NEXUS Ti4L
TRANSMISSION INTERFACE KIT
SUITS GM 4L SERIES

QUICK START GUIDE

HT-196001



Congratulations on purchasing the Nexus Ti4L Transmission Interface Kit for GM 4L series automatic transmissions! This device, in conjunction with a Nexus series transmission harness (HT-187000), enables a Nexus ECU or VCU to integrate and control a supported GM 4L series automatic transmission. This kit is also designed to be plug-and-play with a Rebel LS ECU and terminated harness.

Whether you're starting a new setup or upgrading your vehicle's transmission control, the Nexus Ti4L kit offers a seamless and efficient automatic transmission control interface.

This quick start guide will walk you through the installation of your Nexus Ti4L kit and guide you in configuring the system within the Nexus Software Programmer (NSP) to ensure a smooth installation and optimal functionality of your new automatic transmission interface.







What's included?

- HT-196001 - Nexus Ti4L
- HT-187000 - Transmission Harness (4Lx0E)
- HT-010917 - 500 psi Haltech pressure sensor
- 1/8 NPT male to -4AN male 90° fitting
- -4AN male to 1/8 NPT female adapter
- -4AN female to -4AN female hose (450mm/18")
- P-clamp mount
- M8 x 30mm bolt and spacer
- Quick start guide

Features:

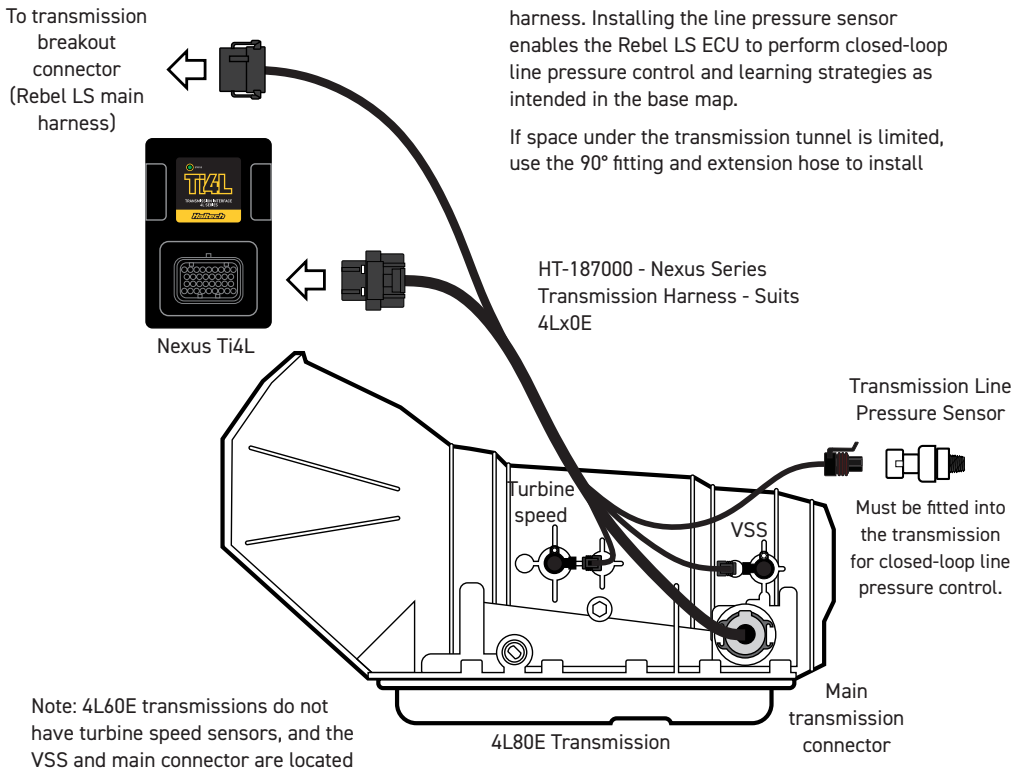
- Fully terminated transmission harness to suit GM 4Lx0E transmissions
- Transmission line pressure closed-loop control using a 500 psi sensor and remote-mount installation hardware
- Plug and Play with a Nexus Rebel LS ECU terminated harness
- Easy Rebel LS Setup Wizard using the Haltech NSP Software or Haltech Connect App

