



Haltech I/O Expander 12
HT-059900
QUICK START GUIDE



WARNING - 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)

Haltech I/O Expander 12

Quick Start Guide

Congratulations on purchasing a Haltech I/O Expander 12

This *Plug and Play* product allows the user the ability to increase the functionality of their Haltech ECU by using the Haltech CAN system which is fitted to all Platinum or Elite Series ECU's.

The Haltech I/O Expander 12 instantly makes available 12 additional user configurable inputs and outputs. Simply plug in the CAN cable and start using your extra I/O.

This quick start guide will walk you through installation of the Haltech I/O Expander 12 into a vehicle. This guide is accompanied by the full service manual located on the software CD or USB key provided with the ECU that you or your tuner will need to refer to before completing your installation and configuration. The manual can also be downloaded from the Haltech website www.haltech.com.

Included in Haltech I/O Expander 12 Kit

- Haltech I/O Expander 12
- Haltech CAN Cable DTM4 to 8-pin Tyco (300mm) (HT-130032)
- Quick start guide

Optional Accessories (Sold Separately)

- I/O Expander 12 – Flying Lead Harness (HT-049902)
- I/O Expander 12 – Plug and Pin Set (HT-030007)
- Haltech CAN Cable DTM4 to 8-pin Black Tyco in various sizes 150mm up to 3600mm (Please contact Haltech for sizes and prices)

Installation

Installing the Haltech I/O Expander 12 is quick and simple there are 2 possible methods for connection to your Haltech ECU, they are outlined below:

Method 1: Direct Connection to Haltech Platinum or Elite Series ECU

- Connect the Haltech I/O Expander 12 directly to a Haltech Platinum or Elite series ECU via the CAN direct connection cable included with the kit

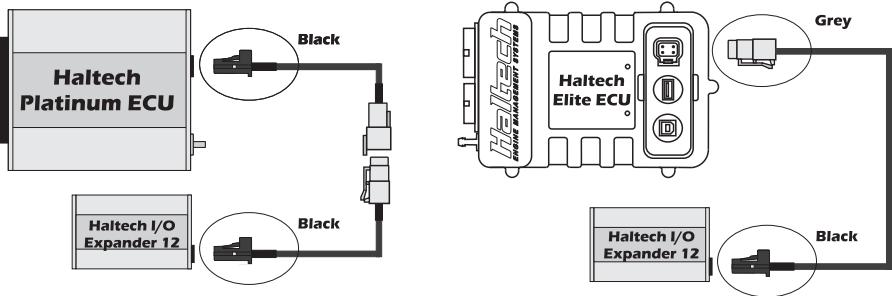


Figure 1 - Direct connection to Haltech ECU

Method 2 : Connection Via Haltech DTM4 CAN Hub (HT-159000)

- Connect the Haltech I/O Expander 12 directly to the CAN Hub attached to a Haltech Platinum or Elite Series ECU (a Haltech CAN Hub Connection Cable may need to be purchased depending on your setup. Please refer to the Haltech CAN Hub quick start guide for details on connecting multiple devices to your Platinum or Elite Series ECU.)

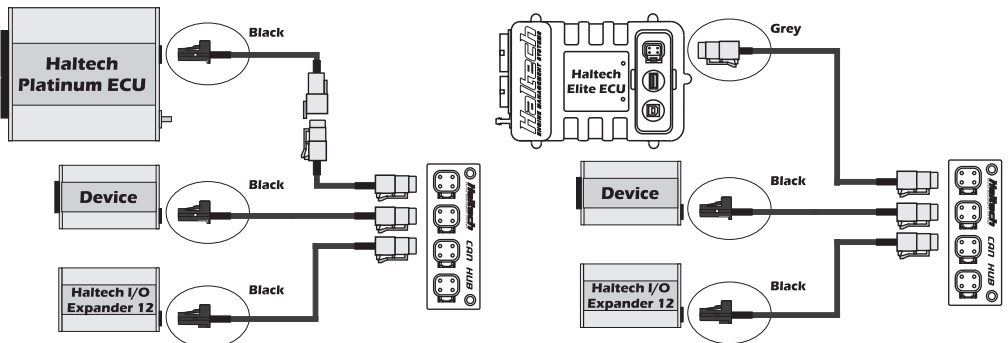


Figure 2 - DTM4 CAN Hub connection to Haltech ECU with 2 Devices

Power and Status LED's

The Haltech I/O expander 12 has two status LED's on the rear of the device. These LED's will illuminate under the following conditions

Power LED (Blue)

The Power LED is connected directly to power and will turn on and remain on when the device is powered up

Status LED (Red)

The Status LED turns on if the device is in error.

