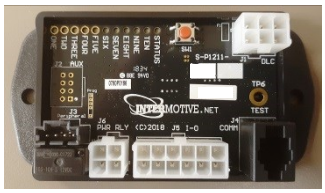
HL610-B Fast Idle, Lift Interlock
2009-2023 Chevy 610 Van 6.0L and 6.6L
Contact InterMotive for additional vehicle applications



Introduction

The HighLock 610 is a wheelchair lift safety interlock which will only work with the ignition on. It will enable the lift when certain vehicle safety conditions are met, and will lock the transmission shifter in Park when the lift door is open and/or the Park Brake is applied. The HighLock 610 may also have the Fast Idle option. The Advanced Fast Idle System (AFIS) elevates engine idle speed in response to a number of triggers in order to assist electrical or mechanical systems on the vehicle.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.

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

IMPORTANT—READ BEFORE INSTALLATION

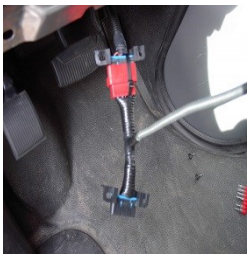
It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.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

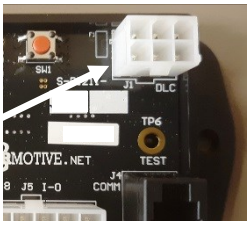
HL610 Module

Remove the lower dash panel below the steering column and find a suitable location to mount the module. Mount the module is in an area away from any external heat sources (engine heat, heater ducts, etc.). Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. Route the harnesses so that the tilt steering column does not contact them in the full down position. When installing the harnesses, leave several inches of take-out in order to remove the module if necessary.

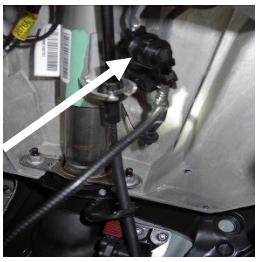
Data Link Harness Installation

1. Locate the vehicle OBDII Data Link Connector, mounted below the lower left dash panel.
2. Remove the mounting screws for the OBDII connector. Plug the Red connector from the HL610-B Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.
3. Mount the Black pass through connector from the HL610-B Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the HL610-B Data Link harness so that it does not hang below the lower dash panel.
5. Plug the free end of the Data Link harness into the mating 6-pin connector on the HL610-B module.





Shift Lock Solenoid Harness Installation



1. Locate the OEM shift lock solenoid below the right side of the steering column.
2. Remove OEM 2-pin black connector and install matching InterMotive T- harness.
3. Verify green locking tabs are in the locked position.

LED Display Panel—Black 4-pin connector

1. Locate a suitable position on the dashboard within view of the driver for mounting the LED Display Panel. The length of the display harness is 40". This is the maximum distance the display can be mounted from the HL610 module.
2. Drill a 5/8" hole in the dashboard where the center of the display will be located, being careful not to damage anything behind the dashboard.
3. Attach the 4 Pin LED display harness to the HighLock 610 Module's 4-pin connector. Run the free end of the display harness under the dash and out through the 5/8" hole.
4. Attach the end of the display harness to the LED Display Panel.
5. Ensure panel is level, and secure using the supplied screws.

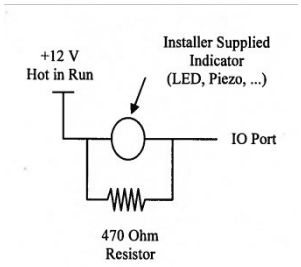
Control Inputs, Output and Lift Inhibit Connections - 12-pin I/O connector

The HL610-B provides three ground side inputs and one ground side output.

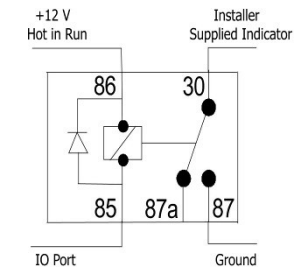
Lift Inhibit (Pin 2): Grounding this input will prevent the module from supplying power on its Wheelchair Lift Output pin.

