UIM805
Upfitter Interface Module®

Medium Duty J1939 Vehicles: F650/750 (diesel only), International, Mack TerraPro Series MRU613, and Freightliner

See UIM805 Programming Utility for list of supported vehicles & chassis data

Introduction

The Upfitter Interface Module® (UIM) provides access to a broad range of vehicle data such as MPH, RPM, Park Brake, Service Brake, temperatures, transmission range, accelerator pedal, ABS, etc. Specific data is vehicle dependent, and by running the UIM805 Programming Utility software (free download from www.intermotive.net), the available information on a particular chassis can easily be determined.

The UIM harness provides four fixed outputs and four programmable outputs, using the UIM805 Programming Utility. The Programmer allows logical combinations (AND, OR, =, >, <) of various vehicle data to control an output. For example, one output can be programmed to go active when ECT>230 OR TFT>250 AND RPM>300 (any numeric values can be used). This could drive a high temperature dash indicator. Another output could be programmed to drive a warning buzzer/lamp when the vehicle speed exceeds some limit, such as 70mph. Electric doors can be disabled unless certain safety conditions are met and so on. There are also two general purpose inputs that can be used as part of the programmable logic.

UIM805 Programming Utility Instructions

(Used for configuring the four programmable outputs)

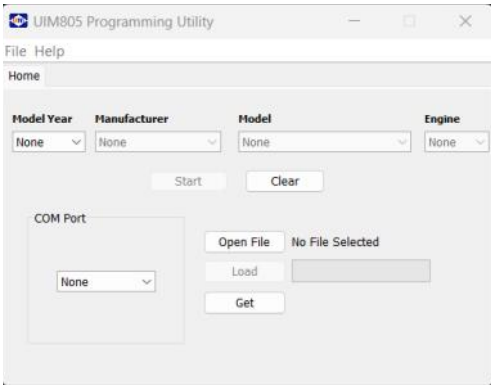
Requirements:

- Java Runtime Environment (v1.6.0_18 or later) must be installed on your computer prior to running this utility. Most PC's have Java installed. The most recent version can be obtained for free at http://java.com/en/download/manual.jsp.
- The UIM805 Programming Utility. This is a free Intermotive software program that will need to be loaded onto 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 (Intermotive part number a-IPU) which is a one-time purchase. This allows downloading the desired output configurations into the UIM module.

Once UIM805 Programming Utility has been run and the specific configuration has been created, it can be downloaded onto the UIM805-A module(s) with the Programming Utility.

Installing the UIM805 Programming Utility on your PC:

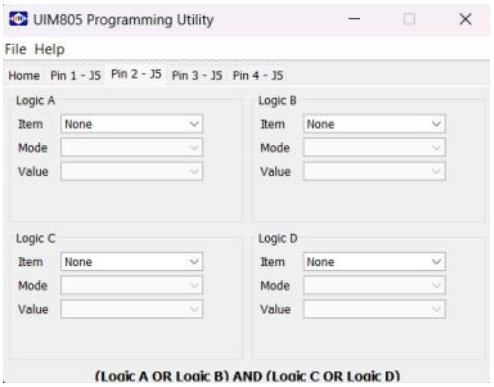
1. Ensure that the proper driver is installed for the USB to Serial download cable. This driver can be found at: **http://www.ftdichip.com/Drivers/VCP.htm**
2. To install the Programming Utility software, unzip the UIM Programming Utility folder to your local hard drive.
3. Create a shortcut on the desktop if necessary, but do not separate the UIM805 Programming Utility.exe file from the rxtxSerial.dll file!
4. Plug the USB cable (Part# S-H37A) into your PC prior to starting the application.
5. Double click the UIM805 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 UIM805 Programming Utility.

