B-ILISC516-D Shift Interlock (Manual Lift Door)

2020 - 2025 Ford Transit*

*** For vehicles with the gateway located below the lower left dash panel (with a Black OBDII connector). For vehicles with the OEM gateway connector located behind the glovebox (White OBDII connector), use G-ILISC516**

Introduction

The B-ILISC516-DD is a microprocessor driven system for controlling wheelchair lift operation. The default system can operate with the vehicle ignition on or off. Lift operation will be enabled when specific vehicle safety conditions are met and will lock the transmission in Park when the wheelchair lift is in use. Optional Plug and Play harnesses (B-ILISC516-DDP) are available for most applications, making installation fast and easy. "Key OFF Only" operation is available with instruction sets to change operating modes.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.

Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

Installation Instructions

WARNING
Disconnect the battery to prevent setting a check engine light.

Disconnect vehicle battery before proceeding with installation.

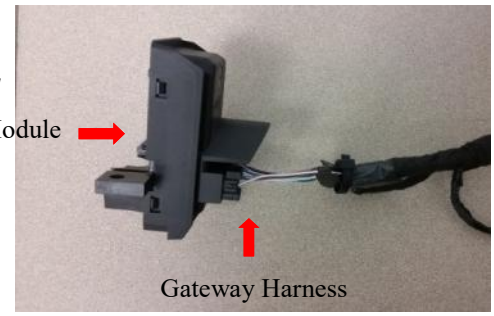
CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.

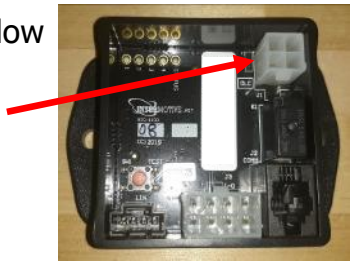
B-ILISC516-D Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the module so that the module's Diagnostic LEDs can be viewed with the lower dash panel removed. Locate the module in an area away from any high heat sources (engine heat, heater ducts, etc.). Do not actually mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

Gateway Plug and Play Harness (4-pin connector)



1. Locate the vehicles Gateway Module. It will be mounted below the lower left dash panel.
2. Remove the harness behind the Gateway module by pressing the locking tab and pulling outward.
3. Plug the Female side of the InterMotive Gateway Harness into the back of the Gateway module. Ensure the connection is fully seated and secured by the locking tab.
4. Plug the Male side of the InterMotive Data Link Harness into the Gateway harness.
5. Secure the B-ILISC516-DD Gateway harness so that it does not hang below the lower dash panel.
6. Plug the free end of the Data Link harness into the mating 4-pin connector on the B-ILISC516-DD module.



LED Display Panel Mounting - Black 4-pin connector

Locate a suitable position on the dashboard, within view of the driver to mount the LED Display Panel. Ensure there is open space behind the dash where the panel is mounted. The harness is 40" in length, which is the maximum distance the display can be from the module.

1. Drill a 5/8" hole in the dash where the center of the display will be located.
2. Attach the Black 4-pin connector of the LED display panel harness to the module.
3. Run the other end of the harness under the dash and out through the 5/8" hole.
4. Attach the end to the LED Display Panel.
5. Ensure the panel is level and secure using supplied screws.

Connecting a Lift Door Input (Cutaway Vehicle or Key Off Mode)

Installing discrete lift door input is only necessary to operate the module in "Key Off Only" mode, "Key On and Off" mode or if the vehicle does not have OEM door switches. If you are working on a vehicle that has no door switch installed (cutaway chassis), a door switch (on the (lift) door) must be installed. The module's pin 8 (gray wire) of the 8-pin connector (see the appropriate CAD drawing) must be connected to the door switch. **NOTE: this input must provide a ground level value when the door is open (Low-True)**. The next section assumes the vehicle has preinstalled OEM door switches and explains how to make the discrete connection for the side door.