Door Ajar (Pin 5): Optional input if the Door Ajar panel is used and an additional door connection is desired. Insert the green wire (provided with panel) into the connector and lengthen as needed, using solder, heat shrink and tape. Connect to the door switch so that a ground is supplied when the door is open.

Transmission=Park (Pin 9): This output can be used to control upfitter circuits, by providing a ground when the transmission is in Park. Maximum current draw is 1/2 amp.



Note: When using the Pin #9 output to drive installer supplied low current devices, such as LEDs or Piezo buzzers, a small amount of leakage current when the pin is inactive may cause the low current device to activate. This is indicated by the LED turning on dimly or the Piezo buzzer sounding faintly when the output is inactive (Conditions not met).
To correct this, install a 470 Ohm 1W resistor across the low current device.
Digikey Part # 470WCT-ND
Or, drive a relay with the IO output to switch ground to the low current device.
Digikey Part # PB682-ND



Fast Idle– Engage (Pin 10): This input pin can be connected to a ground side switch to activate Fast Idle.

Control Inputs, Output and Lift Inhibit Connections (continued)

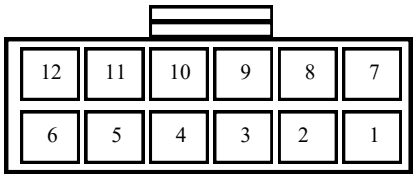
12-pin I/O connector

A 12-pin mating connector is provided along with 5 terminals (two extra). To use any of these inputs/output, properly crimp a connector terminal provided to the installer supplied wire using the correct crimping tool. (Molex Part# 11-01-0197), and insert into the correct connector pin housing.

Ensure the terminals are fully seated in the connector. The largest wire that can be used with these terminals is 16 AWG. Snap this connector into the HL610-B module's 12-pin connector.

12-pin connector pin out definition

Pin #1 - Blue - Shift Lock Output
Pin #2 - Inhibit input - (GND) to Inhibit Lift
Pin #3 - Not Used
Pin #4 - Not Used
Pin #5 - Green - (Door Ajar Input) * Optional
Pin #6 - Not Used
Pin #7 - Red - 12V input from Pin #12
Pin #8 - Not Used
Pin #9 - Transmission=PARK (output ground)
Pin #10 - Fast Idle-Engage
Pin #11 - Not Used
Pin #12 - Red - 12V output to Pin #7



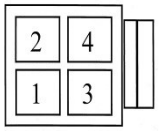
Back of Connector


Mating 12 pin I/O Connector provided

Lift Connector 4-pin

The HL610-B module provides a 4-pin connector to enable wheel chair lift operation, defined as follows:

Pin #1 - RPM Adjust
Pin #2 - Lift power/Vehicle Secure output (Orange wire), connect to Wheel Chair Lift to enable operation.
Pin #3 - Lift door input (Gray wire), connect to Lift Door switch, grounded when door open.
Pin #4 - Lift power input (Yellow wire), connect this to a 12V fused ignition source, **"hot"** in run and crank.



Back of connector

Snap this connector into the HL610-B module's 4-pin connector.

HL610 Module Mounting

Ensure all harnesses are properly connected and routed and are not hanging below the dash area. Mount the module as described on page one and secure using supplied screws or double sided tape.

Reconnect Vehicle Battery

Post Installation Testing

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.

Lift Interlock System Testing

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.

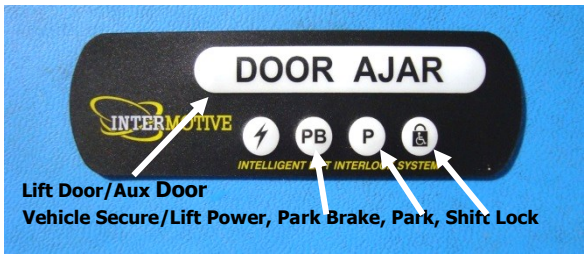
1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs illuminate for approximately 2 seconds. The lower icon LEDs are backlit and will remain illuminated whenever the module is awake.
2. Verify that the Park LED, the Park Brake LED, and the Shift Lock LED remain illuminated.
3.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

Door Ajar LED Panel

Perform the same checks as above.

