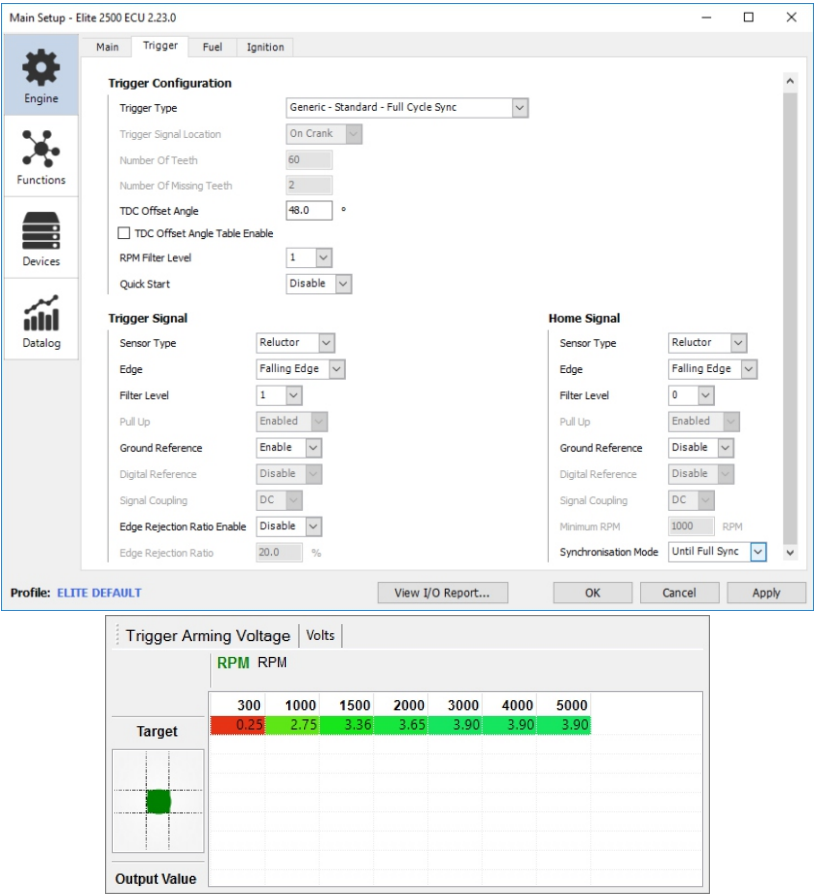


Figure 5 - Typical Software Settings for MSD Crank Angle Sensor

IMPORTANT NOTE:

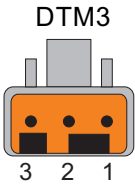
Correct gap between sensor and trigger wheel is 0.055" - 0.060"
Incorrect sensor gap may cause trigger errors or difficulty running the engine.

Throttle Position Sensor (TPS) - AVI 2

The connector labeled with “TPS” will be used to connect the chosen Throttle Position Sensor to the harness. A mating connector for this connection is provided in the connector kit. The connector may also be cut off and re-pinned to suit a direct connection to your existing sensor. Below are some examples of common throttle position sensors and their pin-outs.

