# Eco-Lock™ H-ECL556-A
## Stop/Start Idle Reduction with Anti-Theft
## 2025 Ford Interceptor Utility
### Contact InterMotive for additional vehicle applications

## Introduction

Eco-Lock is an automatic engine stop/start system that provides improved fuel economy, lower vehicle emissions, improved engine life, and extended oil changes by shutting off the engine when appropriate. When enabled by the driver (Transmission in Park), Eco-Lock allows an officer to remove the keys from the ignition, and leave the vehicle unattended, but with electrical loads left on (light bar, etc.). Eco-Lock continuously monitors battery voltages (OEM and aux battery if equipped), cabin and 2-way radio temperatures, while securing the vehicles shift lock, trunk/hatch and weapons rack.

If battery voltages or temperatures move outside of a configurable range, Eco-Lock will automatically restart the engine, charging the battery and enabling AC/Heat as appropriate (regardless of the state of the controls). Eco-Lock will cycle the engine over time as needed to maintain battery voltages and/or cabin/radio temperatures. Eco-Lock will automatically shut off the engine if anyone attempts to steal the vehicle by shifting out of Park while the keys are removed (shifter remains locked in Park). Eco-Lock is instantly disabled when the keys are inserted and turned to Run. Eco-Lock can be used on K-9 units to maintain cabin temperatures in a preset range.

## Installation Instructions

### Disconnect vehicle battery before proceeding with installation

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

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.

It is important to avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Also avoid radio frequency energy from antenna's or inverters next to the module. Finally, avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

## Eco-Lock ECL556 Module

Locate the module in an area away from any external heat sources (engine heat, heater ducts, etc.). Ensure when routing harnesses that the tilt steering column does not contact them in the full down position. When installing the harnesses, leave several inches of take-out such that the module can be removed if necessary.

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 1 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

Data Link Harness
plugs in here

1. The Gateway Module is located on the passenger side footwell. To access the Gateway Module, simply pull the carpet away starting at the left corner closest to the bulkhead. No tools are required.

2. Plug the Female side of the Data Link Harness (840-00298) into the bottom of the module. Ensure the connection is fully seated and secured by the locking tab. Plug the Male side of the Data Link Harness into module harness.

InterMotive Inc.                     Phone: (530) 823-1048              www.intermotive.net
12840 Earhart Ave                  Fax: (530) 823-1516           products@intermotive.net
Auburn, CA 95602                       Page 2 of 13                    H-ECL556-A-031425-INS

## Ignition Switch Harness

The ignition switch must be accessed in order to connect the Eco-Lock ignition harness. Several dash trim panels must be removed.
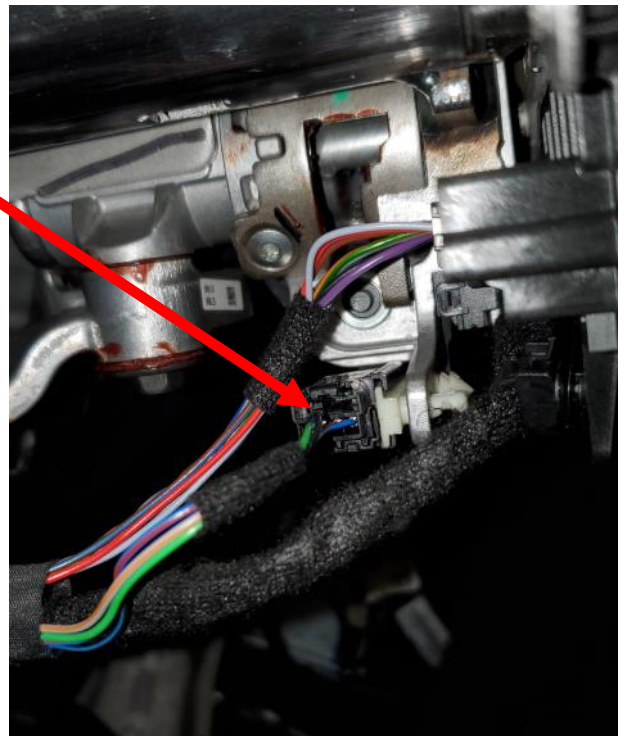
- Remove the upper instrument trim panel and remove the 2 screws.
- Using a non-marring pry tool, remove the lower finish panel from the center stack on the dash.
- Using a non-marring pry tool, remove the upper finish panel from the center stack on the dash.
- Locate the connector plugged into the ignition switch and disconnect it.
- Plug the OEM switch harness connector into the female connector of the Eco-Lock Ignition Switch harness.
- Connect the male Eco-Lock Ignition switch harness connector to the OEM ignition switch.