Possible causes are listed below:

- Incorrect wiring
- CAN Communications Fault
- Two Identical Devices on the CAN Bus

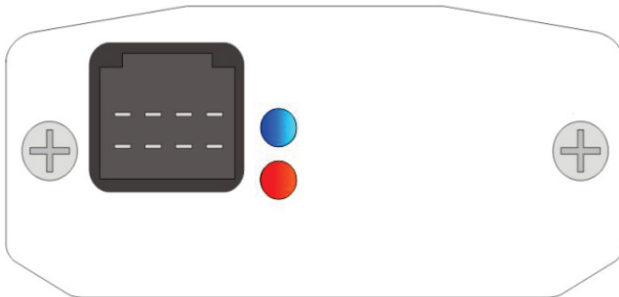


Figure 3 - Rear View of I/O Expander Device Showing Status LED's

Wiring Harness (optional)

The Haltech I/O Expander 12 can be supplied with a 24 pin wiring harness, Connections are outlined in detail below:

WARNING!

Please make sure you configure your I/O Expander 12 with your ECU using ECU Manager Software before you plug in the wiring harness, as outputs may turn on undesirably when power is applied if not configured.

Main Inputs

There are four main inputs to the Haltech I/O Expander 12

+12V DC Switched (Pink)

Connect this wire to a +12V DC Switched ignition source

+12V DC Battery (Red)

Connect this wire to a constant +12V DC battery supply

Signal Ground (Black / White)

Connect this wire to the signal ground on the ECU

Ground (Black)

Connect this wire to Battery Negative (-)

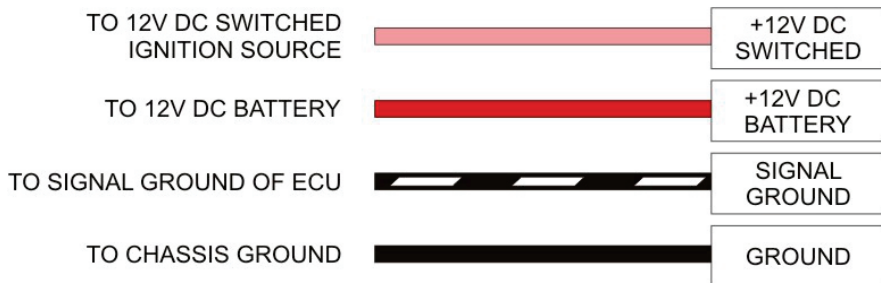


Figure 4 - Main inputs

Analogue Voltage Inputs (AVI)

The Haltech I/O Expander 12 features 4 Analogue Voltage Inputs.

Analogue Voltage Inputs accept variable voltage inputs from 0V to 5V.

AVI inputs can also accept switch inputs that change between two different voltage levels. The *On Voltage* and *Off Voltage* define the thresholds between the *On* and *Off* states. The input voltage can be viewed as a channel in the software to determine the thresholds for a switched input.

Each AVI has a selectable 1K Pull up resistor which can be enabled or disabled in the software allowing quick connection of temperature sensors.

The Haltech I/O Expander 12 harness supplies connections for 5V power and signal ground outputs allowing quick and easy connection of 5V powered sensors.

