

# OWNERS MANUAL

## InPower Model ITM116A

### Platform Lift Interlock

#### 2005 - 2008 Ford E-Series

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### **1. Introduction**

This product is intended for installation in 2005 through 2008 Ford E-Series chassis with FMVSS compliant, public use (commercial) platform lifts manufactured by The Braun Corporation, Ricon Corporation or Maxon Mobility. If another type of lift is to be used, contact the lift manufacturer to determine its compatibility.

The ITM116A interlock system is designed to meet the requirements of FMVSS 403/404 and therefore must be installed in accordance with the lift manufacturer's instructions. The installer must be trained and skilled in installing FMVSS compliant lift systems. The installation must also comply with SAE (Society of Automotive Engineers) and Ford Motor Company electrical wiring procedures.

### **2. Product Description**

The ITM116A interlock system consists of a control module, remote driver's LED display, and two wiring harnesses. The control module is a solid state, non-microprocessor-based control device. It contains three connectors for interfacing to the remote LED display and two wiring harnesses. It also contains ten diagnostic LED indicators to aid in system troubleshooting. The "plug and play" Ford chassis harness contains two tee-cables that connect to the parking brake switch and shift lock solenoid that are both located under the dash. The system wiring harness consists of a five foot long set of wires in a corrugated loom that connect to the Ford SEIC blunt-cut wires located under the hood, and a set of 18 inch blunt-cut wires for interface to the platform lift system, the lift door switch, and 12 volt power. There is also a door output that can be used to power an indicator light to show when the lift door is ajar/open. An engine fast idle function is included that can be wired to provide an automatic, and a choice of two fixed engine speeds. This utilizes the Ford SEIC (Stationary Elevated Idle Control).

### **3. Installation Procedures**

#### **3.1 Safety Precautions**



#### **WARNING**

**This interlock 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 Interlock and lift systems.
- 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.

### 3.2 Getting Started

This manual provides instructions for installing the InPower Model ITM116A Interlock System in a 2005 - 2008 Ford E-Series van with a FMVSS compliant, public use (commercial) platform lift. It is important that you follow these instructions carefully and contact InPower if you need assistance or more information. Note that product technical documents are available on InPower's web site.



**Before installing and operating this interlock system, read and understand the lift manufacturer's safety, operating and installation instructions.**

This interlock system installation requires additional parts and materials that are not supplied with the interlock product (See Section 9.2). Identify all required parts before starting the installation and ensure that these items are the correct type and quality.

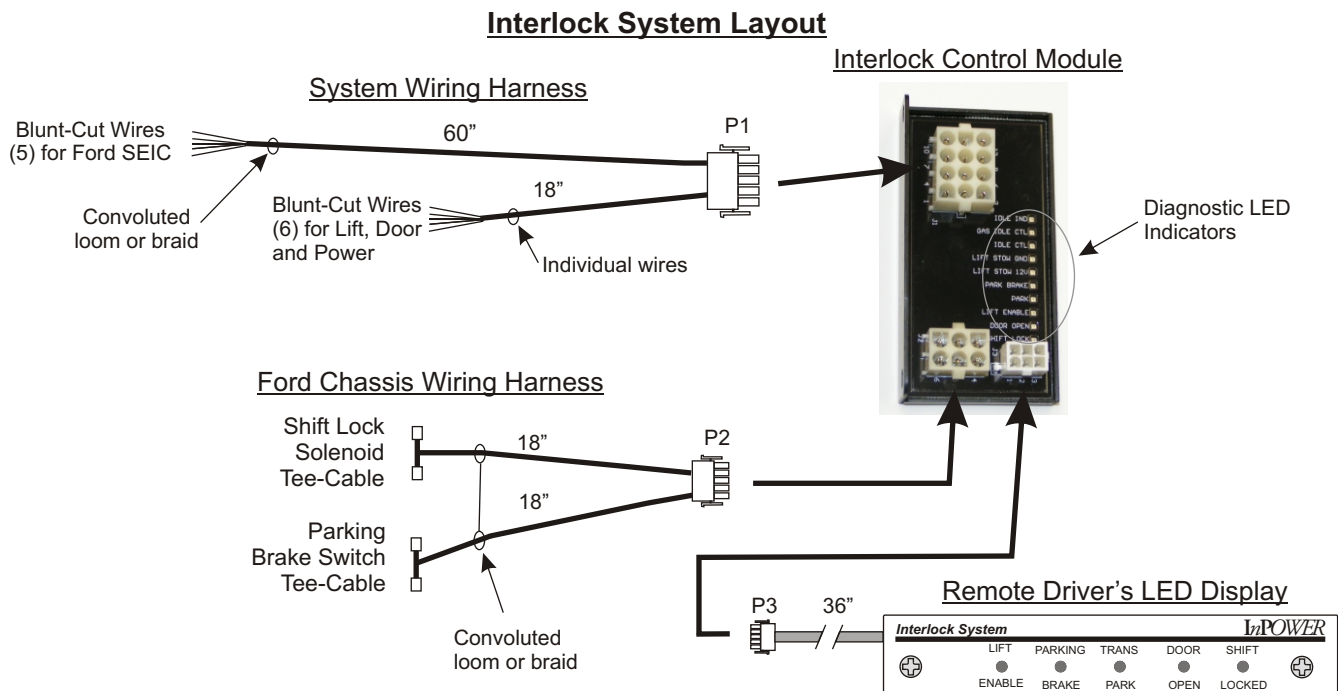
Inspect the interlock product and all other components for damage before starting the installation. Do not perform the installation if any problems exist.