After installation, refer to "**Discrete Door Input Mode**" (page 11) of instructions for lift door selection procedure.

The module's default setting reads door status over vehicle communication network and operates in "Key On Only" mode. If operating in "Key On Only" mode[1] with OEM doors, a discrete input is not needed.

[1] This default setting only apply to application version v4.06+

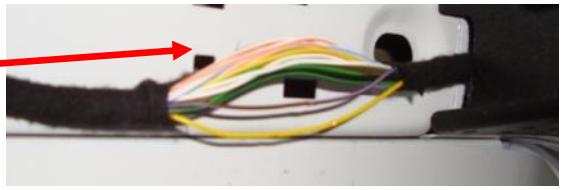
OEM Discrete Door Connection

NOTE: If connecting an OEM door discretely, there is an additional sequence that must be run at installation which identifies the lift door to the module (page 11, OEM Rear and Side Door Section).

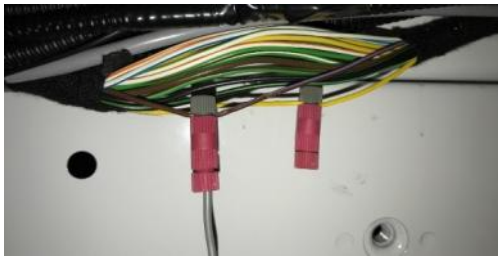
If "Key OFF" operation is desired, a discrete Lift Door input must be made to the module. This is accomplished by connecting into the existing vehicle switch harness above and behind the driver's seat. Securely connect the gray wire of the 8-pin harness to the OEM wire.

If using a Posi-Tap, follow the below instructions.

Both the slide door wire (yellow) and rear door wire (gray) are in this harness. Unscrew the gray cap on the Posi-Tap connector and install it on the appropriate wire, then screw the rest of the connector onto the cap snugging it down but not overly tight.



Unscrew the other end of the Posi-Tap connector, strip 1/4" insulation off the gray wire coming from pin 8 of the module, and insert it through the loose piece so the wire end is even with the piece edge. Hold the wire so it doesn't push back out of the Posi-tap, and screw it back into the main Posi-Tap body. Holding the main Posi-Tap body, gently pull on the just-installed wire to make sure it is solidly connected. Secure the connection using tape.



Shift Lock Connection

There are multiple cup holder options for the Ford Transit. Please follow the appropriate instructions.

Option 1

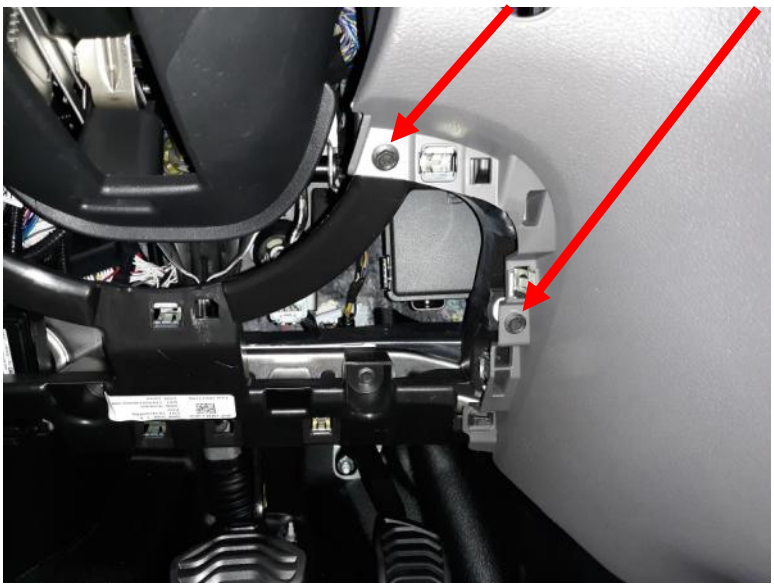
- Remove the cup holder.