SPECIFICATION	DETAILS
Product Name	Nexus Ti4L Transmission Interface Kit suits GM 4L series
Supported ECUs	Nexus Rebel LS ECU Nexus Series ECU / VCU
Supported Transmissions	4L60E, 4L65E: Non 4x4, 1995 onwards. 4L70E: Non 4x4, 2006-2008 only. 2009 onwards use a different pinout on the main transmission connector. 4L80E, 4L85E: Non 4x4, 1994 onwards. Pre 1991-1993 use a different main transmission connector.
Connector	34 Pin AMP Superseal (Type 2 keyway)
LED Indicator	1 x Status LED Green (Normal operation) Orange (Boot mode)
Communications	CAN (Haltech Protocol)
Operating Voltage	8.0V to 22.0V
Ambient Temperature	105°C / 221°F (Max)
Dimensions	70mm x 110mm x 34mm
IP Rating	IP66
Inputs and Outputs	Input 1: Transmission oil temperature Input 2: Transmission line pressure Input 3: Transmission input RPM sensor Input 4: GM 4L60/4L80 N/A input Input 5: GM 4L60/4L80 R/B input Input 6: GM 4L60/4L80 P/C input Output 1: 1-2 shift solenoid Output 2: 2-3 shift solenoid Output 3: Torque converter on/off output Output 4: Line pressure control solenoid Output 5: 3-2 control solenoid Output 6: Torque converter lock PWM output

1. Prepare the workspace - Park the vehicle on a flat surface and engage the parking brake. Lift the vehicle using a hoist, or secure it with jack stands if using a jack. Ensure the engine/transmission is cool before beginning the installation.

2. Install the Nexus Ti4L and transmission harness - Locate the transmission breakout connector on the transmission harness and plug it into the corresponding transmission breakout connector on the Rebel LS main terminated harness.

Next, plug the Nexus Ti4L into the 34-pin Superseal connector on the transmission harness. Find a suitable location in the engine bay (e.g. firewall) to mount the Nexus Ti4L that still allows the transmission harness to reach the transmission connections.



Note: 4L60E transmissions do not have turbine speed sensors, and the VSS and main connector are located on the opposite (right) side.

3. Locate the transmission connectors - Identify the following connectors on your GM 4L60 or 4L80 transmission, and plug the transmission harness into each one:

- **Main transmission connector** - Connects to solenoids, switches, temperature sensor, and other devices within the transmission.
- **Turbine speed sensor** - Located near the torque converter (Not available on 4L60E, just leave unplugged and tucked away).
- **Vehicle speed sensor** - Typically found near the tail shaft of the transmission.
- **Oil pressure port (1/8 NPT)** - for installing the included transmission line pressure sensor.

4. Install the line pressure sensor - Locate the 1/8 NPT oil pressure port on the transmission, usually found on the left side of the transmission case. Remove the blocking plug to install the included line pressure sensor, and connect the line pressure sensor connector found on the transmission harness. Installing the line pressure sensor enables the Rebel LS ECU to perform closed-loop line pressure control and learning strategies as intended in the base map.

If space under the transmission tunnel is limited, use the 90° fitting and extension hose to install the sensor remotely. Secure the extension hose and sensor using the supplied P-clamp to prevent movement. If the transmission is fitted with an aftermarket cast pan, you may choose to install the p clamp onto an existing pan bolt and forgo the spacer and longer bolt. Installation photos are shown below as an example.

5. Check all connections - Double-check all connections for tightness and proper routing.

Ensure the harness is securely fastened with zip ties to prevent contact with moving parts or heat sources. Carefully lower the vehicle from the jack stands.