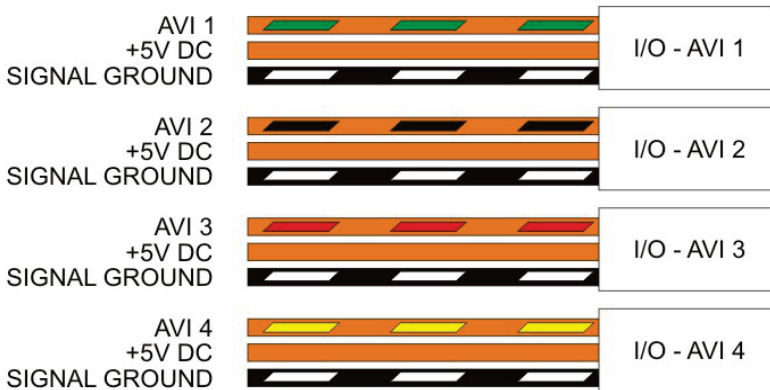


Figure 5 - Analogue Voltage Inputs

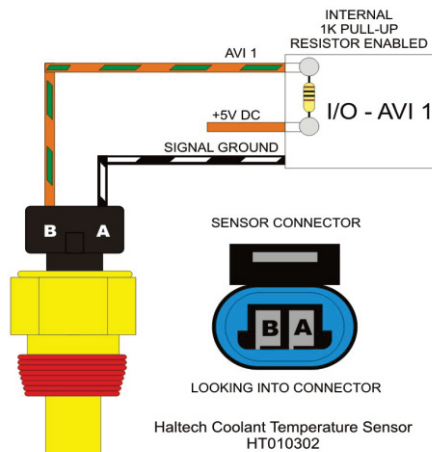


Figure 6 - Haltech HT-010302 Coolant Temperature Sensor wiring to AVI 1

Digital Pulsed Outputs (DPO)

The Haltech I/O Expander 12 features 4 Digital Pulsed Outputs. Each output has been grouped with a +12V DC Source within the harness, this allows the user to fit an external relay to control high current devices.

Digital Pulsed outputs are capable of outputting pulsed waveforms with varying duty and frequency. DPO's can be used to control various devices such as thermo fans, shift lights, bypass air control valves, boost control solenoids etc.

When a Digital Pulsed output is activated by the ECU the output will switch to ground. Solenoid valves and shift lights etc can be run directly from the output. However high current devices such as thermo fans and additional fuel pumps must be activated through a relay. This way the DPO is only switching a relay and not a high current draw device.

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

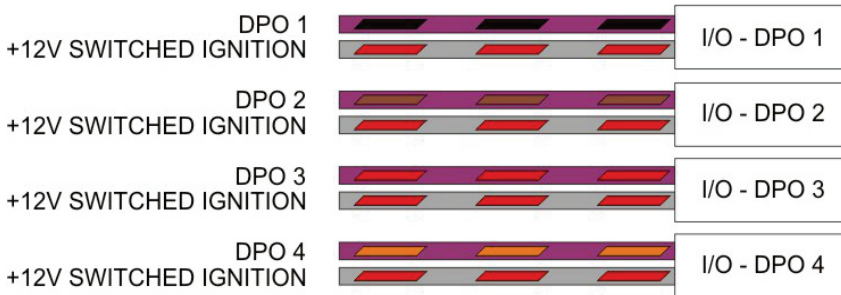


Figure 7 - Digital Pulsed Outputs

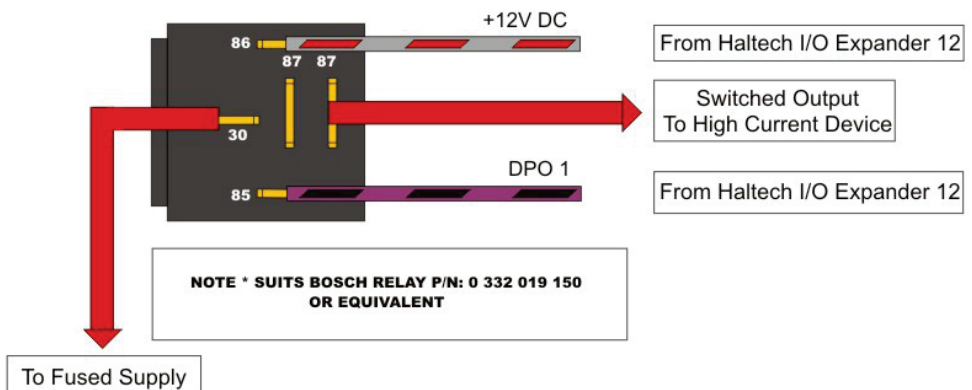


Figure 8 - Digital Pulsed Output Relay Wiring

Digital Pulsed Inputs (DPI)

The Haltech I/O Expander 12 features 4 Digital Pulsed Inputs. Each input has been grouped with a +12V DC Source and a signal ground within the harness, this allows the user to fit an external pull-up to 12V or pull-down to ground resistor if required and or to supply power to a 12V rated sensor.

