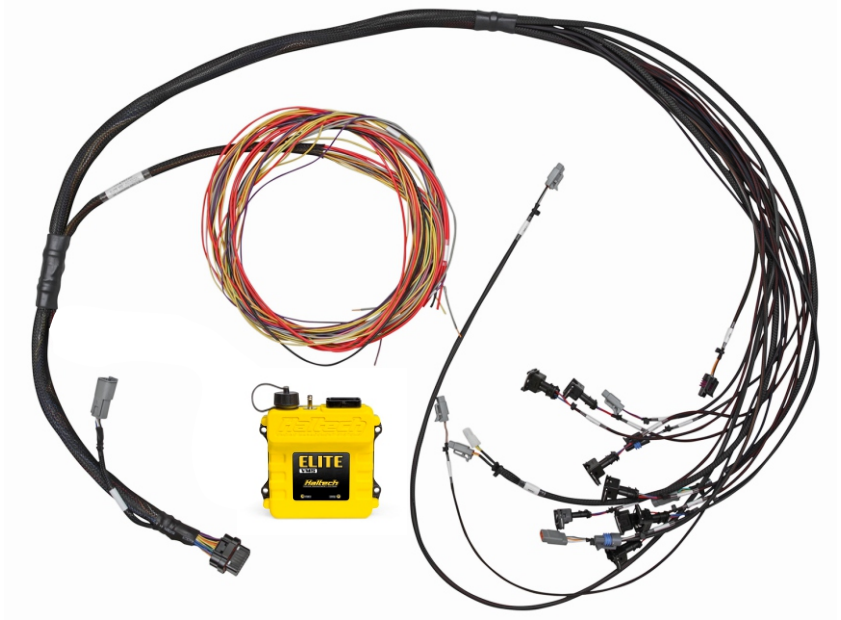
ELITE VMS & VMS-T

Semi-Terminated Engine Harness

HT-147008

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 VMS & VMS-T Semi-Terminated Engine Harness Quick Start Guide

Congratulations on purchasing a Haltech Engine Management semi-terminated engine harness.

This Harness when installed in conjunction with a Haltech Elite VMS or VMS-T 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 allowing you to program the exact 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 VMS & VMS-T semi-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 drive provided with the ECU. The latest version of the software can also be downloaded from the Haltech website at www.haltech.com

Supported Engine(s)

- The Haltech Semi-Terminated engine harness supports most common 8 cylinder small block and big block, carbureted or mechanically fuel injected engines.

Supported ECU(s)

- Haltech Elite VMS & VMS-T

Included in this package

- Haltech Semi-Terminated Engine Harness
- Connector Pack

Optional Accessories (Sold Separately)

- HT-130312 8 Channel Hi Output Ignition Coil & Harness Kit (GM/Chrysler Hemi)
- HT-130313 8 Channel Hi Output Ignition Coil & Harness Kit (Ford)
- HT-020400 Boost Control Solenoid

Harness Overview

The Haltech VMS & VMS-T semi-terminated engine harness is an easy solution for wiring carbureted and mechanically fuel injected 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 semi-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 semi-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.
- Due to the universal nature of this semi-terminated harness the flying lead connections will need proper crimping tools for making the terminations properly.
- If you are unable to confidently make the connection, then please forward any reference material you may have 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. 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:

Switched +12VDC Input + (P)
This input must be connected to an ignition switched +12VDC source. If this connection is not fused, please install the included 10a fuse holder in line.

Ignition Power + (R/Y)
The Ignition Power + (Red) connection will supply battery voltage directly to the ignition breakout connector within the harness. Please connect this wire to a switched +12v source. If this connection is not fused, please install the included 20a fuse holder in line.

Battery Ground - (B)
The Battery Ground - (Black) bundle supplies battery ground for the harness and ignition components. The battery ground bundle consists of a two wire flying lead. Please connect these wires directly to the battery (-) terminal.

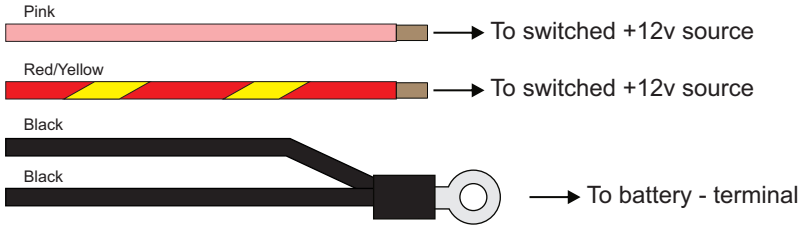


Figure 1 - Main Power Connections

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.

