MDI USER'S GUIDE

· CONTENTS ·

MDI User's Guide

The Multiple Diagnostic Interface User's Guide provides an overview of the MDI tool.

Everything contained in this manual is based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

Requests for permission should be sent to:

General Motors Corporation
Service and Parts Operations
Product Engineering
37350 Ecorse Road
Romulus, MI 48174-1376
U.S.A.

GM Service and Parts Operations

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

VDE Certification (for European Use)

This equipment complies with the requirements of VDE 0871/6.78. Improper use or maintenance neglect may cause unacceptable radio or TV interference.

Using This Manual

To increase their effectiveness with the MDI, users should familiarize themselves with the format and information contained in this guide.

NOTE

If you are reading this guide online, note that the figures and illustrations are hyperlinked to the text. To view a figure, simply click on its reference, which is shown in blue text. After viewing the figure, click on the back button of your viewing software to return to your place in the manual.

Foreword

The Multiple Diagnostic Interface and host computer applications are designed for use by trained service personnel to diagnose and repair automotive electronic systems. Every attempt has been made to provide complete and accurate technical information based on factory service information available at the time of publication. However, the right is reserved to make changes at any time without notice.

To familiarize yourself with the Multiple Diagnostic Interface and host computer applications and their capabilities, and how to use them, please read through the User's Guides before putting the MDI to work.

The Multiple Diagnostic Interface and host computer applications provide the following capabilities:

- Data transfer and Electronic Control Unit (ECU) reprogramming
- Shop network communications (LAN and WLAN)
- Future expandability, including diagnostic applications

Location of Vehicle ECUs and Test Connectors

For the location of vehicle Electronic Control Units (ECUs) and Data Link Connectors (DLCs), refer to the Service Information for the vehicle being tested.

Customer Support Overview

To obtain assistance with a question or problem concerning the operation of your GM-Techline product and its attached products, or to arrange for warranty and non-warranty repairs, telephone your local Customer Support Center. To order replacement parts, contact GM Dealer Equipment.

Before Calling

Before making a call to your local Customer Support Center or GM Dealer Equipment, be sure to have the following information ready:

- Dealership name, address and dealer code number
- Serial number of MDI
- Name, part number, and quantity of the item to be requested
- Telephone number where the technician may be reached.

Prepare a brief description of the problem:

- Tell when the problem occurred
- List any error codes displayed
- Tell what accessories were being used when the problem occurred, and vehicle information

Customer Support Overview continued on next page…

Customer Support Overview *continued…*

Making the Call

The GM Service and Parts Operations **GM-Techline Customer Support Center** telephone lines operate from 8:00 a.m. to 8:00 p.m. (Eastern Standard Time) Monday to Friday.

In the **United States** and **Canada** to contact Customer Support, dial:

- English: 1-800-828-6860 (option 1) or 1-888-337-1010 (option 3)
- French: 1-800-503-3222
- Spanish: 1-248-265-0840 (option 2)
- Fax line: 1-248-265-9327

Customers outside of North America, please contact your regions individual Technical Support Center with any questions or comments.

Customer Support Overview continued on next page…

Customer Support Overview

Warranty and Repair

The Multiple Diagnostic Interface is warranted by ETAS Inc. (a subsidiary of Robert Bosch GmbH) to the original consumer to be free of defects in material and workmanship for two years. Cables, adapters, and accessories are warranted for a period of two years.

The warranty period is from the date of shipment to the original consumer. If a product is found to be defective during this period, the product can be returned to an authorized ETAS Service Center and ETAS Inc. will repair or replace the unit free of charge. This warranty does not cover any part that has been abused, altered, used for a purpose other than that which it was intended, or used in a manner inconsistent with instructions regarding its use including but not limited to the following:

- Damage due to improper product operation or product modification.
- Damage due to use of non-ETAS supplied cables and accessory items, or unauthorized peripheral equipment.
- Damage due to dropping or other severe impact to the product.
- Damage due to exposure to excessive temperatures.
- Damage or loss that may occur during shipping.

This warranty also excludes all incidental or consequential damages.

Taking the Product Back and Recycling

Applicable to product that is sold into the European Union, the European Union has passed a directive called Waste Electrical and Electronic Equipment, or WEEE for short, to ensure that systems are setup throughout the EU for the collection, treating and recycling of electronic waste.

This ensures that the devices are recycled in a resource-saving way representing no danger to health or the environment. The WEEE symbol is shown at the right.

The WEEE symbol on the product or its packaging shows that the product must not be disposed of as residual garbage. The user is obliged to collect the old devices separately and return them to the WEEE take-back system for recycling.

The WEEE directive concerns this device but not external cables or batteries. For more information on this recycling program, contact your local service center.

Declaration of Conformity

According to ISO/IEC Guide and EN 45014

Manufacturer's Name: ETAS Inc.

Manufacturer's Address: ETAS Inc.
2030 Alameda Padre Serra
Santa Barbara, CA 93103

declares, that the product

Product Name: Multiple Diagnostic Interface

Model Number(s): F 00K 108 062, F 00K 108 252

Product Options: ALL

conforms to the following Product Specifications:

Safety: EN 61010-1: 2001

EMC: EN 61326: 2002

Supplementary Information:

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

The product herewith complies with the requirements of the Low Voltage Directive 2006/95/EEC and the EMC Directive 89/336/EEC.

- Location: Santa Barbara, California
- Date: 20 August 2007
- QA Manager:

Things You Should Know: Cautions and Notices

In the Multiple Diagnostic Interface and host computer applications User's Guides:

- CAUTION: indicates there is a possibility of injury to you or other people.
- NOTICE: indicates the possibility of damage to the component being repaired.
- NOTES: providing additional information are separated from the text but do not appear in bold.

Refer to the Repair Manual for the vehicle being tested for further Cautions and Notices.

Operating Precautions

CAUTION!

When performing any checks with the engine running in an enclosed space such as a garage, be sure there is proper ventilation. Never inhale exhaust gases; they contain carbon monoxide—a colorless, odorless, extremely dangerous gas which can cause unconsciousness or death.

CAUTION!

PARKING BRAKE: To help avoid personal injury, always set the parking brake securely and block the drive wheels before performing any checks or repairs on the vehicle.

Operating Precautions continued on next page …

Operating Precautions *continued…*

NOTICE

- DO NOT clasp battery clamps together when connected simultaneously to the vehicle's 12 volt cigarette lighter or power supply. Reverse polarity in the vehicle's cigarette lighter may be present. Damage could occur to the MDI or to the vehicle.
- Make sure all cables and adapters are firmly connected before starting to use the MDI.
- Always read the instructions completely before attempting a new procedure.

Software License Agreement

Please read this software license agreement carefully before proceeding with use of the software. Proceeding with use of the software will constitute your acceptance of the terms and conditions contained herein.

OWNERSHIP: The software is a copyrighted work of General Motors Corporation and you acknowledge that General Motors Corporation owns all copyright and other proprietary right, title and interest in and to the software. Any rights to the software not specifically licensed hereunder are expressly reserved by General Motors Corporation.

USE: You are granted a non-exclusive, non-transferable license to use the software on multiple computer systems. You may not reverse engineer, decompile, modify, reproduce, distribute or sell the software, in whole or in part. This license is personal to you and conditioned upon your strict compliance with all of the terms and conditions contained herein.

TERMINATION: General Motors Corporation may terminate this software license agreement for your failure to comply with the terms and conditions contained herein. Upon termination, you must immediately discontinue your use of the software and destroy any and all copies of the software including, but not limited to, those contained on your computer systems.

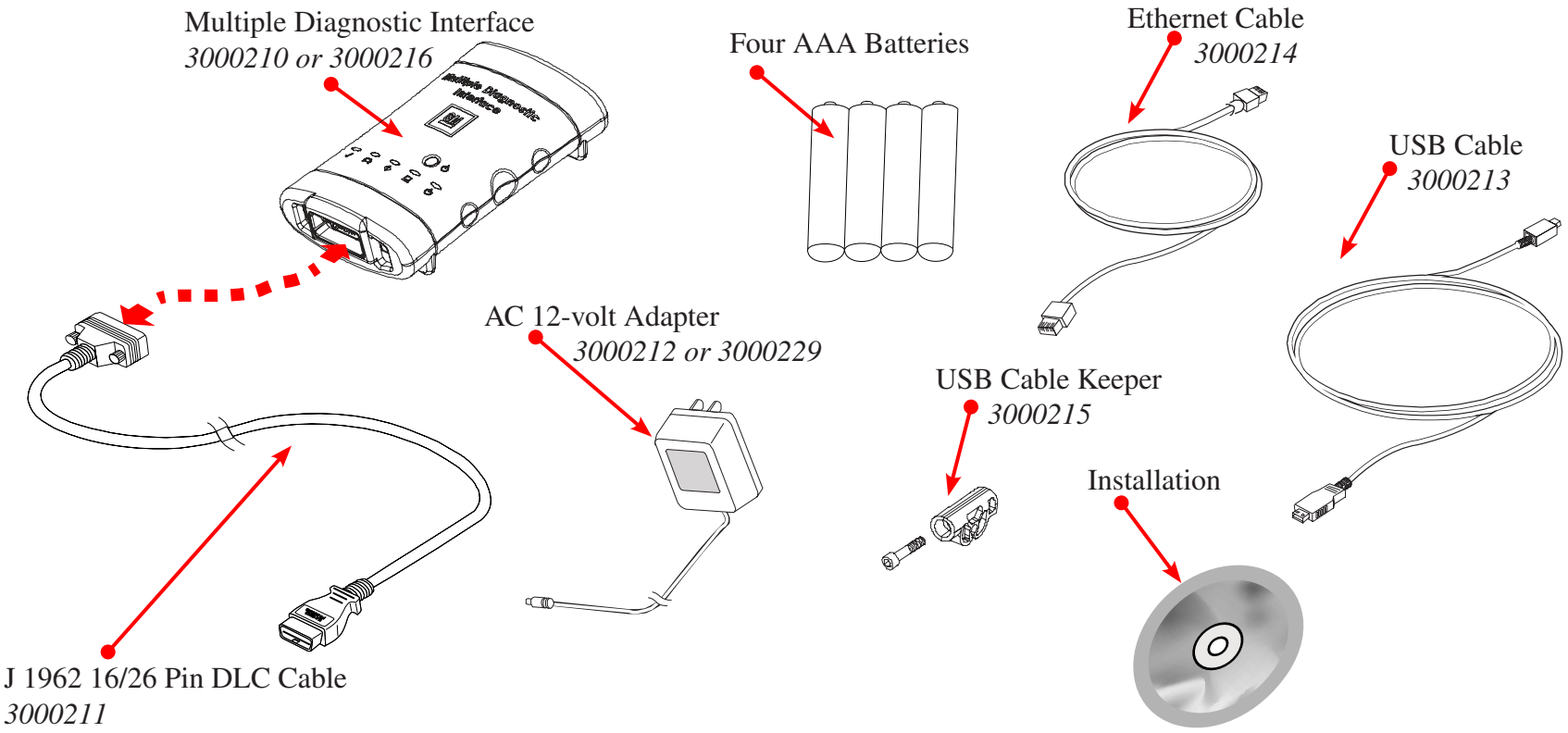
Limited Liability

ETAS does not warrant that the operations of the ETAS software will be uninterrupted or error free. In no event shall ETAS be liable for any direct, indirect, special, incidental or consequential damages (including lost profit) whether based on warranty, contract, tort or any other legal theory.