Determine the type of interlock interface required for the platform lift. This interlock system provides a +12 volt @ 8 amps *Lift Enable* output to allow the platform lift to be operated. It also requires a *Lift Stowed* signal from the lift system that can be either +12 volts or ground (two inputs are provided) when the lift is in the fully stowed position. If the lift system is not compatible with these two interface signals you must take the necessary actions to adapt the lift system interface to the interlock system's interface. Refer to the lift manufacturer's installation instructions for further details.

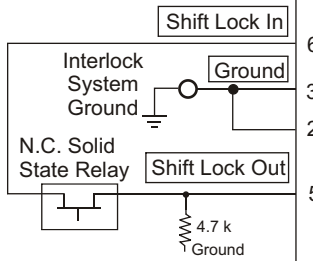
The recommended mounting location for the ITM116A interlock module is under the dash, to the left of the steering column due to the proximity of the wiring connections. **The unit must not be located in the engine compartment or any location that is not protected from the environment.**

### 4. System and Circuit Diagrams

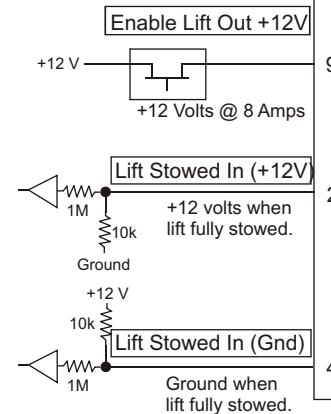
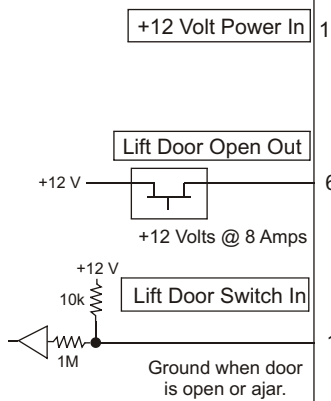
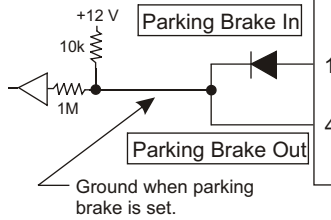
The following pages show the individual circuits that need to be wired. The following section, 5. Installation Instructions, describes how to wire these circuits.



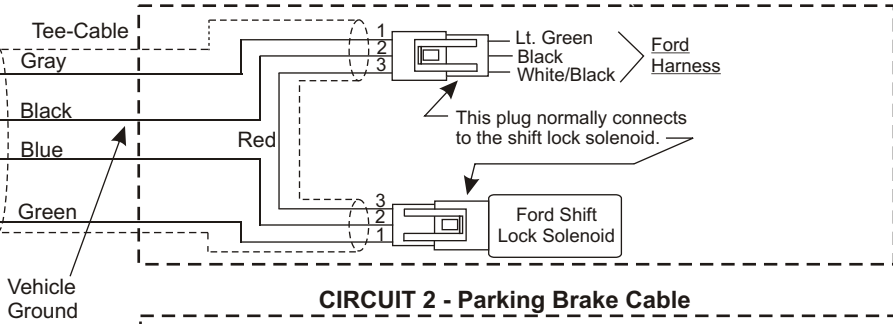
**InPOWER ITM116 Interlock Module**



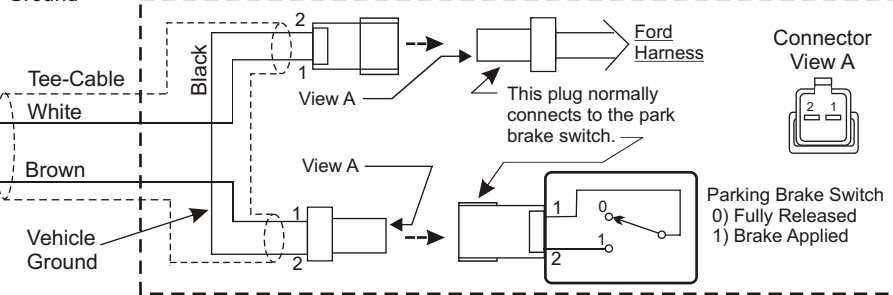
Note - The Interlock module gets its ground from pin-13.



