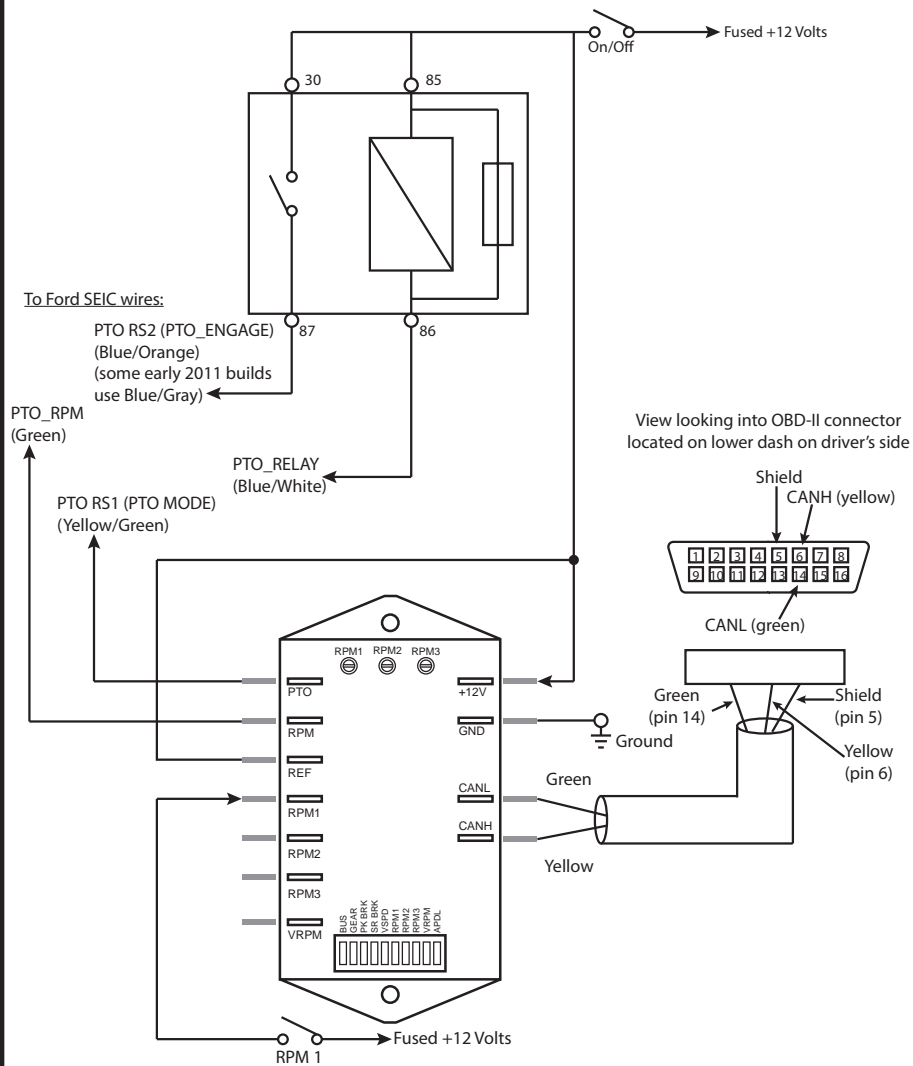


OPTIONAL Relay Circuit for Fully Automatic reset for 2011+ F-Series Gas Engines (see page 2)



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OWNERS MANUAL Model ETM51 Electronic Throttle Module for 2005+ Ford Gas & Diesel Engines



Introduction

Model ETM51 Electronic Throttles are designed to support 2005+ Ford trucks and vans equipped with the Ford Stationary Elevated Idle Control (SEIC) and one of the following engines:

| | |
|--------------------------------------|-----------------------------|
| 6.4 Liter <i>Power Stroke</i> Diesel | 6.8 Liter <i>Triton</i> Gas |
| 6.0 Liter <i>Power Stroke</i> Diesel | 5.4 Liter <i>Triton</i> Gas |
| 6.7 Liter <i>Power Stroke</i> Diesel | 6.2 Liter <i>Triton</i> Gas |

Modules come with four modes of fast idle control: Three user-adjustable preset speeds and one variable input based on a remote variable resistor. The ETM51 installation requires customer-supplied control wiring to select the required mode of operation and to connect to the Ford SEIC wiring. Ford provides blunt-cut wires, and these may be connected to the ETM51 module via 0.25 inch Faston blade terminals.

