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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.

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I. Introduction

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.



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.

I. Introduction

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

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 Figure IV-1). The serial number is used to identify the MDI in the software.

FIGURE IV-1.



Customer Support Overview continued on next page...

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.

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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 IV-2 for the location of the connectors and indicators (LEDs) on the MDI.

FIGURE IV-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 IV-3.



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). Refer to *The Service Programming System (SPS)* guide located in this manual.

The Service Programming System (SPS)

The Service Programming System (SPS) updates the flash calibration files that are stored in a vehicle onboard controller (e.g. PCM, ABS, VTD). The calibration file custom-tailors a module to a certain vehicle. The calibration file contains data such as spark curves and fuel control. When troubleshooting a driveability condition, diagnosis may call for reprogramming the controller with newer calibration information to correct a customer concern. The Multiple Diagnostic Interface (MDI) is your connection between your computer and the vehicle's J1962 DLC connector for pass-thru programming of the vehicle's ECU's.

The ECM/PCM controller can generally use four types of serial communications:

- UART (Universal Asynchronous Receive and Transmit)
- Class 2
- Keyword
- GM LAN

Selecting the Correct Calibration

NOTICE

Prior to performing SPS, it is important to heed the following precautions:

- Using an outdated version could damage vehicle modules. The Multiple Diagnostic Interface and the terminal must have the latest software.
- Make sure the vehicle battery is fully charged. Battery voltage for SPS should be between 12 and 14 volts. However, a battery charger must not be connected to the vehicle when using the MDI.
- Make sure the cable connections are secure. A disconnected cable MAY cause controller failure.
- In using a laptop computer/other display device (PDA etc.) for pass-thru programming, ensure that the power supply is properly connected. If powered by AC and the power cord becomes disconnected, it could interrupt programming and cause damage to the control module. If the laptop is operating from its internal power source (batteries), then make sure it is adequately charged to complete the SPS process.

NOTICE

ECU to be programmed must be installed in the vehicle before beginning this process. Make sure the vehicle battery is fully charged.

Performing Pass-Thru Programming

Pass-thru programming requires that the MDI remain connected to the terminal and to the vehicle throughout the programming process. The vehicle must be in close proximity to the terminal while using pass-thru programming (see Figure IV-4).

IMPORTANT:

TIS 2 Web only supports Pass-Thru Programming with the MDI.

Pass-Thru Programming Procedure

- 1. Launch TIS 2 Web.
- 2. From the TIS 2 Web main screen (Figure IV-5), select the Service Programming System icon.
- 3. Connect MDI to vehicle (Figure IV-4) and Display device (e.g. PDA, PC screen) (Figure IV-6):
 - Power On MDI using ON/OFF button (Figure IV-2).
 - Key on, battery fully charged.
 - Select "Start SPS" (Figure IV-7).
 - SPS software version will appear on the screen. (Figure IV-8). If hardware screen does not appear, check software connections. This process could take some time depending upon you internet connection.
 - Select Diagnostic Tool (Figure IV-9) J2534 GM MDI.
 - Select Programming Process (Figure IV-10).
- Select "Next" to "Sales Make" screen (Figure IV-11). Complete all terminal directed data until "Next" is highlighted (vehicle data will vary). Select "Next." You may or may not get a pop-up screen (Figure IV-12). Make sure correct VIN is displayed. If VIN is incorrect or missing enter the correct VIN (Figure IV-13).

Performing Pass-Thru Programming continued...

IMPORTANT

In order to reduce the potential for signal loss. The MDI should be configured for the most stable communication option at your location. You can choose from USB, Ethernet, or Wireless Ethernet.

- 5. At the "Supported Controllers" screen (Figure IV-14):
 - Select the appropriate control module under "Select Controller," e.g. PCM / VCM Control Module etc.
 - Select the appropriate programming type (Figure IV-15) (Normal, VCI).
 - Select Next. For VCI you will need to contact your local Customer Support Center

IMPORTANT

When selecting the vehicle configuration index (VCI) programming type, a valid VCI number for the vehicle must be entered. This number may be obtained from the Techline Customer Support Center.

The correct tire size and axle ratio must be highlighted and a valid VCI number entered if you select Reconfigure for your programming type.

Select **Cancel** if you receive a message stating that the calibration selected is already the current calibration in the control module and reprogramming with the same download is not recommended.

Pass-Thru Programming Procedure continued...