- Locate connector 2810 (12-pin connector). Remove the OEM connector and plug it into the mating 12-pin connector T-harness supplied with the B-ILISC516. Plug the remaining male connector into the OEM cavity.

Option 2

- Remove the under dash panel by firmly grasping it and pulling it towards the rear of the vehicle.

- Remove the two screws as seen in the photo.



Shift Lock Connection (Continued)

- Remove the trim panel on the passengers side (see photo) by using a plastic trim removal tool.

- Open the glove box and remove the screw as shown in the photo.

Shift Lock Connection (Continued)

- Remove the gear shifter trim panel using a plastic trim removal tool.

- Remove the small trim piece shown in photo.

- Remove the center under dash panel by firmly grasping it and pulling it towards the rear of the vehicle.

- Locate connector 2810 (12-pin connector). Remove the OEM connector and plug it into the mating 12-pin connector T-harness supplied with the B-ILISC516. Plug the remaining male connector into the OEM cavity.

Control Inputs/Outputs - 8-pin connector

Brown – Connect this wire only if **"key off"** lift operation is desired.

An electric Park Brake became an option beginning in 2021. If the vehicle has an electric Park Brake, skip the steps below as the Brown wire will not need to be connected.

Connect this **optional** ILISC516 input to the OEM Park Brake switch (as shown) such that the switch is made when the Park Brake is set. Install a provided rectifier diode (RL202-TPCT-ND or equivalent) as shown in the Blunt Cut CAD drawing, to isolate the Parking Brake ground signal. Strip back some insulation off the OEM White/Violet wire, solder the Brown wire on and tape or use heat shrink tubing. This connection is required if lift operation is desired when the vehicle ignition is OFF.

- Pin #1— BLUE (Shift Lock Request Input) *Optional
- Pin #2 — N/C
- Pin #3 — ORANGE (Vehicle Secure (12V) Output)
- Pin #4 — N/C
- Pin #5 — BROWN (Park Brake (GND) Input) *Optional
- Pin #6 — N/C
- Pin #7 — YELLOW (Shift Lock Output)
- Pin #8 — GRAY (Lift Door Open Input) **Cutaway Vehicle or Key Off Mode**

Control Inputs/Outputs - 8-pin connector

The B-ILISC516-DD provides three ground side inputs and one 12V, 8 amp output.

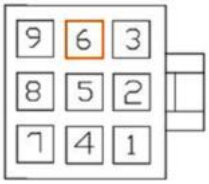
Refer to the B-ILISC516-DD CAD drawing (last pages) as reference when reading these instructions.

Lengthen the following wires appropriately, using solder and heat shrink tubing or tape.

The blunt-cut (4-wire) harness provides for control connections to the vehicle as follows:

Orange – This ***Lift Enable/Vehicle Secure*** output provides 12V@8 amps when it is safe to operate the lift. Connect this output to the lift's "enable" signal.

BRAUN

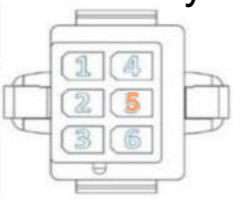


Braun pin 6

RICON

Ricon pin 2

Mobility Networks/VMI



Mobility Networks pin 5

Drawings are looking into the backside of the connectors where the wires exit the connector.

Using a meter to measure current, try connecting a fused (8A) source 12V signal to the correct pin to ensure it enables the lift and does not draw too much current. If the lift draws more then 8 amps on it's enable signal, a control relay will need to be installed.

Note: connecting the Lift Enable/Vehicle Secure Orange wire to the wrong lift pin can damage the interlock.

Control Inputs/Outputs - 8-pin connector (Continued)

Gray – This input must connect to the existing Lift Door switch wire as the instructions show (See above) or connect directly to an installed door switch (See Page 2). This can be used to detect door open/close.

