

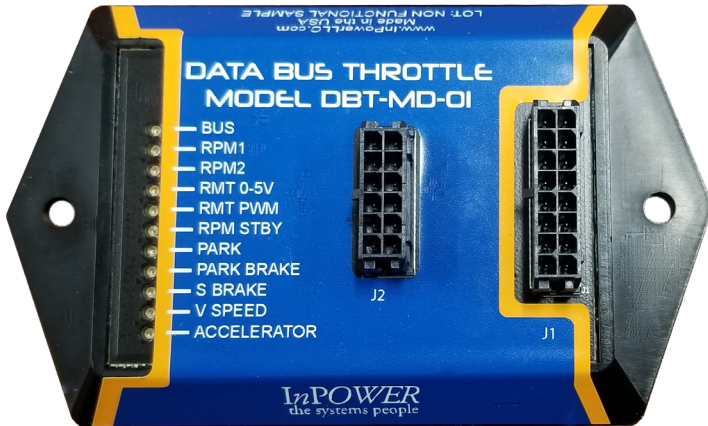
OWNERS MANUAL

InPower Model DBT-MD-01

Electronic Throttle Module and Databus Decoder for Ford 2016+ Vehicles

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1. Introduction

InPower's DBT-MD-01 Data Bus Throttle both decodes the vehicle data bus to provide you with the signals you need and provides high idle engine RPM and PTO control. This product is compatible with 2016+ Ford trucks and vans equipped with the Ford Stationary Elevated Idle Control (SEIC).

Modules come with four modes of high idle control: one standby mode, two preset RPM modes, and one variable input RPM mode based on a customer-supplied remote variable resistor. The standard module also includes four data bus signal outputs: Park Brake Set, Reverse, Engine Run and Park (*note: on F750 chassis, the output is Neutral*) with the capability of additional or alternate outputs per customer special request. Contact information is located on the back page of this manual.

Note: The data bus signal outputs will continue to function so long as the unit has power and vehicle ignition is in the run position. However, the throttle functions will only operate if the Chassis Ready Conditions are satisfied. LED diagnostic indicators are provided to aid in system troubleshooting. These LEDs are located on the module opposite the connectors.

The DBT-MD-01 kit includes two cables. The first cable (J1 Harness) connects to the module via connector J1 and has three labeled sets of 20-inch blunt cut wires: five wires for SEIC, five wires for inputs, and six wires for data bus signal outputs. The second cable (J2 Harness) connects to the module via connector J2 and has both a 16-pin connector plug for the OBDII data link connector and a set of seven blunt cut wires for remote high idle control and preset RPM adjustments.

Note: Ford vehicle wire colors and locations may vary substantially between different models and even different model years. **Please obtain and consult the SEIC information for your specific vehicle prior to installing the module.** Documentation may be obtained from Ford's *Truck Body Builder Advisory Service* (www.fleet.ford.com/truckbbas/).

2. Installation Procedures

2.1 Safety Precautions



WARNING

This electronic throttle product has been designed and manufactured to meet the intended application requirements and specifications. Any modifications to the product or to the installation procedure can be dangerous and will void InPower's warranty.

- Read and understand the instructions in this manual and other manuals before starting the installation.
- Make sure that the vehicle battery power is disconnected during installation of the throttle module.
- Reconnect the battery when the system installation is complete.
- Wear appropriate safety equipment, such as protective eyeglasses, face shield and clothing when installing equipment and handling the battery.
- Be careful when working near a battery. Make sure that the area is well ventilated and that there are no flames near the battery. Never lay objects on the battery that can short the terminals together. If battery acid gets in your eyes, immediately seek first aid. If acid gets on your skin, immediately wash it off with soap and water.

2.2 Getting Started

IMPORTANT NOTE: Please obtain the specific SEIC installation instructions for your vehicle make and model from Ford. Wire colors and locations may vary from model to model and even between different years for the same model. The guide may be obtained from Ford's *Body Builder Advisory Service*.

We recommend installing the DBT-MD 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 tools to splice wires together. For each fixed preset mode, you will need a high idle On/Off switch. For Variable RPM control, you will need a potentiometer. We recommend a 10 Kohm 3, 5, or 10-turn potentiometer such as those available from Digikey. If using PWM for Variable RPM control, refer to PWM instructions.