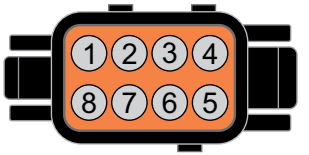
At this stage, your Nexus Ti4L is successfully installed and ready to be configured within the Rebel LS ECU using the Nexus Software Programmer (NSP).





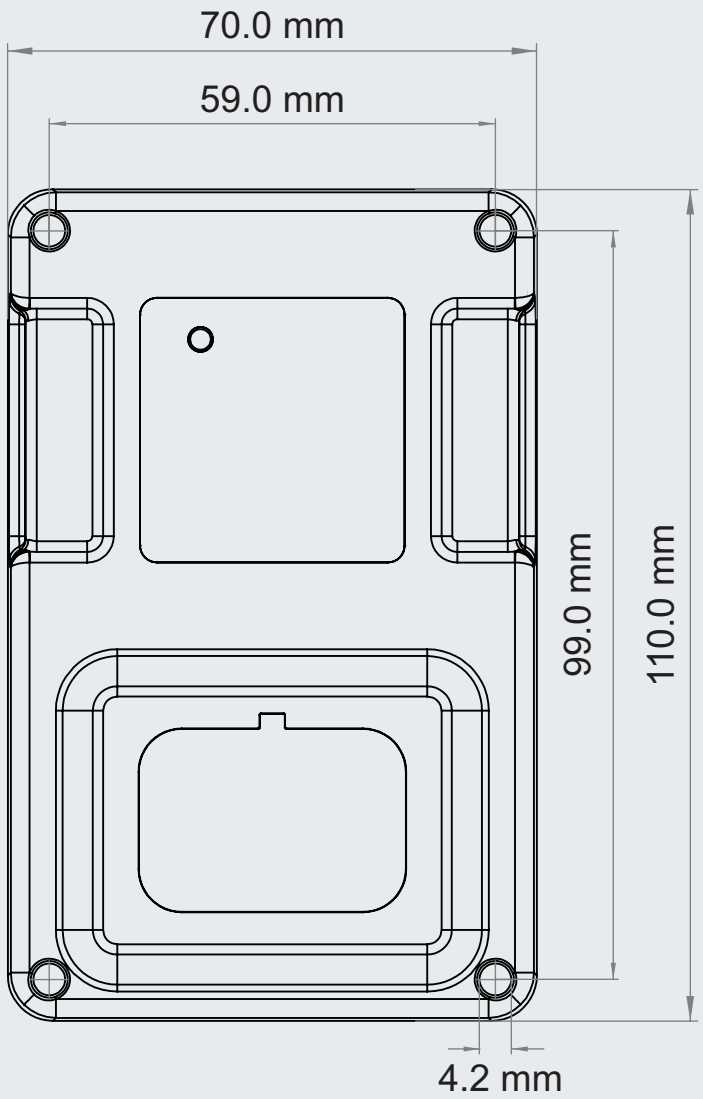
NOTE: If you are using this kit with a universal Nexus series ECU or VCU, the installation process is the same, except the DTM06-8S transmission breakout connector will need to be wired to the Nexus ECU using a DTM04-8P receptacle connector.

Pins 1 and 2 are the power supply and ground pins to the Nexus Ti4L, respectively. Pins 3 and 4 are the CAN High and Low pins and must be connected to the ECU's CAN High and Low pins assigned for Haltech CAN devices. Pins 5 and 8 are the Vehicle Speed Sensor connections and must be wired to an SPI and Signal Ground, respectively.