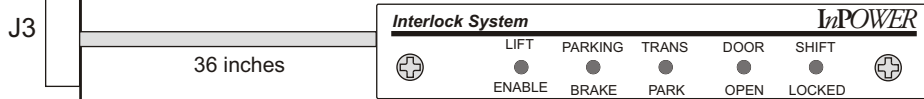
**CIRCUIT 1 - Shift Lock Solenoid Cable**



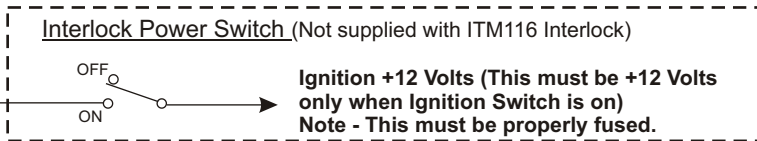
**CIRCUIT 2 - Parking Brake Cable**



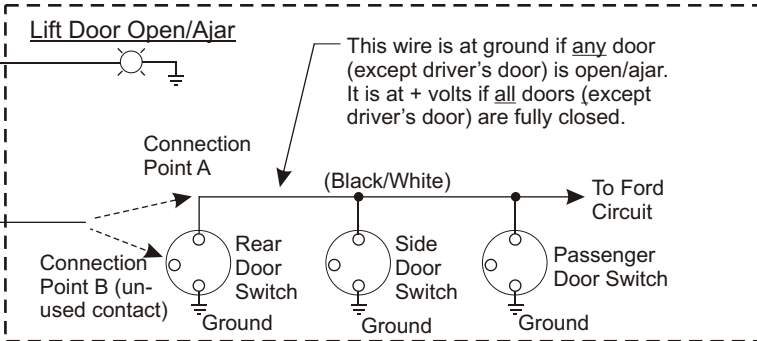
**Remote Driver's LED Display**



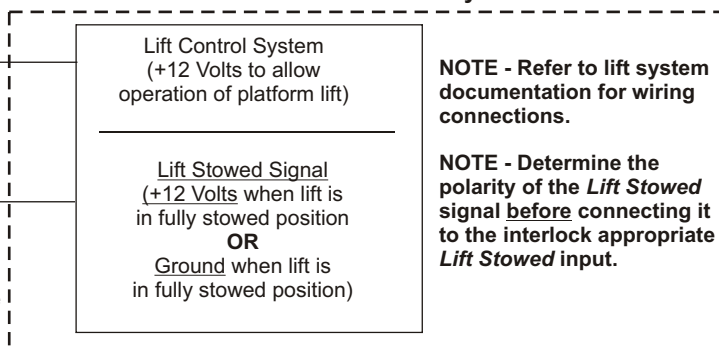
**CIRCUIT 3 - Power Switch**



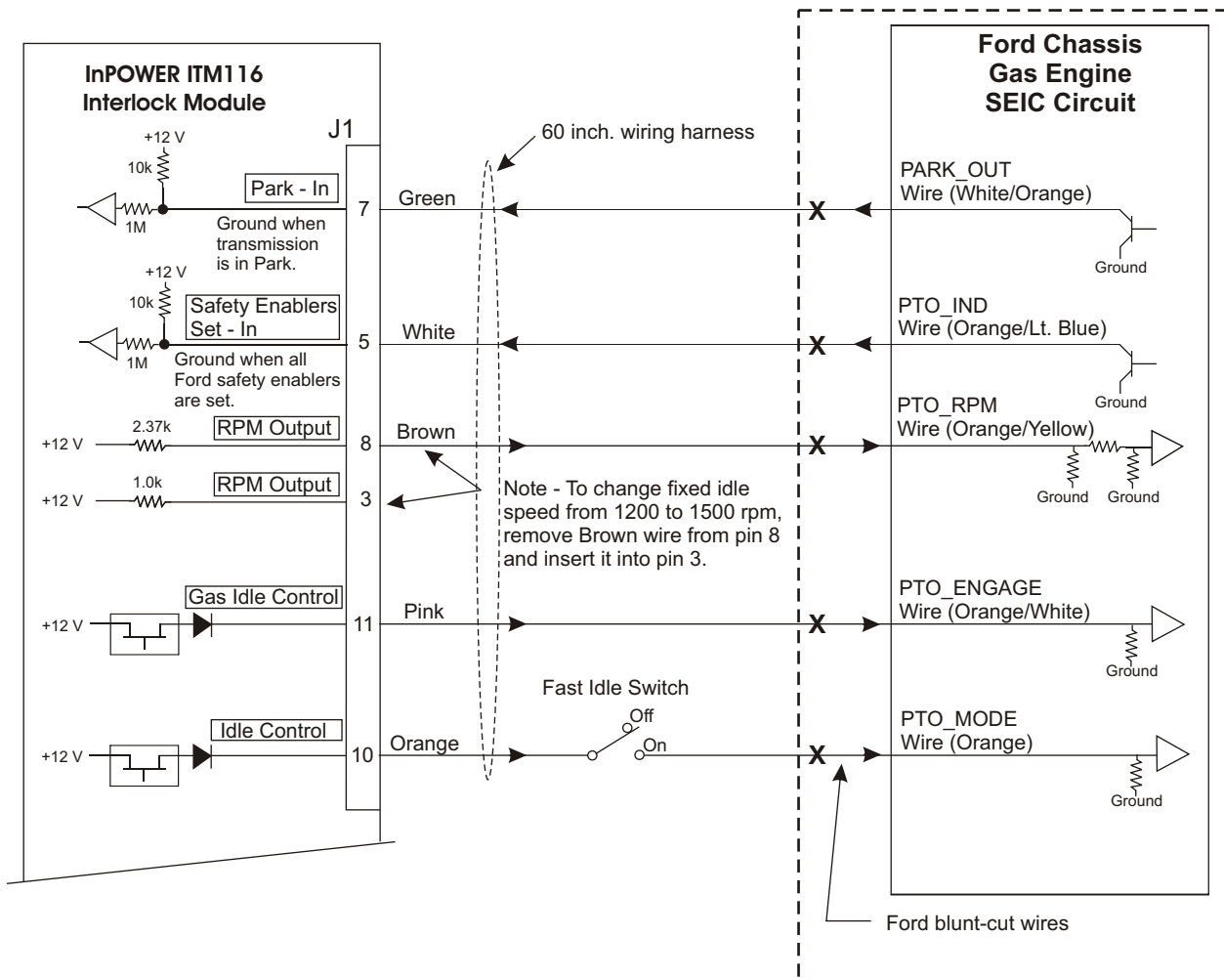
**CIRCUIT 4 - Lift Door Switch & Lamp**



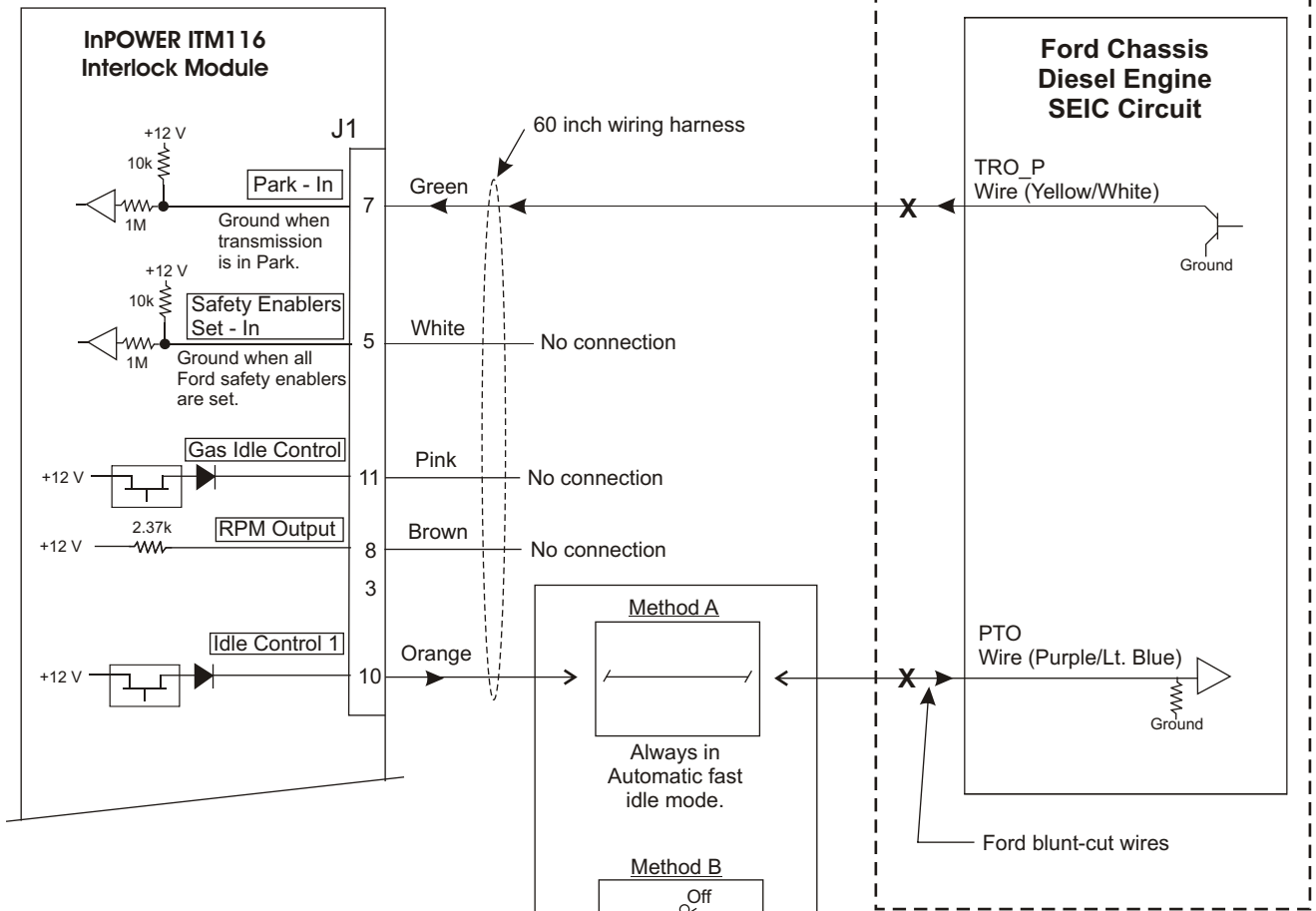
**CIRCUIT 5 - Platform Lift System**



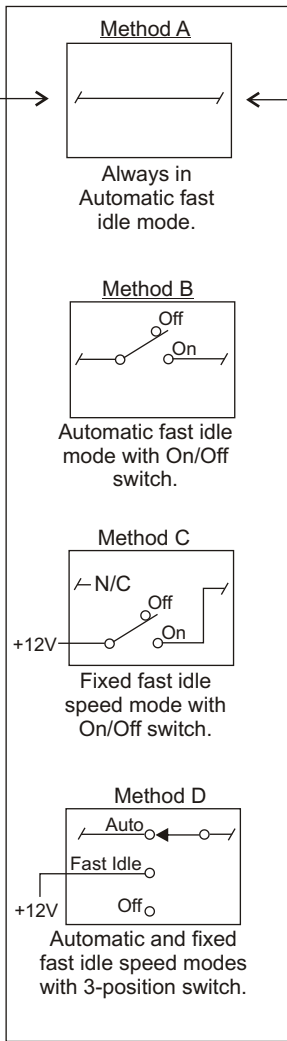
### CIRCUIT 6A - Park Position and Fast Idle (Gas Engine)



**CIRCUIT 6B - Park Position and Fast Idle (Diesel Engine)**



**Alternative Wiring for Fast Engine Idle Operation (Diesel Engines Only)**



## 5. Wiring Instructions



### WARNING

**Make sure that the vehicle battery power is disconnected during installation of the Interlock and lift system. Reconnect the battery when the system installation is complete.**

#### Circuit 1 Wiring (Shift Lock Solenoid Cable)

1. Locate the shift lock solenoid on the bottom left of the steering column behind the dash panel. It has a three-wire harness plugged into it.
2. Remove the harness plug from the solenoid assembly.
3. Install the tee-cable supplied with the interlock between the solenoid connector and the harness plug that you removed from the solenoid. When complete, the interlock tee-cable will be connected to the Ford harness plug and the shift lock solenoid as shown in Circuit #1 diagram.