Multiple Diagnostic Interface Kit Overview

The Multiple Diagnostic Interface (MDI) arrives in a kit which also contains a data link connector cable (J1962 connector), AC 12-volt adapter, USB cable and cable keeper, Ethernet cable, and four AAA batteries. A description of the MDI hardware and software is included in the following sections.

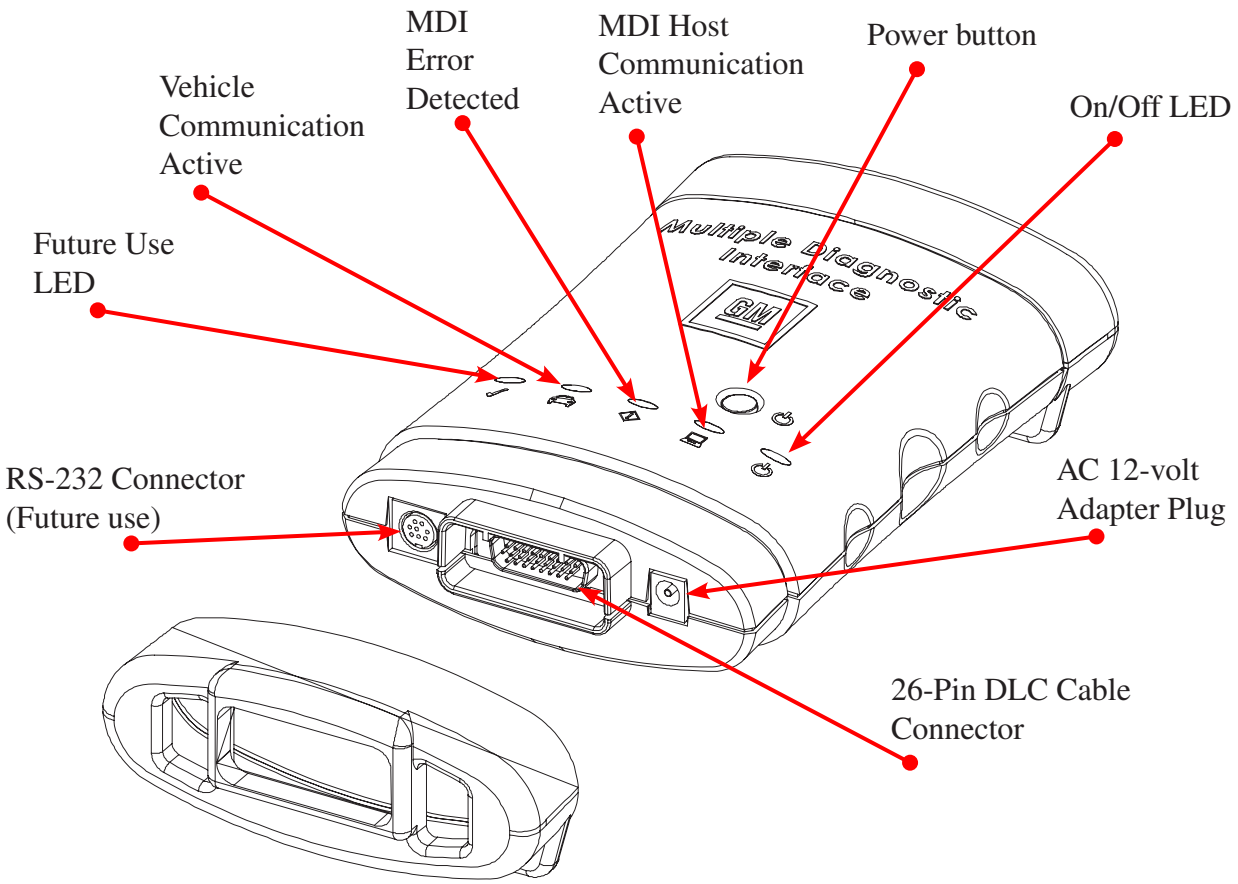
FIGURE VIIC-1.
Multiple Diagnostic Interface Kit



THE MULTIPLE DIAGNOSTIC INTERFACE

The MDI is used by professional technicians as an aid in diagnosing and repairing automotive electrical and electronic systems. The MDI is designed to connect the vehicle to a TIS 2 Web PC computer application which then functions though the MDI for data transfer and Electronic Control Unit (ECU) reprogramming. See Figure VIIC-2 for the location of the connectors and indicators (LEDs) on the MDI.

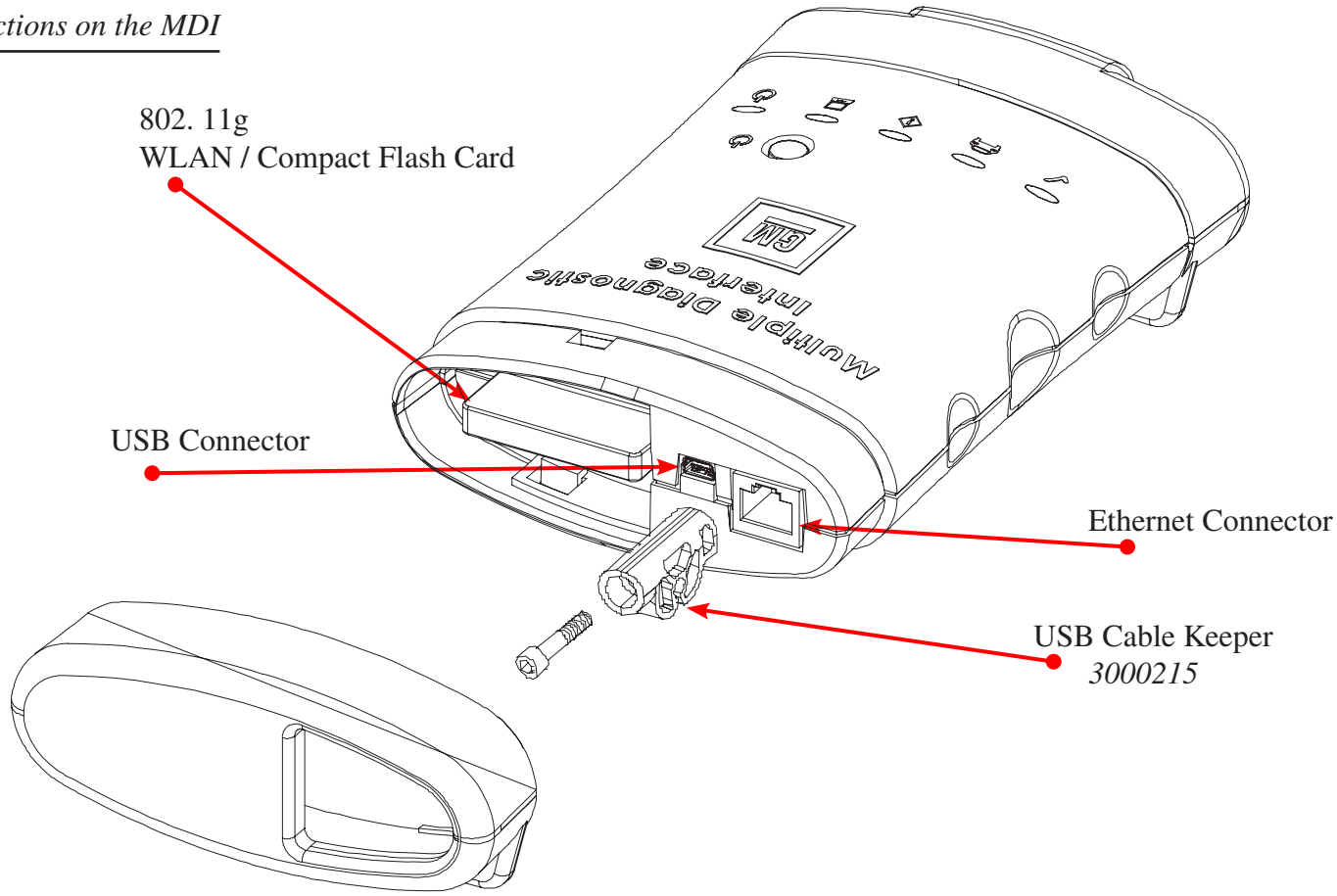
FIGURE VIIC-2.
Connectors and Indicators (LEDs) on the MDI



Host Computer Interface

Using the PC application MDI Manager software, you configure the MDI to communicate with a host computer. The MDI is capable of communicating over a USB cable, an ethernet cable (LAN), or wireless (WLAN). Refer to Figure VIIC-3.

FIGURE VIIC-3.
PC Connections on the MDI



Host Computer Interface continued on next page…

Host Computer Interface *continued...*

Universal Serial Bus (USB)

The MDI has a fixed USB configuration which cannot be changed. This ensures that the MDI can always be connected to a single PC running the MDI Manager software so you can configure to LAN or WLAN configurations required by your local network. Refer to the ***MDI Network Communications Setup Functions*** or the PC application help file supplied with MDI Manager software.

The connectors on the USB cable are slip in connectors that do not have any kind of a latch. In order to keep the USB cable connected, you can secure it to the MDI using the supplied cable keeper (Figure VIIC-4a). The cable keeper is secured to the MDI case with a screw, the USB cable is inserted into the slot, and then plugged in as shown in Figure VIIC-4b.

FIGURE VIIC-4a.
USB Cable Keeper

⊖ zoom ⊕

FIGURE VIIC-4b.
Securing the USB Cable

⊖ zoom ⊕

Local Area Network (LAN)

The MDI's LAN connection is setup and configured while the MDI is connected over USB to a PC running the MDI Manager software. After configuring, the MDI is connected to the LAN using the ethernet cable. Refer cable to *MDI Network Communications Setup Functions* or the PC application help file supplied with MDI Manager software for details.

The connectors on both ends of the Ethernet cable are latched. To disconnect them you must press down on the latch (Figure VIIC-4c) while you pull the connector out.