The ETM51 kit includes a three foot data cable with a 16-pin connector plug for the OBDII data link connector (DLC) on one end and two faston terminals at the other. The DLC is usually located at the lower part of the dash on the driver's side.

Operation

When the vehicle is parked and Chassis Ready Conditions are satisfied, the engine idle speed may be controlled by selection of one of the four available modes: three presets and one variable RPM. The preset RPM modes may be adjusted via three calibration potentiometers on the top of the ETM51 unit.

Chassis Ready Conditions

1. Parking brake is set
2. Gear shift lever is in PARK (automatic only) or NEUTRAL (F750)
3. Foot is off the service brake
4. Foot is off accelerator pedal
5. Vehicle is stationary
6. Engine is started and idling below 900 RPM
7. Coolant temperature >140°F (Gas), 120°F (Diesel)
8. Transmission temperature 20°F to 240°F

Important Note:

While the engine is in high idle, should one of the Chassis Ready Condition inputs change states, the engine will return to normal idle speed.

In 2010 and earlier diesel engines, if the Chassis Ready Condition input is restored to satisfactory conditions, the engine will automatically return to fast idle after three seconds. However, in gas and 2011 and after diesel engines, the engine will not automatically return to fast idle. Instead, the Ford SEIC must be manually reset by turning the Fast Idle switch off and then back on. With ETM51 revision H and later software, the rest can be accomplished automatically on gas engine systems with the addition of an optional relay circuit. (See page 8)

Modes of Operation

Preset RPM High Idle Modes: (3 total)

Function: Increase idle to a preset RPM value
 Terminals: RPM1, RPM2 and RPM3
 Activation: Apply +12V to terminal
 Range of Calibration:
 Gas: 900-2250 RPM
 2005-2010 Diesel: 1200 to 2300 RPM
 2011+ Diesel: 900 to 3000 RPM
 Adjustment: Three potentiometers accessible from the top of the module

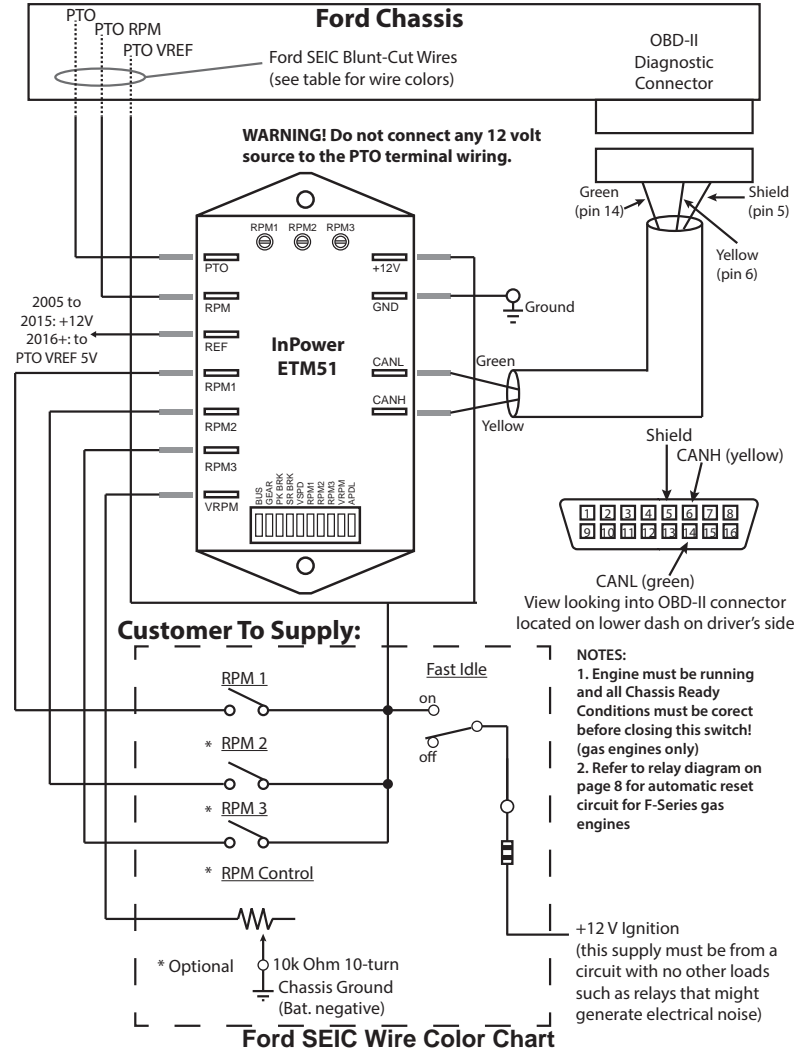
Variable RPM Mode:

Function: Varies RPM as a function of voltage on the VRPM input terminal
 Terminal: VRPM
 Adjustment: 10K Ohm potentiometer between the VRPM terminal and ground
 Enable: Turn potentiometer down to zero resistance then slowly increase until desired RPM is reach
 Disengage: Turn potentiometer down to zero and RPM will drop to standard idle speed
 RPM Range:
 Gas: 900-2250 RPM
 2005-2010 Diesel: 1200 to 2300 RPM
 2011+ Diesel: 900 to 3000 RPM

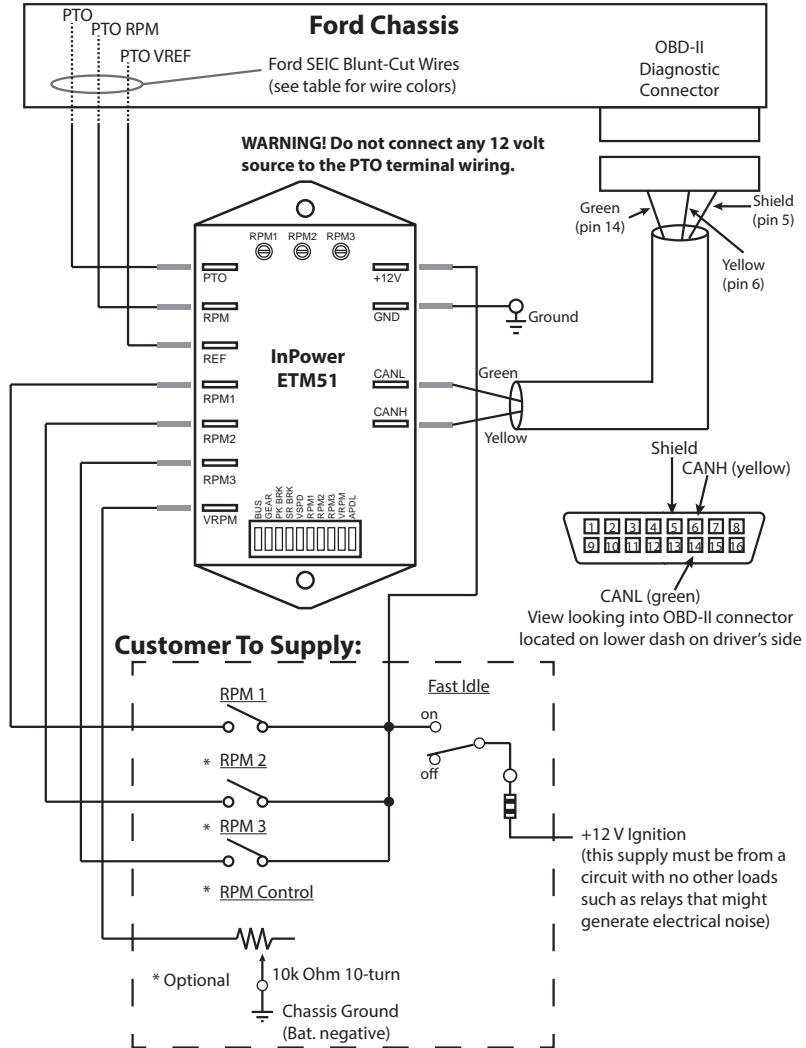
Mode Priorities:

RPM1: Highest
 RPM2: Second
 RPM3: Third
 Variable RPM: Lowest - will only activate when other modes are off

Gas Engine Chassis Wiring Diagram



Diesel Engine Chassis Wiring Diagram



Ford SEIC Wire Color Chart

| Function | F-Series Diesel | | | E-Series Diesel | |
|----------|-----------------|----------------|--------------|-----------------|--------------|
| | 2005-2007 6.0 L | 2008-2010 6.4L | 2011 + 6.7L | 2005-2008 6.0L | 2009 6.0L |
| PTO | Orange | Yellow/Green | Yellow/Green | Purple/Lt. Blue | Yellow/Green |
| PTO RPM | Orange/Yellow | Green | Green | Orange/ Yellow | Green |
| PTO VREF | Orange/Red | White/Brown | White/Brown | Orange/Red | White/Brown |

Status Indicators

A five segment LED provides status and problem detection information. Refer to the following table for coding of these functions.

| LED | Status | Indication |
|--------|----------|---|
| BUS | On Solid | Module ON & Functioning |
| | Flashing | Module ON, problem detected |
| GEAR | On Solid | Gear = Park or Clutch Pump released |
| | Flashing | Problem detected |
| PK BRK | On Solid | Park Brake set |
| | Flashing | Park Brake not set |
| SR BRK | On Solid | Service Brake at rest / not activated |
| | Flashing | Service Brake activated |
| VSPEED | On Solid | Vehicle Stationary |
| | Flashing | Vehicle Moving |
| RPM1 | On Solid | RPM1 terminal +12V, engine at RPM1 |
| | Flashing | RPM1 terminal +12V, engine at low idle * |
| RPM2 | On Solid | RPM2 terminal grounded, engine at RPM2 |
| | Flashing | RPM2 terminal grounded, engine at low idle * |
| RPM3 | On Solid | RPM3 terminal grounded, engine at RPM3 |
| | Flashing | RPM3 terminal grounded, engine at low idle * |
| VRPM | On Solid | VRPM terminal grounded, engine at high idle |
| | Flashing | VRPM terminal grounded, engine at low idle |
| APDL | On Solid | Accelerator pedal at rest position |
| | Flashing | Accelerator pedal actuated (not at rest position) |

* The Ford Powertrain Control Module (PCM) is not responding to the fast idle speed request. This could be caused by a chassis ready condition issue or some other PCM system problem. This could also be caused by the failure to power the ETM51's +12V input until after the engine is started

Installation 1. Getting Started

We recommend installing the ETM51 system under the dash due to the proximity of the wiring connections and cable length. The unit should not be located in the engine compartment or any other location that is not protected.

You will need a crimping tool for the 0.25 inch Faston blade terminals and a wire stripping tool. Be sure to follow the crimping tool instructions for the proper wire size and terminals. Do not lengthen the DLC Cable. Disconnect the battery before making any electrical connections.

WARNING!
Do not connect any 12 volt power source to the ETM51's PTO terminal wiring.

2. Mounting

Mount the ETM51 Module under the dash or on a flat surface using the two mounting holes. Ensure that you have sufficient distance to install the 36 inch DLC cable.

3. Installing the DLC Cable

Connect the two Faston terminals on the DLC cable to the ETM51 module terminals (Yellow wire to CANH terminal and Green wire to CANL terminal). Route the cable to the OBDII Data Link Connector and plug it in. The OBDII connector is usually located on the lower part of the dash on the driver's side. Using a cable tie, secure the plug to the OBDII connector so that it will not vibrate out. We recommend routing the DLC cable across the bottom of the plug/connector and looping the cable tie around the plug, socket and cable to keep it out of the way.

4. Wiring the Mode Selection and SEIC Controls

The ETM51 module must be wired to the Ford SEIC blunt-cut wires and to the customer-supplied Mode Selection controls. The wiring is different for diesel and gas applications, so please refer to the appropriate wiring diagrams on pages 6 and 7. You will also need a good quality chassis ground (battery negative) signal and a +12 volt supply fed from the Ignition Switch.

Note that on gas engine installations, Ford requires the +12 volt supply to be "clean" - i.e. it should have no other loads on the same circuit that could generate electrical noise.