Do not lengthen the cable from the module to the OBD-II connector. Disconnect the battery before making any electrical connections.

2.3 Mounting

Mount the DBT-MD 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 OBD-II cable that is part of the J2 harness.

Plug the J1 cable into the J1 connector (20 pin connector) and plug the J2 cable into the J2 connector (12 pin connector). The J2 cable will be used for the OBD-II connection, power input, RPM adjustment and hooking up either remote RPM or PWM. The J1 cable will be used for hooking into the SEIC circuit, high idle on/off or mode select switches and for providing output signals.

2.4 Wiring

Ensure the J1 cable and the J2 cables are both connected to the module.

Note: So long as the vehicle is on and the unit has power, even if the High Idle Throttle function is not engaged, the Databus Decoder signals will continue to operate. If the Databus Decoder signals will not be used, properly secure the Output wire group on the J1 harness.

A. OBD-II connector

Locate the red connector on the J2 harness. Route this portion of the cable to the OBD-II Data Link Connector and plug it in. The OBD-II connector is usually located on the lower part of the dash on the driver's side. Using a plastic cable tie, secure the plug to the OBD-II connector so that it will not vibrate out. We recommend routing the DLC cable across the bottom of the plug and looping the cable tie around the plug, socket and cable to keep it out of the way.

B. SEIC

Locate the SEIC group of blunt cut wires on the J1 harness. Install wires between the blunt cut wires provided on the J1 harness and the respective inputs and outputs of the Ford SEIC as shown in the wiring diagrams.

C. High Idle Mode Selection Controls

Determine the combination of high idle speed modes you will need (standby high idle, variable RPM control and/or up to two additional fixed preset speeds).

You will need to supply your own switches for turning on or off RPM modes, and for the variable RPM, you will need to provide your own 0 to 5V potentiometer. We recommend a ten-turn potentiometer such as those found at Digikey and other similar vendors.

Please refer to section 2.6 on page 6 for a complete chart of input and output wires. All mode selection switches should be wired to the INPUTS wire group in the J1 Harness. The variable remote should be wired to the appropriate wires in the J2 Harness.

D. Decoded Data Bus Signal outputs

Note: As long as the unit has power (connected via the Red wire on the J2 harness) and the vehicle is on (data bus signals are not transmitted when the vehicle is off), the DBT-MD will provide these output signals, regardless of the status of the throttle controls and engine RPM.

All decoded signal output wires are located in the J1 harness in the bundle marked Outputs. Each wire corresponds to a different signal and all wires give a 600mA current when connected. (Note: The pink wire and the gray wire are unused in the standard model but may be given a custom signal at customer request.) Tape or otherwise properly secure any unused wires out.

Please see 2.6 on page 6 for chart.

2.5 Calibration

All four RPM modes come with Factory Calibrations but may be adjusted by the user if so desired once the module is installed.

1. Activate the mode you wish to adjust. Note: If the Adjustable RPM mode is activated, this process will adjust the maximum RPM setting.
2. Locate the grey wire in the J2 harness. Apply +12V to this wire to raise the RPM or ground the wire to lower it to the desired RPM. Note: A minimum of 910 RPM is required for PTO to activate, so we do not recommend lowering the Standby RPM.
3. To permanently store the changed RPM, disconnect from all RPM modes but maintain power. If you disconnect the power without first deactivating all modes, it will not store the changes.

2.6 Harness Wire Chart

J1 Harness

SEIC Group	Wire Color	Connector Pin #	Description
	White	2	Input from PTO Relay/PTO
	Brown	8	Input from PTO VREF
	Orange	13	Output to PTO-REQ2 for gas
	Yellow	14	Output to PTO-REQ1
	Green	16	Output to PTO-RPM

Input Group	Wire Color	Connector Pin #	Function
	Brown	2	Not Used
	Pink	4	Input RPM1
	Tan	5	Input RPM2
	Violet	6	Input RPM STBY
	Dark Blue	7	Input RPM Remote