Setting the UIM805 Pin Configurations:

1. Under the "home" tab select the model year (any), manufacturer (J1939 vehicle), model (any) and engine (any) of the vehicle in which the UIM will be installed in.
2. Click the "Start" button. ⟶
3. This screen will come up.
4. Configure each pin as desired. Press the Enter button after each entry.
5. Select "Save Configuration" under the "File" tab.
6. Enter a configuration name (ABC### or AB###) and click "OK".
7. Review the configuration summary and click "Yes".
8. Enter a filename and choose a location that will be easy to locate.
9. Under the "File" menu, select "Print Saved Configuration".
10. Double click the .imc file previously configured.
11. Enter Company Name, phone number, and notes and press "Enter".
    Note: Enter the vehicle model year, model, and engine in the notes section.
12. Cut the printed page and place it in the bag attached to the 12-pin connector.

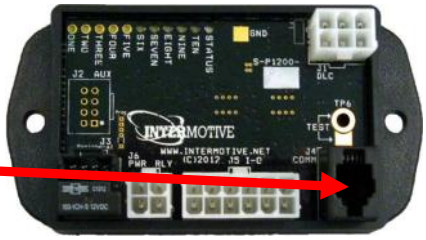


InterMotive Module Desktop Power/Ground Supply

The InterMotive Module Desktop Power/Ground Supply (part number s-6w-powersupply) allows programming the UIM on your desk. The Module Desktop Power/Ground Supply consists of a 120V AC to 12VDC adapter with a Male 6-Pin Molex connector (also included is a 6-Pin to 4-Pin adapter harness—which is not needed for the UIM).

Note: Do not have the UIM805 Programming Utility opened until these instructions indicate.

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 plug in the power adapter until indicated in the following steps.
3. Plug the phone jack into the J4 COMM port of the UIM805-A module and the USB plug into the computer.



J4 COMM Port

Loading a UIM805 Configuration File:

Open the UIM805 Programming Utility. Under the "Download" tab on the UIM805 Programming Utility, choose the COM Port the USB cable is connected to.

Note: Press the Windows key plus X key and select Device Manager. In the Device Manager window, expand the 'Ports' menu and the download cable will display as 'USB Serial Port.'

Click the 'Open File' button.

1. Open the UIM*.imc or configuration file to load on the UIM805-A 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 power to be applied.
3. Plug in the 6 pin connector of the power adapter into the UIM805-A 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 to 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.

Installation Instructions

Disconnect the battery before proceeding with the 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.

UIM805 Module

Remove the lower dash panel below the steering column and find a suitable location to mount the UIM805 module. Do not mount the module where it will be exposed to excessive heat. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

J1939 Data Link Harness (Blunt Cut version)

(Do not perform if using the optional P2(G) or P3G Plug and Play Data Link Harness)

Back of the connector

- **Important:** On the following wires use solder and electrical tape to make all of the connections.
- Locate the vehicle's J1939 Connector. It will be mounted below the lower left dash panel. Remove the J1939 Connector from the mounting bracket.
- Locate Pin A of the J1939 connector. Do not cut the wire! Strip the insulation 1" from the J1939 connector and attach the Black wire from the UIM805-A Data Link Harness.
- Locate Pin B of the J1939 connector. Do not cut the wire! Strip the insulation 1" from the J1939 connector and attach the Red wire from the UIM805-A Data Link Harness.
- Locate Pin C of the J1939 connector. Do not cut the wire! Strip the insulation 1" from the J1939 connector and attach the Yellow wire from the UIM805-A Data Link Harness.
- Locate Pin D of the J1939 connector. Do not cut the wire! Strip the insulation 1" from the J1939 connector and attach the Green wire from the UIM805-A Data Link Harness.
- Plug the free end of the Data Link harness into the mating 6-pin connector on the UIM805-A module.
- Secure the UIM805-A Data Link harness so that it does not hang below the lower dash panel.

J1939 Data Link Harness (Optional P2/P2G Plug and Play Data Link Harness)

P2

- Locate the vehicle's J1939 Connector. It will be mounted below the lower left dash panel.
- Remove the J1939 Connector from the mounting bracket.
- Connect the UIM805-A Data Link harness J1939 female connector to the vehicle's J1939 connector.
- Mount the UIM805-A Data Link harness J1939 male connector to the vehicle's J1939 connector mounting bracket.
- Plug the free end of the Data Link harness into the mating 6-pin connector on the UIM805-A module.
- Secure the UIM805-A Data Link harness so that it does not hang below the lower dash panel.