Engine Connections

Ignition Outputs 1 - 4 (IGN1, IGN2, IGN3, IGN4, IGN5, IGN6, IGN7, IGN8)
The Haltech Elite VMS & VMS-T semi-terminated engine harness is wired such that the 8 available ignition outputs are terminated on a 12-pin Deutsch connector labeled “IGNITION”.

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

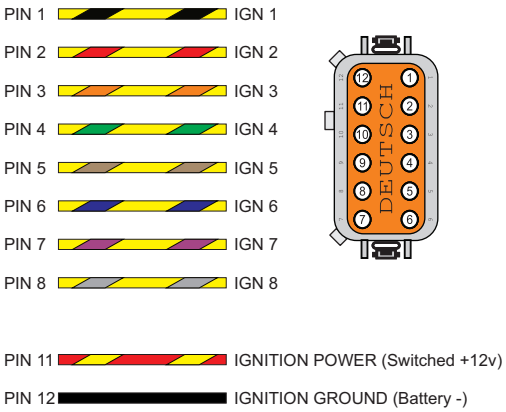


Figure 2 - Ignition Connector

Camshaft Position Sensor (CAM)

The camshaft position sensor is used to determine the camshaft position. This harness comes pre-terminated with a 4-pin Deutsch connector and a mating connector is included. You may wire either reluctor or hall effect style sensors to this connection. Pin allocation for each type of sensor is shown below. Unused connections are marked with a red X.

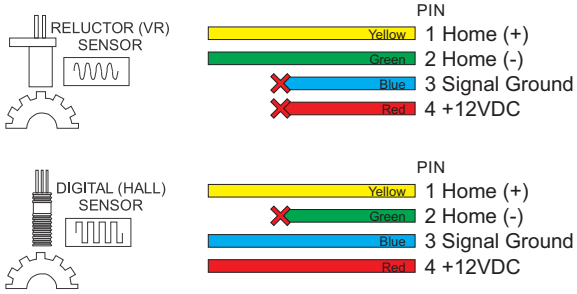


Figure 3 - Camshaft Position Sensor Connections

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 3-pin Deutsch connector for hall effect sensor connections.

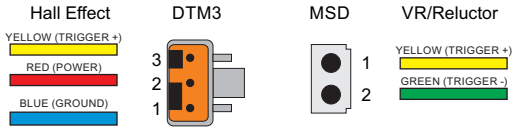


Figure 4 - Crankshaft Position Sensor Connections

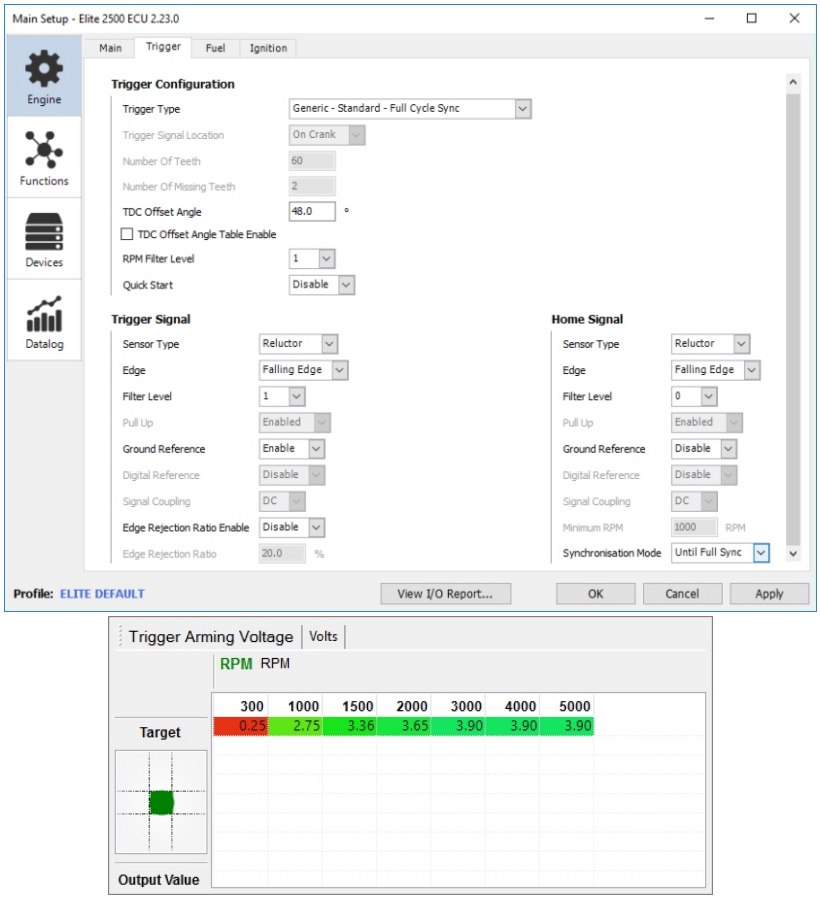


Figure 5 - Typical Software Settings for MSD Crank Angle Sensor

IMPORTANT NOTE:

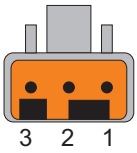
Correct gap between sensor and trigger wheel is 0.055” - 0.060”
Incorrect sensor gap may cause trigger errors or difficulty running the engine.