- 6. During communication a "validate /select vehicle data" screen will appear (Figure IV-16). You may or may not get a popup screen (Figure IV-12).
- 7. At the Calibration Selection screen:
 - Select the appropriate calibration(s) (Figure IV-17).
 - Make sure all folder tabs have a green check mark.
 - Select Next.
- 8. At the Summary screen: (Figure IV-18)
 - Verify current calibration(s) with selected calibration(s).
 - Select Next.
 - At the Summary Screen, current calibration is displayed along with the new calibrations available for the selected vehicle. Diagnostic enhancements are listed for various DTC's. Multiple screens may be available. Calibration data may be printed from these screens.
 - The Transfer Data screen appears as reprogramming begins, finishing when the percentage bar reaches 100 percent. Time may vary depending upon calibration. (Figure IV-19). Estimated remaining programming time will appear on the screen.

Pass-Thru Programming Procedure continued...

IMPORTANT

Some vehicles will require that Idle Learn, TP Learn, Theft Deterrent Relearn, or Crankshaft Variation Learn procedures be performed after programming. Consult the appropriate service information for these procedures.

- 9. The Program Controller "Programming Complete" screen appears (Figure IV-20).
- 10. Select "clear DTC's" to erase history data. The program will return to the TIS 2 Web main screen. Be sure to verify successful reprogramming. Refer to Verifying Reprogramming on (page III-7).
 - A warranty claim code will appear if appear if applicable.
 - A calibration module replacement must be changed on the vehicle for the claim code to appear. These may be "Post Programming " and or controller specific instructions after programming is completed.
 - At the summary screen, current calibration is displayed along with the new calibrations available for the selected vehicle. Diagnostic enhancements are listed for various DTC's. Multiple screens may be available. Calibration data may be printed from these screens.
- 11. Turn off the MDI by pressing the ON/OFF button. Refer to (Figure IV-2). Select Cancel.
- 12. Disconnect the MDI from the vehicle (Figure IV-4) for disconnect.

Verifying Reprogramming

After any kind of control module programming, verify that programming was successful:

Turn the ignition off, wait at least 30 seconds, then start the vehicle to confirm that reprogramming was successful. If the vehicle does not repeat the SPS procedure.

END OF TEXT PORTION OF DOCUMENT. SCREENSHOTS AND FIGURES ARE IN THE NEXT SECTION.

Figure IV-4. Vehicle to terminal pass-thru connection



FIGURE IV-5. TIS 2 Web main screen





Service and Parts Operations



Service- and Diagnostic-Information (SI)



Calibration Information (SPS Info)



Techline Print (TL Print)



Labour Times (LT)



Security Access (Security)



Software Download (SWDL)



Snapshot (Snap)



Service Programming System (SPS)



Tech2 View (T2 View)

FIGURE IV-6. Connect MDI (J2534) device to vehicle and PC



FIGURE IV-7. Start SPS



BEFORE YOU START!

The right Java software must be installed on your Techline PC for TIS-Online to work. Refer to the online help to download SPS is going through several steps that might be time consuming depending on your connection speed. For further details please refer to the online help.

Please be patient if connected via slow modem lines ...

The TIS software application does not support the use of the browser's Forward and Back buttons. Errors will occur. Please only use the buttons that are displayed on the application screens and not on the toolbar.

FIGURE IV-8. SPS Software Version

Home SI LT SWDL SPS SPS Info Security Snap T2	View TL Print	a 🖉 🖉 🖉 🦉
Cadillac (GME)		Service and Parts Operations
BEFORE YOU STAR	T!	
The right Java software must be installed on your Techline PC for to download SPS is going through several steps that might be time consuming further details please refer to the online help.	r TIS-Online to work. Refer to the online help g depending on your connection speed. For	Start SPS
Please be patient if connected via slow modem lines The TIS software application does not support the use of the bro the application screens and not on the toolbar.	SPS V. 1.0.23 GM SPO	n y use the buttons that are displayed on

FIGURE IV-9. "Select Diagnostic Tool" screen

Service Programming System		
	Select Diagnostic Tool and Programming Process	
	Select Diagnostic Tool	
	J2534 GM MDI J2534 Tech2 Tech2 Legacy Pass-Thru Tech2 Remote Test Driver	
	Select Programming Process	
Print Settings		Next > Cancel