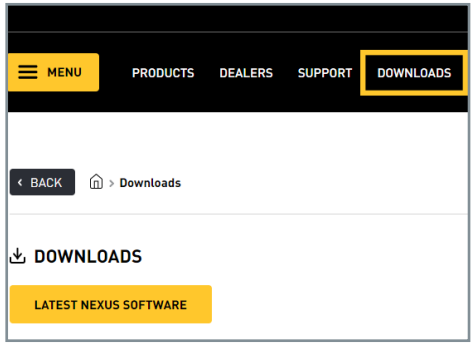
Transmission Breakout Connector
DTM06-8S
(Wire side view)

PIN	FUNCTION	WIRE COLOR	NOTES
1	+12V switched	Pink / Red	Nexus Ti4L power supply
2	Power ground	Black	Nexus Ti4L power ground
3	CAN High	White	To Nexus ECU or VCU CAN High
4	CAN Low	Blue	To Nexus ECU or VCU CAN Low
5	VSS signal	Gray / Light Green	To Nexus ECU or VCU SPI
6	Unused		No connection
7	Unused		No connection
8	VSS ground	Black / White	To Nexus ECU or VCU signal ground



Installing the NSP software

Haltech NSP (Nexus Software Programmer) is the software used for configuring the Nexus Ti4L Transmission Interface. Follow these steps to install the Haltech NSP software:



1. Download the NSP installer - Go to the Haltech website (www.haltech.com), navigate to the 'Downloads' section, and click on the download link for Nexus Software Programmer.

2. Run the installer file - Once the download is complete, locate the downloaded file (usually in the 'Downloads' folder of your computer) and double-click on the file to run the Nexus Software Setup Wizard.

3. Launch Haltech NSP - Once the installation is complete, you can launch the Haltech NSP software from the Windows 'Start' menu or using the desktop shortcut that was created.







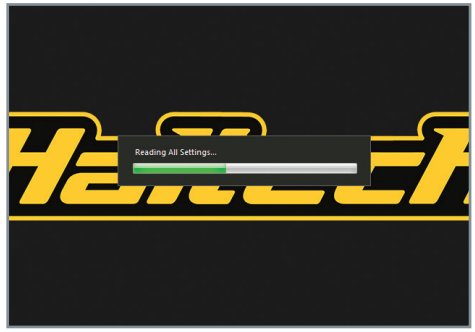
Going online with your Nexus Rebel LS ECU

The Nexus Ti4L Transmission Interface is a Haltech CAN device configured within your Nexus Rebel LS ECU.

To begin, open the NSP software and connect the supplied Haltech USB cable between your laptop and the USB-C port on the front of your Nexus ECU.



This USB connection allows the NSP software to read or write settings into the ECU or use the Rebel LS Setup Wizard if you're starting a new map.

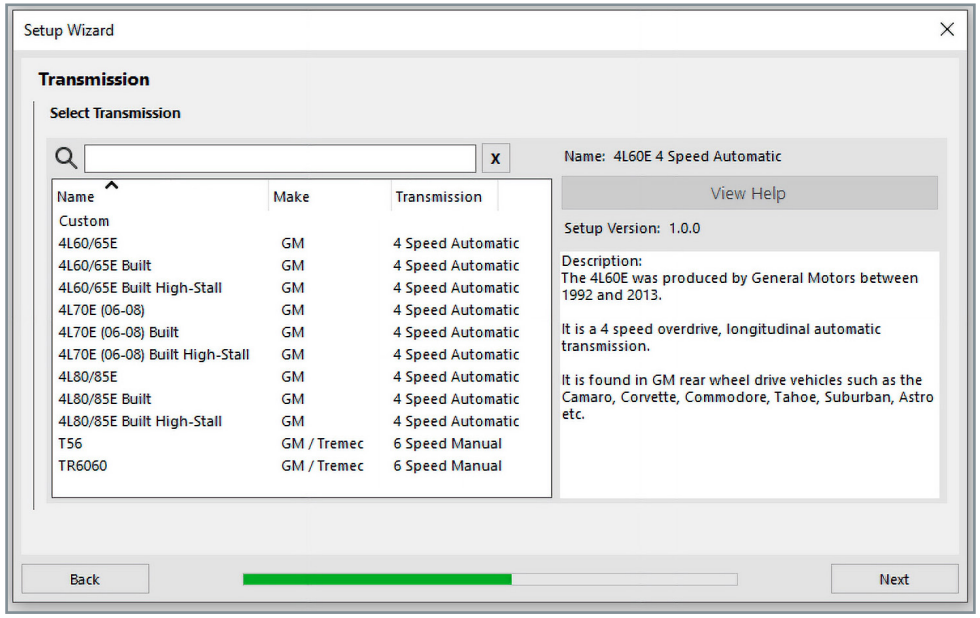


Nexus Ti4L setup using the Wizard

The Setup Wizard will guide you through creating a basemap by defining the specific engine, camshaft, throttle type, MAP sensor, injectors, and ignition coils you're using. Additionally, the Wizard will let you select which GM 4L series transmission you have.