Throttle Position Sensor (TPS) - AVI 2

The connector labeled with “AVI 2” 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.

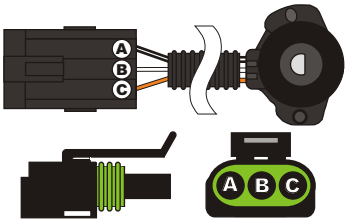
HALTECH SUPPLIED DTM3 TPS CONNECTOR

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



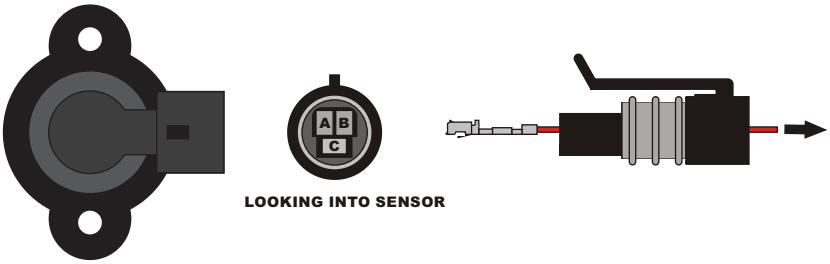
TYPICAL AFTERMARKET SENSOR CONNECTIONS

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



TYPICAL FORD TPS SENSOR CONNECTIONS

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

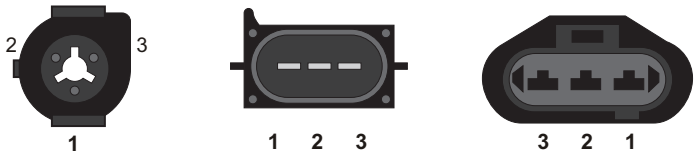


Figure 6 - Throttle Position Sensor Connections (AVI 2)

Manifold Pressure Sensor (MAP) - AVI 3

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 “AVI 3” comes pre-terminated with a 3-pin Delphi 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.

You may choose to use the on-board pressure sensor as the MAP input (OBPS is a 3-bar designation and capable of up reading up to 29 psi of pressure.) Doing so will free up this AVI for other functions.

On nitrous applications, TPS may be used exclusively as a load source and this AVI may be used for other functions.

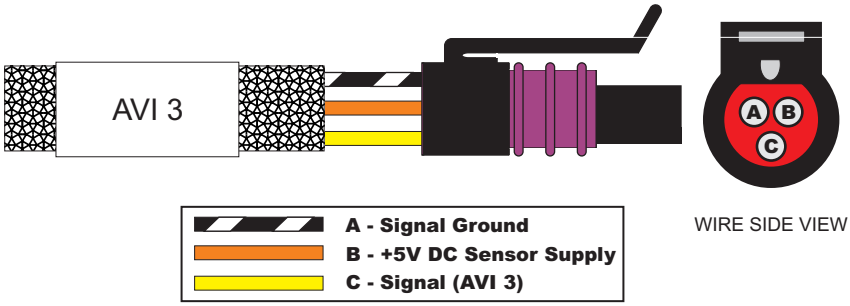


Figure 7 - Manifold Pressure Sensor Connection (AVI 3)

Auxiliary Analog Voltage Input - AVI 4

The connector labeled “AVI 4” can be used to directly connect an HT-010504 12-Position Rotary Trim Module. A mating connector is also provided for other uses.

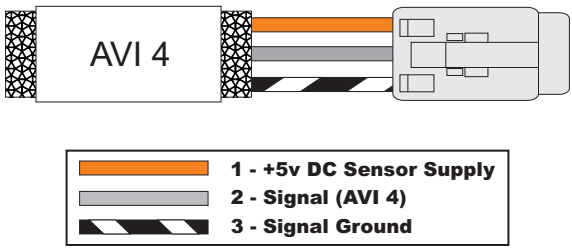


Figure 8 - Auxiliary AVI Connection (AVI 4)

Driveshaft Speed Input - DPI 1

The connector lead labeled “DRIVESHAFT SPEED” can be used to connect a driveshaft speed sensor for use with the Advanced Torque Management function of the VMS-T or simply for datalogging purposes.