Output Group	Wire Color	Connector Pin #	Function	Signal Output Level
	Dark Green	1	Park Brake Set	Ground
	Pink	9	<i>Not Used</i>	<i>Not Used</i>
	Tan	10	Veh. In Reverse	Positive
	Violet	11	Engine Run	Positive
	Dark Blue	12	Park (750: Neutral)	Positive
	Gray	15	Not Used	Ground

J2 Harness

Wire Color	Connector Pin #	Function	Comments
Black	1	Ground	Red OBDII Connector
Black	2	Ground Out to Remote	Blunt Cut *
Orange	3	Input From 0-5V	Blunt Cut *
Yellow	6	Bus +	(P6) Red OBDII Connector
Red	7	+12V Power	Blunt Cut
Violet	8	Not Used	Blunt Cut
Gray	9	RPM Adjust	Blunt Cut
Pink	10	Input from PWM Remote	Blunt Cut **
White	11	5V Output to Remote	Blunt Cut *
Green	12	Bus -	(P14) Red OBDII Connector

* These three wires are for use with remote variable RPM

** The Pink PWM Remote wire is for use with PWM only

Note:

12V Power must be supplied to the **Red +12V Power** Power Input Wire (7) for unit to function.

J2 gray wire may be used to adjust calibration for all RPM settings (See section 2.5)

Cut the Black Wire at the OBDII Connector and connect to a good ground.

3. 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: standby, two presets and one variable RPM. The preset RPM modes may be adjusted via the grey RPM adjust wire (see Adjusting RPM Values, page #).

Chassis Ready Conditions:

- No vehicle speed
- Parking brake set
- Shift selector in Park (or Neutral on F750)
- Accelerator not pressed
- Service brake not pressed
- Engine running and below 1000 RPM
- No Diagnostic Trouble Code (DTC). Check Engine light must be off.

NOTE: While the engine is in high idle, should the throttle be deactivated by one of the Chassis Ready Conditions changing, the engine will return to normal speed. The throttle will flash the diagnostic LEDs to indicate the cause of the deactivation for ten seconds after Chassis Ready Conditions are restored. Then it will reset and return the vehicle to high idle.

Modes of Operation:

Standby Mode

Function: Increase idle to minimum required to activate PTO
Activation: Apply +12V to Violet Wire on J1 Harness Input Group
Factory Calibration: 950 RPM

NOTE: A minimum of 910 RPM is required to enable PTO on 2017+ vehicles, so we do not recommend adjusting the Standby set-point below the Factory Calibration.

Preset RPM Modes

Function: Increase idle to preset RPM values
Activation: RPM1: Apply +12 V to Pink Wire on J1 Input Group
RPM2: Apply +12V to Tan Wire on J1 Input Group
Factory Calibration: RPM1: 1500 RPM RPM2: 1200 RPM
Calibration Range: Varies based on vehicle model. Generally, 900 RPM to 2200 RPM (gas) or 2800 RPM (diesel)

Variable RPM Mode

Function: Varies RPM as a function of voltage from customer-supplied remote variable control

Activation and Adjustment:

1. Activate Standby Mode: Apply +12V to Pink Wire on J1 Harness Input Group (J1 Pin4)
2. Activate Remote Mode: Apply +12V to Dark Blue Wire on J1 Harness Input Group (J1 Pin7)
 The module will then look for a signal from either PWM or remote potentiometer. Both RMT 0-5V and RMT-PWM LEDs will flash until it receives a remote signal. At that point, the corresponding LED will turn solid and the other one will shut off.
3. To adjust RPM with the potentiometer, start at zero and then turn potentiometer up slowly until desired RPM is reached. To adjust with PWM, contact InPower for PWM specifications.