FIGURE VIIC-4c.
Latch

⊖ zoom ⊕

Host Computer Interface *continued...*

NOTE

Do not use the RS232 cable from a Tech 2 to connect the MDI to the dealer LAN.

Wireless Local Area Network (WLAN)

The MDI's 802.11g WLAN connection is setup and configured while the MDI is connected over USB to a PC running the MDI Manager software. Refer to ***MDI Network Communications Setup Functions*** or the PC application help file supplied with MDI Manager software.

MDI Manager software

The MDI Manager software is a host computer application which runs on the Microsoft Windows 2000 or XP Pro operating system to configure and update, MDIs. The MDI Manager software is also used to set each MDI's J2534 identity. The MDI Manager software provides the following functions:

- Configuration of the MDI to host PC communications
- MDI software updates

Minimum hardware requirements

Minimum hardware requirements: (refer to GM Online Support for further information.)

- Intel Pentium IV / 1.3 GHz

NOTE

Processors such as Celeron, Cyrix and AMD are NOT compatible with some GM software.

- System Memory (RAM)
- 256 MB SDRam
- Hard Disk Drive: 20 GB3 ATA or greater
- CD-ROM Drive / DVD combo drive
- RAM: 512 MB RAM or greater
- Parallel Port 1
- Serial Port 1
- USB Ports 1 or more Audio Adapter 16-Bit or greater
- Audio Speaker Yes
- Video Memory

PC Computer Application

The MDI functions with a PC computer applications (PC program) for testing specific vehicles and systems. The programs are upgraded periodically to include new vehicles, model years, systems, and functions. Specific operating instructions are provided within the PC computer application.

The MDI supports pass-thru programming of the flash calibration files that are stored in a vehicle onboard controller (e.g. PCM, ABS, VTD).

MULTIPLE DIAGNOSTIC INTERFACE FEATURES

Data Link Connector and Cable

NOTE

The DLC cable supplied with your MDI is keyed such that it will only connect to the MDI. It will not connect to a Tech 2 and conversely, Tech 2 cables will not connect to the MDI.

Communication between the MDI and the vehicle's electronic systems is through the heavy duty 16-pin to 26-pin Data Link Connector (DLC) cable that is connected to the bottom center of the MDI.

Power Source

The MDI is intended to be powered from the vehicle battery via the DLC Cable.

The MDI may also be powered using the AC 12-volt adapter with a UAL approved extension cord or when located near a suitable wall socket.Typically the AC 12-volt adapter is used during bench operations or when configuring the MDI, updating software, or during testing of MDI.

To comply with safety regulations, use only an approved AC Adaptor. One has been shipped with your MDI. Phihong Model PSA15R-120P is approved for all MDIs. For MDI with manufacturer part number F-00K-108-062, Regal JG-12151-N is also approved.

Multiple Diagnostic Interface Features continued on next page…

Multiple Diagnostic Interface Features *continued…*

Battery Backed Operation

Four AAA Batteries are provided to power the MDI during a brief power interruption. The MDI will not operate solely on the battery pack, the MDI must be connected to the vehicle's 12-volt power supply during bench operations such as setting the MDI configuration options or updating software.

See Chapter 5 for battery replacement instructions.

Beeper

The MDI contains an audio beeper which can be used for user prompts like test begin and end indications, and error indications.

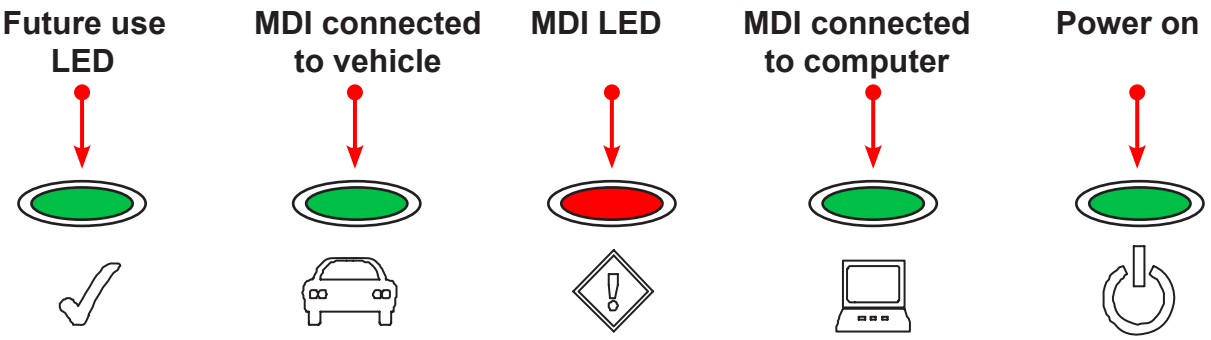
Multiple Diagnostic Interface Features continued on next page…

Multiple Diagnostic Interface Features *continued...*

LEDs

Five Light Emitting Diodes (LEDs), one red and four green, are located on the front of the MDI as shown in Figure VIIC-6. One LED is reserved for future host computer applications.

FIGURE VIIC-6. *LEDs*



MULTIPLE DIAGNOSTIC INTERFACE CHARACTERISTICS

ITEM	CHARACTERISTIC
Size	16.7 x 11.4 x 3.8 cm (6.6 x 4.5 x 1.5 inches)
Weight	0.454 kg (1 lb.)
Power	3.0 Watts @ 12 Vdc
Input Voltage	7 to 32 Vdc (protected against reverse polarity)
LED Display	5 LEDs—Software controlled on-board (1 red; 4 green)
Power Sources	• 12-24 Volt vehicle power • External AC 12-volt adapter • On-board AAA batteries for brief power interruptions
Operating Temp.	0 °C TO 50 °C (32 °F TO 122 °F)
Storage Temp.	-20 °C TO 70 °C (-4 °F TO 158 °F)

Getting Started

Perform the following:

1. Unpack your MDI kit, check the contents, and install the four AAA batteries. Chapter 5.
2. Logon to TIS 2 Web to download and install the MDI Manager software application onto your PC or use the MDI software CD, if provided in the installation kit.
3. Power up and connect your MDI to your PC using the USB cable, then setup the MDI configuration appropriate for your local area network communications.
4. Connect the MDI to the vehicle's DLC connector, reconnect to the LAN or WLAN, and access the MDI from your TIS 2 Web PC application.

INSTALLING THE MDI MANAGER SOFTWARE

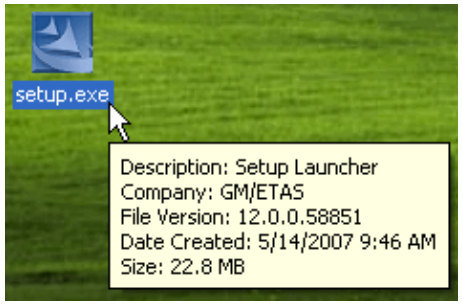
The MDI Manager software is a PC application that provides access and control over the MDIs located on your network. Any PC application that directly communicates with the vehicle, must have the MDI Manager software installed. The MDI Manager software application is used to update the MDI Tester software and set up the configuration of each MDI. The following sections provide an overview of the steps required to get started using your MDI.

For your initial software installation, use the MDI Software Installation CD provided by GM Service and Parts Operations. Future MDI updates can be done from the SPS application in TIS 2 Web. Logon to your SPS application at the TIS 2 WEB website and follow the instructions provided for installing the MDI Manager software application onto your PC.

Installing The MDI Manager Software continued on next page…

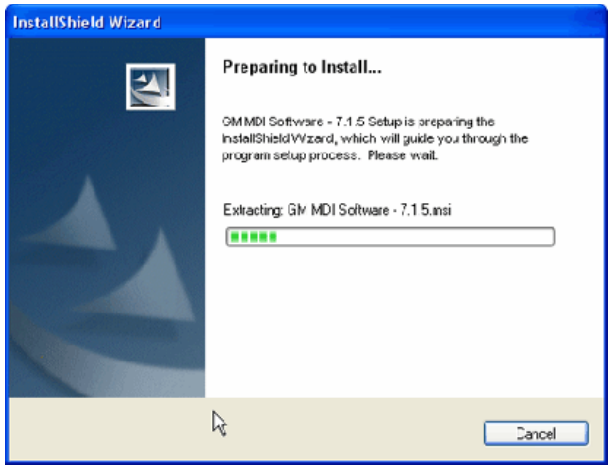
Installing The MDI Manager Software *continued…*

1. Place the MDI Software Installation CD into your CD drive or download the setup.exe file as directed by your TIS 2 Web site.

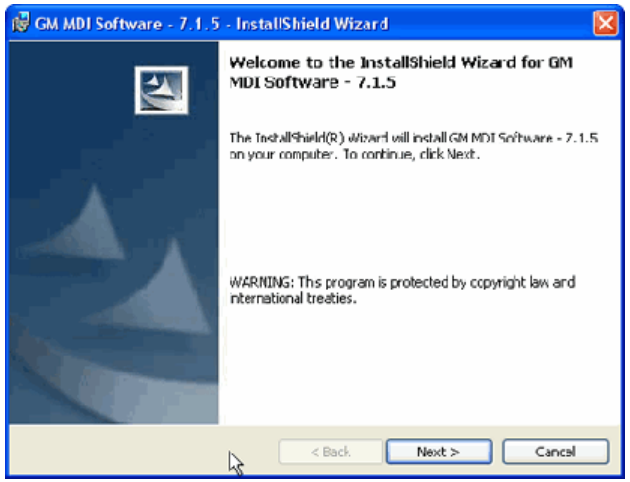


2. If the InstallShield Wizard does not automatically start, double-click the setup icon.

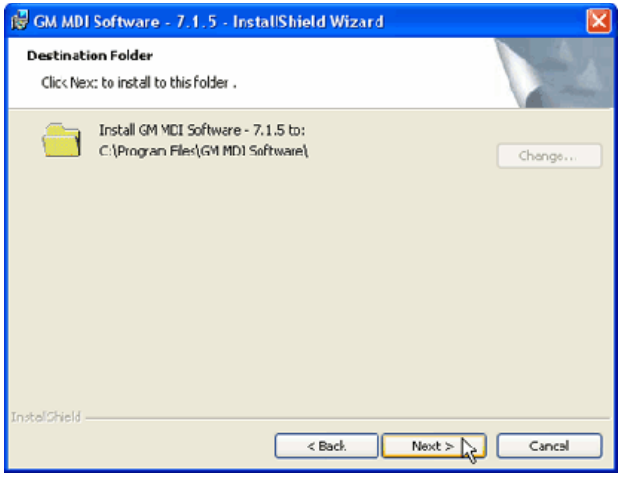
3. The InstallShield Wizard will start and guide you through the software installation.