There are two connectors fitted to this lead. The 3-pin Molex connector suits RacePak brand driveshaft speed sensors. The 3-pin Deutsch connector and mating connector can be used to adapt the harness to other style sensors. ONLY USE ONE CONNECTOR AT A TIME
.
For more information on calibrating and using the driveshaft speed input, please refer to the help file located in the ESP Software.

.

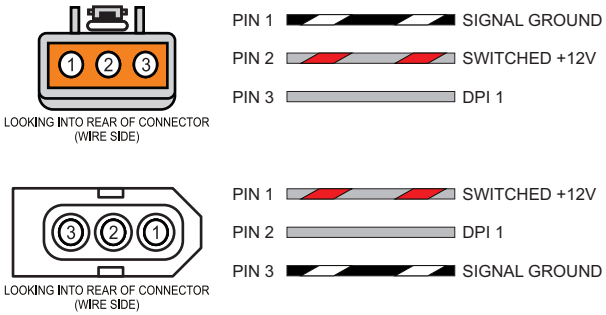


Figure 9 - Auxiliary Digital Pulsed Input (DPI 1)

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:

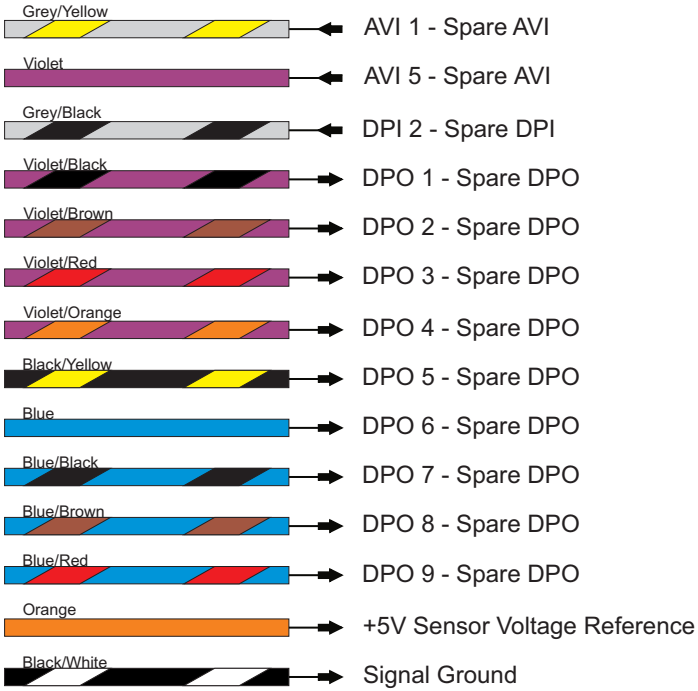


Figure 10 - In Cabin Harness Wiring

Spare Digital Pulsed Outputs (DPO1 - DPO9)

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, AVI5)

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:

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

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

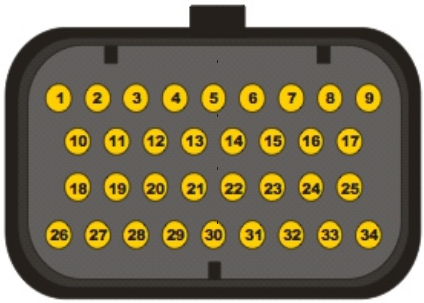
Digital Pulsed Input (DPI2)

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
- Fuel Flow Sensor
- Flex Fuel Sensor