Minimum RPM: Equal to Standby Mode RPM

Maximum RPM: Preset Adjustable. Factory Default: 1500 RPM

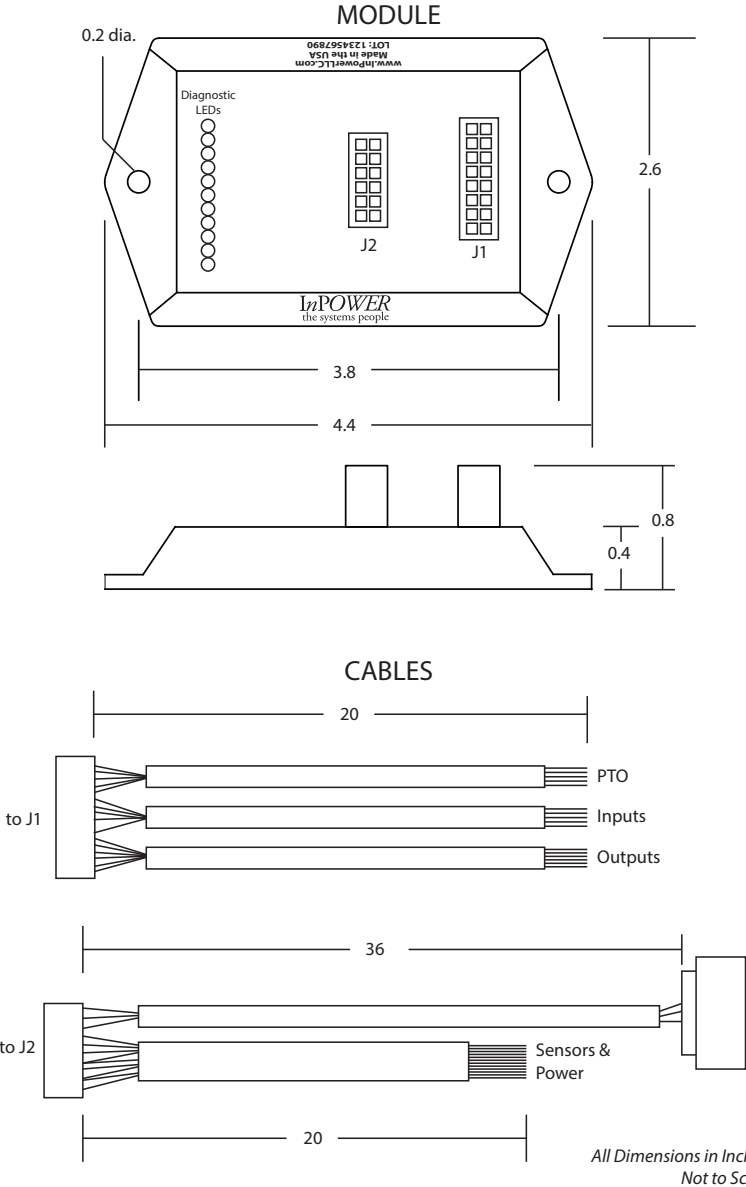
Mode Priorities:

If more than one mode is selected at a time, the modes take the following priorities:

RPM1	Highest - overrides all other modes
RPM2	Second - overrides lower modes
Variable RPM	Third - overrides lower mode
Standby	Lowest

NOTE: When using module with PTO on 2017+ gas vehicles, first engage Standby High Idle Mode before engaging PTO.

4. Mechanical Drawing



5. Status Indicators and Troubleshooting

5.1 For new installations. The throttle automatically checks to see if its software revision code supports the chassis. The DBT-MD detects the vehicle type during the first ignition turn-on after installation. If the Park LED is on solid and all other LEDs are off, the truck is not supported by this model.

Please refer to the Throttle Selector Guide found on our website for the most up-to-date compatibility information.

(www.inpowerdirect.com/electronicthrottlecontrols_selector.php)

5.2 Check all wiring and make sure all connectors are plugged in firmly.

Refer to the Harness Wire Chart in section 2.5 on page 5 when checking that wires are connected to appropriate inputs and outputs.

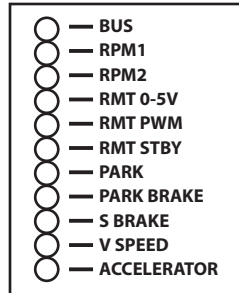
Ford vehicle wire colors and locations may vary substantially between different models and even different model years. **Please obtain and consult the SEIC information for your specific vehicle.** Documentation may be obtained from Ford's *Truck Body Builder Advisory Service* (www.fleet.ford.com/truckbbas/).