4. The InstallShield Wizard is ready to install software. Click **Next>** to continue.



5. The InstallShield Wizard displays the path where your software will be installed. Make note of the path for future reference. You can not change this location. Click **Next>** to continue.

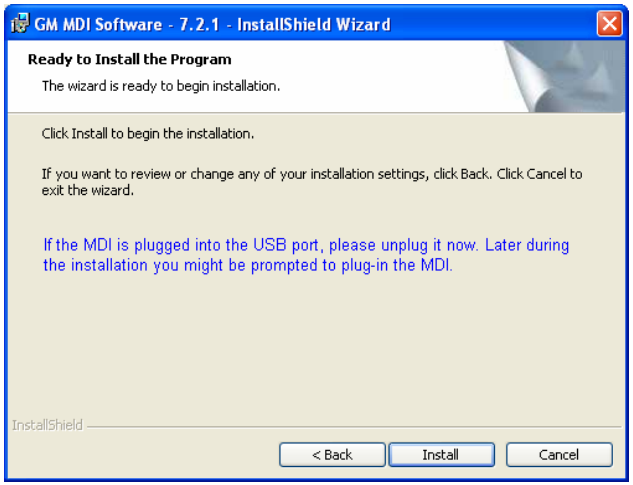


Installing The MDI Manager Software continued on next page…

Installing The MDI Manager Software *continued…*

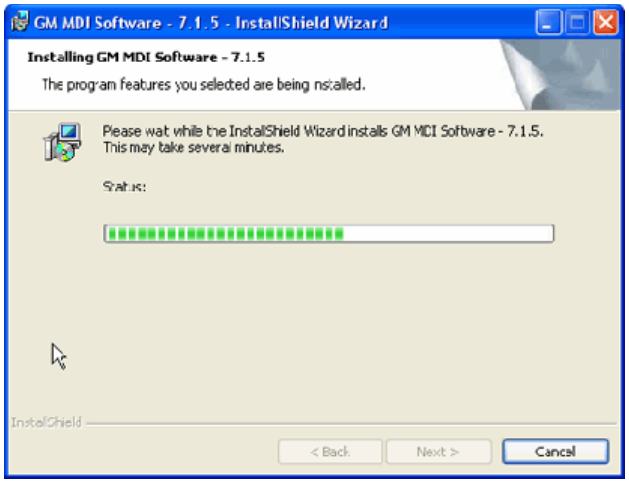
6. You can not change any settings in this installation.

   Click **Install** to continue.



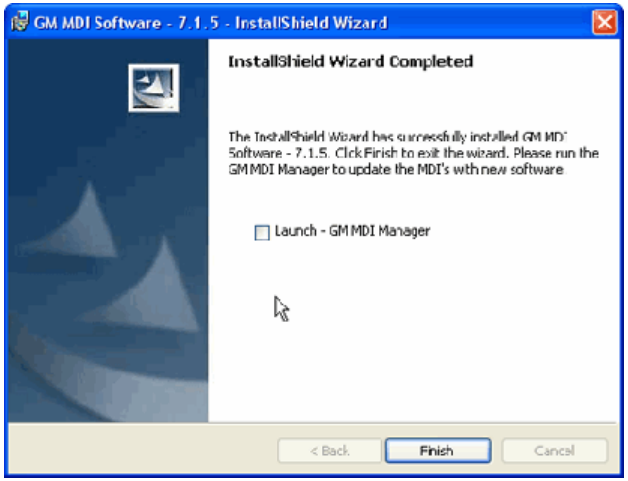
7. A progress bar will appear providing information on the status of the installation.

   If you are sure you that wish to cancel the installation. Click **Cancel** to halt the installation process. You will be prompted to respond.



8. Connect USB cable to configure PC for MDI USB connection.

Click **Finish** to complete the installation. Select the **Launch - GM MDI Manager** check box if you would like to start the MDI Manager software.



The InstallShield Wizard will place the program icon on your desktop.

Click the 

icon to start the program.

SETUP THE MDI HARDWARE

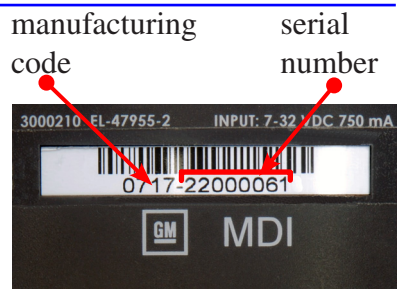
Unpack your MDI kit and verify the contents. Refer to ***Multiple Diagnostic Interface Kit Overview on page II-1.***

Install the four AAA batteries into the MDI. Refer to ***Replacing the Batteries on page V-2.***

Your first connection will be to the PC where you have installed MDI Manager. You will need the AC 12-volt adapter for power and the USB cable to connect to the PC. ***MDI USB Connection on page III-5.***

IDENTIFYING YOUR MDI

The GM MDI assembly label is located on the back of the unit. As shown in the illustration at the right, the assembly identification number has two parts: a manufacturing code for traceability and a unique serial number (22000061, in this example). The serial number is used to identify the MDI in the software.



CONNECTING THE MDI TO YOUR PC FOR SOFTWARE UPDATE

Each MDI that is brought into your shop must be updated, one at a time, using the MDI Manager software. This is done only via the USB connection.

NOTE

Do not use a USB hub to connect multiple MDIs to a PC. The MDI has a fixed USB address and address conflicts will occur.

When you receive a new MDI, it must be updated to the latest MDI Tester software. The MDI Manager software will display the status of all MDIs that are detected. If the MDI is labeled **UPDATE MDI S/W** in the **MDI Explorer** tab, it requires an MDI Tester software update before it can be used. Refer to ***Update MDI Tester software.***

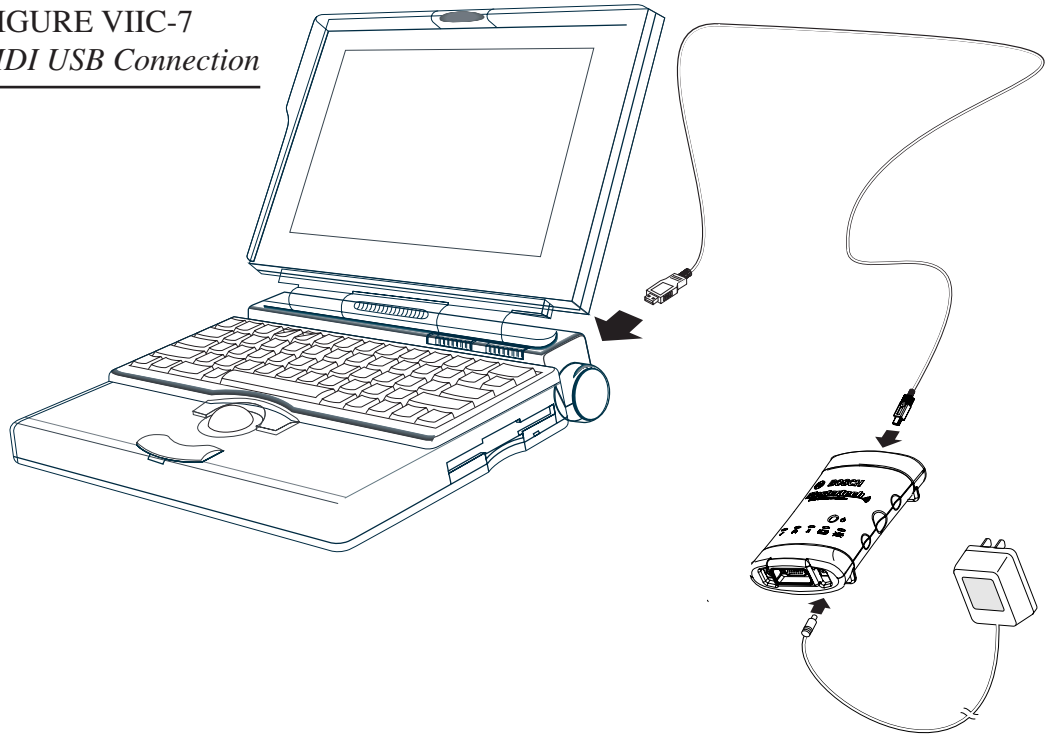
Setup the MDI hardware continued on next page…

Connecting the MDI For Initial Update and Configuration *continued…*

Update MDI Tester Software

1. Start the MDI Manager software by clicking on the **MDI_Manager** icon
2. Plug the USB cable into the PC and MDI.
3. Power on the MDI by plugging in the AC 12-volt adapter. When the MDI powers up, the green LEDs will flash in succession while the MDI performs its power on self test. If the test detects an MDI fault, the red LED will be illuminated. Once the self test is complete, only the green Power LED will be illuminated. Then you are ready to move to the next step. Refer to Figure VIIC-7 below.

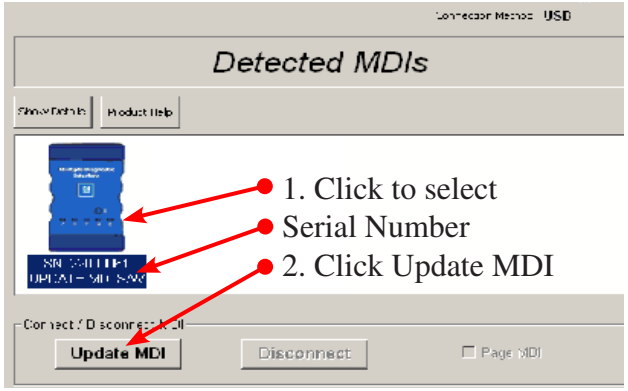
FIGURE VIIC-7
MDI USB Connection



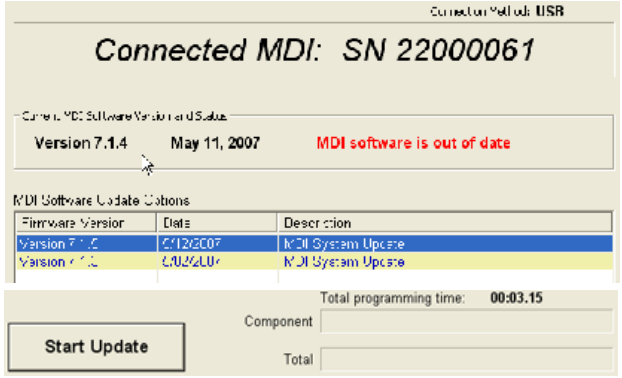
Update MDI Tester Software continued on next page…

Update MDI Tester Software continued on next page *continued…*

4. The MDI will appear on the **MDI Explorer** tab, as shown below. **The MDI Explorer** tab is the main screen for information on your MDIs.