## Shift Lock Harness Installation

### Sedan and Utility

1. Locate the OEM shift lock solenoid at the side of the steering column (photo below).

2. Remove the OEM 4-pin Black connector from the shift lock solenoid assembly.

3. Eco-Lock provides a shift lock T-harness. Plug one leg of the Eco-Lock T-harness into the OEM shift lock  solenoid, and the other leg into the OEM harness.

4. Route the third leg of the Eco-Lock T-harness to the Eco-Lock module on the left side of the dash.

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 3 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

# I/O Wiring, Features, and Descriptions: (Solder and heat shrink all connections)

## Lock Output

Pin 2, White wire of the 12 pin connector is the Eco-Lock output. This output (500mA max current) can control installer supplied normally closed relays to disable the trunk and weapon rack release buttons when Eco-Lock is active. When Eco-Lock activates this output, the relays will open the circuits from the buttons and disable them. This minimizes possible theft when Eco-Lock is active and the vehicle is unattended.

When Eco-Lock is enabled, this output becomes active after a configurable delay (default 10 seconds). This output remains active until the key is back in the run position.

## Police Interceptor *Utility* Lift Gate Release Circuit

The lift gate release circuit is pin 1 Brown wire in BCM (behind Park Brake) connector 2280E. Use a normally closed relay controlled by the Lock Output to interrupt & disable the lift gate release switch.
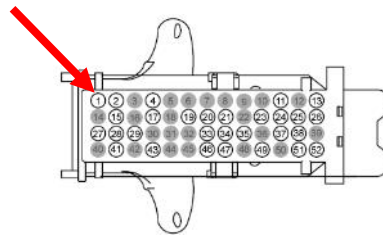
2280E Connector Face
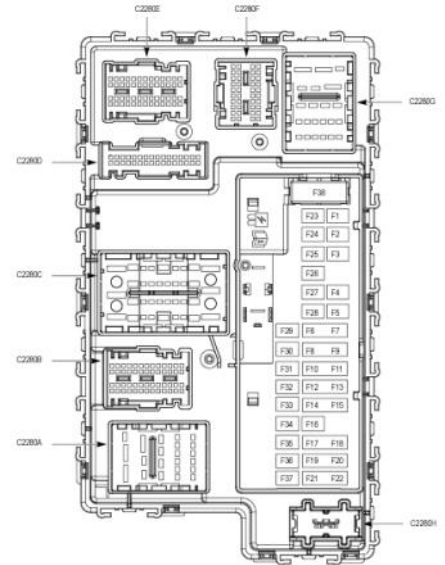
## Eco-Lock Enable Input

Pin 10 Gray wire of the 12 pin connector is the Eco-Lock system enable. This input can be connected to an installer supplied momentary switch or to another signal (control head, or steering wheel switch, etc.) that will automatically enable Eco-Lock. An "Eco-Lock Enable" label is included in the kit to identify the enable switch. By default, this enable input is high true (12V). A programming sequence can be used to toggle this input between High (12V) and Low True (GND). The following steps detail the procedure:

With the key in Run, engine off and transmission in Park

1. Ground the TEST pad on the module
2. Shift to Reverse
3. Press and release the Service Brake 5 times in approximately 10 seconds

Onboard LED 7 will flash to indicate that the programming sequence was successful. If the LED flashes 3 times, the input is now High True. If the LED flashes 6 times, the input is now Low True. If the LED did not flash, shift back to Park, wait 15 seconds and attempt the sequence again. Call InterMotive Technical Support for further assistance.