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

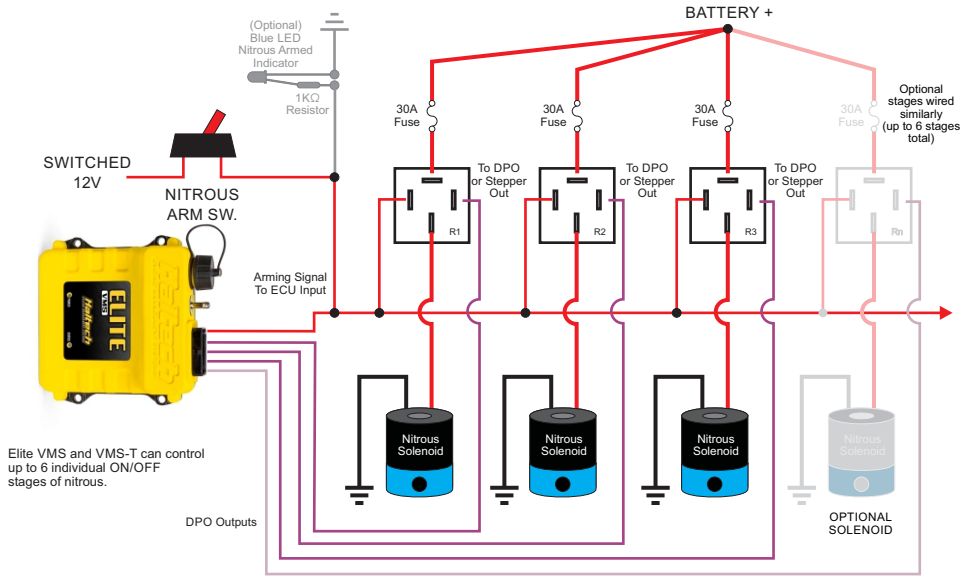
Harness Pinout



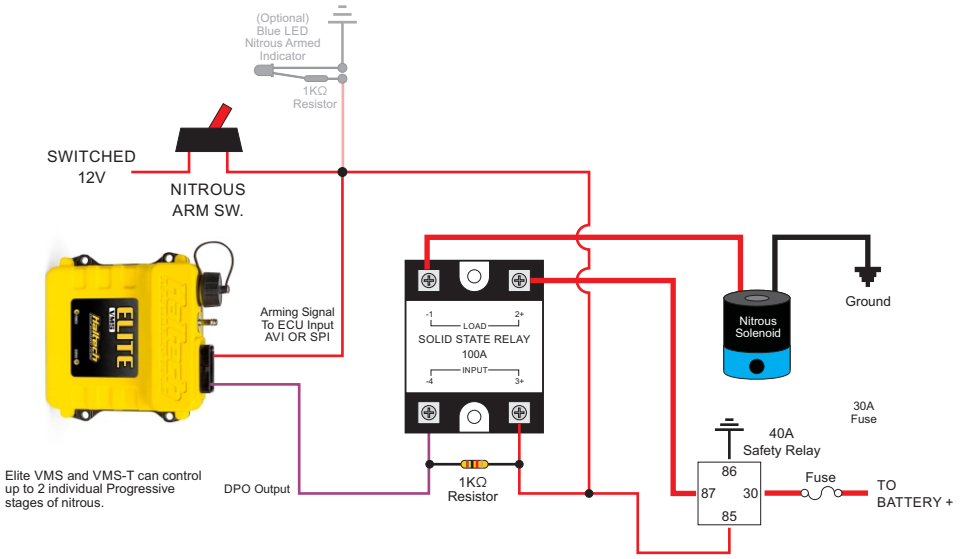
(34 Pin Connector)

ECU Connector (34 Pin Plug)	Function	Description
1	DPO 2	Digital Pulsed Output 2
2	AVI 1	Analogue Voltage Input 1
3	IGN 1	Ignition Coil #1
4	IGN 2	Ignition Coil #2
5	IGN 3	Ignition Coil #3
6	IGN 4	Ignition Coil #4
7	IGN 5	Ignition Coil #5
8	IGN 6	Ignition Coil #6
9	+5V	+5V DC Sensor Supply
10	GND	Battery Negative
11	SIG GND	Signal Ground
12	DPI 1	Digital Pulsed Input 1
13	DPI 2	Digital Pulsed Input 2
14	TPS (AVI 2)	Throttle Position Sensor
15	MAP (AVI 3)	Manifold Absolute Pressure Sensor
16	CAN H	CAN High
17	CAN L	CAN Low
18	DPO 1	Digital Pulsed Output 1
19	DPO 6	Digital Pulsed Output 6
20	DPO 7	Digital Pulsed Output 7
21	DPO 8	Digital Pulsed Output 8
22	DPO 9	Digital Pulsed Output 9
23	DPO 3	Digital Pulsed Output 3
24	DPO 5	Digital Pulsed Output 5
25	DPO 4	Digital Pulsed Output 4
26	+12VDC	ECU Main Power
27	IGN 7	Ignition Coil #7
28	IGN 8	Ignition Coil #8
29	AVI 4	Analogue Voltage Input 4
30	AVI 5	Analogue Voltage Input 5
21	TRIGGER (+)	Crankshaft Position Sensor (+)
32	HOME (+)	Camshaft Position Sensor (+)
33	TRIGGER (-)	Crankshaft Position Sensor (-)
34	HOME (-)	Camshaft Position Sensor (-)