Blue (Optional Shift Lock Request Input) - Insert the "pinned" end of the included Blue wire into pin #1 of the 8-pin connector and connect the other end to any source which provides a High True level to request shift lock. This can be used to request shift lock upon closing the switch.

Plug the 8 pin connector to the module.

Control Inputs/Outputs - 2-pin connector

Yellow – This ***Lift Enable/Vehicle Secure*** input is the source for the 12V@8 amps output listed on the previous page. Connect this input to a 12V source.

NOTE: The vehicle secure output will not function without the vehicle secure input connected.

Reconnect vehicle battery

Ensure all the harnesses are properly connected and routed. With all connections made, turn KEY to RUN position - the display panel should prove out with all LEDs lit for about 2 seconds.

KEY OFF ONLY mode

The module's default setting is "Key On Only" operation. Vehicle secure only turn on when all conditions are met. NOTE: in "Key On Only" mode, the module will go to sleep in 15 seconds after the vehicle is turned off with the key in off position. To change operation mode to "Key Off Only" mode, the following procedure must be performed:

1. Assure Park Brake is NOT applied with Key in RUN position and engine OFF.
2. Put the module in diagnostic mode by pressing the Red button on the module.
3. Wait for module's LED1 to finish "blink out" firmware version and all LED's become steady.
4. Hold the Red button down on the module again while holding down the Service Brake.
5. Continue holding Service Brake until LED3 and LED4 turn on steady and let go of Service Brake while LED3 and LED4 is still ON.

NOTE: Releasing the Service Brake while LED3 and LED4 is still ON sets the module to "Key Off Only" mode. Whereas releasing the Service Brake while LED3 and LED4 is OFF sets the module to "Key On" mode. "Key Off Only" mode will only work if discrete Lift Door input connection is installed.

Lift Door Identification

***OEM rear door only available with "Key On" operation. If "Key Off Operation" is desired on the rear door, a door switch must be installed. Refer to page 2 for discrete install instructions.**
The module's default setting have the lift door as the rear door and door status on the vehicle communication network. If the vehicle has the OEM side and rear doors with built in switches, the module needs to know which of the two possible doors (side or rear) is defined to be the lift door. The following procedure must be performed in order to accomplish this:

Vehicles with OEM Rear and Side Doors

1. Assure Side and Rear Doors are completely closed.
2. Vehicle is in PARK with Key in the RUN position and engine OFF.
3. Park Brake is applied.
4. Put the module in diagnostic mode by pressing the Red "Test" button on the module - the module LEDs will scroll, then LED1 will "blink out" the firmware version, and finally LEDs 1 - 3 (at the least) will come ON steady.
5. Wait for LED1 to complete "blink out" the firmware version and all LED's become steady.
6. Pump the Service Brake pedal (4 times within 5 sec) until you see module LEDs 1 - 4 blinking together.
7. Open the lift door; The module LEDs will stop blinking and remain OFF.
8. Verify the lift door is "known" by opening and closing it while watching the "Lift Door Open" LED on the display panel. If there is no indication or if the sense seems opposite to what it should be, the previous sequence must be repeated.

Discrete Door Input Mode (Firmware Version 4.10 or higher)

1. Assure Side and Rear Doors are completely closed.
2. Vehicle is in PARK, Parking Brake applied, the Key in the RUN position, either the driver or passenger door must be open, the engine is OFF, the Gray wire on the 8-pin connector is not grounded, and/or the lift door is closed.
3. Put the module in diagnostic mode by pressing the Red "Test" button on the module - the module LEDs will scroll, then LED1 will "blink out" the firmware version, and LEDs 1 - 3 (at the least) will come on steady.
4. Depress and continue to hold the Service Brake while doing steps 5 through 6.
5. Press the Red "Test" button a second time on the module - the Status LED, LED1, and LED2 will blink On and Off slowly.
6. Jump a ground to the Gray wire on the 8-pin connector or have a second person open the Lift Door that the Gray wire is attached to.
7. LEDs 1 - 4 will blink rapidly, if successful.

