# MoTeC

# M150 2011–14 FORD MUSTANG GT



The MoTeC 2011–14 FORD MUSTANG GT kit provides a complete replacement for the factory Ford ECU in a V8 equipped Mustang GT. It utilizes the existing vehicle wiring and sensors to deliver plug-in convenience. Using an integration patch harness and MoTeC M150 ECU the kit delivers fully programmable engine control to the platform while maintaining stock vehicle systems functionality. The M1 ECU is supplied with firmware preloaded that is based on the MoTeC GPR package with additional enhancements and features  unique to the 2011 - 2014 Ford Mustang GT V8 (S197) and motorsport demands. This kit is only available for the V8 engine 6 Speed manual transmission variant

The kit comprises of the M150 ECU, "Plug-N-Play" patch harness, Two MoTeC IGN4 ignitors and a MoTeC LTCD to use with the factory LSU 4.9 lambda sensors.

Installation of manifold pressure sensor is required and installation of a fuel pressure sensor is highly recommended. The patch harness has wiring provisions for both sensors. The flexible M1 platform allows the installer to select and calibrate sensors that best suit the range of engine operation

This package supports the following OE ECU features with user definable parameters:

- Starter control
- Air conditioner control
- High and low speed fan control
- Fuel lift pump control
- Cruise control
- Alternator control
- Fully functional fuel level gauge with low fuel warning
- Ghost Cam mode – Provides aggressive idle note with no drivability side effects.
- Fuel Economy VTC settings
- Continued function of the odometer and trip meter

The supplied start file contains all the calibrations and settings for the OEM sensors, fuel injectors, ignition coils, throttle servo, cam control, alternator control and fuel lift pump control. Settings for fuel delivery, ignition timing and camshaft phasing have been calibrated on an OEM vehicle.

A significant amount of time will be saved by the user with this initial setup completed. Users can begin tuning to their desired power and modifications right away with the assurance of a safe base tune.

Included are many ancillary features commonly found on race vehicles such as anti-lag, rolling launch, driver switches, gearbox control, knock control, intercooler spray-bars, launch control, coolant pumps, and traction control.

The product fully integrates with other MoTeC devices, providing pre-defined CAN messaging for all current Displays/Loggers, LTC's, E888, GPS, PDMs and SLMs.

## ▶ KIT CONTENTS (11 – 14 FORD MUSTANG GT)

- **Hardware**
  - **M150 –** M150 ECU
  - **M150 MUSTANG S197 LOOM**
    - **RG.HN.0355.01** - Short Harness (400mm)
    - **RG.HN.0357.01** - Long Harness (1450mm)
  - **M LTCD –** LTCD LSU 4.9
  - **M IGN4 –** IGN4 (x2)
- **Licenses**
  - **23434 –** M1 LIC – MOTEC USA FORD MUSTANG GT 6MT      (Required to load package in M150 ECU)

## ▶ FEATURES

- Configurable Launch Control with anti-lag containing tables for engine speed, throttle limit, boost aim and closed loop ignition timing control as well Spool Mode to optimize turbocharger response at the starting line.
- Pre-stage setting for Launch Control.
- Traction Control: Closed loop system featuring the ability to use alternate wheel speed inputs for differential ground speed control. Ability to control engine torque using ignition timing, fuel cut, ignition cut and drive by wire throttle using a flexible user-configurable strategy.
- Pre-configured OE coolant fan control.
- Pre-configured OE alternator control.
- Pre-configured OE fuel lift pump control.
- Pre-configured air conditioner control.
- Pre-configured Gear detection with simplified Gear Estimate table.
- Gearbox shift support with ignition cut, fuel cut, throttle blip and engine speed matching in forward gears.
- Transmission pump output with differential temperature threshold and hysteresis control.
- Pre-configured Drive by Wire throttle servo control.
- Pre-configured Throttle Pedal sensor with Driver Switch based translation table.
- Configurable driver switches for various systems.
- Vehicle speed limiting (pit speed control).
- Factory Gauge override to convert the factory oil life read out to display Flex Fuel Alcohol Content.
- Factory Gauge override to convert the oil temperature gauge to display Flex Content at key on.
- Mode switching via factory cruise control dial using the engine speed read out as the mode indicator.
- Configurable pulsed tachometer output.
- Pre-configured vehicle speed measurement using wheel speed sensors.
- Downshift Rev Matching feature utilizing factory sensors and standard 6 speed manual transmission.
- Adjustable fuel economy gauge calibration
- Pre-configured No Lift Shift ignition timing and cut based strategy for the stock 6 speed manual gearbox.
- Differential pump output with differential temperature threshold and hysteresis control.