## Aux Battery Input (up to 36 Volt)

The Eco-Lock module internally monitors the OEM battery voltage. An auxiliary battery may also be monitored. Pin #4 (Gray with Black stripe wire) of the 12 Pin Connector is an auxiliary battery voltage monitor input. It measures the analog battery input and can trigger a low battery restart when this input falls below a user defined level. Extend the Gray/Black wire as needed and connect to aux battery. By default, this trigger is disabled, but may be enabled using the Eco-Lock software application. Contact InterMotive for details.

InterMotive Inc.                    Phone: (530) 823-1048               www.intermotive.net
12840 Earhart Ave                 Fax: (530) 823-1516          products@intermotive.net
Auburn, CA 95602                    Page 4 of 13             H-ECL556-A-031425-INS

## Restart Beeper

When active, Eco-Lock will periodically stop and start the engine. Pin #3 Orange wire (inside split loom) of the **12 Pin Connector** drives a warning beeper that will sound for **2 seconds** prior to an auto restart. The bezel on the beeper can be rotated to control volume.

- Attach the beeper using the included zip ties.

- Connect the Orange lead to the Red post of beeper, and Black lead to the negative post.

- The Black lead eyelet must be grounded in order for the beeper to function. Attach the eyelet to the location in the photo.
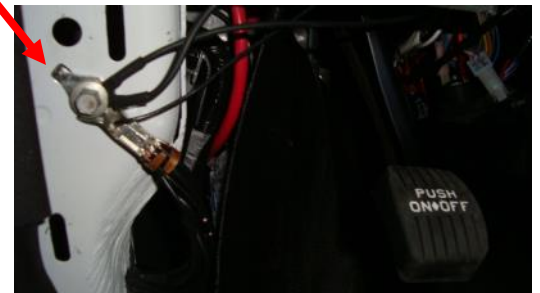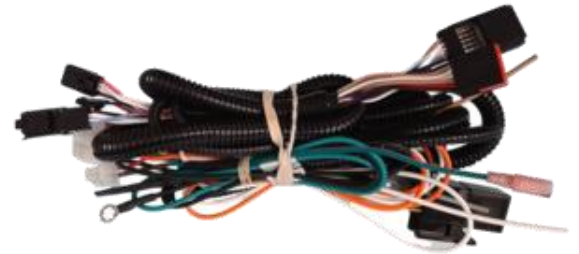
## Eco-Lock Enable Switch with Active LED (S-H84GX)

A switch with **LED** is provided in the kit.

1. Drill a 16mm (0.630") hole in the desired mounting location. One possibility is the dash panel to the left of the Steering Wheel.

2. Route the switch and LED harness through the hole and mount it in the hole.

3. Slide the switch and LED's lock nut onto the harness and snug it down onto the back of the switch.

4. Plug in the 4 pin (Black) connector of the switch LED harness into the mating connector on the Eco-Lock main harness (840-00031).

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 5 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

## Thermostat/Thermistor

The thermistor is intended to allow the vehicle to auto restart the engine as a result of hot or cold temperatures. It may be used to prevent the cabin or the engine from getting too cold or too hot in severe environments. It may also be used in police K9 vehicles to prevent cabin temperature extremes.

1. Mount the thermistor, pin #5 (12 pin connector, Green wire) in a location where it cannot be damaged by sharp objects and mechanical moving parts such as the Park Brake or tilt steering wheel mechanisms.

2. Locate where thermistor temperature reflects cabin air temperature.

3. Attach the thermistor Ground eyelet to the location in the photo.
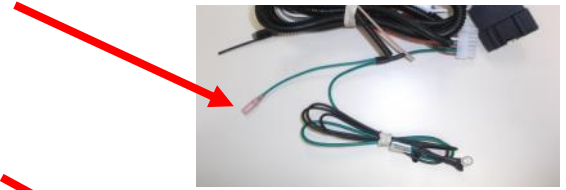
### Low Temperature Thermostat Engine Cycling

ECL556 will turn the cabin heater on high when low temperature auto-restart occurs. If the cabin temperature does not increase 3 degrees in 6 minutes after a low temperature restart, the thermostat is disabled until the key is cycled.