Digital Pulsed Inputs are capable of accepting pulsed input information such as for a road speed sensor. These inputs measure the time periods between the pulses and can process this information to provide quantities such as road speed.

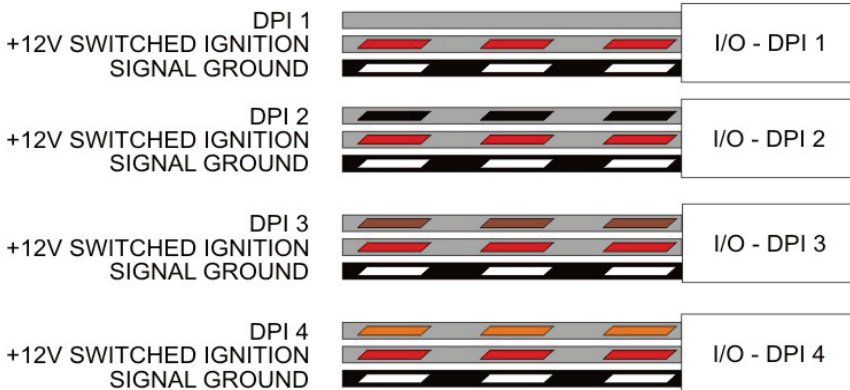


Figure 9 - Digital Pulsed Inputs

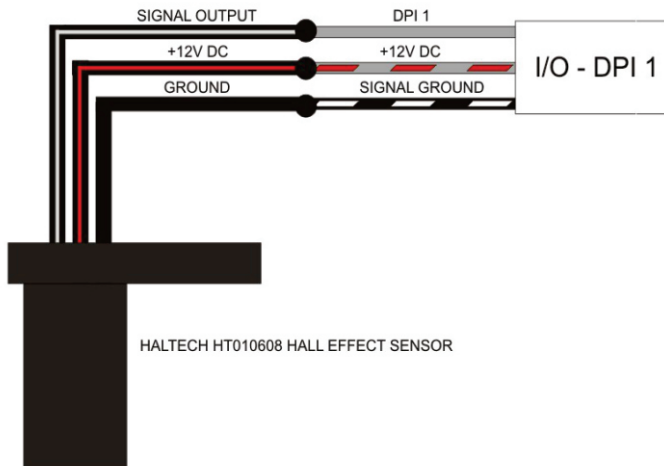
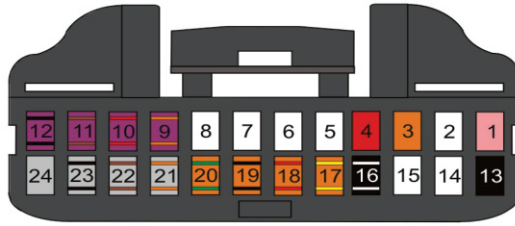