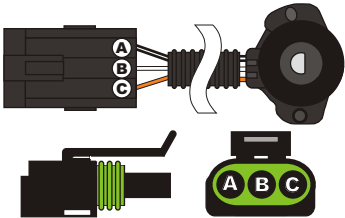
HALTECH SUPPLIED DTM3
TPS CONNECTOR

Sensor Pin	Function	Wire Color
1	Ground	B/W
2	+5VDC	O
3	Signal	W



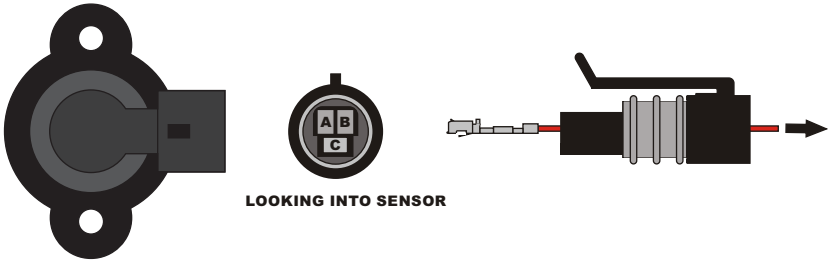
TYPICAL AFTERMARKET
SENSOR CONNECTIONS

Sensor Pin	Function	Wire Color
A	Ground	B/W
B	Signal	W
C	+5VDC	O



TYPICAL GM TPS
SENSOR CONNECTIONS

Sensor Pin	Function	Wire Color
A	+5VDC	O
B	Ground	B/W
C	Signal	W



LOOKING INTO SENSOR

TYPICAL FORD TPS
SENSOR CONNECTIONS

Sensor Pin	Function	Wire Color
1	+5VDC	O
2	Signal	G
3	GROUND	B

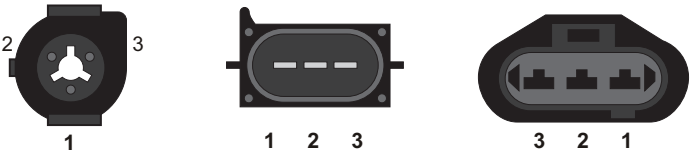


Figure 6 - Throttle Position Sensor Connection (AVI 2)

Manifold Pressure Sensor (MAP) - AVI 3

A MAP sensor is required when tuning an engine to compensate for changes in air density due to pressure. The MAP sensor is used to convert the pressure of air in the intake into an electrical signal for the ECU to use as a reference for engine load. The sensor works in absolute pressures, thus its calibration is not affected by changes in barometric pressure.

The connector labeled with “MAP” comes pre-terminated with a Delphi 3-pin connector that suits a Haltech 5 or 7 bar MAP Sensor (HT-010110 or HT-010130). These sensors may be purchased separately from www.haltech.com.

The connector may also be removed and the wires re-pinned to suit your particular sensor.

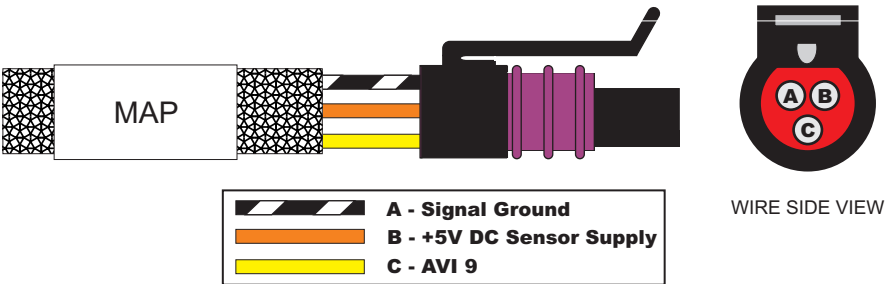


Figure 7 - Manifold Pressure Sensor Connection (AVI 3)

Intake Air Temperature Sensor (IAT) - AVI 4

The connector labeled with “IAT” is a connector that suits a Haltech/GM style IAT sensor. An air temperature sensor is a required sensor used in Volumetric Efficiency (VE) tuning to compensate for changes in air density due to air temperature. Cold air has a higher density than warm air and therefore requires a greater volume of fuel to maintain the same air/fuel ratio. The sensor needs to be mounted after any turbo intercooler in the moving airstream to give fast response times and reduce heat soak effects.

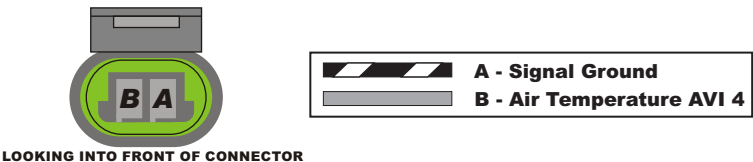


Figure 8 - Intake Air Temperature Sensor Connection (AVI 4)

Spare Digital Pulsed Outputs (DPO3, DPO4)

There are two spare Digital Pulsed Output (DPO) connectors located on the Haltech V8 Big Block / Small Block terminated engine harness. (DPO3 and DPO4). These connections consist of:

- +12V DC Sensor Supply
- Digital Pulsed Output

When the output is activated by the ECU, the output will switch to ground. Devices such as solenoid valves, shift lights can be run directly from the output provided that they do not exceed the maximum current draw of 1A, however high current devices such as thermofans and additional fuel pumps must be activated through a relay. A relay can be wired between the DPO and the supplied +12V DC on this connector. This way the output is only switching the relay and not a high current draw device.