### High Temperature Thermostat Engine Cycling

ECL556 will turn the cabin air conditioner on the max A/C setting when a high temperature auto-restart occurs. If the cabin temperature does not decrease 3 degrees in 6 minutes after a high temperature restart, the thermostat is disabled until the key is cycled.

### -Q  Option - Bimetal 2-way Radio/Equipment Protection Thermostat

A Bimetallic thermostat switch and 15' harness is included in this optional kit which will close when its temperature reaches 150° F. This is connected to pin #5 (12 pin connector, Green wire), which will trigger an engine restart and ECL556 will turn the cabin air conditioner on max. Once the thermostat switch contacts open again (135° F), the air conditioner will turn off and the engine will shutdown (all other conditions met). The thermostat can be screwed or thermal epoxied to a 2-way radio's case or other equipment.

2-Way Radio/Equipment thermostat 15' Harness.

Thermostat switch. Attach with screws or thermal epoxy to equipment being monitored for temperature.

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 6 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

### Eco-Lock Active Output

Pin 1, Tan wire of the 12 pin connector is the Eco-Lock Active output. This output (1 Amp max current) can control installer supplied normally closed relays or auxiliary indicator LEDs. This output can keep police equipment active while Eco-Lock is cycling the engine. When Eco-Lock is enabled, this output becomes active. This output remains active until the key is back in the run position.

If police equipment is powered with key in RUN/START only, the equipment will lose power when Eco-Lock shuts down the engine. To prevent this, use this output to power the police equipment in addition to the RUN/START signal (an external relay may be required if current exceeds 1 Amp). Once wired, the equipment will stay powered while Eco-Lock cycles the engine.

### ECL556 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 with supplied screws or double sided tape.

### ECL556 Harness (4 Pin connector and 12 Pin connector)

1. Plug the ECL556 12-Pin connector into the mating 12-pin connector on the ECL556 module.
2. Plug the ECL556 4-Pin connector into the mating 4-pin connector on the ECL556 module.

## Reconnect the vehicle battery

InterMotive Inc.                      Phone: (530) 823-1048                      www.intermotive.net
12840 Earhart Ave                     Fax: (530) 823-1516                        products@intermotive.net
Auburn, CA 95602                      Page 7 of 13                               H-ECL556-A-031425-INS

## Configurable options (with default settings)

- Battery restart, recharge, and delay values:
  * Restart Voltage = 12.0V
  * Restart Delay (the battery Voltage must be below the threshold for this period of time before a low battery auto-restart) = 5 Seconds
  * Recharge Voltage = 13.5V (engine runs until this voltage is reached, then the Recharge Timer starts (see below).
  * Recharge Timer = 300 Seconds (engine continues to run after reaching Recharge Voltage for this length of time).
- Secondary battery restart, recharge, and delay values (disabled by default).
- Eco-Lock enable settings (this input activates the system— usually a switch controls this).
  * Eco-Lock enable sense = High true
  * Eco-Lock enable delay = 3 seconds (key must be removed within 3 seconds after pushing enable button)
- Eco-Lock timer duration (this timer is for vehicle lock-down, gun rack and trunk) = 10 Seconds
- Idle shutoff timer duration (after driver shuts key off, engine shuts down) = 2 Seconds
- Enable/disable idle shutoff timer = Enabled
- Minimum engine temperature for auto-shutoff to occur = -40° F
- Operation of the Brake pedal = Auto-restart
- Thermostat settings:
  * Enable/Disable thermostat = Enabled
  * Low restart temperature = 40° F
  * High restart temperature = 90° F
  * Warm-up temperature = 55° F (after a low temperature restart, engine will not shut off until cabin temperature exceeds this).
  * Cool-down temperature = 75° F (after a high temperature restart, engine will not shut off until cabin cools to this value).