P2G

J1939 Data Link Harness (Optional P3G Plug and Play Data Link Harness - MT-45 Chassis)

- Locate the vehicle's J1939 Connector. It will be mounted below the lower left dash panel.
- Remove the J1939 Connector from the mounting bracket.
- Connect the UIM805-A Data Link harness J1939 female connector to the vehicle's J1939 connector.
- Mount the UIM805-A Data Link harness J1939 male connector to the vehicle's J1939 connector mounting bracket.
- Plug the free end of the Data Link harness into the mating 6-pin connector on the UIM805-A module.
- Secure the UIM805-A Data Link harness so that it does not hang below the lower dash panel.

OBD Data Link Harness (Optional P4P lug and Play Data Link Harness - MRU613 Chassis)

- Locate the vehicle's OBD Connector. It will be mounted below the lower left dash panel.
- Remove the OBD Connector from the mounting bracket.
- Connect the UIM805-A Data Link harness OBD female connector to the vehicle's OBD connector.
- Mount the UIM805-A Data Link harness OBD male connector to the vehicle's OBD connector mounting bracket.
- Plug the free end of the Data Link harness into the mating 6-pin connector on the UIM805-A module.
- Secure the UIM805-A Data Link harness so that it does not hang below the lower dash panel.

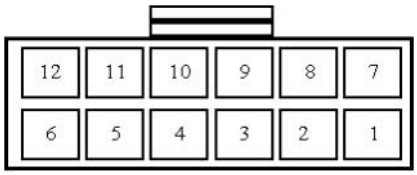
12 pin UIM connector pin-out definition

This connector contains the UIM's 8 output pins. Each output is rated at 1/2A and is intended to drive relay coils or other low current loads. Note that Pin 1 of the eight outputs is active high (12V) while the rest are active low (ground). Output pins 8-11 are pre-configured and cannot be changed. **Note: when driving relays, a diode-protected type must be used. InterMotive recommends DigiKey #PB682-ND Relay.**

The 8 outputs are defined as follows:

- Pin #1 (Purple wire) Configurable Output, **Active High***
- Pin #2 (Green wire) Configurable Output, Active Low
- Pin #3 (White wire) Configurable Output, Active Low
- Pin #4 (Gray Wire) Configurable Output, Active Low
- Pins #5-6 are no-connects
- Pin #7 (Red Wire) fixed jumper to pin 12
- Pin #8 (Brown Wire) Engine Running, Active Low
- Pin #9 (Orange Wire) Vehicle Speed(VSS) 2.2Hz/MPH, 0-12V pulsed
- Pin #10 (Blue Wire) Trans Range = Park, Active Low
- Pin #11 (Yellow Wire) Clean Tach Out, 0-12V pulsed
- CTO = ((RPM/2)*#Cyl) = pulses per minute. E.G. 600rpm = 2400ppm (8 cylinders)
- Pin #12 (Red Wire) fixed jumper to pin 7

12 Pin IO



Back of Connector

12 pin UIM connector (continued):

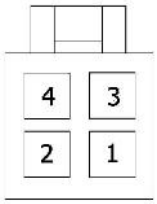
Extend these output wires and connect to vehicle equipment as needed. Tape unused leads. When connecting to relays, use relays with appropriate kick-back suppression, such as Digikey #PB682-ND. Unsuppressed relays will induce very high voltage spikes throughout modern vehicle's sensitive computer electronics and should not be used, per Ford, GM, SAE, etc.

4 pin Input connector definition

This harness contains the UIM's 2 discrete wire inputs. These are both active low inputs which means external devices must pull these inputs to ground. These inputs have their own internal pull up resistors so they can be left floating when not used or not active. These inputs can be used as part of the programmable logic to configure the output pins.

- Pin #1 - (Blue/White stripe) Input 1, Active low
- Pin #2 - Not Used
- Pin #3 - (Green/White stripe) Input 2, Active low
- Pin #4 - Not Used

Connect inputs as needed. Tape up unused input wires.