5.3 A series of 11 LEDs on top of the module provide diagnostic information for troubleshooting purposes. The LEDs are labeled and correspond to RPM modes, Databus status and safety interlocks necessary to bring the vehicle to high idle. If no LEDs are illuminated, the unit does not have power.

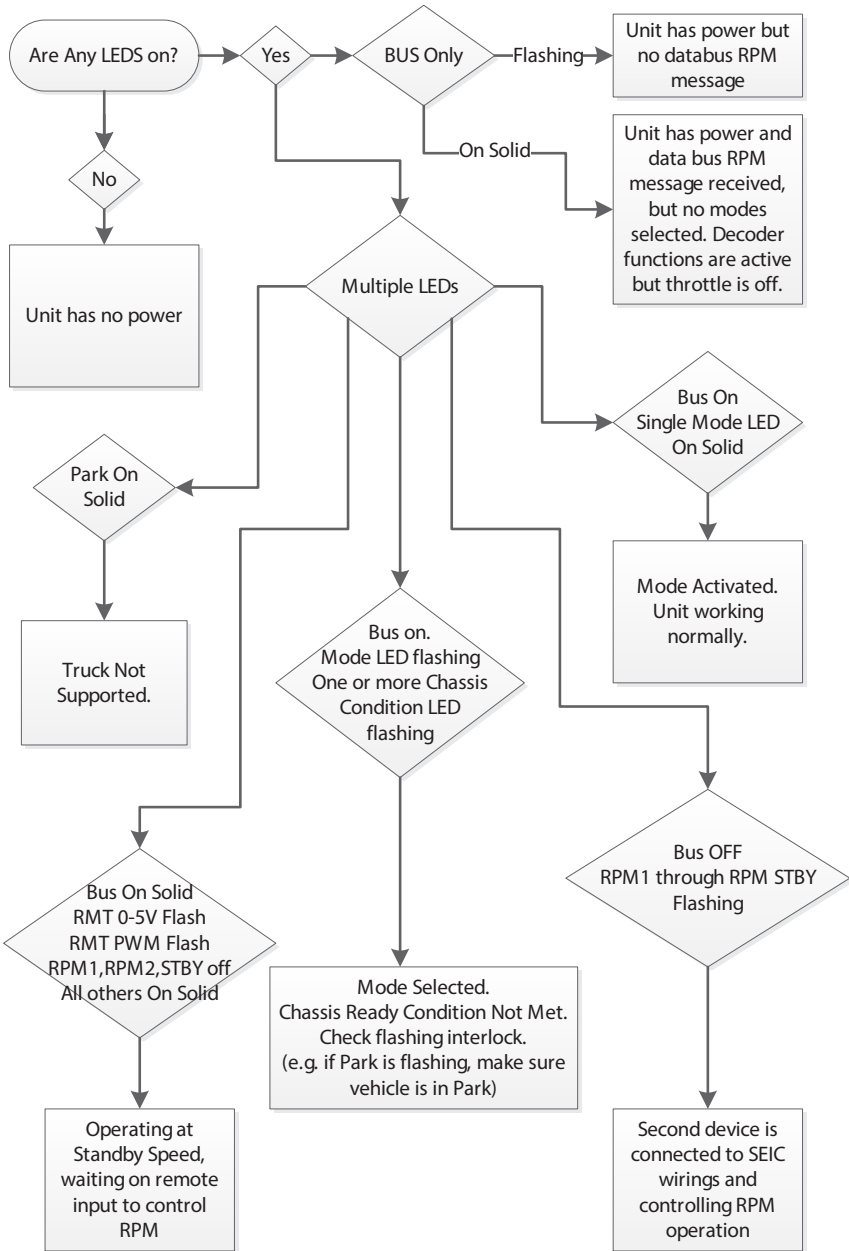
See LED Troubleshooting Flowchart on Page 9.

5.4 While engine is in high idle, if one of the Chassis Ready Conditions changes states, the engine will return to factory idle. The throttle will flash the diagnostic LEDs to indicate the cause of the high idle deactivation. Then, once conditions are restored, after a ten second delay it will return the vehicle to the preset high idle speed. This feature may be used to troubleshoot intermittent problems.

DBT-MD LED INDICATORS



5.5 LED Troubleshooting Flowchart



Contact Us

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