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 8 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

# ECL556 Programming Utility Instructions

The Eco-Lock Programming Utility allows the operation of the system to be customized by modifying the configurable options on the previous page, and to optimize it for your particular application.

## Requirements

- Java Runtime Environment (v1.6.0_18 or later [32 bit]) must be installed on your computer prior to running this utility. Most PC's already have Java installed. The most recent version can be obtained for free at http://java.com/en/download/manual.jsp.

- The ECL556 Programming Utility. This is a free Intermotive software program that will need to be loaded on your PC. The files are available from the download page at www.intermotive.net. It is recommended that an "InterMotive" folder be created to store the files.

- USB to Serial cable (part# S-H37A1) is included with the A-IPU kit and is a one-time purchase. This kit is required for all programming and includes a power adapter for desk use.

Once ECL556 Programming Utility has been run and the specific configuration has been created, it can be downloaded onto the ECL556 module(s) with the Programming Utility.

## Computer Installation

1. Ensure the proper driver is installed for the USB to Serial download cable. This driver can be found at: **http://www.ftdichip.com/Drivers/VCP.htm**
2. To install the programming utility, unzip the ECL556 Programming Utility folder to your local hard drive.
3. Create a shortcut on the desktop if necessary, but do not separate the ECL556 Programming Utility.exe file from the rxtxSerial.dll file!
4. Plug in the USB cable (Part# s-h37a1) prior to starting the application.
5. Double click the ECL556 Programming Utility.exe file to launch.
6. This screen will come up.
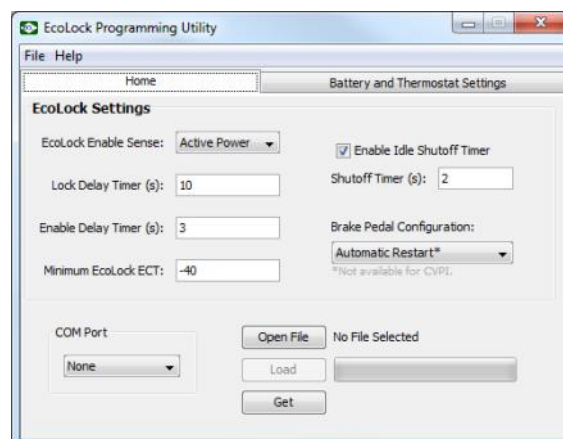


If the program does not launch, close all applications and reinstall the Java Runtime Environment and the ECL556 Programming Utility.

All options in the configuration menu come with descriptions that explain what parameters are currently set and how to update them.

7. Configure the settings as desired.
8. Select "Save Configuration" under the "File" tab.
9. Enter a configuration name (Max. 16 characters) and click "OK".

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 9 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

## Desktop Programming the ECL556

The InterMotive "A-IPU" kit is sold separately and allows programming the ECL556 on your desktop. It consists of a 12VDC wall adapter and download cable and works with the ECL556 programming software utility.

**Note: Do not have the ECL556 Programming Utility opened until instructed to do so.**

1. Plug the Module Desktop Power/Ground Supply inverter into a 120V AC power source.

2. Locate the 6-Pin Female connector on the module, but do not connect the AC adapter to the ECL556 module until indicated in the following steps.

3. Plug the phone jack end of the download cable into the J4 COMM port of the ECL556 module and the USB end into the PC.

J4 COMM Port

## Loading previously created Configuration file into the ECL556

Open the ECL556 Programming Utility. Under the "Download" tab on the ECL556 Programming Utility, choose the COM Port the USB cable is connected to.

**Note**: This can be determined on Windows through the Device Manager. In the Device Manager window, expand the 'Ports' menu and the download cable will display as 'USB Serial Port (COM#).'

Click the 'Open File' button.

1. Open the ECL*.ims or configuration file to load on the ECL556 module. (This file must already be loaded on the computer).

2. Click the load button on the computer screen. "Waiting" will come up next to the progress bar. This means the program is waiting for the download cable to be plugged into the ECL556 module.