Figure 10 - Haltech HT-010608 wiring to DPI 1

Appendix

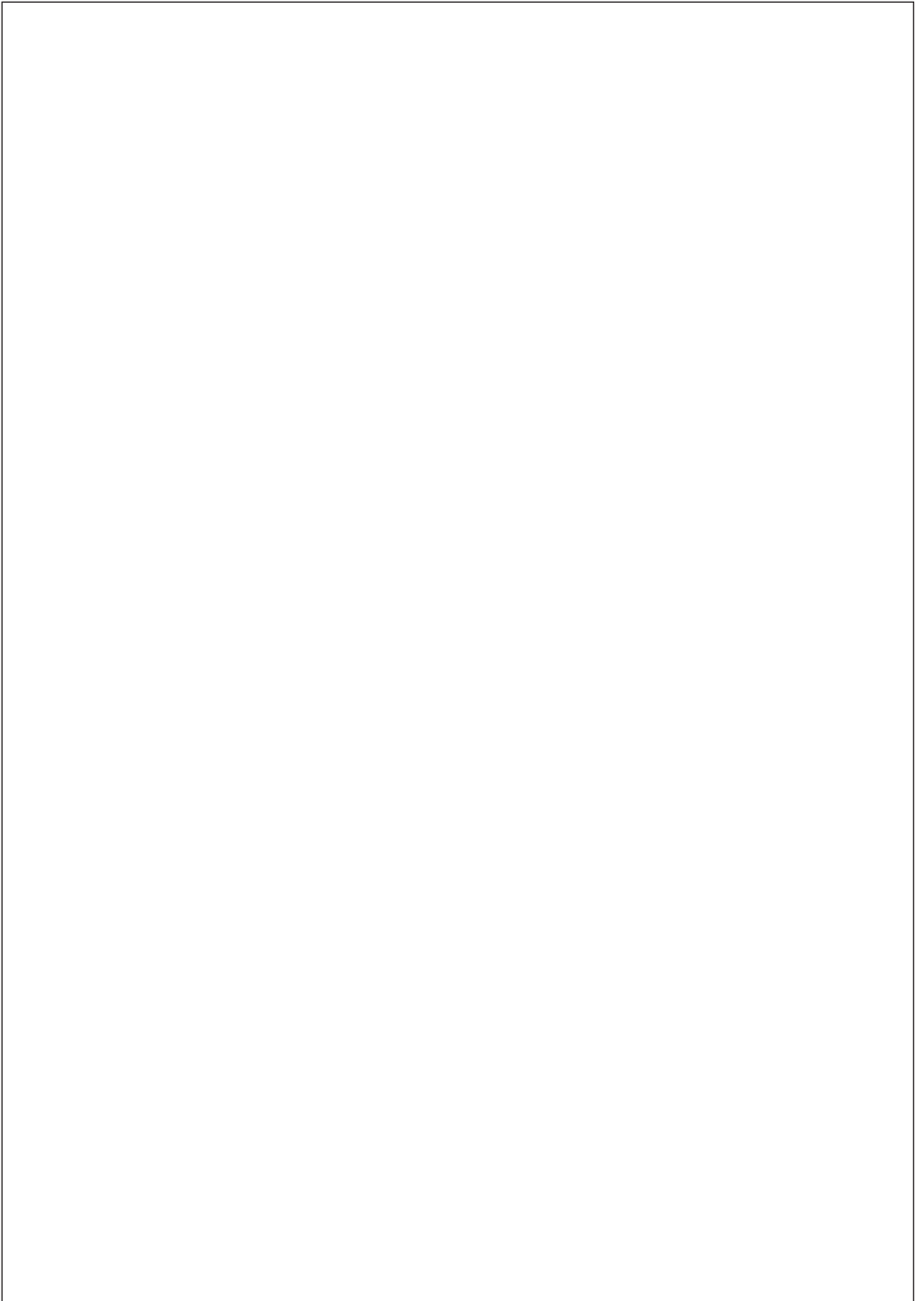


Looking into the wire side of the connector

Pin #	Description	Colour
1	Switched Ignition Input	Pink
	*Switched Ignition Output	Grey/Red
2	-	-
3	5V DC Output	Orange
4	12V Battery Supply	Red
5	-	-
6	-	-
7	-	-
8	-	-
9	DPO4	Violet/Orange
10	DPO3	Violet/Red
11	DPO2	Violet/Brown
12	DPO1	Violet/Black
13	Ground	Black
14	-	-
15	-	-
16	Signal Ground	Black/White
17	AVI4	Orange/Yellow
18	AVI3	Orange/Red
19	AVI2	Orange/Black
20	AVI1	Orange/Green
21	DPI4	Grey/Orange
22	DPI3	Grey/Brown
23	DPI2	Grey/Black
24	DPI1	Grey

* Available in Haltech I/O Expander Harness Only Part # HT-049902

Figure 11 - I/O Expander Pinout Information





V5.1

Need more help?



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