- Pre-configured warning system that activates the factory MIL indicator on the dash to indicate faults.
- Test settings for injection and ignition outputs for easier setup.
- Exhaust Pressure Based engine efficiency compensation table.
- Data acquisition of numerous factory sensors off the factory CAN Bus, including Longitudinal Acceleration, Lateral Acceleration, Yaw Rate, Steering Angle, Wheel Speeds.
- Pre-configured calibrations for Original Equipment sensors.
- Pre-configured reference mode for engine synchronization.
- Pre-configured physical settings for engine displacement, fuel density, stoichiometric ratio, fuel pressure and injector characterization which allows for simplified engine start-up prior to tuning.
- Pre-configured settings for ethanol fuel density, ethanol stoichiometric ratio to allow fuel blending ("flex fuel").
- Powerful Efficiency Model based on AlphaN with boost using the supplied inlet manifold pressure sensor, factory inlet air temperature, and optionally exhaust pressure and boost pressure sensors supporting either plenum or boost over individual runner (ITB) inlet systems.
- Pre-configured Engine Efficiency map that allows for quick and easy tuning.
- Secondary Injection (16 injector) capable.
- Optional Flex Fuel using an ethanol composition sensor allows for ethanol composition blending including integration of the Fuel Temperature reading provided by the sensor.
- Pre-configured throttle rate of change based transient fuel for simplified transient fuel tuning.
- Engine Load Average channel with tables for engine speed limit, ignition trim, fuel mixture aim and throttle limit.
- Pre-configured ignition output and coil settings.
- Pre-configured individual cylinder knock system.
- Pre-configured camshaft control of inlet and exhaust cams.
- Pre-configured engine start fuel, idle and ignition settings.
- Pre-configured Closed Loop Idle control systems using ignition and drive by wire actuation, including active adjustments for coolant and air conditioning activation.
- Boost control system with targets based on Engine Speed, Gear, Fuel Alcohol Content, Throttle Position, Driver Mode Switch, Coolant Temperature, Engine Load Average, Exhaust Temperature, Race Time, Inlet Air Temperature and Vehicle Speed.
- Optionally configurable turbocharger bypass control.
- Intercooler temperature and spray control.
- Supports nitrous with four activation stages that can trigger any of the four nitrous control outputs using a progressive Mass Flow based model with pressure-based compensations. Triggers additional fuel pumps, bottle heater control.
- Ghost Cam idle mode for aggressive exhaust note

## ▶ MoTeC FEATURES

- Ford Flat Foot Shifting integration
- Race time system with tables for ignition trim, fuel mixture aim and throttle limit
- Engine run time total for engine hour logging
- GPS acquisition and logging via CAN or RS232
- Support of MoTeC devices: E8XX, PDM, SLM
- ECU CAN Receive from other MoTeC devices.
- ECU CAN Transmit of most common channels using standard MoTeC CAN templates
- Configurable security for multiple users with differing access options
- Turbocharger Speed, Inlet and Outlet Temperature
- Wastegate Pressure and Position
- Wheel Speed (preconfigured)

## ▶ OPERATION

### Reference Mode
The M1 Reference Mode in this Package is locked to the Ford Coyote pattern.

### ECU Power
The M1 ECU will be powered when the ignition switch is on via the factory ignition switch. The ECU will hold power on key off when M1 Tune is connected for convenience of tune changes and datalog retrieval. The ECU will hold power on key off for a short time to provide a graceful shutdown when M1 Tune is not connected to it.

### Engine Start
The Ford Starter section contains settings to maintain the OEM style engine start control.

### Driver Switches
Various in-car dials and switches are acquired over the CAN Bus and assigned to Firmware resources to allow for mode switching in the ECU. See the Help for the main Ford group in M1 Tune.

### Spares
The integration harness includes a 12 pin DTM where additional resources can be connected.

### VIN
The Ford group contains the configuration for the VIN number that must be broadcast to vehicle systems. The last 6 digits of the vehicle VIN number should be entered.