5. Select the MDI, then click the **Update MDI** button.
6. Select the latest version of the MDI Tester Software and click **Start Update. Do not unplug the MDI from the PC or remove power from the MDI during the update process.**



7. When you see the message shown at the right, click **OK.** The MDI Manager software switches automatically to the **MDI Explorer** tab and your MDI will appear when it has finished the restart and Power On Self Test (POST).

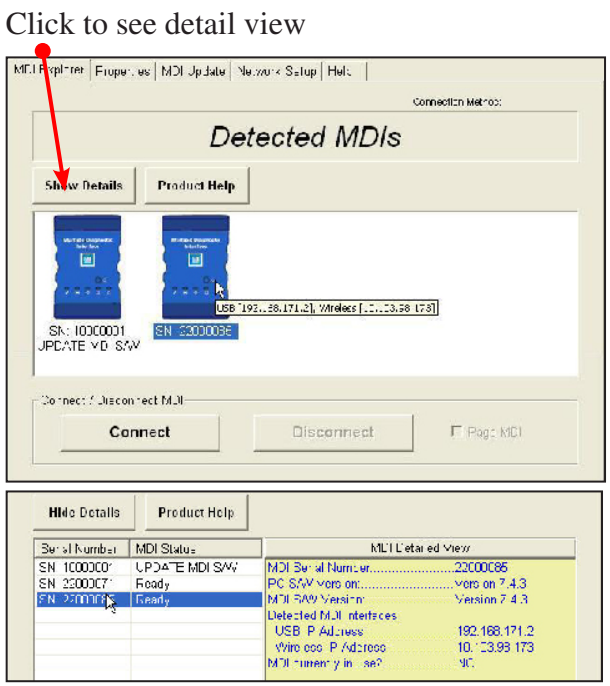
Using The MDI Manager Software

NOTE

In order to configure an MDI to communicate on your network you must connect the MDI, via USB, to a PC running MDI Manager software.

Use the following steps to communicate to an MDI with the MDI Manager software:

1. In the MDI Manager software **MDI Explorer** tab, select the MDI in the **Detected MDIs** window. Hold your cursor over the MDI icon to see a popup with the IP address and the connections or click on **Show Details** to see the detail view of the detected MDIs.



2. Click on **Connect,** in either view, to connect to the MDI. The MDI is displayed with a green **check mark** on your display indicating that your MDI Manager software is in control of that MDI. MDI Manager software on another PC will still detect your MDI but it will be displayed with a red not symbol indicating that it is not available.

Using the MDI Manager software continued on next page…

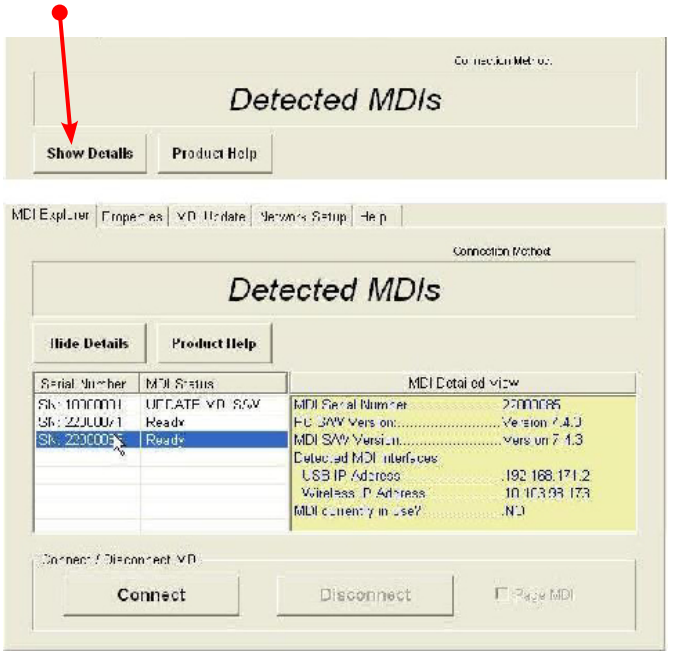
Using the MDI Manager software *continued...*

NOTE

If your MDI is connected via USB, the functions on all tabs are available; if your MDI is not connected via USB, the functions on the **Network Setup** and **MDI Update** tabs are not available.

CHECK THE DETAILS FOR THE MDI MANAGER SOFTWARE AND ANY DETECTED MDI

1. Start the MDI Manager software.
2. On the **MDI Explorer** tab, select any MDI in the **Detected MDIs** window and click on **Show Details** to see the detail view of that MDI.



Using the MDI Manager software continued on next page...

Using the MDI Manager software *continued...*

The MDI **Detailed View** window shows the **PC S/W Version** information for the MDI Manager software and the MDI **S/W Version** for the MDI Tester Software as well as available interfaces and IP addresses.

As shown in the illustration above, the MDI Manager software is a newer version than the MDI Tester Software. Typically these versions must be the same for the MDI to operate.

- If both your MDI Manager software and the MDI Tester Software match, you can use your MDI with this PC.
- If your MDI Manager software is more recent than the MDI Tester Software, see ***Update MDI Tester Software.***
- If your MDI Tester Software is more recent than your MDI Manager software, download the current version from TIS 2 Web.

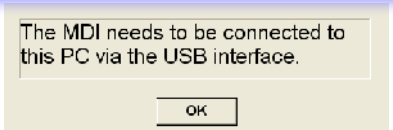
MDI NETWORK COMMUNICATIONS SETUP FUNCTIONS

The **Network Setup** tab in the MDI Manager software is selected in order to change the MDI connection interfaces, wireless access or security settings, or to clear any previous network settings.

NOTE

You can not change the settings for the USB interface of the MDI. They are set at the factory.

You must be connected to the MDI via USB to access the setting on the Network Setup tab. If you are not connected via USB you will see the following message and the entire tab will be grayed out.



Clear Network Settings

Selecting the **Clear Network Settings** button will reconfigure your MDI to the communications settings it had when it left the factory. Only the USB interface will be enabled. Any software upgrades that have been installed to the MDI will still be installed. When the MDI reset is finished the MDI Manager software will display the **MDI Explorer** tab.

Using the MDI Manager software continued on next page...

Using the MDI Manager software *continued…*

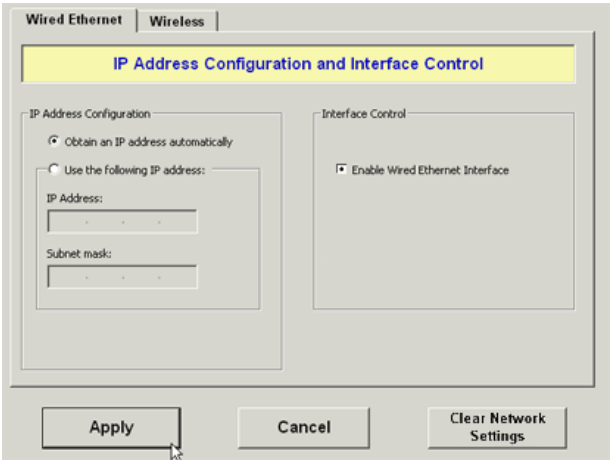
Enable Wired Ethernet

The following procedure shows how to configure your MDI for wired ethernet communication in your environment. Before modifying the MDI communications interface, contact your IT Administrator.

Things you will need to know:

- Does your LAN automatically assign IP addresses? If not, you will need an **IP Address** and **Subnet Mask** to assign to your MDI.

1. Ask your local IT Administrator if your LAN automatically assigns IP addresses. If not, you will need to obtain an IP Address and **Subnet Mask** from your IT Administrator to assign to your MDI.
2. Plug the USB cable into the PC and MDI.
3. Power on the MDI by plugging in the AC 12-volt adapter.
4. Select and **Connect** to your MDI in the MDI Manager software **MDI Explorer** tab.
5. Select the **Network Setup** tab.
6. Select the **Wired Ethernet** tab.
7. Select the **Enable Wired Ethernet Interface** check box in the **Interface Control** box to enable the interface. Once you enable the interface, the **IP Address Configuration** box and the **Apply** and **Cancel** buttons become active.

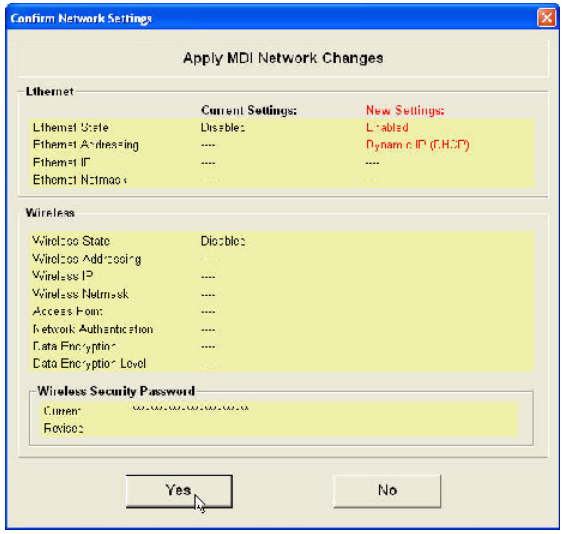


The MDI Manager software will store the changes you have made for each interface. You can select the other interface, make additional changes, and then apply all the changes to both interfaces at once by selecting the **Apply** button. You can start over anytime before you select **Apply** by selecting **Cancel** so that all your stored changes are discarded.

Using the MDI Manager software continued on next page…

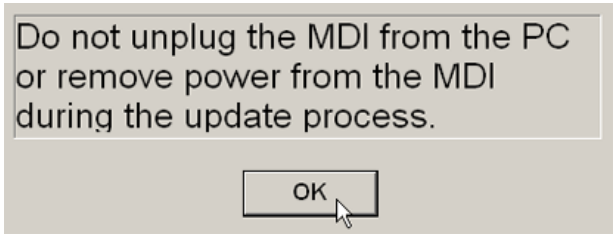
Using the MDI Manager software *continued…*

8. Select **Obtain an IP address** automatically if your LAN automatically (DHCP) assigns **IP addresses.** Otherwise enter the assigned IP Address Static IP and **Subnet mask.**



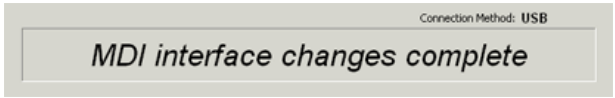
9. Select **Apply** to reconfigure your MDI. You will see the screen at the right to check your communication changes. Select **Yes** to continue, or **No** to get back to the **Network Setup** tab to make any changes.