Completing the Wizard will enable the NSP software to create a tailored basemap for your application. This will configure all the necessary settings, tables, and input/output wire assignments across the Rebel LS ECU and the Nexus Ti4L Transmission Interface.

At this point, your engine and transmission is now ready for tuning.

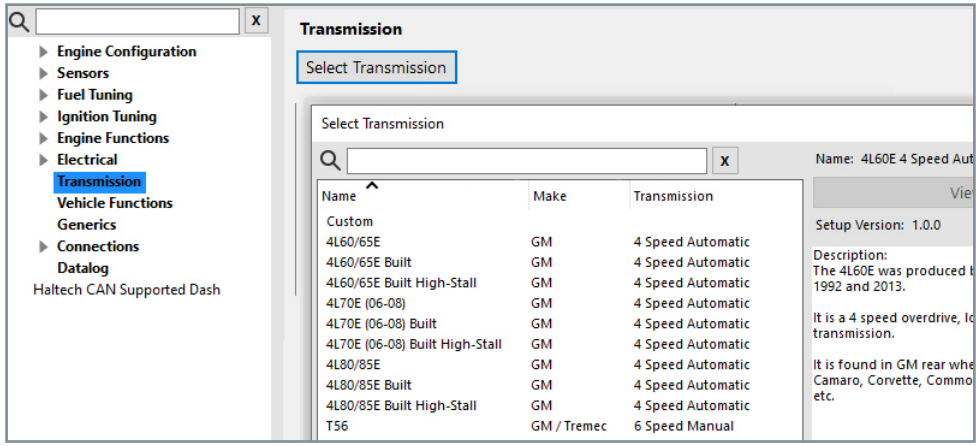


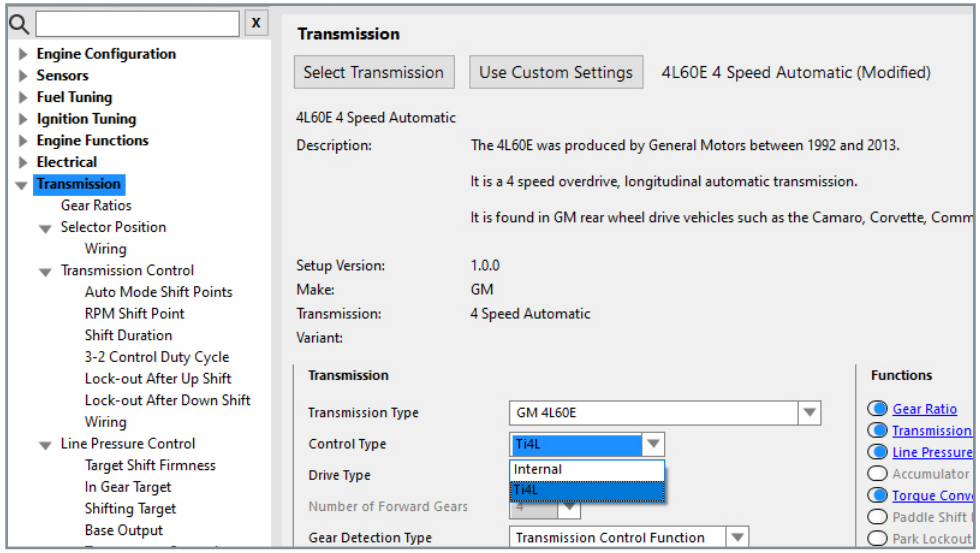
Nexus Ti4L - setting up manually

If you are manually setting up the Nexus Ti4L Transmission Interface - such as when modifying an existing ECU map or using the Nexus Ti4L with a universal Nexus ECU/VCU - the first step is to go to the Transmission section in the Navigation tree on the left side of the NSP software and click 'Select Transmission.' This will open a window displaying a list of GM 4L series transmissions. Select the one that matches your setup, and the NSP software will adjust the transmission control strategy accordingly.