FIGURE IV-10. Select Programming Process

Service Programming System		
	Select Diagnostic Tool and Programming Process	
	Select Diagnostic Tool	
	J2534 GM MDI	
	J2534 Tech2	
	Tech2 Legacy Pass-Thru	
	Tech2 Remote	
To the second	Test Driver	
and		
	Select Programming Process	
	Reprogram ECU	
	Replace and Program ECU	
Print Settings		Next > Cancel

FIGURE IV-11. Salesmake

ervice Programming	System			_
alidate/Select Vehic	e Data			
alesmake				
	Buick			
	Buick (Daewoo)			
	Cadillac			
	Cadillac (GME)			
	Chevrolet			
	Chevrolet (Daewoo)			
	Chevrolet (Holden Thailand)			
	Chevrolet (Holden)			
int Reset		< Back	Next >	Can

FIGURE IV-13. Validate Vehicle Identification Number (VIN)

Service Programming System		_ 🗆 ×
	Validate Vehicle Identification Number(VIN)	
	Make sure that the correct VIN is displayed. If the VIN is incorrect or missing, enter the VIN.	
ИСЭ УГ СЕКТАКА. МОТОВА СОВР СИМИ САМИТИКА. МОТОВА СОВР СИМИ САМИТИКА. ИСТОВАТИКА ТИМИ ИСТОВАТИИ. ТИМИ ИСТОВАТИИ. ЧЕСКОВАТИИС ВООТОВАТИИ. ЧЕСКОВАТИИСЯ ВООТОВАТИИ. МОТОВАТИИСЯ ВООТОВАТИИ. МОТОВАТИИСЯ ВООТОВАТИИ. 16/MDX03E6XD124678 ТРРЕ: М.Р.И.	VIN 1G2ZF55B264100040	•
MODEL: UMIS UMPD THE SIZE SPEED ATG ALM COLD THE PRESSURE PAT P21502615 S 1158J 24469425Pap RA P21502615 S 1058J 24469425Pap SPA T12502815 M 10544T 42569A86P30		
Print ECU Data	< Back	Next > Cancel

FIGURE IV-14. Supported Controller

Service Programming System		Supported Controllers	_	<u>_0×</u>
	Select Cont EBCM PCM/VCM V.T.D. TCM RSE ONSA IPC Select Prog	Supported Controllers roller Electronic Brake Control Module Powertrain/Vehicle Control Module Vehicle Theft Deterrent Learn Transmission Control Module Remote Start Enable/Disable TIS2WEB Pass-Thru OnStar Activation (Replaced/Upgraded units only) Instrument Panel (Backlight dimming fix ONLY) M4387: Communicating with the device, please wait. rammin		
M4382: Connecting to the Ser	ver		VIN:	1G2ZF55B264100040

FIGURE IV-15 Select Programming Mode

Service Programming System					_ 🗆 ×
		Supported Controllers			
	Select Cont	roller			
	EBCM	Electronic Brake Control Module			
	PCM/VCM	Powertrain/Vehicle Control Module			
	V.T.D.	Vehicle Theft Deterrent Learn			
The second second	TCM	Transmission Control Module			
	RSE	Remote Start Enable/Disable			
	ONSA	TIS2WEB Pass-Thru OnStar Activation (Replaced/Upgraded units only)			
	IPC	Instrument Panel (Backlight dimming fix ONLY)			
	Colort Drow	somming Trans			
	Select Prog	ramming type			
	Normal				
	VCI				
			VIN:	1G2ZF55B26	4100040
Print ECU Data			< Back	Next >	Cancel

FIGURE I IV-12. Programming Mode Message screen

Service Programming System	n	
Validate/Select Vehicle Data		
Salesmake	Pontiac	▼
Model Year	2006	•
Vehicle Type	Passenger Car	•
Car Line	G6	•
M4392: Connecting to the	M4387: Communicating with the device, please wait.	
M4382: Connecting to the	Server	
Print Reset		< Back Next > Cancel

FIGURE IV-16. Vehicle Data Selection screen

Service Programming Syste	em	
) (alidate/Calent) (abiala Dat		
Valiuate/Select Vehicle Dat	d	
CID Sustam	Front cide, and head surfain cir have	
Sin System		¥
	Front and side air bags	
	Front, side, and head curtain air bags	
		7 (400407004
	VIN: 1G6DP5	79180107231
Print	Ne	w Cancel