Back of Connector

4 Pin IO

Reconnect the vehicle battery

Initial Installation Power-Up: (Firmware older than 3.63)

The following sequence must be performed prior to mounting the UIM805 module:

1. Ensure the Data Link harness 6 pin connector is NOT connected to the UIM805 module yet.
2. Turn the vehicle key on, engine off.
3. Press the Red button on the UIM805 module printed circuit board labeled "Test", while plugging in the 6-pin Data Link connector. This allows the UIM to capture the VIN to ensure proper operation.
   NOTE: Holding the Red button on power up will put the module into Diagnostic mode. Lit LEDs do not indicate faults in this mode.
4. If no CAN data detected, the LEDs will scroll from low to high.
5. If failure to acquire or parse the VIN, the LEDs will scroll from high to low.
6. LEDs scrolling from the center outward indicates an invalid configuration is loaded on the module.
7. LEDs 1-3 may light when VIN or data baud rate is acquired. This does not indicate a failure.

Note: Step 3 must be repeated if a module is moved to a new vehicle.

Initial Installation Power-Up: (Firmware 3.63 and newer)

The following sequence must be performed prior to mounting the UIM805 module.:

1. Ensure the Data Link harness 6 pin connector is NOT connected to the UIM805 module yet.
2. Turn the vehicle key on, engine off.
3. Plug in the 6-pin Data Link connector. This allows the UIM to capture the VIN to ensure proper operation. **NOTE:** Holding the Red button on power up will put the module into Diagnostic mode. Lit LEDs do not indicate faults in this mode.
4. If no CAN data detected, the LEDs will scroll from low to high.
5. If a VIN is not obtained the module assumes a 6-cylinder engine that conforms to J1939 specifications.
6. LEDs scrolling from the center outward indicates an invalid configuration is loaded on the module.

UIM805 Module Mounting

Ensure all the harnesses are properly connected and routed, and are not hanging below the dash area. Locate the UIM805 module in an area away from any external heat sources (engine heat, heater ducts, etc.). Mount the module using two screws, Velcro, or double backed tape.

UIM Post Installation Testing

1. Turn the ignition ON to wake up and initialize the UIM805 module.
2. With the conditions met, ensure that the specific output has the desired output (e.g., output 5 goes low when engine is running).

The UIM805 is properly installed only if it passes the above tests. If any irregular operational issues persist, recheck the data configuration.
Contact InterMotive at 530-823-1048 for technical assistance.

Diagnostics:

To enter diagnostic mode, momentarily press the Red "Test" button on the UIM805 printed circuit board while the ignition is on. That Status LED will blink the Diagnostic Page number. Pressing the "Test" button will cycle through the Diagnostic Pages and will exit Diagnostic Mode after the final Page.

Page 1: The on-board LED's will light when a corresponding load is active:

LED1 = Pin1 LED2 = Pin2 LED3 = Pin3 LED4 = Pin4
LED5 = Pin8 LED6 = Pin9 LED7 = Pin10 LED8 = Pin11
LED9 = Discrete Input 1 Active LED10 = Discrete Input 2 Active