### Ignition Coils
Ford OEM coil requires an ignitor and the kit provides two MoTeC IGN4 units. They must be plugged into the patch harness into the matching connectors for each bank. Failure to do so will cause a no-start condition. Improper connection could damage the coil or the ignitor.

### Bank Lambdas
The factory lambda sensors are Bosch LSU 4.9. The kit provides a MoTeC LTCD that directly connects to the sensors which can be reached from the top of the engine bay. The LTCD can be mounted at the firewall where each lambda sensors connection will reach it.

### Coolant Fans
The fans are configured to work similar to factory. Refer to the help in M1 Tune under Coolant Fans for a more detailed description.

### Selectable Source Vehicle Speed
The Ford instrument cluster displayed speed can be derived from any speed data in the M1 ECU. The default setting is to transmit the vehicle speed derived from the output shaft speed.

### Ford Rev Match
Ford Rev Match section contains settings for downshift auto blip rev matching assuming a one gear downshift. It must be Enabled and Driver Rev Match Switch must be On to utilize. Settings have been configured to demonstrate functionality, however the Pump and Hold tables may need to be tuned for your vehicle – refer to help in M1 Tune.

### Ford Flat Foot Shifting
This feature has been preconfigured, however Driver Ford Foot Shifting Switch must be On before it will activate. It is designed such that when active and the Clutch State goes Disengaged and the Activate parameters have been met, a supplied ignition cut and ignition timing retard will be applied.

### VTC Aim Economy
This subsystem contains settings to allow you to run nominal settings that improve fuel economy at steady state conditions. The package ships with this setting disabled, but with example settings provided the user can easily begin experimenting with it.

### Rolling Launch
Designed to assist in building boost for a rolling start, it can be activated when Driver Rolling Launch Switch is On or by holding the Cruise Decel button when Cruise Control is disabled. The system is active once Rolling Launch Activate thresholds are met.

### Mode Switching
While mode switching for numerous systems can be done via the Driver Switch system, Boost Aim and Traction Aim have been given special consideration and you can select those modes on the fly via the Cruise Control buttons. This does not interfere with the function of Cruise Control as this type of mode switching is only active when Cruise Control is disabled. Once activated, the tachometer on the gauge cluster indicates the current mode – 1000 rpm is mode 1, 2000 rpm is mode 2 and so on. To change modes for Traction Aim hold the Cruise Cancel button for 2 seconds. To change modes for Boost Aim hold the Cruise Accel button for 2 seconds. The tachometer will jump to the active mode

## Mode Switching (continued)

and you can tap the Cruise Accel and Cruise Decel buttons to iterate up and down through the modes. No activity for 2 seconds or tapping Cruise Cancel will turn off the mode select. The function of these two special modes can be seen in Driver Traction Control Switch and Driver Boost Aim Switch. If you want to use a normal switch to change modes, the Input can be assigned and it will override Cruise Control based mode selection for that option.

## ▶ INSTALLATION

### Fuel Pressure Sensor

The purpose of the fuel pressure sensor is to allow the Motec ECU to directly measure the rail pressure and maintain it with the closed loop fuel pump control. This sensor is also used to accurately measure the pressure drop across the fuel injectors for the most accurate fuel delivery possible. In boosted applications this sensor is critical to allow for safe operation and warnings based on insufficient fuel flow. A sensor of the appropriate range must be chosen to cover the total pressure in the rail under any condition. Installations with manifold referenced fuel pressure regulators will need to consider the range of pressure at maximum manifold pressure. The sensor installation is detailed in a separate document available from Motec USA

### Manifold Pressure Sensor

A manifold pressure sensor is used by the MoTeC M150 to most accurately calculate the engine load so it can best match the fuel and ignition delivery to the engine operational point. This sensor is required and must be matched to the intended operational range of manifold pressures. Normally aspirated engines will use a different sensor than boosted applications. The sensor installation is detailed in a separate document available from Motec USA

### LTCD

CAN High/Low as well as power and ground are provided at the Spares 4 pin DTM connector for the LTCD connection. The installer may need to make a small interconnection loom between the spares connector and the LTCD for it to be deployed in a convenient location. This allows for flexibility in mounting and location of the LTCD in the engine bay. Lambda sensors must be installed after any turbocharger or other exhaust restrictive devices to ensure accurate information.