#### Circuit 2 Wiring (Parking Brake Switch Cable)

1. Locate the Parking Brake Switch connector C2015 near the parking brake pedal assembly. It has a two-wire harness plugged into it.
2. Remove the harness plug from the switch connector.
3. Install the tee-cable supplied with the interlock wiring harness between the parking brake switch connector and the harness plug that you removed from the parking brake switch connector.
4. When complete, the interlock tee-connector will be connected to the Ford harness plug and to the parking brake switch connector as shown in Circuit # 2 diagram.

#### Circuit 3 Wiring (Interlock System Power Switch)

The installer must supply a two-position On-Off Interlock Power Switch. This switch may be mounted on the dash at a convenient location.

NOTE - An alternative method is to wire the interlock module power input directly to a +12 volt power source that is powered by the Ignition Switch, and delete the Interlock Power Switch.

1. Mount the Interlock Power Switch.
2. Wire the "common" side of the Power On/Off switch to a properly fused +12 volt fused ignition switch source (**powered when the ignition switch is On**). Refer to the Ford Body Builders book for location of customer access ignition circuits.
3. Wire the "On" position side of the switch to the Red harness wire that goes to pin 12 on the interlock module.
4. When complete, you should have +12 volt fused power on the interlock module pin 12 when the ignition switch

is On and the Interlock Power Switch is On.