When an additional door (Aux Door), is open, the Door Ajar LED will blink on the display panel until the door is closed. If the **Lift Door** is open, the Door Ajar LED will stay on steady, taking priority over the additional door input.

Note: All LEDs are <u>active</u> and there is no display backlighting.



Post Installation (continued)

Fast Idle

The Fast Idle option has several "auto triggers" that will increase engine RPM. These include low battery voltage, air conditioner on, engine cold, and external switch input on pin #10 of the 12 Pin connector (I/O 4).

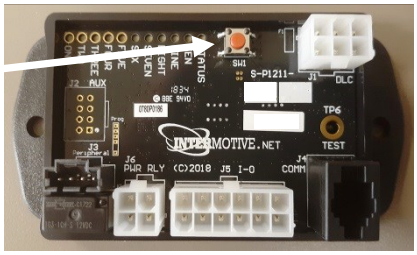
1. Press the Service Brake for 1 second. Fast idle will temporarily disengage anytime the brake pedal is pushed, but will automatically reengage after approximately 2 seconds once the Service Brake pedal is released.
2. Shut down the engine and verify that all LED's turn off, which may take a few minutes. Do not activate any vehicle controls during this time (windows, mirrors, doors, etc.).

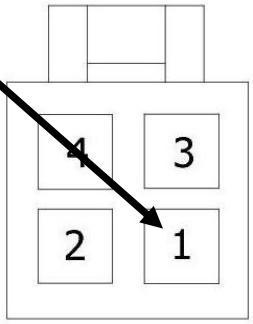
Setting Fast Idle RPM Speeds (900 RPM - 2000 RPM)

The HL610 has a configurable RPM setting. The default setting is triggered by low battery voltage, air conditioner On, or external switch inputs. The setting is changed by doing the following procedure:

Default Configuration

1. Momentarily press the Red Test button on the module **THREE** times. The status LED on the module will flash a 3-3 code (three short flashes, a pause, and three more short flashes).
2. The vehicle RPM will increase to the currently configured setting.
3. To raise the RPM by 50, momentarily ground pin 1 on the 4-pin connector until the desired RPM is set.
4. Press the Red Test button **ONE** more time until no LED's are lit on the module.





Back of Connector

Leave in vehicle
Operating Instructions HL610 Fast Idle, Shift Interlock, I/O
2009-2023 Chevy 610 Van - 6.0L and 6.6L Engines

Advanced Fast Idle Operation

The Advanced Fast-Idle System (AFIS) option of the HL610-B includes Charge-Protect and Manual engage modes. Charge-Protect is a feature that maintains vehicle charging system voltage by increasing and controlling vehicle idle speed when necessary. Whenever charging system voltage falls below a minimum voltage of 12.5V, this AFIS feature will increase idle speed and maintain fast idle until one of the safety conditions is no longer met, the user cycles the shift lever or the user manually disengages fast idle. The Charge-Protect and Manual engage modes also require that all safety conditions are met.

Safety conditions that must be met to engage or maintain Fast Idle operation
Vehicle NOT moving (speed = 0 MPH).
Service Brake NOT pressed.
Vehicle Transmission Range in Park
RPM inside of safe operating range.
Transmission Fluid Temperature below 250° F.
Engine Coolant Temperature below 230° F.