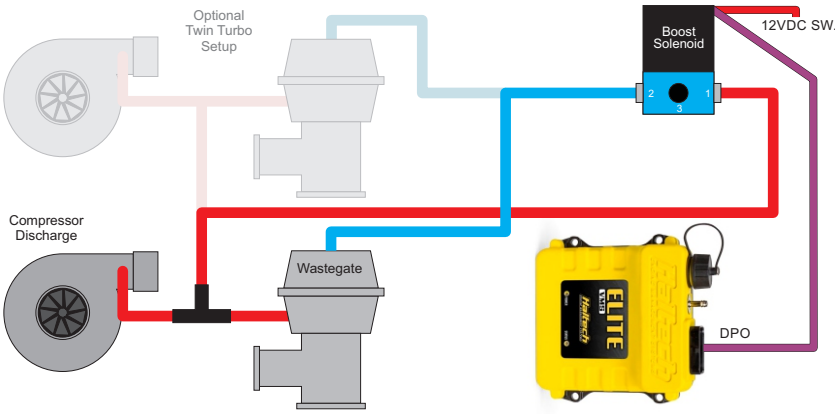
Typical Multi-Stage Nitrous Wiring



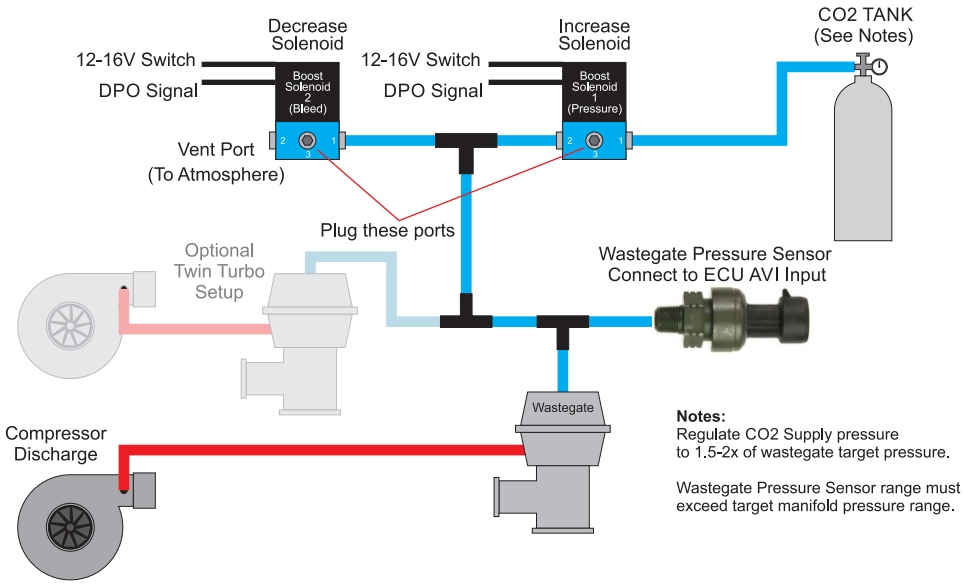
Typical Progressive Nitrous Wiring



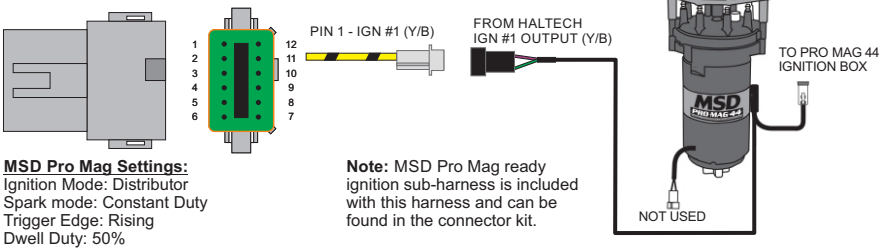
Typical Boost Control Setup



Typical Co2 Boost Control Setup



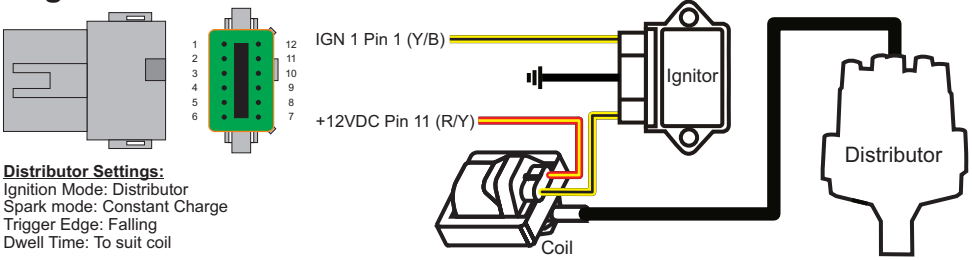
MSD Pro Mag Installation



MSD Pro Mag Settings:
Ignition Mode: Distributor
Spark mode: Constant Duty
Trigger Edge: Rising
Dwell Duty: 50%