**NOTE - Do not power the interlock system directly from the Battery or any power source that is not fused and turned off with the ignition switch.**

#### Circuit 4 Wiring (Lift Door Switch and Light )

Wire the switch as shown in the Circuit #4 diagram. Wire the interlock wiring harness Violet wire (pin 1 on J1) to either Connection Point A on the door switch or to Connection Point B (see Circuit #4 Diagram). If wired to A, the rear, side and passenger doors interact to provide the following operation. If any door is opened the lift can be operated (providing the vehicle is in Park and park brake is set). And all doors (except the driver's door) must be closed to complete the interlock sequence (release the shift lock).

If wired to Connection Point B only, only the door switch wired will be monitored by the interlock system. Note that you will need a switch connector pin to attach to the switch when using Connection Point B. If a Lift Door Open light is required, wire the light to the Lift Door Open Output interlock wire harness Blue wire (pin-6 on J1). This output supplies a +12 volts @ 8 Amps output. The other side of the light must be wired to ground.

#### Circuit 5 Wiring (Platform Lift)

1. Review the platform lift installation manual and determine how to wire the ITM116 interlock to the following lift interface connections:
  - A. Enable Lift - This is an **input** to the lift system. When at +12 volts, the platform lift can be operated. Install a wire from the platform lift's Enable Lift input to the ITM116 Yellow blunt-cut wire in the interface wiring harness (Pin-9 on J1).