▶ M150 PINOUT

**M150 Connector A – 34 Way**

| | | | | |
|---|---|---|---|---|
| A1 | AT5 | Analogue Temperature Input 5 | SHIFT UP | |
| A2 | AT6 | Analogue Temperature Input 6 | SHIFT DOWN | |
| A3 | AV15 | Analogue Voltage Input 15 | SPARES DTM12-4 | |
| A4 | AV16 | Analogue Voltage Input 16 | SPARES DTM12-5 | |
| A5 | AV17 | Analogue Voltage Input 17 | - | |
| A6 | IGN9 | Low Side Ignition 9 | HFC | |
| A7 | IGN10 | Low Side Ignition 10 | LFC | |
| A8 | IGN11 | Low Side Ignition 11 | ALT CONTROL | |
| A9 | IGN12 | Low Side Ignition 12 | FPC | |
| A10 | SEN_5V0_C | Sensor 5.0V C | - | |
| A11 | LA_NB1 | Lambda Narrow Input 1 | EOL | |
| A12 | LA_NB2 | Lambda Narrow Input 2 | REVERSE SWITCH | |
| A13 | KNOCK3 | Knock Input 3 | KNOCK BANK 2 | |
| A14 | KNOCK4 | Knock Input 4 | KNOCK BANK 2 | |
| A15 | DIG2 | Digital Input 2 | SPARES DTM12-3 | |
| A16 | DIG3 | Digital Input 3 | BPS | |
| A17 | DIG4 | Digital Input 4 | BPP | |
| A18 | SEN_5V0_C | Sensor 5.0V C | - | |
| A19 | SEN_5V0_B | Sensor 5.0V B | - | |
| A20 | LIN | LIN Bus | - | |
| A21 | RS232_RX | RS232 Receive | - | |
| A22 | RS232_TX | RS232 Transmit | - | |
| A23 | DIG1 | Digital Input 1 | OSS | |
| A24 | BAT_NEG | Battery Negative | Ground | |
| A25 | BAT_NEG | Battery Negative | Ground | |
| A26 | SEN_0V_C | Sensor 0V C | - | |
| A27 | SEN_0V_C | Sensor 0V C | - | |
| A28 | CAN3_HI | CAN Bus 3 High | LTC CAN, SPARES DTM12-11 | |
| A29 | CAN3_LO | CAN Bus 3 Low | LTC CAN, Spares DTM12-10 | |
| A30 | CAN2_HI | CAN Bus 2 High | - | |
| A31 | CAN2_LO | CAN Bus 2 Low | - | |
| A32 | BAT_NEG | Battery Negative | Ground | |
| A33 | SEN_0V_B | Sensor 0V B | SPARES DTM12-2 | |
| A34 | SEN_0V_A | Sensor 0V A | - | |

▶ M150 PINOUT

**M150 Connector B – 26 Way**

| B1 | HB9 | Half Bridge Output 9 | THROTTLE SERVO - |
|----|------|----------------------|------------------|
| B2 | HB10 | Half Bridge Output 10 | THROTTLE SERVO + |
| B3 | UDIG8 | Universal Digital Input 8 | FPM |
| B4 | UDIG9 | Universal Digital Input 9 | O/D CANCEL |
| B5 | UDIG10 | Universal Digital Input 10 | TSS |
| B6 | UDIG11 | Universal Digital Input 11 | START |
| B7 | UDIG12 | Universal Digital Input 12 | ISP-R |
| B8 | INJ_LS5 | Low Side Injector 5 | AC CLUTCH CONTROL |
| B9 | INJ_LS3 | Low Side Injector 3 | EXHAUST CAMSHAFT BANK 2 |
| B10 | AV9 | Analogue Voltage Input 9 | ACCEL PEDAL MAIN |
| B11 | AV10 | Analogue Voltage Input 10 | CYLINDER HEAD TEMP |
| B12 | AV11 | Analogue Voltage Input 11 | INLET AIR TEMPERATURE |
| B13 | BAT_POS | Battery Positive | Battery Positive |
| B14 | INJ_LS6 | Low Side Injector 6 | STARTER RELAY |
| B15 | INJ_LS4 | Low Side Injector 4 | INLET CAMSHAFT BANK 2 |
| B16 | AV12 | Analogue Voltage Input 12 | TFT |
| B17 | AV13 | Analogue Voltage Input 13 | - |
| B18 | AV14 | Analogue Voltage Input 14 | - |
| B19 | BAT_POS | Battery Positive | Battery Positive |
| B20 | HB7 | Half Bridge Output 7 | TCC |
| B21 | HB8 | Half Bridge Output 8 | SPARES DTM12-9 |
| B22 | PH9 | Peak Hold Injector 9 | ECU POWER RELAY |
| B23 | PH10 | Peak Hold Injector 10 | SSE |
| B24 | PH11 | Peak Hold Injector 11 | - |
| B25 | PH1 | Peak Hold Injector 12 | - |
| B26 | SEN_5V_A | Sensor 5.0V A | - |