**The Digital Pulsed Outputs are limited to 1A Max current draw.
A relay is required for devices that might pull more than 1A.**

These outputs can be programmed within the ESP Software to control auxiliaries such as:

- A/C Output
- Aux Fuel Pump
- Boost Control
- Check Engine Light
- Intercooler Spray
- Shift Lights
- Thermofans

For a full list of output options and explanations please go to the help section within the

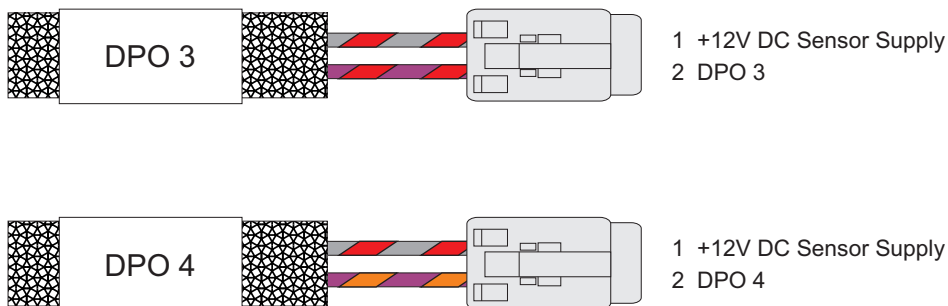


Figure 9 - Spare DPO3 / DPO4 outputs

Engine Coolant Temperature Sensor (ECT) - AVI 5

The connector labeled “ECT” is a connector that suits a Haltech/GM style ECT sensor. The engine coolant temperature sensor provides the ECU with a signal that allows the ECU to know the current engine temperature.

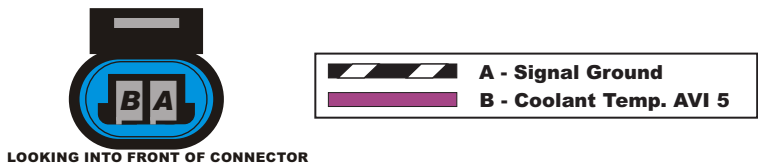


Figure 10 - Engine Coolant Temperature Sensor Connection (AVI 5)

Auxiliary Digital Pulsed Input - DPI1

The connector labeled “DPI1” can be used to connect inputs that may use a digital pulsed signal to communicate information to the ECU. A mating connector for this connection is provided in the connector kit.

The connection consists of:

- +12V DC Sensor Supply
- Signal Ground
- Digital Pulsed Input

This input can be programmed within the ESP Software to read inputs such as:

- Vehicle Speed Sensor
- Flex Fuel Composition Sensor
- Fuel Flow Sensor
- Clutch Switch

For a full list of input options and explanations please go to the help guide located within the ESP Software.

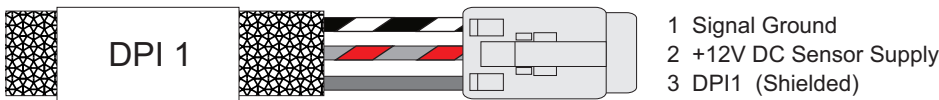


Figure 11 - Auxiliary Digital Pulsed Input (DPI 1)

Auxiliary Connections

The in-cabin harness wiring is made up of multiple inputs and outputs. Correct connection of these wires is essential for proper operation of the harness. **Any unused connections should be insulated.** All available in cabin connections are outlined below:

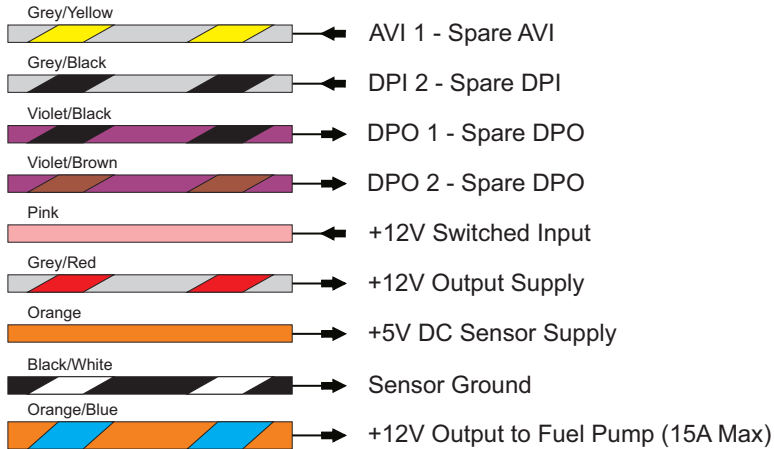


Figure 12 - In Cabin Harness Wiring

Fuel Pump Output (Fuel Pump +12V DC)

The fuel pump output supplies a continuous +12V DC supply to the fuel pump when the engine is running.