After selecting the correct transmission, change the 'Control Type' setting from 'Internal' to 'Ti4L.' This will reassign the inputs and outputs from the ECU to the Ti4L's. The Ti4L inputs and outputs are preset to match the Ti4L Transmission Harness (HT-187000) and cannot be reassigned.

Lastly, ensure that the line pressure sensor, transmission oil temperature sensor, and all other transmission control-related sensors are correctly calibrated in the software for proper operation.





PINOUT INFORMATION

Nexus Ti4L connector
AMP 34-pin Keyway 2
Wire side view



PIN	PIN TYPE	FUNCTION	WIRE COLOR (HT-187000 HARNESS)
1	CAN High	Haltech CAN High connection	White
2	CAN Low	Haltech CAN Low connection	Blue
3	+12V switched	Ti4L +12V power input	Pink / Red
4	Power ground	Ti4L power ground input	Black
5	Power ground	Ti4L power ground input	Black
6	Unused	Do not connect	
7	Output 1	1-2 shift solenoid control	Brown / Black
8	Output 2	2-3 shift solenoid control	Brown / Red
9	Output 3	Torque converter lock on/off output	Brown / Green
10	Unused	Do not connect	
11	Unused	Do not connect	
12	Unused	Do not connect	
13	Unused	Do not connect	
14	Unused	Do not connect	
15	+5V	Ti4L sensor +5V power supply	Orange
16	Unused	Do not connect	
17	Unused	Do not connect	
18	Input 3	Transmission input RPM sensor input	Gray / Brown
19	Input 4	GM 4L60/4L80 N/A input	Gray / Red
20	Input 5	GM 4L60/4L80 R/B input	Gray / Orange
21	Input 6	GM 4L60/4L80 P/C input	Gray / Yellow
22	Input 1	Transmission oil temperature input	White
23	Input 2	Transmission line pressure input	White / Yellow
24	Unused	Do not connect	
25	Unused	Do not connect	
26	Sensor ground	Ti4L sensor ground	Black / Gray
27	Sensor ground	Ti4L sensor ground	Black / Gray
28	Sensor ground	Ti4L sensor ground	Black / Gray
29	Sensor ground	Ti4L sensor ground	Black / Gray
30	Unused	Do not connect	
31	Unused	Do not connect	
32	Output 4	Line pressure control solenoid	Brown / Pink
33	Output 5	3-2 control solenoid	Pink / Red
34	Output 6	Torque converter lock PWM output	Pink / Brown

WARRANTY CERTIFICATE

At Haltech we make every effort to design and manufacture fault-free products that perform up to or above the market expectations. All our products are covered by a Limited 12 Month Warranty.

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.

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. Proof of purchase in the form of a copy of the original purchase invoice, receipt or bill of sale which indicates that the product is within the warranty period, must be presented to obtain warranty service.

Replacement or repair of a defective product 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, receipt or bill of sale 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.

Returns of Products Supplied in Sealed Packaging

The sale of any sensor or accessory 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.

A sensor or accessory product may be returned after 30 days of purchase (with its sealed packaging intact) for credit only (no refunds given) and will be subject to a 10% restocking fee.

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 Off-Road Usage Policy

In many states 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 and may never be used on a public road or highway.

Using Haltech products for street/road use on public roads or highways is prohibited by law unless a specific regulatory exemption exists (more information can be found on the SEMA Action Network website www.semasan.com/emissions for state by state details in the USA).

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 purchasing, using or installing any Haltech product.

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