3. Plug in the 6 pin connector of the power adapter into the ECL556 module. The progress bar on the computer screen will display status as the configuration loads and takes approximately 2 seconds or less. Configuration is loaded once the screen says "DONE" and programming is complete.

4. To verify that the correct data was loaded into the module, disconnect the 6 pin connector from the module and press the 'Get' button on the screen. Plug in the 6 pin connector and the information will be displayed.

To program another module with the same configuration file, start with step 2.

InterMotive Inc.               Phone: (530) 823-1048          www.intermotive.net
12840 Earhart Ave             Fax: (530) 823-1516     products@intermotive.net
Auburn, CA 95602             Page 10 of 13        H-ECL556-A-031425-INS

## Post Installation Operational Test

### Installation Test Mode

With the module configured as desired, and installed in the vehicle, the Installation Test Mode can be entered by pressing the Red test button for approximately 5 seconds with the key on. All the LED's on the module will briefly flash and LED 4 will stay illuminated.



Eco-Lock will now function without monitoring the following pre-conditions: Engine Temp, Battery Voltage, and Thermostat. It will also enable Service Brake restarts. This temporary mode allows for easier post installation testing.

Several conditions will prevent Eco-Lock from auto-shutdown in test mode: Service Brake Applied, Hood Open (Open = Not Grounded), or Vehicle Speed not 0.

**Test 1.** Start the Engine (Trans = Park, Hood closed).

**Test 2.** While the engine is running, enable Eco-Lock by asserting the enable request input (depending on installation, could be a switch, button, control head, etc.).

- The Yellow LED will flash 5 times and then blink every 2 seconds.

- Remove the key from the ignition within 3 seconds (configurable).

- The engine will remain on for 2 seconds (Configurable Idle Timer) after the key is removed.

**Test 3.** Eco-Lock is now active and will begin monitoring restart triggers. Press the Service Brake to manually trigger a restart. Release the Service Brake and engine will shut off in 2 seconds.

**Test 4.** 10 seconds (configurable) after the key is removed, Eco-Lock disables the trunk and weapon rack release buttons (if implemented). Ensure trunk and weapons release buttons are disabled.

**Test 5.** With the engine Off and Eco-Lock active, open the hood. Press the Service Brake and the engine must *not* restart. Once the hood is closed, the Service Brake will restart the engine.

**Test 6.** To deactivate the system, insert key and turn to run. The Yellow LED will flash 5 times and stop.

### Notes:

With Eco-Lock active (key out, yellow LED with short flash every 2 seconds), the system will shut down the engine (if running) and keep the shifter locked if anyone attempts to steal the vehicle by shifting out of Park.

Eco-Lock will never auto restart the engine unless it has been activated (yellow LED with short flash every 2 seconds).

If the Thermistor ground wire is not properly grounded, the system will flash LED 8 and the engine will not auto shut down - this assumes the system is NOT in Test mode as described above.

**Do not put vehicle in service unless hood open disables Eco-Lock from auto restarting engine.**

**If the system fails any of the above tests, check the related wiring. If necessary, call InterMotive Technical Support at 530-823-1048. Do NOT release vehicle for service unless it has passed ALL of the above tests.**