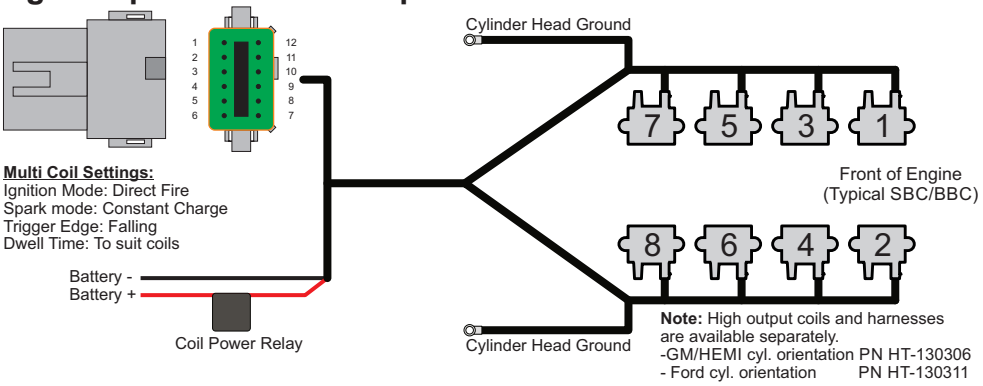
Note: MSD Pro Mag ready ignition sub-harness is included with this harness and can be found in the connector kit.

Single Inductive Coil & Distributor Installation



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

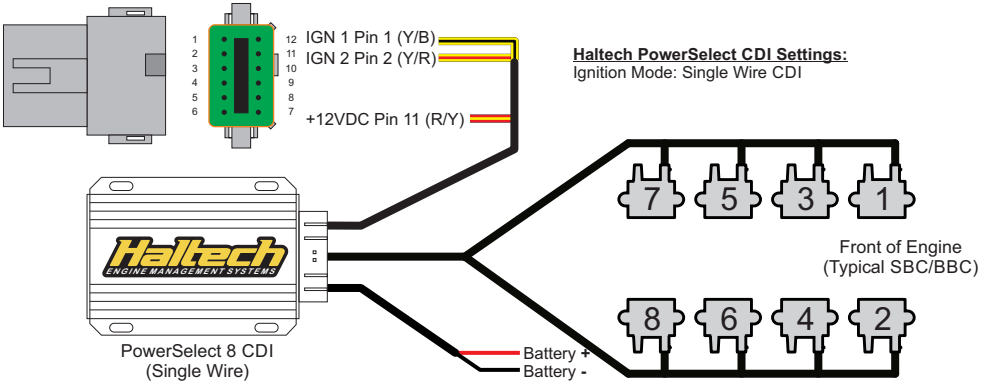
High Output Coil and Mil-Spec Coil Harness Installation



Multi Coil Settings:
Ignition Mode: Direct Fire
Spark mode: Constant Charge
Trigger Edge: Falling
Dwell Time: To suit coils

Note: High output coils and harnesses are available separately.
-GM/HEMI cyl. orientation PN HT-130306
- Ford cyl. orientation PN HT-130311

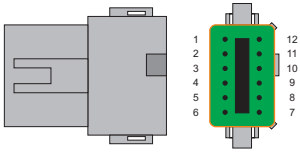
Haltech Power Select 8 Installation



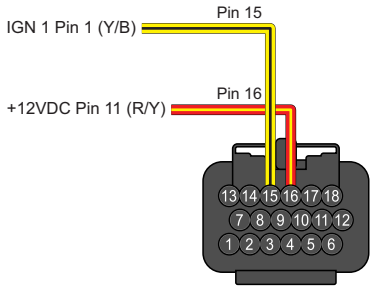
Haltech PowerSelect CDI Settings:
Ignition Mode: Single Wire CDI

Single Channel CDI Installation

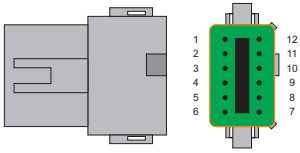
M&W PRO-10 and PRO-Drag1



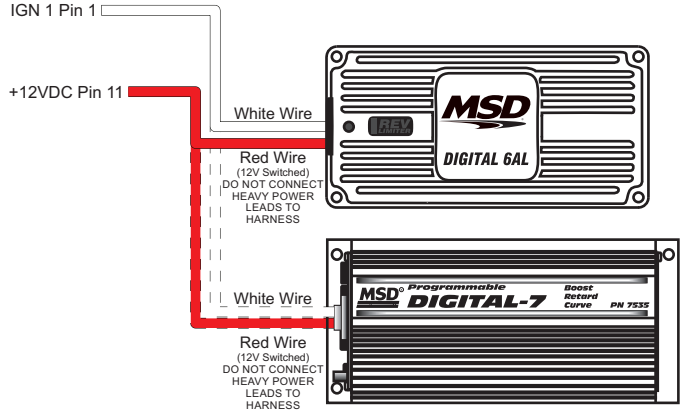
M&W Single Channel CDI Settings:
Ignition Mode: Distributor
Spark Mode: Constant Charge
Trigger Edge: Falling
Dwell Time: 0.5ms