4A. Idle Speed Mode Controls

Determine the combination of fast idle speed modes you will need (variable RPM control and/or up to three fixed preset speeds). You will need a 10k Ohm potentiometer for the variable RPM control (VRPM) and a switch or relay contact for the fixed speed presets (RPM1, RPM2 and RPM3). You will also need a Fast Idle On/Off switch.

Wire these devices as shown in the Wiring Diagram for your respective engine: Diesel (page 6) or Gas (page 7). Make sure to have a good quality chassis ground and a +12 volt fused supply fed from the Ignition Switch. Refer to the Ford Body Builders book for location of these circuits.

Note on Variable RPM control: We recommend a ten-turn potentiometer such as those available from Williams Controls (www.wmco.com) or Digikey (www.digikey.com).

4B. Ford SEIC Wiring

Install the wires between the ETM51 module and the Ford SEIC as shown in the wiring diagrams. On F-Series trucks, the SEIC wires are located above the parking break pedal. On E-Series vans, they are located in the engine compartment on the top driver's side of the firewall. On F650 chassis, they are located under the hood on the passenger side. Refer to the Ford SEIC documentation for more details.

Setup and Calibration

The only calibration required is to select each of the three preset modes (RPM1, RPM2 and RPM3) and adjust the three respective ten turn potentiometers on the ETM51 to the desired RPM. (900 to 2250 RPM on gas engines and 1200 to 2300 RPM on the 2005-10 diesel engines; 900 to 3000 RPM on the 2011+ diesel engines). Each complete turn of the potentiometer will increase or decrease the idle speed by roughly 300 RPMs. Adjustments may be made with a 1/16" (1.6mm) or smaller screwdriver.

Specifications

Electrical

| | |
|--------------------------------|-----------|
| Input Voltage (+12V Terminal): | 8 to 16 V |
| Input Current (+12V Terminal): | 37mA |

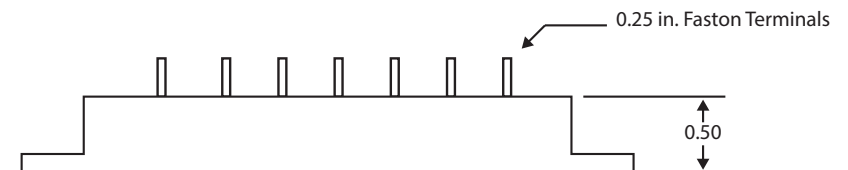
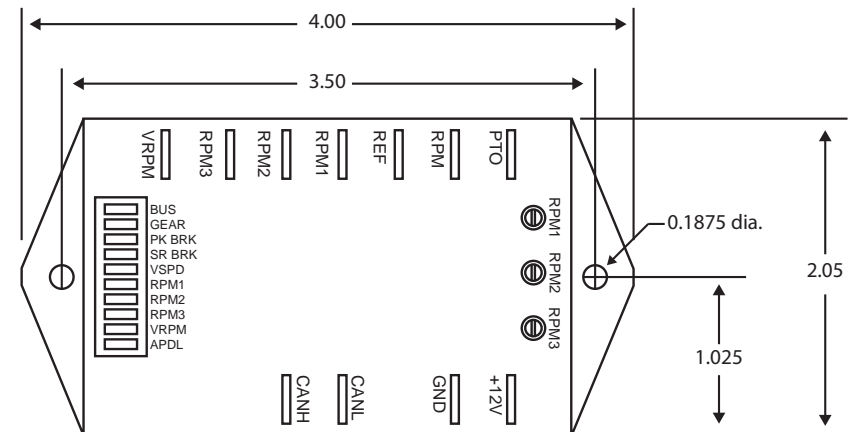
Mechanical

| | |
|-------------------------|---|
| Weight: | 0.17lbs |
| Connections: | Faston 0.25 inch terminals |
| Case Material: | Cyolac thermoplastic (UL 94VO) |
| Encapsulation Material: | Epoxy potting compound, resistant to most fuels, oils, acids and cleaning agents. |

Reference:

See www.fleet.ford.com/truckBBAS/index.htm

Mechanical Drawing



All dimensions in inches. Not to Scale.