### ▶ M150 PINOUT

**M150 Connector C – 34 Way**

| | | | |
|---|---|---|---|
| C1 | HB2 | Half Bridge Output 2 | STARTER RELAY |
| C2 | SEN_5V_A | Sensor 5.0V A | Sensor 5.0V A |
| C3 | IGN1 | Low Side Ignition 1 | COIL 1 |
| C4 | IGN2 | Low Side Ignition 2 | COIL 2 |
| C5 | IGN3 | Low Side Ignition 3 | COIL 3 |
| C6 | IGN4 | Low Side Ignition 4 | COIL 4 |
| C7 | IGN5 | Low Side Ignition 5 | COIL 5 |
| C8 | IGN6 | Low Side Ignition 6 | COIL 6 |
| C9 | SEN_5V_B | Sensor 5.0V B | SPARES DTM12-11 |
| C10 | NEG1 | Battery Negative | Ground |
| C11 | NEG2 | Battery Negative | Ground |
| C12 | IGN7 | Low Side Ignition 7 | COIL 7 |
| C13 | IGN8 | Low Side Ignition 8 | COIL 8 |
| C14 | AV1 | Analogue Voltage Input 1 | THROTTLE SERVO POSITION TRACKING |
| C15 | AV2 | Analogue Voltage Input 2 | THROTTLE SERVO POSITION MAIN |
| C16 | AV3 | Analogue Voltage Input 3 | - |
| C17 | AV4 | Analogue Voltage Input 4 | - |
| C18 | HB1 | Half Bridge Output 1 | LPC |
| C19 | PH1 | Peak Hold Injector 1 | INJECTOR 1 |
| C20 | PH2 | Peak Hold Injector 2 | INJECTOR 2 |
| C21 | PH3 | Peak Hold Injector 3 | INJECTOR 3 |
| C22 | PH4 | Peak Hold Injector 4 | INJECTOR 4 |
| C23 | INJ_LS1 | Low Side Injector 1 | EXHAUST CAMSHAFT BANK 1 |
| C24 | INJ_LS2 | Low Side Injector 2 | INLET CAMSHAFT BANK 1 |
| C25 | AV5 | Analogue Voltage Input 5 | - |
| C26 | BAT_POS | Battery Positive | Battery Positive |
| C27 | PH5 | Peak Hold Injector 5 | INJECTOR 5 |
| C28 | PH6 | Peak Hold Injector 6 | INJECTOR 6 |
| C29 | PH7 | Peak Hold Injector 7 | INJECTOR 7 |
| C30 | PH8 | Peak Hold Injector 8 | INJECTOR 8 |
| C31 | HB3 | Half Bridge Output 3 | SSA |
| C32 | HB4 | Half Bridge Output 4 | SSB |
| C33 | HB5 | Half Bridge Output 5 | SSC |
| C34 | HB6 | Half Bridge Output 6 | SSD |