10. Select **OK.** If you unplug the MDI from the PC or remove power from the MDI during the update process. The Network Setting may not be applied to the MID. Refer to ***Recover MDI Tester Software***.



11. MDI **Configuration in Process** will flash during the update process.

12. MDI **interface changes complete** will be displayed briefly when the update process is finished.



Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

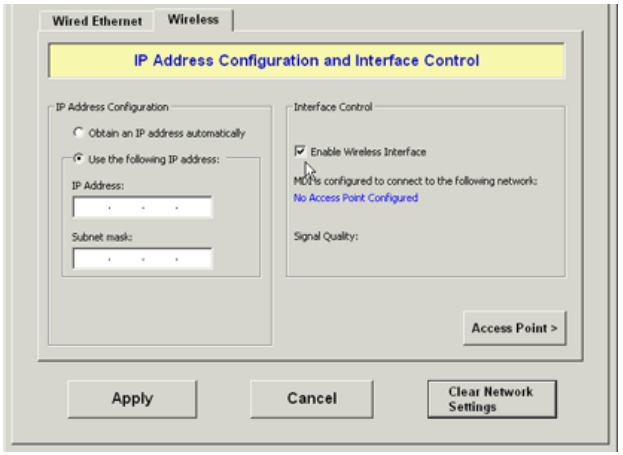
Enable Wireless

The following procedure shows how to configure your MDI for wireless communication in your environment. Before modifying the MDI communications interface, contact your IT Administrator.

Things you will need to know:

- Does your wireless LAN automatically assign IP addresses?
  If not, you will need an **IP Address** and **Subnet Mask** to assign to your MDI.
- Ask your local IT Administrator if your wireless network automatically assigns IP addresses. If not, you will need to obtain an IP Address and Subnet Mask from your IT Administrator to assign to your MDI.
- required network authentication is WPA—Personal, Open, or Shared
- required data encryption is TKIP or WEP (64-bit or 128-bit)
- wireless security password (encryption key)

1. Start the MDI Manager software by clicking on the **MDI_Manager** icon.
2. Plug the USB cable into the PC and MDI.
3. Power on the MDI by plugging in the AC 12-volt adapter.
4. Select and Connect to your MDI in the MDI Manager software **MDI Explorer** tab.
5. Select the **Network Setup** tab.
6. Select the **Wireless** tab.
7. Select the **Enable Wireless Interface** check box in the **Interface Control** box to enable the interface. Once you enable the interface, the IP Address Configuration box and the Apply and Cancel buttons become active.

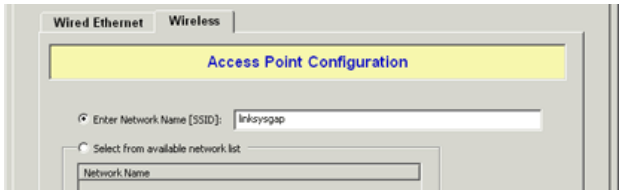


Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

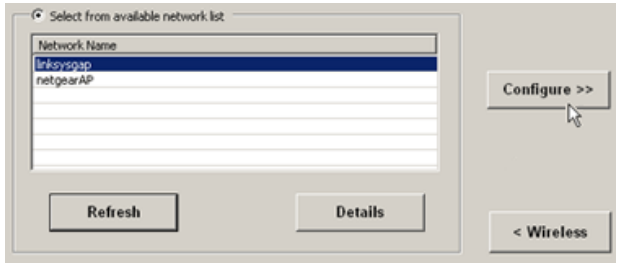
8. Select **Use the following IP address:** then enter the assigned **IP Address** and **Subnet mask.**

   Select **Obtain an IP address** automatically if your LAN automatically (DHCP) assigns **IP addresses.** Otherwise enter the assigned IP Address Static IP and **Subnet mask.**



9. Select **Access Point** to begin wireless access point configuration.

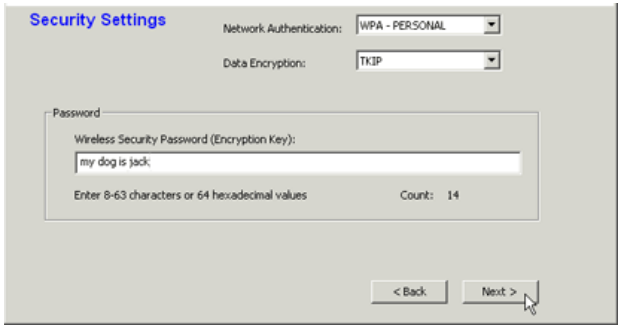
10. The current MDI wireless configuration is shown on the screen to the right. The MDI is out of range or the access point you will use, select the **Enter Network Name [SSID]:** radio button and type the network name.



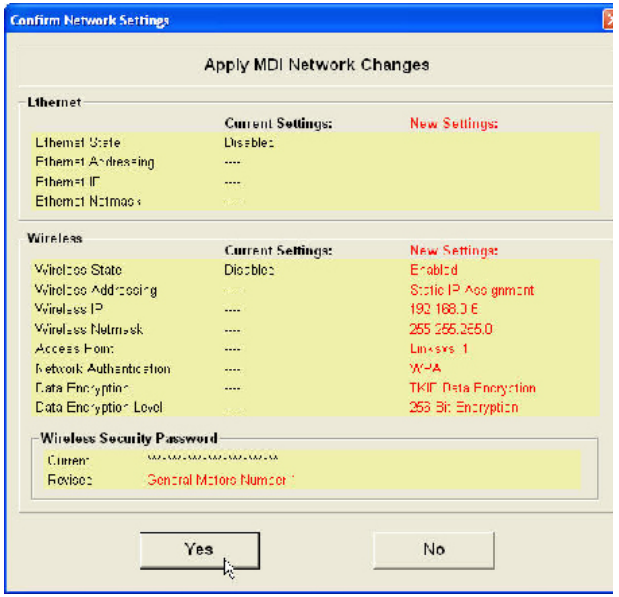
   If the MDI is within range of your wireless access point and broadcasting choose the **Select from available network list** radio button and then select **Refresh** to cause the MDI to search for wireless network signals. The detected networks are displayed in the **Network Name** box.

11. After you have selected the network name select **Configure.**

12. Enter the security settings that are required by your network, then select **Next>.**



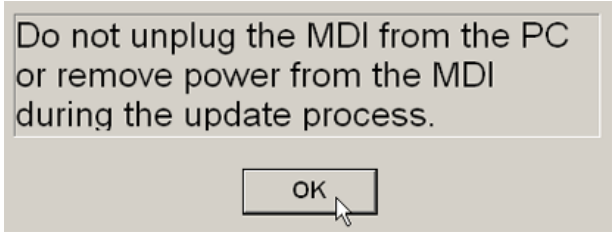
13. Select **Yes** to reconfigure your MDI, or if you want to start over select **No.**



Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

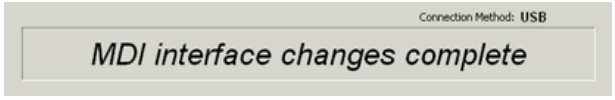
14. Select **OK.**



If you unplug the MDI from the PC or remove power from the MDI during the update process, you will have to recover the MDI. Refer to ***Recover MDI Tester Software.***

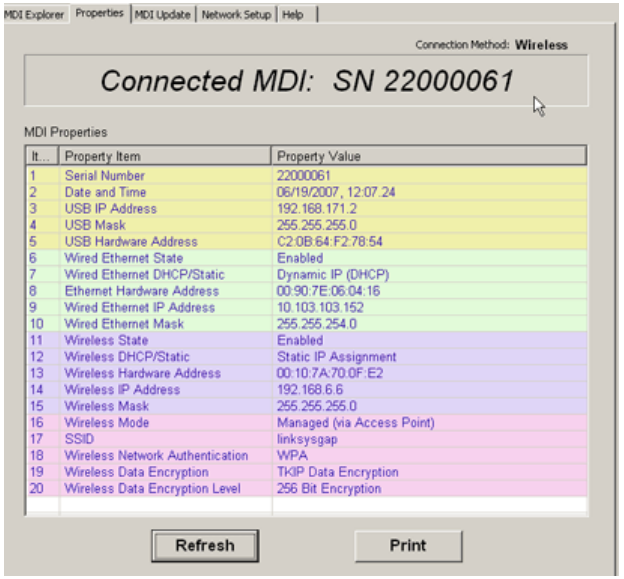
15. MDI **Configuration in Process** will flash during the update process.

16. MDI **interface changes complete** will be displayed briefly when the update process is finished.



17. Choose the **Properties** tab to verify that the MDI is configured correctly.

In the illustration at the right, the USB cable has also been disconnected to verify that the wireless connection is working.



18. Record or print your settings as they are displayed on the **Properties** tab for future reference.

Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

RECOVER MDI TESTER SOFTWARE

As a result of a power failure or a communications error during a software update, the MDI Tester Software may become corrupted. You may see several symptoms such as error messages directing you to go to RECOVERY mode or an inability to connect to a detected MDI.

The error message at the right would generally occur during MDI Tester Software download. If you see either of these messages, perform the Recovery Procedure.

Recovery Procedure

The following procedure will place the MDI in a RECOVER state.

1. Remove power from the MDI. This may require disconnecting the power cord and pressing the Power button. Ensure that all the LEDs are off. If the MDI Power button does not shut off the power after the power cord is removed, remove the batteries. Refer to ***Replacing the Batteries.***

2. Press and hold the Power button down while you apply power to the MDI. When you see all the LEDs light as shown at the right (about 10 seconds), release the Power button. The MDI will start up in a recovery state with only the Power LED lit. Continue with the next step.

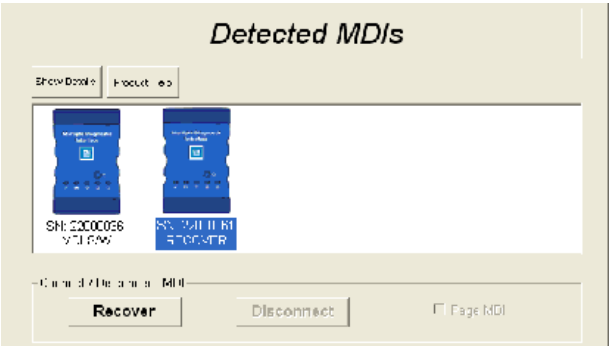
Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

3. Start the MDI Manager software by clicking on the **MDI_Manager** icon.

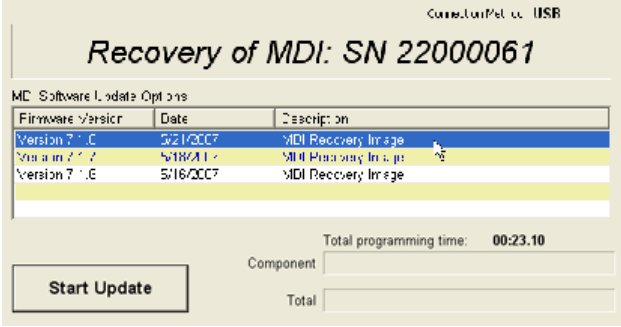
NOTE Your MDI is connected via USB or it will not be recognized.