InterMotive Inc.
12840 Earhart Ave
Auburn, CA 95602

Phone: (530) 823-1048
Fax: (530) 823-1516
Page 11 of 13

www.intermotive.net
products@intermotive.net
H-ECL556-A-031425-INS

**Leave in Vehicle**
**Operating Instructions**
**Eco-Lock™ ECL556-A Stop/Start Idle Reduction with Anti-Theft**
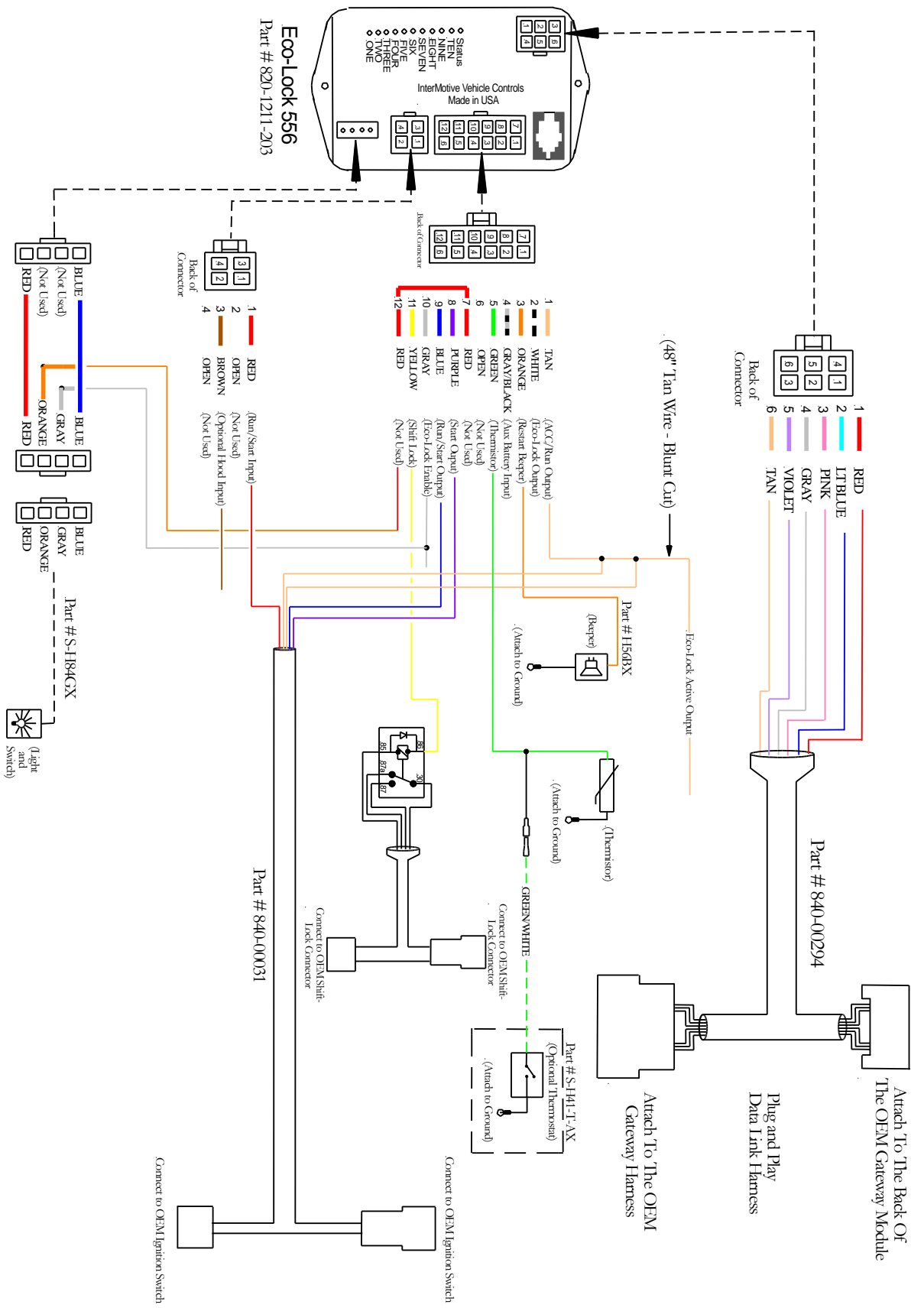**2025 Ford Interceptor Utility**

The Eco-Lock ECL556 provides enhanced fuel economy and lower vehicle emissions by eliminating unnecessary idle time. Once activated by pushing the button and removing the key, the engine shuts down, and locks the shifter. Auto engine restarts are triggered by low battery voltage, cabin/radio temperatures (if enabled), or holding the Service Brake on. The system allows a vehicle to be left unattended with various equipment left on (light bar, radio's, etc.), and will cycle the engine to prevent the batteries from being discharged, or cabin temperatures from exceeding preset limits. The trunk switch and weapons rack release buttons are disabled at this time. The system also provides anti-theft capabilities described below.