## 5. Wiring Instructions (Continued)

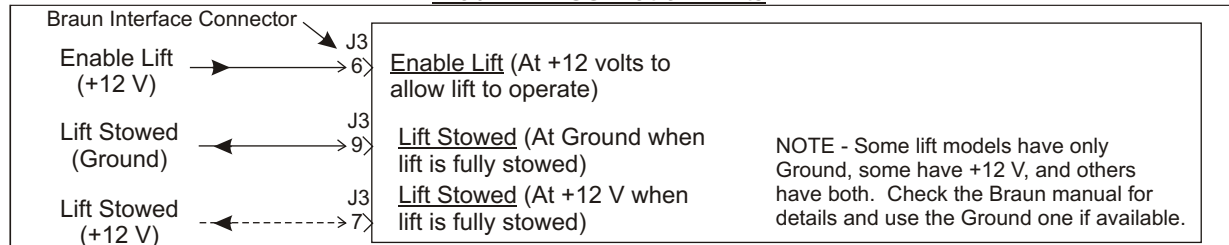
### Circuit 5 (Platform Lift) Continued

**Note - The ITM116 will supply a +12 volt @ 8 amp output to allow operation of the lift. Verify that this is the correct polarity for the platform lift.**

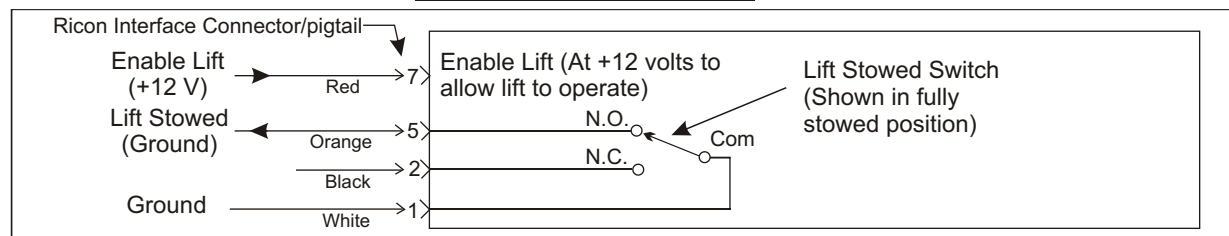
- B. Lift Stowed - This is an **output** from the lift system. **Verify the polarity of this signal.** If it is +12 volts when the lift is fully stowed, wire it to the ITM116 Tan blunt-cut wire (Pin-2 on J1). If it is at ground when the lift is fully stowed, wire it to the ITM116 Grey blunt-cut (Pin-4 on J1).

The following diagrams show the wiring interface of typical platform lift systems. **Be sure to verify the exact wiring interface for the lift system that you have.**

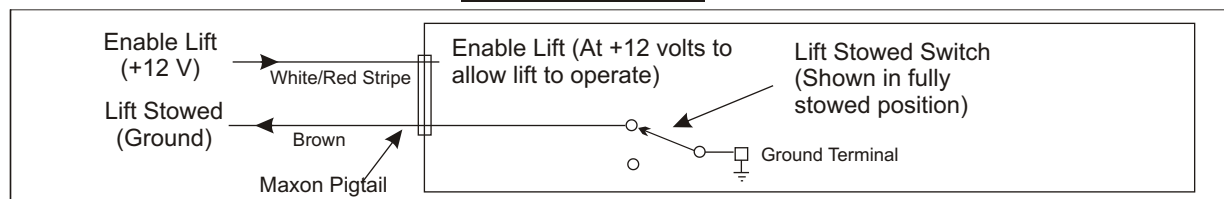
#### Braun FMVSS Platform Lifts



#### Ricon Series S Platform Lifts



#### Maxon Platform Lifts



### Circuit 6 Wiring (Ford Chassis SEIC Circuit)

The Ford *Stationary Elevated Idle Control* (SEIC) and *Customer Access Circuits* (CAC) feature consists of a set of blunt-cut wires located in the engine compartment on the top driver's side of the firewall. It is in the large harness running below the windshield/cowl (See Photo 1). Refer to Ford's Body Builders Layout Book for further details relating to the Ford SEIC and Customer Access signals. You will need to connect the five wires in the long (5 ft.) ITM116 harness to the appropriate Ford SEIC blunt-cut wires. **Note that the connections will be different for the gas and diesel engines.**