4. Plug the USB cable into the PC and MDI. When the MDI is detected by the MDI Manager software, it will be labeled as shown at the right.



5. Select the MDI displaying the serial number matching your MDI and click **Recover.** The MDI Manager software switches automatically to the **MDI Update** tab.

6. Select the latest version of the **MDI Recovery Image** and click **Start Update.** Do not unplug the MDI from the PC or remove power from the MDI during the recovery process.



7. When you see the message shown at the right, click OK. The MDI Manager software switches automatically to the MDI Explorer tab and your MDI will appear when it has finished the restart and Power On Self Test (POST).

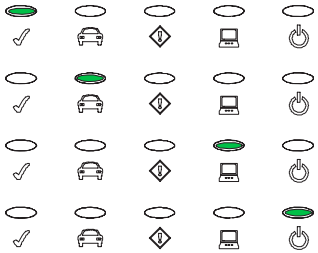
Using the MDI Manager software continued on next page…

Using the MDI Manager software *continued…*

TESTING THE MDI

Power on Self Test

When you first apply power to the MDI, the Power On Self Test (POST) will run. You should observe the following sequence of lights and hear the “BEEP’ indicating that the MDI is working properly.



Quick flash

1st stage

2nd stage

3rd stage, then beep

Connecting The MDI To The Vehicle

The Multiple Diagnostic Interface kit contains the following cable to connect the MDI to the vehicle.

• J1962 16/26 pin Data Link Connector (DLC) cable ***page II-1.***

Refer to the Repair Manual or the electrical wiring diagram for the vehicle you are testing to determine the location and type of Data Link Connector (DLC) installed on the vehicle.

1. Connect the 26-pin end of the DLC cable to the bottom of the MDI, then tighten the screws.
2. Connect the 16-pin end of the DLC cable to the vehicle DLC connector.

Powering The Multiple Diagnostic Interface

The MDI can be powered by the vehicle's 12-volt battery or by the AC 12-volt adapter. The internal AAA batteries provide power only for short intermittent power outages.

AC 12-Volt Adapter

Connect the AC 12-volt adapter to the bottom of the MDI, then plug the power supply into a standard 120 volt / grounded wall outlet.

Vehicle Battery

The MDI is powered directly by the DLC cable when the cable is connected to the vehicle DLC.

Care and Cleaning

After using the Multiple Diagnostic Interface (MDI), a few simple steps will help you leave the vehicle electronic system(s) in the proper state and also ensure that you get the most use out of your diagnostic tools:

1. Before turning the MDI off, exit any PC computer application.
2. Turn the MDI off by pressing the on/off button. The Power LED turns off.
3. Disconnect the MDI's J1962 16/26 Pin DLC cable from the vehicle.
4. Disconnect the USB or ethernet cable from the PC and the MDI.
5. Inspect the cables and connectors for damage and corrosion. Replace faulty components immediately.
6. Store the MDI, cables, and other parts in a secure, dry location.

Cleaning and Storing Your MDI

If the MDI, connectors, or cables become dirty, they may be cleaned by wiping them with a rag lightly coated with a mild detergent or non-abrasive hand soap. Do not immerse the MDI or any of its parts or accessories in water. Avoid using harsh solvents such as petroleum based cleaning agents, Acetone, Benzene, Trichloroethylene, etc. Although the MDI and accessories are water resistant, they are not waterproof; thoroughly dry them prior to storage.

Replacing The Batteries

The MDI contains four AAA batteries. The batteries are not intended to power the MDI. The batteries only provide back-up power for momentary power interruptions like those that can occur during engine cranking. The batteries will supply power to keep the MDI running for about 30 seconds before the MDI automatically shuts down.

NOTE

Know the Law! Dispose of batteries legally!

Batteries are considered hazardous waste under many local laws or regulations and may not be discarded in the municipal waste system. Check with local solid waste officials in your area for recycling options or proper disposal methods. Many local government agencies and businesses run programs that help businesses properly dispose of hazardous wastes.

To replace the batteries:

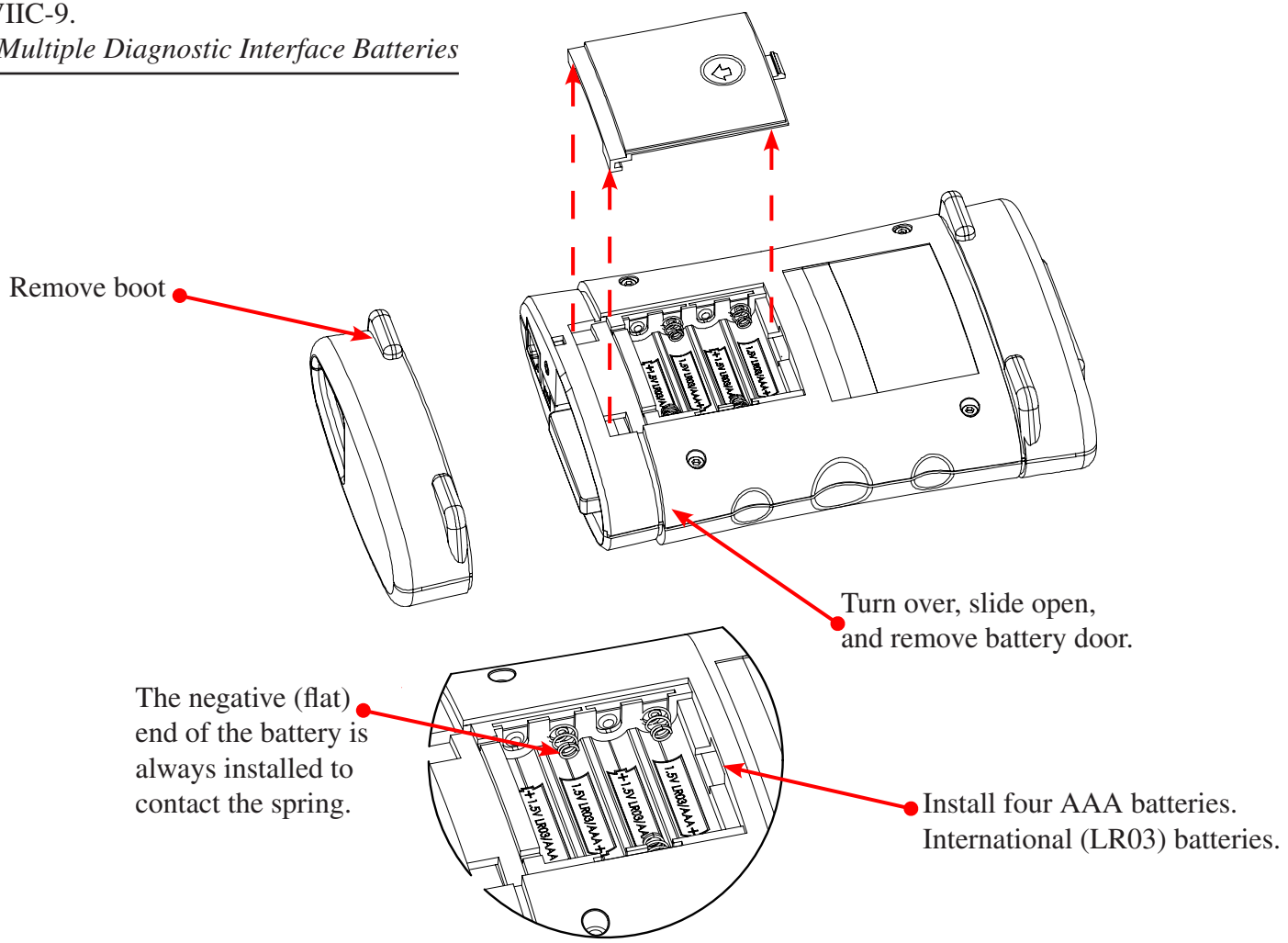
1. As shown in the diagram (Figure VIIC-9), install new batteries with the positive (+) and negative (-) terminals oriented as indicated on the inside of the battery enclosure.
2. Place the cover on the battery case so the tabs at the top of the cover are aligned with the slots in the case, and the slots at the bottom of the cover are aligned with the tabs on the case.
3. Press the arrow on the battery cover while pushing the cover toward the top of the case. The cover should snap into place.

Replacing the batteries continued on next page…

Replacing the batteries *continued…*

To replace the batteries:

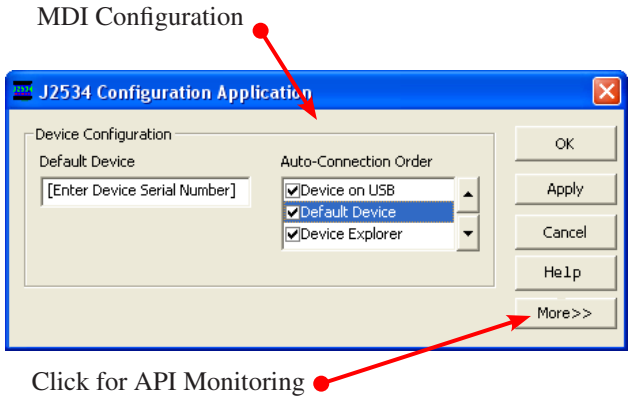
FIGURE VIIC-9.
Install the Multiple Diagnostic Interface Batteries



The J2534 Configuration Application

The Multiple Diagnostic Interface (MDI) is a J2534 device that connects between your computer and the vehicle's J1962 DLC connector for pass-thru programming of the vehicle's ECU's. The J2534 Configuration Application is installed onto your PC at the same time as the MDI Manager software allowing you to control how your TIS 2 Web application will connect to an MDI. In addition, this application provides API Monitoring controls to aid in investigating problems encountered while using any J2534 devices (including the MDI).

To launch the J2534 Configuration Application from SPS, press the "configuration" button on the Diagnostic settings screen.



DEVICE CONFIGURATION

The **Device Configuration** controls allow you to define a default MDI and a connection sequence that your TIS 2 Web application will follow to connect to your MDIs. There are two controls in this area: the **Default Device** control and the **Auto-Connection Order** control.

Default Device control

The **Default Device** text box allows you to type the serial number of the MDI that you want to define as your default device.