NOTE: For discrete door, ensure the discrete wire has been installed before performing pat and rub above (refer to pages 2-3).

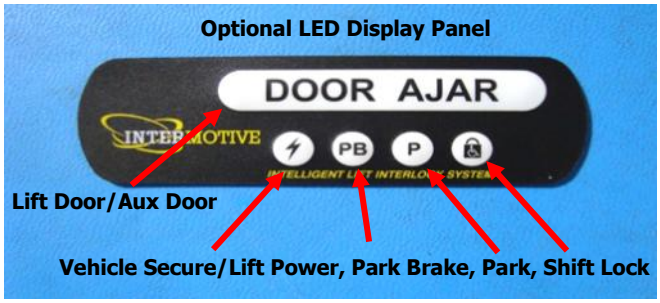
Post Installation / Check List

B-ILISC516-DD (Manual Lift Door)

The following checks must be made after installation of the system, to ensure correct and safe operation of the lift. If any of the checks do not pass, do not deliver the vehicle. Recheck all connections as per the installation instructions.

Begin the checklist with the vehicle in the following state:

- Lift stowed
- Lift Door closed
- Park Brake set (PB)
- Transmission in Park (P)
- Ignition off (Key off). Wait until the module goes into "Sleep" mode (all panel LEDs OFF) which takes approximately 5 minutes.



KEY ON CHECK: NOTE—you can skip this section if module set up for Key OFF Only

1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs turn ON for approximately 2 seconds. The lower icon LEDs are backlit and should remain ON whenever the module is awake.
2. Verify that the Park, Park Brake, and the Shift Lock LED remain ON.
3. Attempt to deploy the lift. The lift must not deploy with the Lift Door closed. Next, open the lift door.
4. With Lift Door open, Park Brake set and transmission in Park, all 5 LEDs will be ON. Attempt to deploy the lift. Verify the lift deploys. Stow the lift.
5. With Lift Door open and transmission in Park, release Park Brake. Verify that the Park Brake (PB) and Vehicle Secure LEDs turn OFF, and attempt to deploy the lift. Verify the lift does not deploy.
6. With Lift Door closed and Park Brake set, verify transmission will not shift out of Park.
7. With Lift Door open and Park Brake released, verify transmission will not shift out of Park.
8. With Lift Door closed, Park Brake released and Service Brake applied, verify you can shift out of Park.

KEY OFF CHECK:

NOTE: You must have both a discrete Park Brake (manual Park Brake only) and Lift Door input connected for the following test. If not, then test can be skipped:

1. Start with the same conditions as for KEY ON check above except do not wait for the module to go to sleep. The key remains OFF throughout this test.
2. Repeat Steps 2 - 5 (above) to complete this test.
3. Close the Lift Door and verify module goes to sleep after 5 min.
4. Open the Lift Door and verify module wakes up with display LED's proving out; then Park, Shift Lock, and Lift Door Open LEDs remain ON.

Using Module LEDs
The module has 5 on-board LEDs which are used to convey information about the operation of the module. In the normal mode all LEDs are OFF, but they come ON in different situations:

Operation Errors - Under certain conditions the module LEDs are used to indicate errors which prevent continued operation. In this case, the Status LED will blink and depending on which other LEDs are lit, the error is identified as follows:

LED1 ON - Set-up error on output device.
LED2 ON - Could not set up the CAN communication
LED3 ON - Output error
LED 2&3 ON - Loss of CAN traffic

VIN Errors - If there is an error while getting the vehicle VIN during initial installation, LEDs 1-4 will scroll 2 times then another LED will turn on to ID the error as follows:

LED1 ON - Wrong Manufacture (Example: Not Ford)
LED2 ON - Wrong chassis (Example: Not a Transit)
LED3 ON - Wrong engine
LED4 ON - Wrong model year (Example: Not model 2020-2025)
STATUS ON - Bogus VIN (e.g. all characters the same)
No LEDs ON - No VIN response

Diagnostics - The module can be put into a diagnostic mode where each LED represents a system status. The module is fully functional in this mode. To enter diagnostic mode, press the Red button on the module. LED's will scroll a couple times, LED1 will "blink out" the current firmware version, and then the LEDs will reveal system status as follows:

NOTE: Cycling the key will exit Diagnostic Mode and all LED's will be off.