## ▶ M150 PINOUT

**M150 Connector D – 26 Way**

| | | | |
|------|---------|-------------------------------|------------------------------|
| D1   | UDIG1   | Universal Digital Input 1     | CRANKSHAFT POSITION          |
| D2   | UDIG2   | Universal Digital Input 2     | EXHAUST CAMSHAFT BANK 1 POS  |
| D3   | AT1     | Analogue Temperature Input 1  | CPP                          |
| D4   | AT2     | Analogue Temperature Input 2  | CRUISE SWITCH                |
| D5   | AT3     | Analogue Temperature Input 3  | SPARES DTM12-6               |
| D6   | AT4     | Analogue Temperature Input 4  | SPARES DTM12-7               |
| D7   | KNOCK1  | Knock Input 1                 | KNOCK BANK 1                 |
| D8   | UDIG3   | Universal Digital Input 3     | INTAKE CAMSHAFT BANK 1 POS   |
| D9   | UDIG4   | Universal Digital Input 4     | EXHAUST CAMSHAFT BANK 2 POS  |
| D10  | UDIG5   | Universal Digital Input 5     | INTAKE CAMSHAFT BANK 1 POS   |
| D11  | UDIG6   | Universal Digital Input 6     | TR-P                         |
| D12  | BAT_BAK | Battery Backup                | -                            |
| D13  | KNOCK2  | Knock Input 2                 | KNOCK BANK 1                 |
| D14  | UDIG7   | Universal Digital Input 7     | CSW                          |
| D15  | SEN_0V_A| Sensor 0V A                   | Sensor 0V A                  |
| D16  | SEN_0V_B| Sensor 0V B                   | Sensor 0V B                  |
| D17  | CAN_HI  | CAN Bus 1 High                | FORD CAN                     |
| D18  | CAN_LO  | CAN Bus 1 Low                 | FORD CAN                     |
| D19  | SEN_6V3 | Sensor 6.3V                   | -                            |
| D20  | AV6     | Analogue Voltage Input 6      | AC PRESSURE                  |
| D21  | AV7     | Analogue Voltage Input 7      | -                            |
| D22  | AV8     | Analogue Voltage Input 8      | THROTTLE PEDAL TRACKING      |
| D23  | ETH_TX+ | Ethernet Transmit+            | WHITE/ORANGE                 |
| D24  | ETH_TX- | Ethernet Transmit-            | ORANGE                       |
| D25  | ETH_RX+ | Ethernet Receive+             | WHITE/GREEN                  |
| D26  | ETH_RX- | Ethernet Receive-             | GREEN                        |

▶ M150 PINOUT

**M150 DTM-12S (SPARES)**

| Pin | Function |
|-----|----------|
| 1 | Spares Ground |
| 2 | Spares 0 Volt 'B' Supply |
| 3 | Spares DIG 2 |
| 4 | Spares AV 15 |
| 5 | Spares AV 16 |
| 6 | Spares AT 03 |
| 7 | Spares AT 04 |
| 8 | Spares HB 08 |
| 9 | Spares CAN3 LO |
| 10 | Spares CAN3 HI |
| 11 | Spares 5 Volt 'B' Supply |
| 12 | Spares Switched 12v Power |

**M150 DTM-6S (IGN4 BANK 1 OUTPUTS TO COILS)**

| Pin | Function |
|-----|----------|
| 1 | CYLINDER 1 IGNITION COIL |
| 2 | CYLINDER 2 IGNITION COIL |
| 3 | CYLINDER 3 IGNITION COIL |
| 4 | CYLINDER 4 IGNITION COIL |
| 5 | IGN4 BANK 1 GROUND |
| 6 | IGN4 BANK 1 GROUND |

**M150 DTM-4S (IGN4 BANK 1 INPUTS FROM ECU)**

| Pin | Function |
|-----|----------|
| 1 | CYLINDER 1 IGNITION COIL (IGN LS1) |
| 2 | CYLINDER 2 IGNITION COIL (IGN LS2) |
| 3 | CYLINDER 3 IGNITION COIL (IGN LS3) |
| 4 | CYLINDER 4 IGNITION COIL (IGN LS4) |

**M150 DTM-6S (IGN4 BANK 2 OUTPUTS TO COILS)**

| Pin | Function |
|-----|----------|
| 1 | CYLINDER 5 IGNITION COIL |
| 2 | CYLINDER 6 IGNITION COIL |
| 3 | CYLINDER 7 IGNITION COIL |
| 4 | CYLINDER 8 IGNITION COIL |
| 5 | IGN4 BANK 2 GROUND |
| 6 | IGN4 BANK 2 GROUND |

**M150 DTM-4S (IGN4 BANK 2 INPUTS FROM ECU)**

| Pin | Function |
|---|---|
| 1 | CYLINDER 5 IGNITION COIL (IGN LS5) |
| 2 | CYLINDER 6 IGNITION COIL (IGN LS6) |
| 3 | CYLINDER 7 IGNITION COIL (IGN LS7) |
| 4 | CYLINDER 7 IGNITION COIL (IGN LS8) |

**M150 DTM-4S (Lambda To CAN)**

| Pin | Function |
|---|---|
| 1 | Ground |
| 2 | CAN3 Low |
| 3 | CAN3 High |
| 4 | Switched 12v Power |