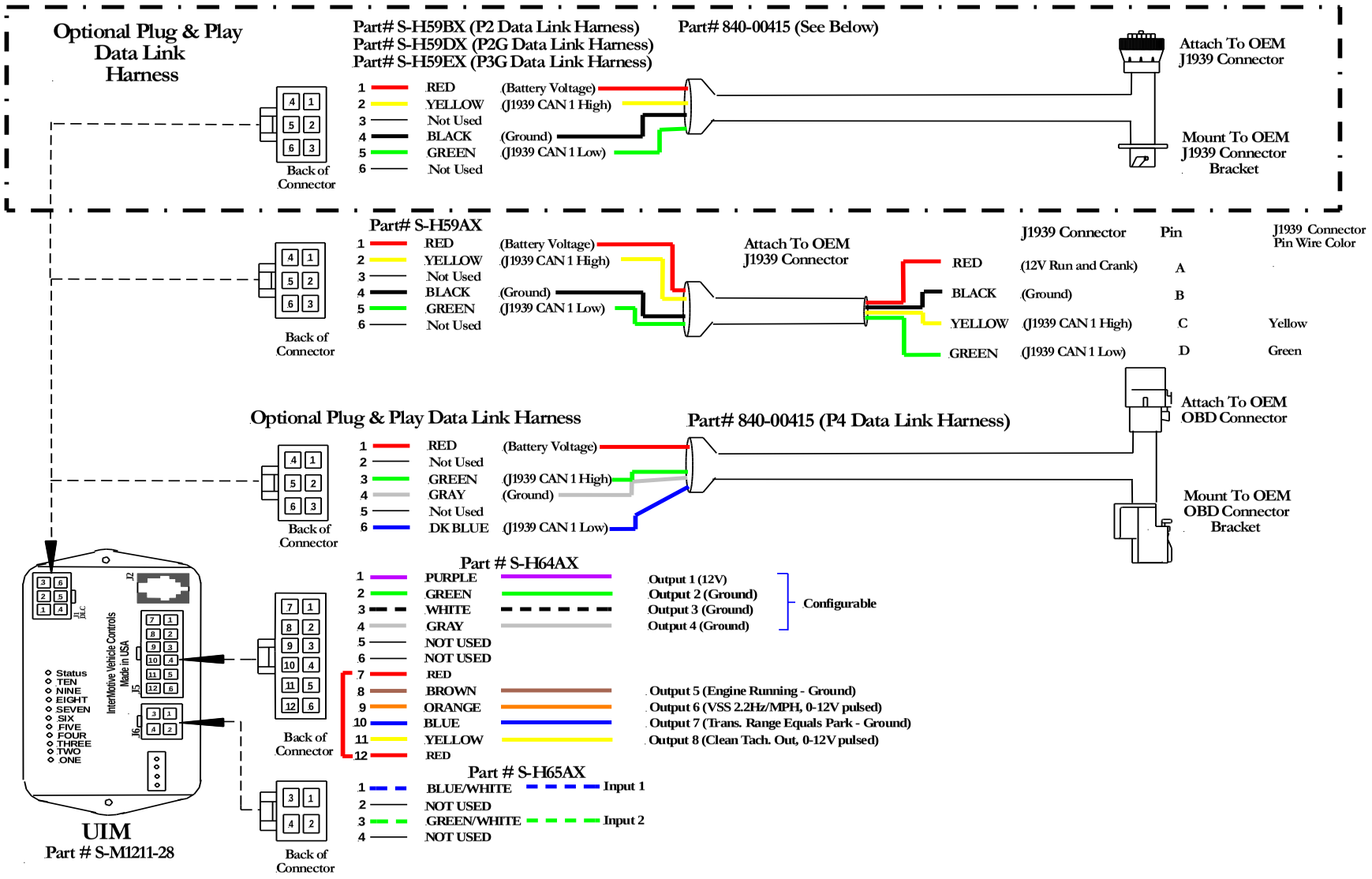
Page 2: Each LED toggles on a specified event:

LED1 = PGN61441 received LED2 = PGN61443 received LED3 = PGN61444 received
LED4 = PGN61445 received LED5 = PGN65262 received LED6 = PGN65265 received
LED7 = PGN65269 received LED8 = PGN65272 received LED9 = PGN65276 received
LED10 = Outputs Updated

UIM Operation:

Turning the vehicle ignition ON will wake up and initialize the UIM805 module. Outputs are controlled based on the module's configuration created using the Intermotive UIM805 Programming Utility program.

When the key is turned OFF, the UIM805 module will go into a low power sleep mode. This may take up to five minutes, and the LED's on the module will go out once in sleep mode. Other vehicle activity such as opening doors, inserting key in the ignition, etc. may delay sleep mode.



Submit product registration at www.intermotive.net

If the UIM fails any step in the Post Installation Test, review the installation instructions and the loaded configuration by running the Graphical User Interface application. If necessary, call

InterMotive technical support @ (530) 823-1048.

InterMotive Inc.
12840 Earhart Ave.
Auburn, CA 95602

Phone: (530)-823-1048
Fax: (530)-823-1516

www.intermotive.net
products@intermotive.net