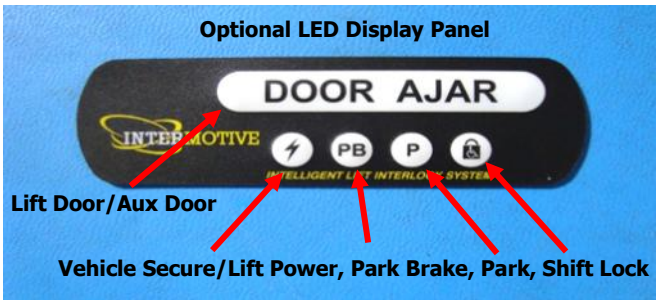
LED Diagnostics	
LED # ON	**Description**
1	Shift Lock Enabled
2	TR = Park
3	Park Brake On
4	Lift Door Open
Status	Lift Enabled

Leave in Vehicle
B-ILISC516-DD Shift Interlock (Manual Lift Door) Operating Instructions
2020 - 2025 Ford Transit

*** For vehicles with the gateway located below the lower left dash panel (with a Black OBDII connector). For vehicles with the OEM gateway connector located behind the glovebox (White OBDII connector), use G-ILISC516**

B-ILISC516-DD (Manual Lift Door)

The B-ILISC516-DD is a microprocessor driven system for controlling wheelchair lift operation. The system will operate with the vehicle ignition ON or OFF, (if optional Park Brake and Lift Door input supplied) or if so set up, the lift will only be energized if the Key is OFF. Lift operation is enabled when specific vehicle safety conditions are met and will lock the transmission in Park when the wheelchair lift is in use. The B-ILISC516-DD prevents the vehicle from being shifted out of park if the lift door is open. As an added feature, the vehicle cannot be shifted out of park anytime the parking brake is applied. This eliminates excessive Parking Brake wear due to driving with the parking brake applied.



Key On function:

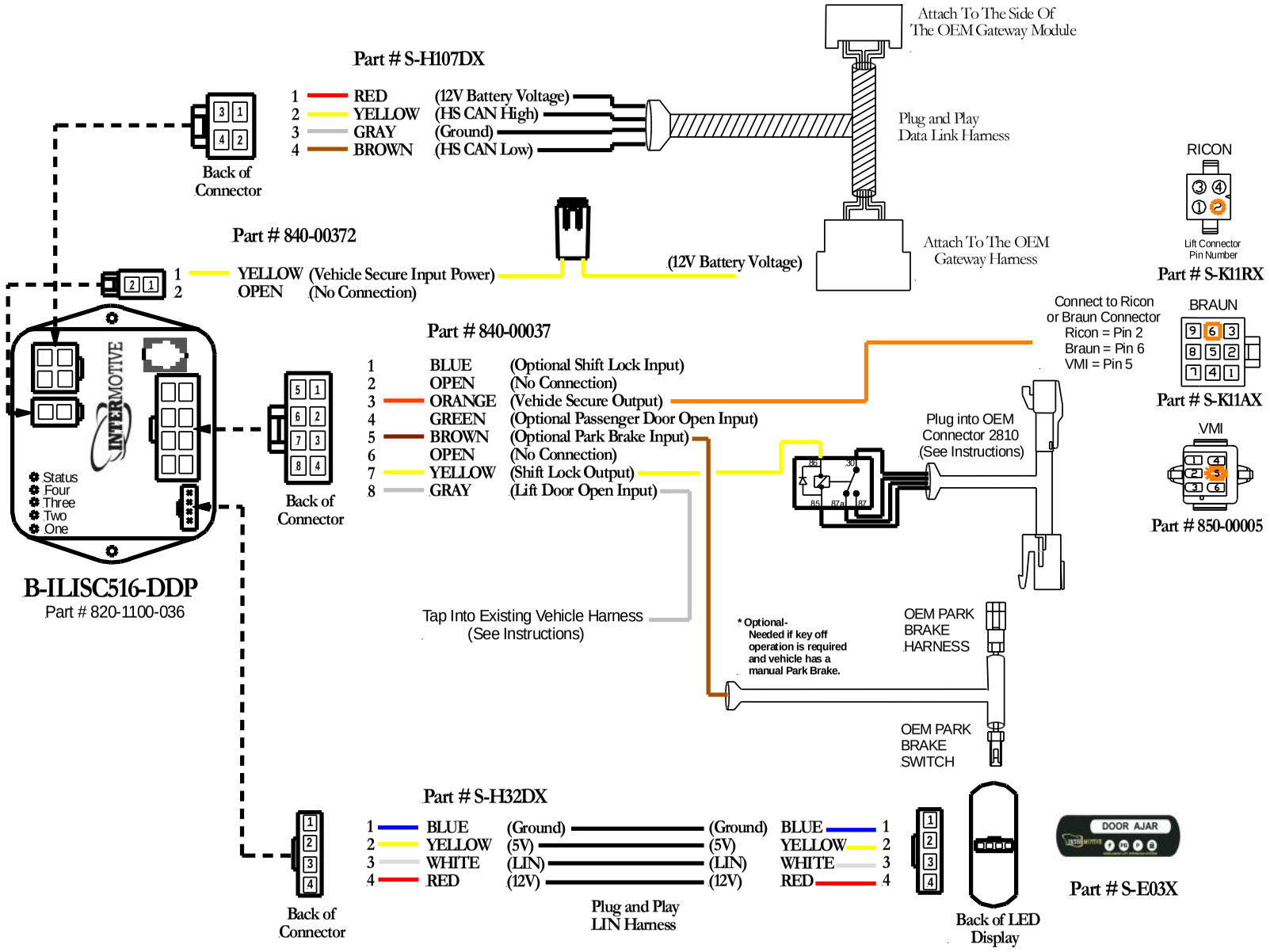
1. When the vehicle is in "Park" the (P) LED will be ON.
2. When the Park Brake is applied, the (PB) LED will be ON.
3. When the Lift Door is open, the Door Ajar LED will be ON.
4. With the vehicle in Park and either the Park Brake applied or Lift Door open or external Shift Lock input high, the Shift Lock LED will be ON, and the transmission cannot be shifted out of Park.
5. With the vehicle in Park, Park Brake applied and Lift Door open, the Vehicle Secure LED will be ON, and the lift will be operational. **All** LEDs will be illuminated on either display panel.

Key Off function: (if discrete Park Brake and Lift Door input supplied)

- Vehicle must be in Park before turning key off.
- With the vehicle in Park, the (P) LED and Shift Lock LED will be ON.
- With the Park Brake applied and the Lift Door open, all LEDs will be ON, and the lift will be operational.