This output wire is rated for a max continuous current draw of 15A (through relay located inside the fuse box).

The fuel pump output wire can be connected directly to the positive side of the fuel pump, providing the pump in use will draw less than 15A of current under full load. If your pump will draw more than 15A or if dual pumps are to be used, it is recommended that you use this wire to control a relay to turn on the fuel pumps.

+12VDC Switched Input (Pink)

This input must be connected to a +12VDC switched ignition source. This is required to turn on the relays contained within the fusebox.

+12VDC Output Supply (Grey/Red)

This output can be used to power devices such as solenoids, relays, lights, etc.

Spare Digital Pulsed Outputs (DPO1, DPO2)

Digital Pulsed Outputs (DPO) are switch-to-ground or PWM outputs. When the output is activated by the ECU, the output will switch to ground. Solenoid valves, shift lights, etc can be operated directly from these outputs, however high current devices such as thermofans and additional fuel pumps must be activated through a relay.

A relay can be wired between the DPO and the supplied +12V DC on the connectors, this way the output is only switching the relay and not a high current draw device.

The Digital Pulsed Outputs are limited to 1A Max current draw.

For a full list of output options and explanations please reference the help guide located within the ESP software.

Spare Analogue Voltage Input (AVI1)

Analogue Voltage Inputs (AVI) can accept variable voltage signals from 0V to 5V. This input can also accept switched signals that change between two different voltage levels. The switch on voltage and switch off voltage define what the thresholds are between the on and off states. The voltage can be viewed as a channel in the ESP software to determine thresholds for a switched input.

This input can be programmed within the ESP Software to read variable voltage signals such as:

- O2 Sensors
- Pressure Sensors
- Temperature Sensors
- Various Switches

For a full list of input options and explanations please reference the help guide located within the ESP software.

Digital Pulsed Input (DPI2)

The Digital Pulsed Input (SPI) can accept a digital input that can vary in duty and/or frequency. This input can be programmed within the ESP Software to read inputs such as:

- Vehicle Speed Sensor
- Crank Angle Sensor
- Cam Angle Sensor
- Fuel Flow Sensor

For a full list of input options and explanations please reference the help guide located within the ESP software.

Fuse Box

The Haltech fuse box is connected to the harness.

Contained within the Haltech fuse box is 3 fuses and 3 relays.

Each fuse protects the corresponding relay output (ie fuse #1 protects relay output #1, fuse #2 protects relay output #2 and so on).

The Haltech fuse box can handle a maximum continuous current draw of 75A, exceeding this value may cause damage to the fuse box, therefore please ensure all auxiliary devices, fans and fuel pumps connected **do not** exceed the supplied fuse box current limit.

The functions of each of the relays are outlined below:

Fuse #	Relay #	Function	Fuse Required
F1	R1	+12V Output to ECU/Injectors	15A
F2	R2	+12V Output to Ignition	15A
F3	R3	+12V Output to Fuel Pump	20A

Figure 13 - Haltech fuse box relay allocation table

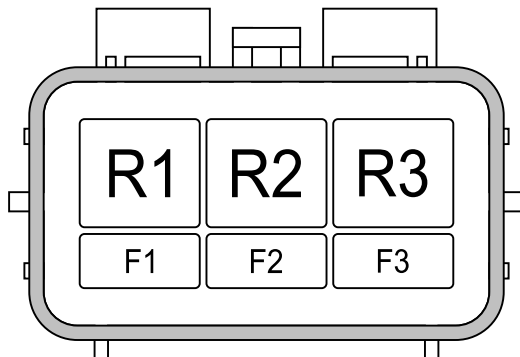
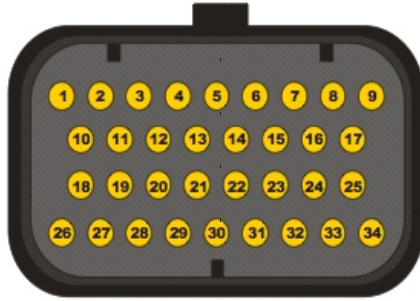