- Eco-Lock is enabled by removing the key from the ignition within 3 seconds of pushing the Eco-Lock enable button. Transmission must be in Park and Service Brake not pushed.

- When activated, the engine will shut off two seconds (settable) after the key is removed. Note that the Service Brake will prevent engine shutoff. ECL556 locks the shifter in Park while active.

- Once the engine has been auto-stopped (ECL556 active) the system monitors the main battery voltage, in addition to an optional auxiliary battery (possibly in trunk). If either battery falls below a minimum value, the system will sound an alarm for 2 seconds and auto-restart the engine to recharge the batteries. After a preset charging time, the engine will shut off again.

- The driver may reenter the vehicle and press/hold the Service Brake to run the heater or A/C without disabling Eco-Lock. Releasing Service Brake will allow the engine to shut down (assuming the engine off conditions are met).

- To prevent unattended vehicle theft (Eco-Lock active), the engine will turn off if someone attempts to shift the vehicle out of Park. The shifter will remain locked, and the trunk and weapons rack release buttons will remain disabled.

- Inserting the key and turning it to Run restores normal operation. Weapons release buttons and trunk release are restored to normal operation.

| Default requirements for auto engine shut off | |
|---|---|
| Eco-Lock Active | Transmission in Park |
| Hood Closed | Service Brake Not Applied |
| Battery Voltage > 12.0V (settable) | Cabin Temperature in Normal Range |

| Default requirements for auto engine restart | |
|---|---|
| Eco-Lock Active | Transmission in Park |
| Hood Closed | Engine Auto-stopped |

U.S. Patent #9,469,261

**Eco-Lock 556**
Part # 820-1211-203

Status
TEN
NINE
EIGHT
SEVEN
SIX
FIVE
FOUR
THREE
TWO
ONE

InterMotive Vehicle Controls
Made in USA

Back of Connector

Back of Connector

| # | Color | Function |
|---|-------|----------|
| 1 | RED | (Run/Start Input) |
| 2 | OPEN | (Not Used) |
| 3 | BROWN | (Optional Hood Input) |
| 4 | OPEN | (Not Used) |

Part #S-H84GX

BLUE (Not Used)
RED (Not Used)

BLUE
GRAY
ORANGE
RED

BLUE
GRAY
ORANGE
RED

| # | Color | Function |
|---|-------|----------|
| 1 | TAN | (ACC/Run Output) |
| 2 | WHITE | (Eco-Lock Output) |
| 3 | ORANGE | (Restart Beeper) |
| 4 | GRAY/BLACK | (Aux Battery Input) |
| 5 | GREEN | (Thermistor) |
| 6 | OPEN | (Not Used) |
| 7 | RED | (Not Used) |
| 8 | PURPLE | (Start Output) |
| 9 | BLUE | (Run/Start Output) |
| 10 | GRAY | (Eco-Lock Enable) |
| 11 | YELLOW | (Shift Lock) |
| 12 | RED | (Not Used) |

(Light and Switch)

Part #840-00031

(48" Tan Wire – Blunt Cut)

Part #H56BX
(Beeper)

(Attach to Ground)

(Thermistor)

(Attach to Ground)

GREEN/WHITE

Part #S-H41-T-AX
(Optional Thermistat)

(Attach to Ground)

Connect to OEM Shift-Lock Connector

Connect to OEM Shift-Lock Connector

Connect to OEM Ignition Switch

Connect to OEM Ignition Switch

Eco-Lock Active Output

Back of Connector

| # | Color |
|---|-------|
| 1 | RED |
| 2 | LT BLUE |
| 3 | PINK |
| 4 | GRAY |
| 5 | VIOLET |
| 6 | TAN |

Part # 840-00294

Attach To The Back Of
The OEM Gateway Module

Plug and Play
Data Link Harness

Attach To The OEM
Gateway Harness

**Submit product registration at www.intermotive.net**

If the Eco-Lock556 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.