### Circuit 6A Wiring (Gas Engines)

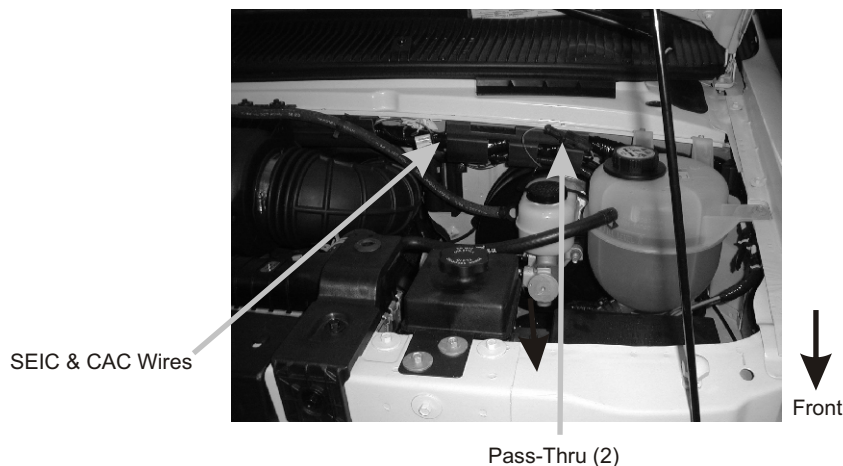
Refer to the circuit 6A diagram for wiring the gas engine systems. Connect the five ITM116 harness wires (5 ft. long) to the Ford blunt-cut wires per the diagram. Note that in gas engine applications there is no automatic fast idle operation, only a fixed speed fast idle that is controlled by the Fast Idle On/Off Switch. The fixed fast Idle engine speed will elevate to 1200 rpm (unless the Brown wire on pin 8 was changed to pin 3 for 1500 rpm operation).

## 5. Wiring Instructions (Continued)

### Circuit 6B Wiring (Diesel Engines)

Refer to the circuit 6B diagram for wiring the diesel engine systems. Connect the ITM116 harness wires (5 ft. long) to the Ford blunt-cut wires per the diagram. Note that only two wires are required for the diesel engine system. Do not connect the ITM116 interlock's Pink (Pin-11), White (pin-5) and Brown (pin-8) wires. Note that this diagram shows alternative wiring methods for different types of fast idle operation. In the Automatic position, when the battery voltage drops below 12.5 Vdc the engine speed increases to 1200 rpm, and returns to idle when the voltage reaches 13.6 Vdc. In the fixed fast Idle mode the engine speed will elevate to 1200 rpm.

Photo 1  
Engine Compartment



### Remote Driver's LED Display

The LED display includes a 36 inch cable that is attached to the underside of the display at one end and contains a 6-pin connector plug at the other end. Mount the display in a suitable location on the dash (usually to the right of the steering wheel). Two methods may be used for routing the cable. It may exit the side of the display so that it can be routed between the dash panel and the steering column. Or, you can drill a hole in the dash so that the cable can be routed through and behind the dash. Attach the display with the mounting screws provided, route the cable to the ITM116 control module, and insert the cable plug into connector J3.

**NOTE - Consult Ford documentation before drilling to verify the location of all critical components and harnesses.**

## 6. Interlock System Operation

The interlock system is powered from the Interlock Power Switch and the Ignition Switch when they are both in the On position. The following is the interlock system sequence of operation:

- Step 1 - With the interlock powered on, place the transmission in the Park position.
- Step 2 - Set the parking brake.
- Step 3 - Open the lift door. When opened, the transmission shift lock will be set to prevent the transmission from being taken out of Park, and the Lift Enable will be set to allow operation of the platform lift. The Lift Door Open light, if installed, will operate.
- Step 4 - The platform lift may now be operated (Refer to the platform lift operating instructions). Note - During the Lift Enable sequence, if the parking brake is released the Lift Enable will be deactivated, preventing lift operation.
- Step 5 - When the lift cycle is completed return the lift to its fully stowed position.
- Step 6 - Close the lift door. Note - Depending on how the door switch is wired, all doors may need to be closed.
- Step 7 - Release the parking brake. When released, the shift lock will be automatically released.
- Step 8 - The cycle is now complete and the vehicle can be taken out of Park and driven.

Continued...



## 6. Interlock System Operation - Continued

### Notes:

1. The shifter will remain in the Park position whenever the lift door is open.
2. The Lift Door Open output (+12 v @ 8 amps) is activated whenever the door is open, independent of other interlock inputs.
3. When the Fast Idle Mode Switch is in the Automatic position, the engine speed will increase to 1200 rpm if the battery voltage drops below 12.5 volts, and will return to normal idle speed when the battery voltage increased to 13.6 volts.

## 7. System Troubleshooting

If there is a problem with system operation, there is a very high probability that the control module has: A) either lost its ground or +12 volt power source, or B) that one or more of its inputs are not being actuated by the remote sensor (e.g., Lift Door Switch or Lift Stowed Switch). Most troubles are related to wiring problems, or sensors either failing or becoming out of adjustment.

### Troubleshooting Procedure:

- Step 1 - Determine if the control module is powered. If the LEDs on the control module are illuminated you have power. If none are illuminated, check the +12 volt supply on pin-12 (Red wire) with a voltmeter. Also check that the module is getting a good ground on pins 13 (Black wires). This ground is obtained from the shift lock solenoid harness (see page 3, Circuit 1).
- Step 2 - If the ground and power are correct, first reset the interlock system by turning off its power. Then, step through the operating sequence as described in Section 6. *Interlock System Operation*, and note the status of the green and red LED indicators on the control module. Pay particular attention to the inputs (Green LEDs) such as the lift door switch input and the lift stowed switch input. Verify that the input status LEDs agree with the sensor positions.