The J2534 Configuration Application next page…

The J2534 Configuration Application *continued…*

Auto-Connection Order

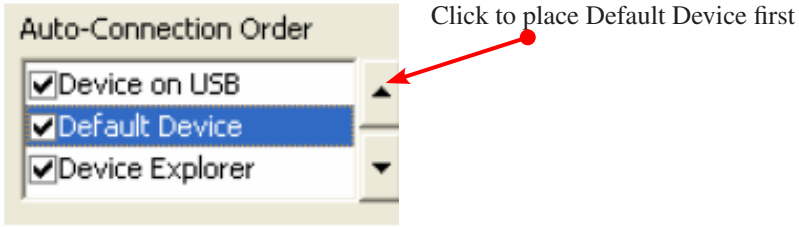
The Auto-Connection Order control allows you to select multiple connection methods.

- Device on USB
- Default Device
- Device Explorer

If the box to the left of the method is checked, then the connection method will be attempted when connecting. If the box is not checked, then the connection method will be skipped. The connection methods are attempted sequentially from top to bottom.

To change the order, select a connection method and then click the up or down arrow to the right of the **Auto-Connection Order** window.

The **Device on USB** connection method will attempt to connect to an MDI via USB, even if that MDI is not the **Default Device.**

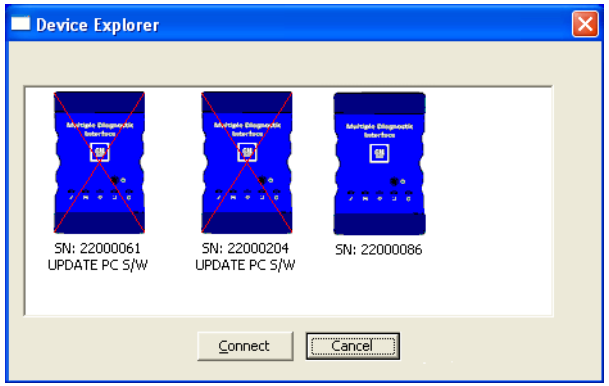


The J2534 Configuration Application next page…

The J2534 Configuration Application *continued…*

The **Default Device** connection method will attempt to connect to the Default Device (MDI) using the first available connections in the following order: USB, wired ethernet, then wireless.

The **Device Explorer** connection method opens the dialog box shown below if MDIs are detected.



MDIs that are not available will have a red X across them and can not be selected. MDIs that are available can be selected is several ways.

- You can right-click an MDI and select from available connections (USB, wired ethernet, or wireless).
- You can select an MDI and press the **Connect** button.
  The Auto-Connection strategy will connect using the first available connections in the following order: USB, wired ethernet, then wireless.
- You can right-click on an MDI and select from available connections.
- You can also right-click on an MDI and set it as the Default Device.

The **Cancel** button will close the dialog box without making a connection.

The J2534 Configuration Application next page…

The J2534 Configuration Application *continued…*

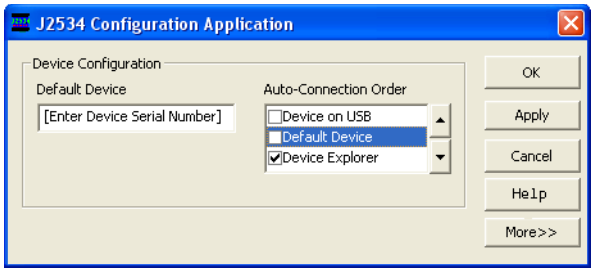
Connecting to an MDI from TIS 2 Web Applications

The Auto-Connection strategy will try to connect using the first method in the Auto-Connection Order. If an MDI is not available using that method, the Auto-Connection strategy will move on to the next method in the Auto-Connection Order. If none of the connection methods find an available MDI, the TIS 2 Web application will display an error message.

Using Multiple MDIs from TIS 2 Web Applications

You can only connect to a single MDI at a time, but you may want to connect to several MDIs in succession.

When you are finished using one MDI, launch the J2534 Configuration Application (you can usually do this from within your TIS 2 Web application).



Verify that the Auto-Connection Order will allow you to select a different MDI; one way to do this is to select only **Device Explorer,** as shown above. Then click **Apply.**

You can now return to your TIS 2 Web application and select any MDI on the **Device Explorer** dialog box.

If You Are Having a Problem

This section is intended to help you get back on track if the MDI appears to be operating abnormally. In addition, the most likely cause for the condition is given as well as other possible causes and recommendations on how to isolate or eliminate the problem. If your problem is not isolated or eliminated by using these instructions, see ***Customer Support Overview.***

NOTE If you have a problem using the MDI, reboot the MDI Manager software and perform the Self Test.

MDI DOES NOT PASS SELF TEST (POST)

Most Likely Cause

- Internal problem in the MDI.

Recommendations

- Connect the MDI to a PC using USB and perform the software recovery procedure. Refer to ***Recover MDI Tester Software.***
- Contact your local Customer Support Center.

MDI ERROR LED LIGHTS AFTER POWER ON

This indicates a problem has been detected during power on.

Recommendations

- Power down the MDI and verify that it has the same problem when you power up again.
- Connect the MDI to a PC using USB and perform the software recovery procedure. Refer to ***Recover MDI Tester Software.***
- Contact your local Customer Support Center.

If You Are Having a Problem continued on next page…

If You Are Having a Problem *continued…*

MDI FAILS TO POWER UP

The MDI should power up as soon as external power is applied. If the MDI does not turn on, first check the wall plug or power cable connections. Try supplying power to the MDI from two different power sources, the vehicle DLC connector and the AC 12-volt Adapter.

Recommendations

- Check that the cables are securely attached to the MDI and the connector pins are clean.
- If connecting to the vehicle DLC connector, try powering from the AC 12-volt Adapter.
- If connecting to the AC 12-volt Adapter, try powering from the vehicle DLC connector
- Verify power at the DLC connector and the AC 12-volt Adapter.

If the MDI still fails to power up, you may have a problem with the MDI. Contact your local Support Center.

MDI TURNS OFF IMMEDIATELY WHEN DISCONNECTED FROM THE VEHICLE

The MDI should stay on for a factory set time (with batteries installed) after it is disconnected from power (vehicle DLC or AC 12-volt Adapter) unless you press the power button.

Recommendations

- Power up the MDI and verify that it has the same problem when power is removed.
- Replace the batteries and make sure they are properly installed.

If the MDI still fails to power down correctly, you may have a problem with the MDI. Contact your local Customer Support Center.

If You Are Having a Problem continued on next page…

If You Are Having a Problem *continued…*

TIS 2 WEB DISPLAYS A MESSAGE THAT THE MDI IS NOT COMMUNICATING WITH THE VEHICLE

- Refer to the TIS 2 WEB documentation for troubleshooting guidance.

TIS 2 WEB DOES NOT RECOGNIZE MY MDI

- Make sure MDI Manager software is installed on the PC and the MDI has the latest software version.
- If the MDI Manager software is running, make sure it is not connected to your MDI .
- Test the connection to your MDI by using the 'Test Connection' functionality of SPS.
- Using the MDI Manager software, make sure that your MDI is displayed on the MDI Explorer tab. Verify that you can successfully connect to your MDI.

a. Make sure that you are attempting to connect to the correct MDI by verifying that the correct serial number for your MDI is displayed in the MDI Explorer tab.

b. Make sure that the MDI is not already connected to another PC.

- Using the J2534 Configuration Application, set the **Auto-Connection Order** to **Device Explorer** only, in order to select your MDI. Refer to ***Using Multiple MDIs from TIS 2 Web Applications.***

MDI MANAGER SOFTWARE ON THE PC CAN NOT COMMUNICATE WITH THE MDI

MDI Manager software must be installed on the PC and the MDI must be powered up before it will communicate using USB. The MDI must also be configured for wired ethernet or wireless before it will communicate using either. The MDI will connect first using USB, if available; if USB is not available, the MDI will connect using wired ethernet; if neither USB nor wired ethernet is available, the MDI will connect using wireless.

If You Are Having a Problem continued on next page…

If You Are Having a Problem *continued…*

Recommendations

- Check that the cables are securely attached to the MDI, the MDI has completed its power up sequence, the connector pins are clean, and the MDI Manager software is running.
- If connecting using USB, check that the MDI USB connection is detected by Windows.

a. Connect the MDI to the PC USB port, then power up the MDI.

b. From the Windows Control Panel, open the Network and Dial-up Connections window.

c. Check for device name ETAS USB Remote NDIS Network Device. If not running, then either the USB driver has not been loaded on the PC or the MDI is not powered and connected to the USB. Check all USB ports on the PC and verify that the MDI is powered on.

- If connecting using wireless ethernet, make sure that wireless communication is enabled and the IP configuration is properly set using the MDI Manager software.

a. Check that the USB cable is not plugged in. USB connection takes precedence over wireless.

b. Check that the MDI is not being used via wired ethernet. Wired ethernet connection takes precedence over wireless.

c. Check that the wireless card is properly seated in the MDI.

d. Contact your IT department and check that your PC is detecting the wireless access point and the correct security settings have been configured for the MDI.

- If connecting using wired ethernet, make sure that wired ethernet communication is enabled and configured using the MDI Manager software.

a. Check that the USB cable is not plugged in. USB connection takes precedence over wired ethernet.

b. Check that the MDI device detects wired ethernet activity by viewing the lights blinking on the wired ethernet port of the MDI.

c. Contact your IT department and check that the MDI and the PC are on the same subnet.

- Contact your IT department for the correct GM MDI settings.
- Contact your local Customer Support Center.

Glossary and Abbreviations

TERM	DEFINITION
AC	Alternating Current
CURSOR	Highlighted text or data on a display screen Same as Marker.
dc	Direct Current
DLC	Data Link Connector
ECM	Engine Control Module
ECU	Electronic Control Unit
Hz	Hertz, a unit of measure for frequency.
I/P	Internet Protocol
LAN	Local Area Network
LED	Light Emitting Diode
MARKER	Highlighted text or data on a display screen. Same as Cursor.
MDI	Multiple Diagnostic Interface
MDI Manager Software	PC software that configures, test, and update the MDI
PC	Personal Computer running the Microsoft Windows 2000 or XP Pro operating system.

Glossary and Abbreviations continued on next page…

Glossary & Abbreviations *continued...*

TERM	DEFINITION
RS232	Same as RS232C
RS232C	The most standard serial communication interface used in the computer industry.
Subnet	Grouping of IP addresses
USB	Universal Serial Bus, a common standard for interfacing with a PC.
Vdc	Volts dc
WLAN	Wireless Local Area Network. See LAN.

END OF DOCUMENT

Figure VIIC-10.
Vehicle to terminal pass-thru connection