FIGURE IV-17. Calibration Screen

ervice Programmir	ng System	
	Calibration	Selection
Powertrain/Veh	icle Control Module	
Calibration	 Main Operating System System Fuel system Speedometer Engine diagnostic 	
12500021 Euro	Lovetom	
- 12568831 Fue	i systemi	Current Calibration
	885	12600033
· · · · · · · · · · · · · · · · · · ·	12605679	Bulletins
	Ø <u>12607594</u>	
		Index SELECTED NOSELECTION UNSELECTED
History		
Part Number		Description
12607594 1	New calibration with diagnostic enhancements for DTCs P168	2 and P1516 and fix for stall immediately after remote start.
12605679 F	Part number change only, does not address any service issue:	s.
12604741	New calibration for start of production	
		VIN: 1G2ZF55B264100040
rint ECII Dat	ta	< Back Next > Cano

FIGURE IV-18. Summary Screen

Controller Id PCM/VCM 1 2 3	Current# 12600029 12600034 12600033	Selected # 12607442 12607596	Summ Main Operating System. Replaces 1 000082FC), 12602118 (CVN 00000 (CVN 00009D58), 12604676 (CVN New calibration with diagnostic enh remote start.	Description Description 12600942 (CVN 00003279), 12601392 (0 09A9), 12602748 (CVN 0000C85C), 1260 0000775F), 12605331 (CVN 0000228D) nancements for DTCs P1682 and P1516	CVN 00003070), 12601719 (CVN 03381 (CVN 000009EF), 12604175 and fix for stall immediately after
Controller Id CCM/VCM 1 2 3	Current# 12600029 12600034 12600033	Selected # 12607442 12607596	Main Operating System. Replaces 1 000082FC), 12602118 (CVN 00000 (CVN 00009D58), 12604676 (CVN New calibration with diagnostic enh remote start.	Description 12600942 (CVN 00003279), 12601392 (0 09A9), 12602748 (CVN 0000C85C), 1260 0000775F), 12605331 (CVN 0000228D) nancements for DTCs P1682 and P1516	CVN 00003070), 12601719 (CVN 13381 (CVN 000009EF), 12604175 and fix for stall immediately after
2 2 Scm/VCM	12600029 12600034 12600033	12607442 12607596	Main Operating System. Replaces 1 000082FC), 12602118 (CVN 00000 (CVN 00009D58), 12604676 (CVN New calibration with diagnostic enh remote start.	12600942 (CVN 00003279), 12601392 (()9A9), 12602748 (CVN 0000C85C), 1260 0000775F), 12605331 (CVN 0000228D) nancements for DTCs P1682 and P1516	CVN 00003070), 12601719 (CVN 13381 (CVN 000009EF), 12604175 and fix for stall immediately after
2 3	12600034 12600033	12607596	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
3	12600033				
		12607594	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
4	12600035	12607597	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
5	12600032	12607593	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
6	12600030	12607592	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
7	12600036	12607443	Slave Operating System. Replaces 0000933B), 12584175 (CVN 00000	12600036 (CVN 0000C34F), 12599605 ICBF)	(CVN 00009A10), 12598373 (CVN
8	12600031	12607595	New calibration with diagnostic enh remote start.	nancements for DTCs P1682 and P1516	and fix for stall immediately after
ehicle Data					
		Attribute		Valu	e

FIGURE IV-19. Transfer Data

Service Programming System					_ 🗆 ×
		Transfer Data			
	1. Download from Server 2. Load to ECU Download from Server				
	Server Download Status	Estimated time remaining			
	Download completed				
	0%	50%			
		finished			
	Load ECU				
	Load ECU Status	Estimated time remaining			
	Reprogramming	00:13:15			
	0%	50%			
		658456 Bytes reprogrammed (of 2061952)			
M4382: Connecting to the	Server		VIN:	1G2ZF55B264	100040
Print			< Back	Next >	Cancel

FIGURE IV-20. Programming Complete

Service Programming System		- 🗆 ×
J2534 Pass Thru: Final Instructions		
J2	2534 Pass Thru: Final Instructions Programming Complete. Warranty Claim Code: 11885 Record this code on the warranty repair order (if applicable). Post Programming Instructions: Follow the Controller Specific Instructions below. If there are no Controller Specific Instructions, turn ignition off for 30 seconds to reset the controller	
	Controller Specific Instructions: Clearing DTCs will erase stored history data from all controllers, and will reset the PCM I/M flags. Crankshaft Position Variation Relearn Procedure using Special Function on TECH2 may be needed after programming. Refer to Service Manual DTC P1336 /P0315 (System Variation Not Learned)	040
Print	New	Cancel