Figure 14 - Haltech fuse box layout

Harness Pinout



(34 Pin Connector)

Pin	Function	Description
A1	DPO 2	Digital Pulsed Output 2
A2	AVI 1	Analogue Voltage Input 1
A3	IGN 1	Ignition Coil #1
A4	IGN 2	Ignition Coil #2
A5	IGN 3	Ignition Coil #3
A6	IGN 4	Ignition Coil #4
A7	INJ 7	Injector #7
A8	INJ 8	Injector #8
A9	+5V	+5V DC Sensor Supply
A10	GND	Battery Negative
A11	SIG GND	Signal Ground
A12	DPI 1	Digital Pulsed Input 1
A13	DPI 2	Digital Pulsed Input 2
A14	TPS (AVI 2)	Throttle Position Sensor
A15	MAP (AVI 3)	Manifold Absolute Pressure Sensor
A16	CAN H	CAN High
A17	CAN L	CAN Low
A18	DPO 1	Digital Pulsed Output 1
A19	INJ 1	Injector #1
A20	INJ 2	Injector #2
A21	INJ 3	Injector #3
A22	INJ 4	Injector #4
A23	DPO 3	Digital Pulsed Output 3
A24	DPO 5	Fuel Pump (+) 15A Max
A25	DPO 4	Digital Pulsed Output 4
A26	+12V (INJ)	Main Power
A27	INJ 5	Injector #5
A28	INJ 6	Injector #6
A29	IAT (AVI 4)	Intake Air Temperature Sensor
A30	ECT (AVI 5)	Engine Coolant Temperature Sensor
A31	TRIGGER (+)	Crankshaft Position Sensor (+)
A32	HOME (+)	Camshaft Position Sensor (+)
A33	TRIGGER (-)	Crankshaft Position Sensor (-)
A34	HOME (-)	Camshaft Position Sensor (-)