Fast Idle may be initiated by either a manual or automatic Fast Idle trigger. The AFIS strategy can only command elevated idle when certain safety conditions are met (see above section). Fast Idle operation can be terminated by a safety condition violation. If a Fast Idle operation terminates due to a safety condition violation, automatic Fast Idle is unavailable until Park is de-asserted and re-asserted. (Shift out of Park and back into Park). The base Fast Idle RPM level is determined by the type of engine (Gas or Diesel) in the vehicle. For Gas engine vehicles, the idle speed is 1500 RPM and Diesel applications remain fixed at 1200 RPM.

Manual Fast Idle Start Trigger
Fast Idle Input – ground applied to 12 Pin connector Pin #10 of the HL610-B Module, such as an input from Coach AC.

Automatic Fast Idle Start Trigger
Charge Protection - Battery voltage less than 12.5V.

Fast Idle Disengagement Triggers
Safety Condition Violation.
Engine Coolant Temperature > 230° F.
Open or battery voltage on 12 Pin connector Pin #10 while in Fast Idle caused by 12 Pin connector Pin #10 fast idle input.
Transmission Fluid Temperature above 250° F.

Note: Fast idle will temporarily stop anytime the brake pedal is depressed, but will automatically reengage after approximately 2 seconds once the brake pedal is released.

When additional electrical or A/C loads are in use, engine RPM may drop. The AFIS feature will then raise the RPM back up to the fast idle speed. When the load is removed, engine RPM will increase. AFIS will then lower the RPM back to the fast idle speed.

Lift Operation

The Intelligent Lift Interlock System of the HL610-B is a microprocessor driven system for controlling wheelchair lift operation. Lift operation will only be allowed when all of the following conditions are met:

The vehicle is in "Park"
The parking brake is applied.
The vehicle ignition is on.
The lift door is open.
Lift inhibit is not activated.

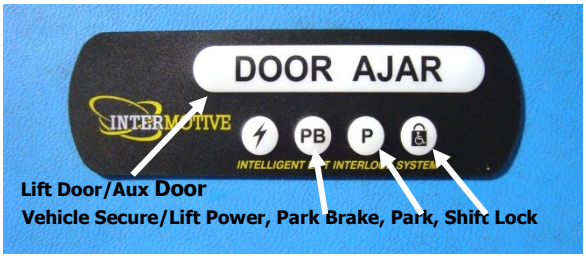
The HL610-B will not allow the vehicle to be shifted out of park if the lift door is open. As an added feature, it will not allow the vehicle to be shifted out of park when the parking brake is applied. This feature eliminates excessive parking brake wear due to driving with the parking brake applied.

When the vehicle is first started, or if the key is turned to the "Run" position, the five upper LED's (Active), on the display panel will illuminate for 2 seconds as a prove out of the LED's. The lower Icon LED's are backlit and will remain illuminated whenever the HL610-B module is awake. The module will stay awake for several minutes after the ignition is turned off.

Optional Door Ajar Display Panel

LED function and prove out is the same as the Standard Display Panel, except that all LEDs are active and remain illuminated whenever the module is awake.

After prove out, the operation of the LED panel is as follows:



Vehicle Secure – Illuminates Green if the lift is enabled. This means that all conditions for lift operation have been met and the lift has been supplied a vehicle secure signal.

Park Brake – Illuminates Red when the parking brake is applied.