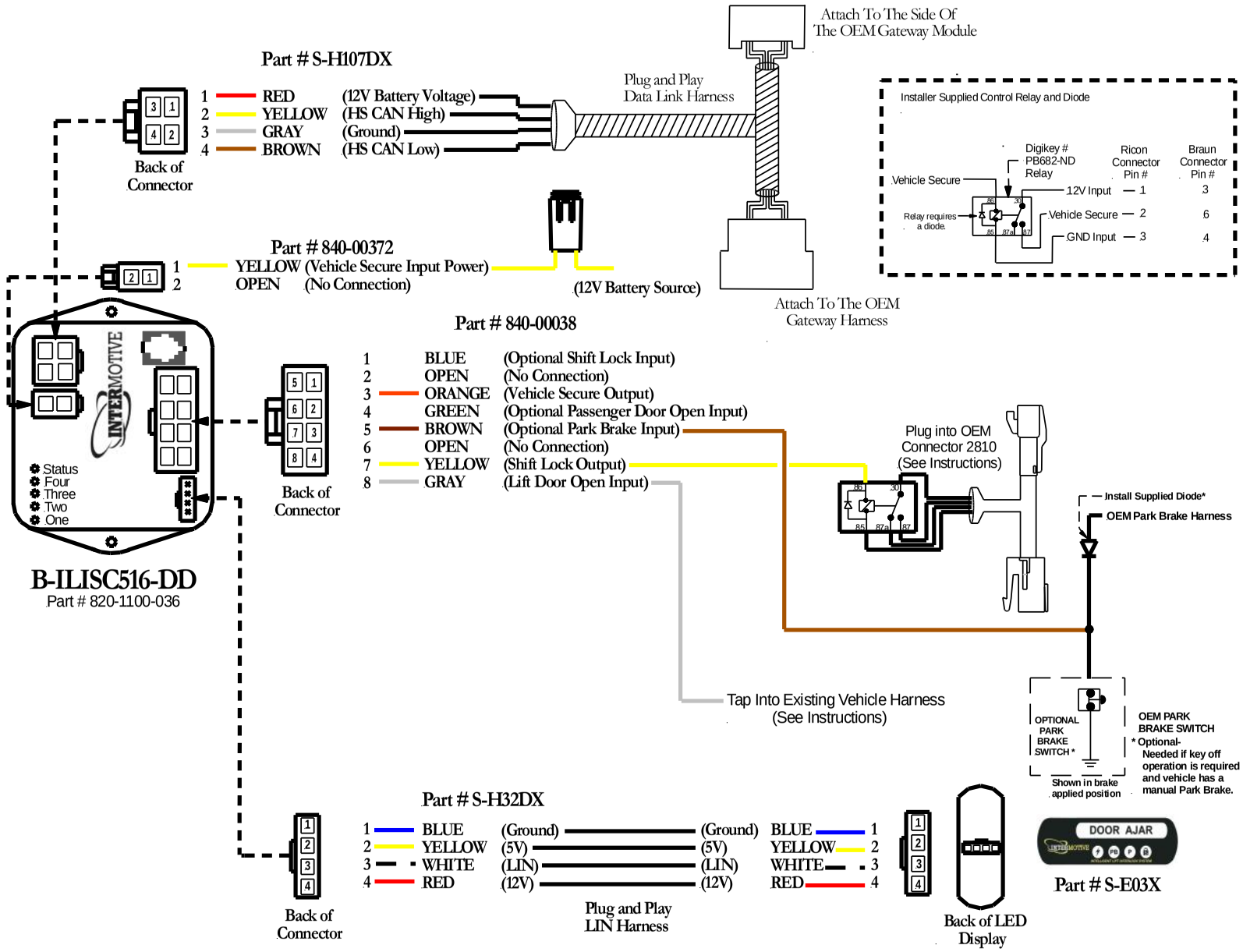
Sleep Mode: When the lift door is closed and ignition power (Key) is turned OFF, the vehicle CAN communication traffic will stop after a delay. Around five minutes after this, the system will enter a low current "sleep" mode of operation with all LEDs OFF. To wake from "sleep" mode, turn the ignition on (key on) or open the lift door. All display LEDs will turn ON for approximately 2 seconds as a "prove out". The backlit LEDs remain ON as long as the module is awake.

Plug and Play Harness



If the B-ILISC516-DD fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048.

Blunt Cut Harness



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