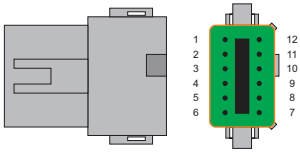
MSD 6AL and Digital-7



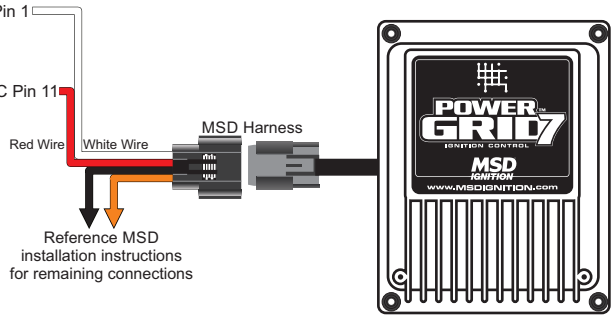
MSD Single Channel CDI Settings:
Ignition Mode: Distributor
Spark Mode: Constant Duty
Trigger Edge: Rising
Dwell Duty: 30-50%



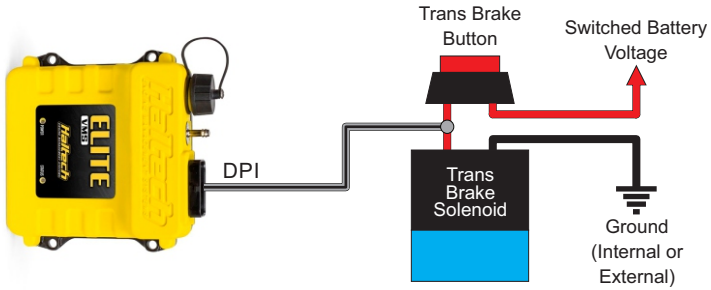
MSD Power Grid7 Ignition Module



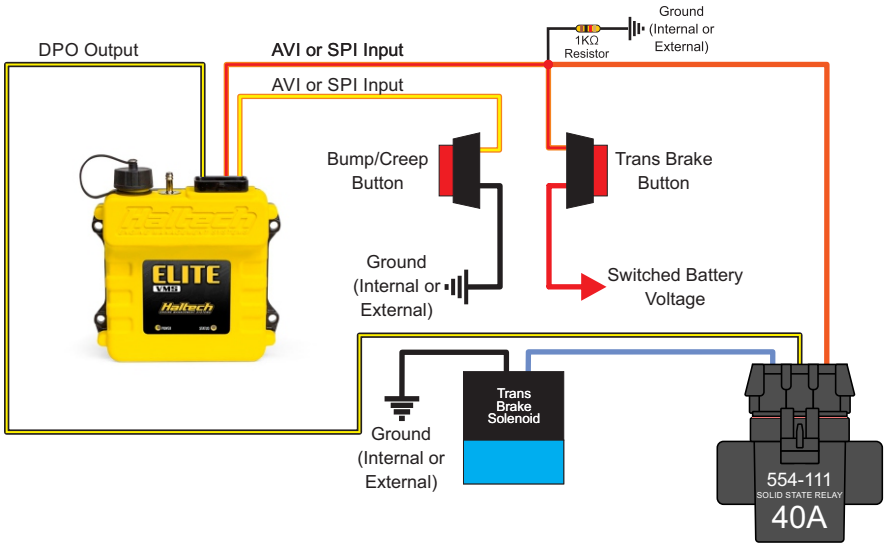
MSD Single Channel CDI Settings:
Ignition Mode: Distributor
Spark Mode: Constant Duty
Trigger Edge: Rising
Dwell Duty: 30-50%



Typical Trans-brake wiring (Naturally Aspirated, Nitrous or Supercharged Applications)



Typical Trans-brake wiring (Turbocharged applications)



NOTES

Need more help?

Intl: **+61 2 9729 0999**
USA: **+1 888 298 8116**

Intl: **support@haltech.com**
USA: **usasupport@haltech.com**

www.haltech.com

/Haltechecu

/HaltechEngineManagement