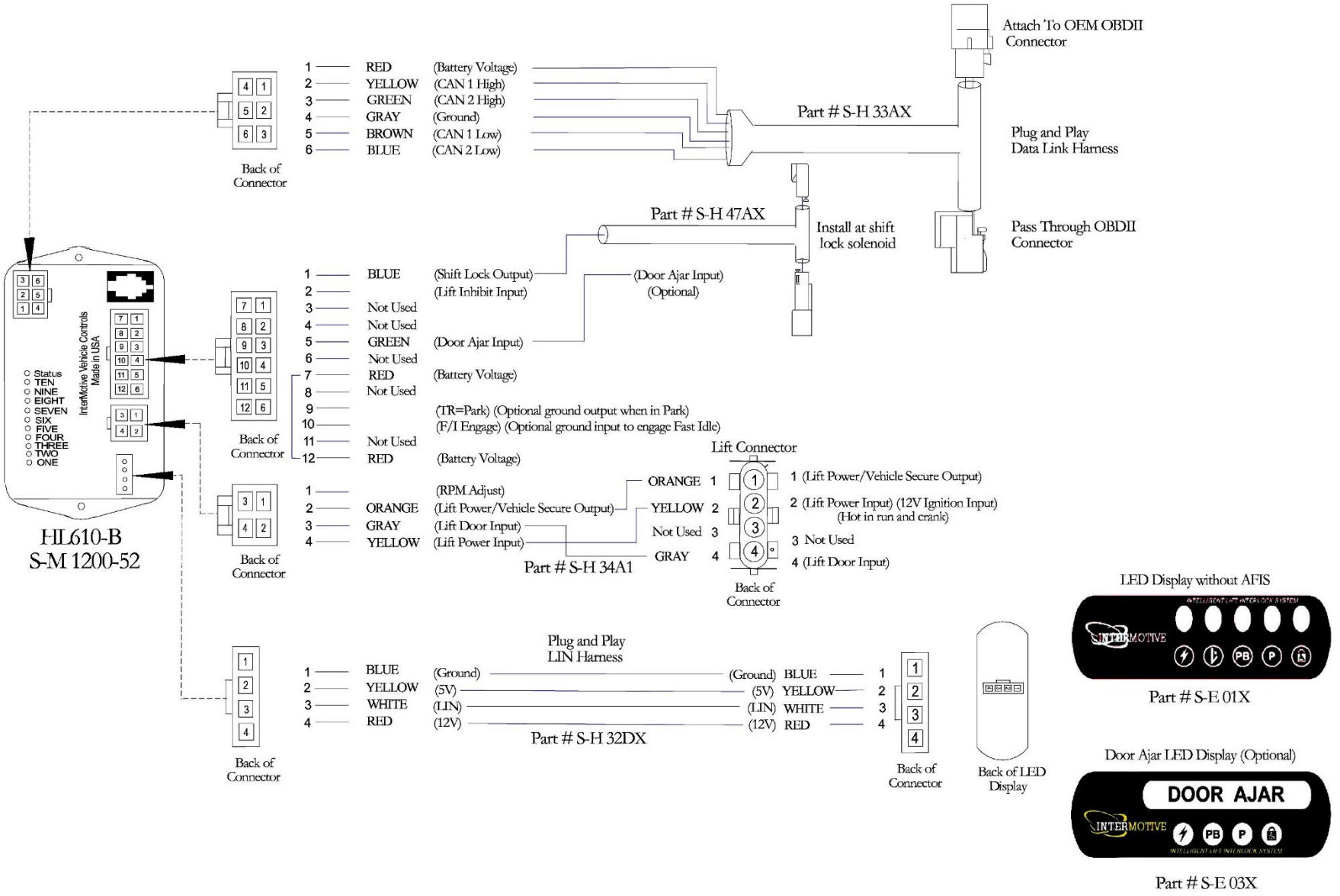
Park - Illuminates Red when the vehicle transmission is in the park range.

Lift Door - Illuminates Red when the lift door is open.

Shift Lock - Illuminates Red when the lift door is open and/or the parking brake is applied. If illuminated, the driver will not be allowed to shift out of park.

Optional input: If equipped with a connection for an additional door (Aux Door) the Door Ajar LED will blink on the display panel until that door is closed. If the **Lift Door** is open, the Door Ajar LED will stay on steady, taking priority over the additional door input. Note: All LEDs are <u>active</u> and there is no display backlighting.

The HL610-B initializes when the vehicle ignition is on. After the initialization, the HL610-B requests various vehicle data by sending data request messages across the OEM CAN diagnostic data network and all control logic is performed. When the HL610-B module has been running and the vehicle ignition is turned to the off or accessory positions, the module goes into a low current consumption "sleep" mode. This may take up to 5 minutes.



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If the HL610-B 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.