The ITM116 interlock module contains 10 diagnostic LED indicators to aid in system troubleshooting. These indicators show the status of input and output signals of the ITM116 control module, and are color coded as follows: Input Signals = Green, Output Signals = Red, and Ford SEIC wires = Yellow. These 10 diagnostics indicators are located on the connector side of the ITM116 control module.

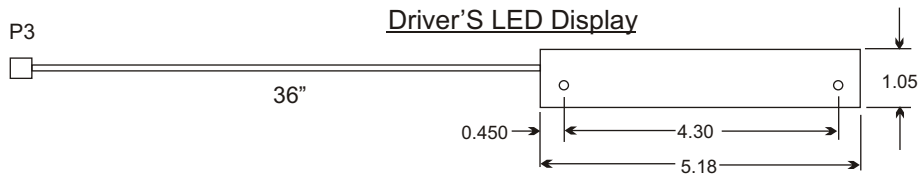
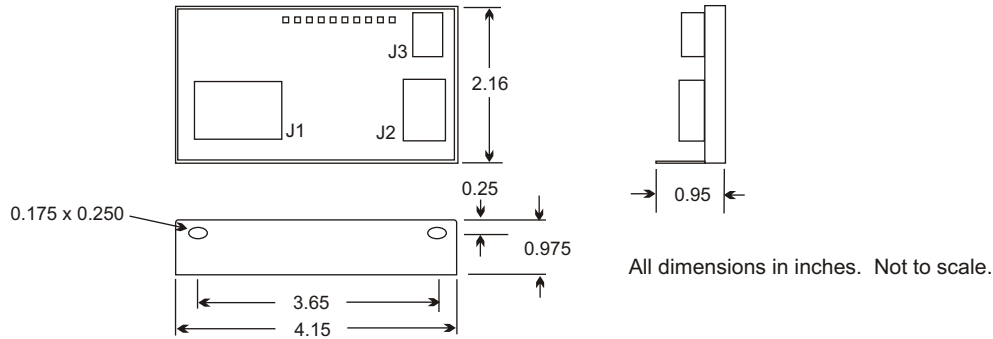
### System Diagnostic LED Indicators (Located on the Control Module)

- IDLE CTL IND  (Yellow) On when Ford SEIC PTO\_IND is at ground (Chassis enablers OK).\*
- GAS IDLE CTL  (Yellow) On when the gas engine PTO\_ENGAGE has been activated.\*
- IDLE CTL  (Yellow) On when Ford SEIC has been activated.\*
- LIFT STOW GND  (Green) On when the platform lift is the fully stowed position (If ground wire is used).
- LIFT STOW 12V  (Green) On when the platform lift is the fully stowed position (If +12 volt wire is used).
- PARK BRAKE  (Green) On when the park brake is set.
- PARK  (Green) On when the transmission is in the Park position.
- LIFT ENABLE  (Red) On when the interlock allows the platform lift to operate.
- DOOR OPEN  (Green) On when the platform lift door is ajar or open (not fully closed).
- SHIFT LOCK  (Red) On when the interlock system is locking the shifter in the park position.

\* For details of the Ford SEIC refer to Ford SVE Bulletin Q162 (Web site: [www.fleet.ford.com/truckbbas](http://www.fleet.ford.com/truckbbas) or Tel: 877-840-4338)

## 8. Mechanical Drawing

### Model ITM116 Control Module



## 9. Reference Information

### 9.1 Company Contacts

#### Ford Motor Company

Truck Body Builder Advisory Service  
Product Development Center  
MD 410  
PO Box 2053  
Dearborn, MI 48121-2053  
1-877-840-4338  
[www.fleet.ford.com/truckbbas/index.htm](http://www.fleet.ford.com/truckbbas/index.htm)  
[bbasqa@ford.com](mailto:bbasqa@ford.com)

#### The Braun Corporation

631 West 11th Street  
Winamac, IN 46966  
(574) 946-6153  
(800) 946-6158  
[www.braunlift.com](http://www.braunlift.com)

#### Ricon Corporation

7900 Nelson Road  
Panorama City, CA 91402  
(818) 267-3038  
(800) 322-2884  
[www.riconcorp.com](http://www.riconcorp.com)

#### Maxon Lift Corp.

11921 Slauson Avenue  
Sante Fe Springs, CA 90670  
(562) 464-0099  
(800) 227-4116  
[www.maxonlift.com](http://www.maxonlift.com)

### 9.2 Required Parts Not Supplied with ITM116 Interlock

1. Power switch and fuse. See page 3, Circuit 3.
2. Lift Door Open indicator light, if required. See page 3, Circuit 4.
3. Lift Door Closed switch, if not using Ford door switch. See page 3, Circuit 4.
4. Miscellaneous wire, mounting hardware, wire tie wraps, wire loom.
5. Fast Idle switch. See page 4, circuits 6A and 6B.