Typical Trans-Brake/Auxiliary Rev Limiter Installation

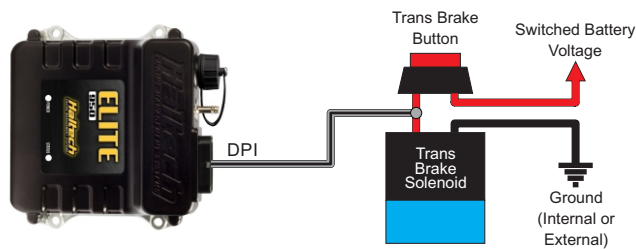


Figure 15 - Auxiliary Rev Limiter Connection

Typical Single Stage Nitrous Solenoid Installation

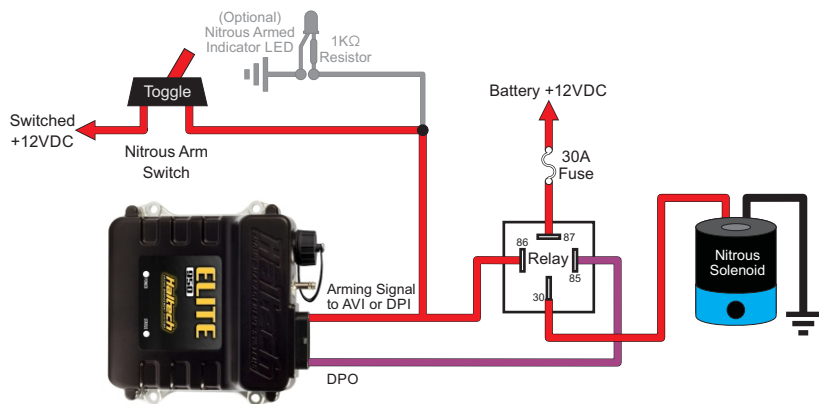


Figure 16 - Nitrous Control Connection

Typical Boost Control Installation

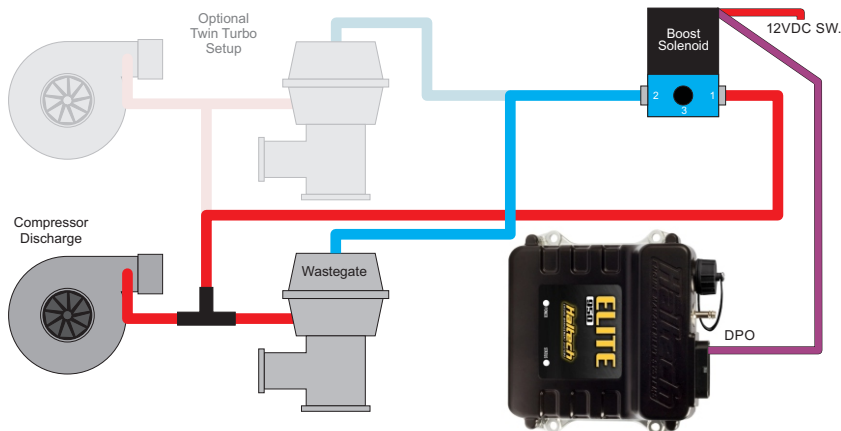
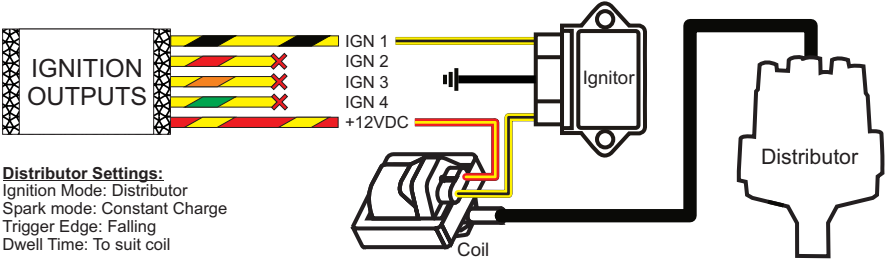


Figure 17 - Boost Control Connection

Single Inductive Coil & Distributor Installation



Distributor Settings:
Ignition Mode: Distributor
Spark mode: Constant Charge
Trigger Edge: Falling
Dwell Time: To suit coil

Figure 18 - Single Coil Connection

Wasted Spark Inductive Coil Installation

Inductive Coils Settings:
Ignition Mode: Wasted Spark
Spark mode: Constant Charge
Trigger Edge: Falling
Dwell Time: To suit coils.

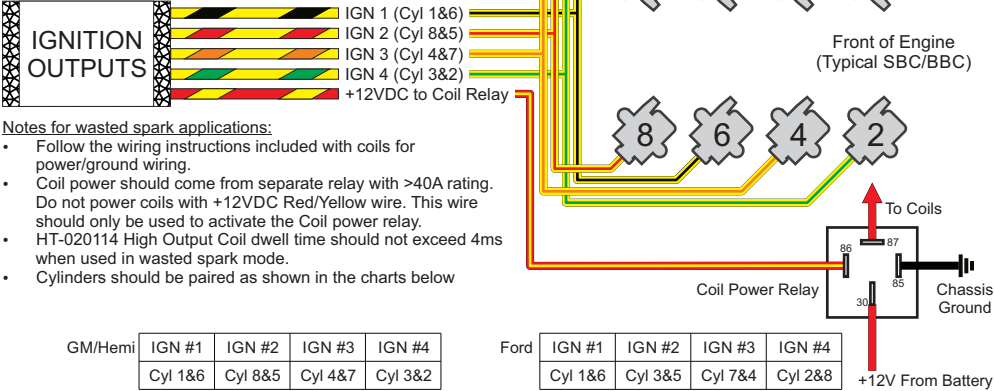
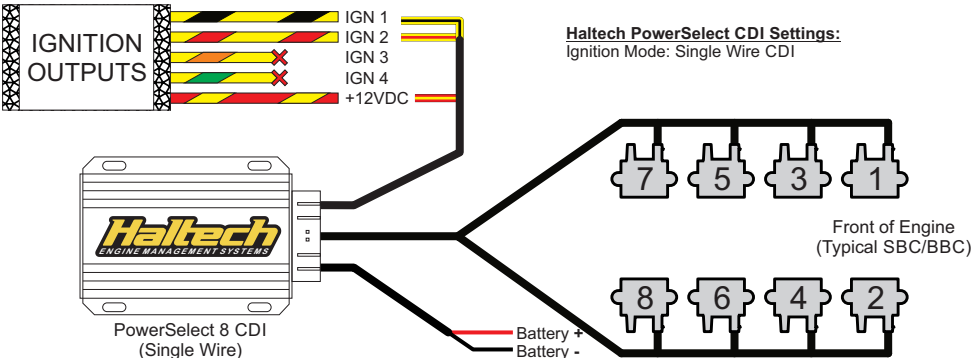


Figure 19 - Wasted Spark Connection

Haltech Power Select 8 Installation

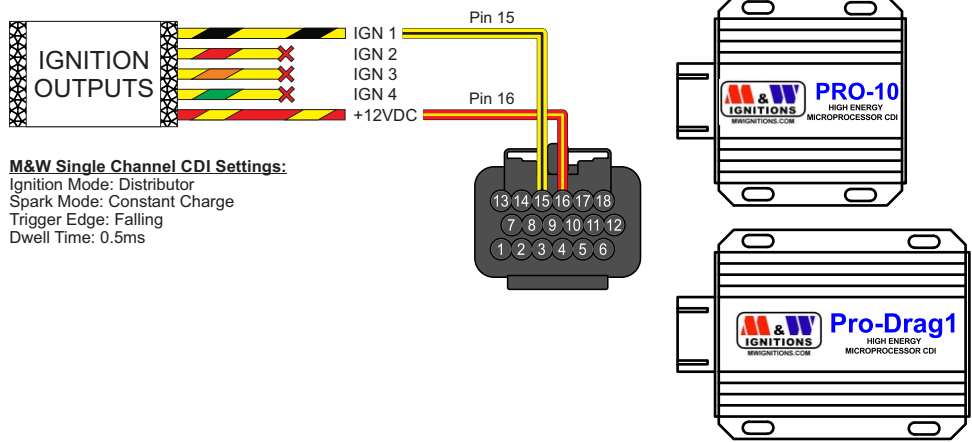


Haltech PowerSelect CDI Settings:
Ignition Mode: Single Wire CDI

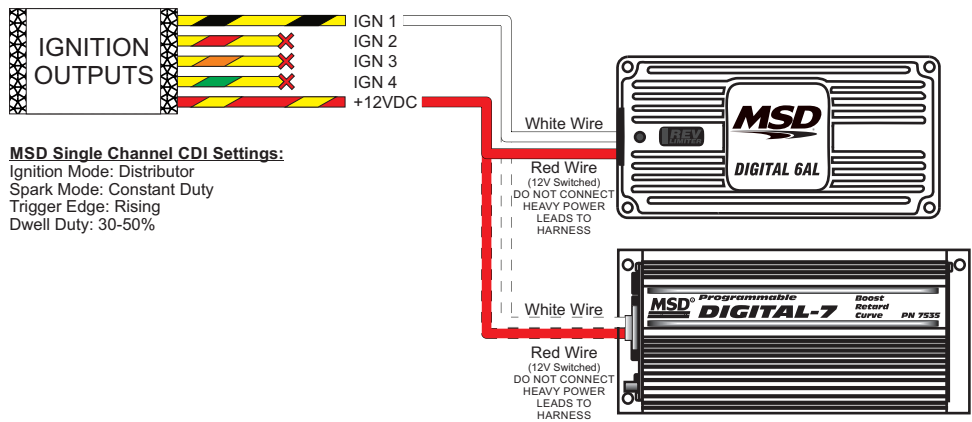
Figure 20 - Haltech Power Select Connection

Single Channel CDI Installation

M&W PRO-10 and PRO-Drag1



MSD 6AL and Digital-7



MSD Power Grid7 Ignition Module

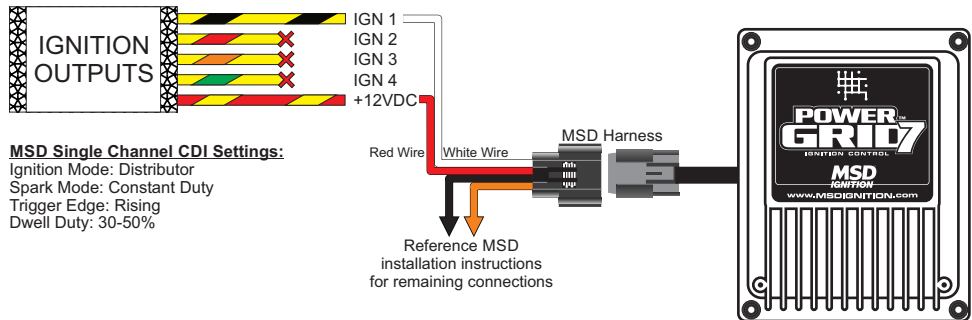


Figure 21 - Single Channel CDI Connection

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Need more help?



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