

DSS-5000

Battery Diagnostic Service System

USER GUIDE



FOR TESTING 12 VOLT AUTOMOTIVE BATTERIES AND 12 VOLT CHARGING SYSTEMS



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CHAPTER 1

INTRODUCTION

PERSONAL PRECAUTIONS




Inspect the battery for damage and check the electrolyte level. If the electrolyte level is too low, replenish it and fully charge the battery. Always use the necessary safety precautions when working with batteries to prevent severe injury or death. Follow all manufacturers' instructions and BCI (Battery Council International) safety recommendations, which include the following precautions:

- Battery acid is highly corrosive. If acid enters your eyes, immediately flush them thoroughly with cold running water for at least 15 minutes and seek medical attention. If battery acid gets on your skin or clothing, wash immediately with a mixture of water and baking soda.
- Always wear proper safety glasses or face shield when working with or around batteries.
- Keep hair, hands, and clothing as well as the analyzer cords and cables away from moving engine parts.
- Remove any jewelry or watches before you start servicing the battery.
- Use caution when working with metallic tools to prevent sparks or short circuits.
- Never lean over a battery when testing, charging, or jump starting.

DESCRIPTION

The analyzer uses function-specific applications accessed through a series of menus and icons to guide users through the battery testing process for consistent testing implementation and accuracy. These are accessed using the Tablet Controller's touch screen display. Test results can be displayed, on the tablet, full-color printed, or wirelessly emailed.

SYMBOLS CONVENTIONS

Symbol	Description
	The safety symbol indicates instructions for avoiding hazardous conditions and personal injury.
	The safety symbol with the words CAUTION, WARNING or DANGER indicates instructions for avoiding hazardous conditions and personal injury.
	The wrench symbol indicates procedural notes and helpful information.

**DANGER**

Risk of explosive gases.
Never smoke or allow a spark or flame in the vicinity of a battery.
Batteries can produce a highly explosive mix of hydrogen gas and oxygen, even when the battery is not in operation. Always work in a well-ventilated area.

**WARNING**

Wash hands after handling.
Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

CHAPTER 1

INTRODUCTION

DIAGNOSTIC DEVICE



FRONT VIEW



- ① **PRINTER (OPTIONAL FEATURE)**
- ② **DIAGNOSTIC DEVICE CONNECTION:** For when the Tablet Controller is docked with the Diagnostic Device.

TABLET CONTROLLER



FRONT VIEW



BACK VIEW

- ① **TOUCH SCREEN:** Primary user interface.
- ② **CAMERA:** For VIN scanning and identification
- ③ **DIAGNOSTIC DEVICE CONNECTION:** For when the Tablet Controller is docked with the Diagnostic Device.
- ④ **CHARGER PORT:** Plug in point for the Diagnostic Device charger.
- ⑤ **POWER BUTTON:** For turning the Tablet Controller on and off independent of the Diagnostic Device.
- ⑥ **USB PORT**

CHAPTER 1

INTRODUCTION

TEST PREPARATION

INSPECTING THE BATTERY

Before starting the test visually inspect the battery for:

- Cracked, buckled, or leaking case. If you see any of these defects, replace the battery.
- Corroded, loose, or damaged cables and connections. Repair or replace them as needed.
- Corrosion on the battery terminals, and dirt or acid on the case top. Clean the case and terminals using a wire brush and a mixture of water and baking soda.
- Low electrolyte level. If the electrolyte level is too low, add distilled water to fill up to ½ above the top of the plates and fully charge the battery. Do not overfill.
- Corroded or loose battery tray and hold-down fixture. Tighten or replace as needed.

TESTING OUT-OF-VEHICLE

The preferred battery test location is in the vehicle. However, if you plan to test out of the vehicle:

- Always disconnect the negative cable from the battery first and reconnect it last.
- Always use a carry tool or strap to lift and transport the battery.

TESTING IN-VEHICLE

The preferred test position is at the battery posts. If you must test at a remote-post location, it should have both a positive and negative post. Otherwise, you must remove the battery and perform an out-of-vehicle test.

At the start of the test, make sure all vehicle accessory loads are off, the key is not in the ignition, and the doors are closed.

CONNECTING TO A BATTERY

Connect the clamps to the tester: the red clamp to the positive (+) terminal and the black clamp to the negative (–) terminal.

If you connect the clamps in the wrong polarity (positive to negative or negative to positive), the tester displays CLAMPS REVERSED! Reconnect the clamps.

To make sure both sides of the clamps are gripping the terminals, rock the each clamp back and forth. A poor connection will prevent testing, and the tester will display the message CHECK CONNECTION. If the message reappears after you have correctly reconnected the clamps, clean the terminals and reconnect.

CONNECTING AN ACCESSORY CABLE

If you are using an accessory cable, plug it as you would a phone jack into the accessories port on top of the tester. It locks automatically into the port. To remove it after testing, press the lever and pull the connector out.

SETTING USER PREFERENCES

Before starting your test you may want to customize the use of your analyzer by setting preferences in the Settings (⚙️) Menu. The Settings Menu is described in Chapter 9.

INITIAL POWER UP

1. Upon initial power-up, the Language Settings screen is displayed. Tap **Next** to continue.

SYSTEM LANGUAGE	Select the default standard language for the analyzer to on the Tablet Controller
TEST RESULT LANGUAGE	Select the default language for the analyzer to use for all tests and results displayed on the Tablet Controller.
EMAIL LANGUAGE	Select the default standard language for the analyzer to use for all tests and results sent via email.
PRINT LANGUAGE	Select the default standard language for the analyzer to use for all tests and results printed using a networked printer.

2. A Consent to collect data screen is displayed. Tap the Consent check box and then tap **Next** to continue.
3. Using the on-screen keyboard, enter the new username **ADMIN**. Do not enter a password. Tap **Next** to continue.

IMPORTANT: By default, the first user created is assigned Administrator rights. Tap Add User to add additional users. See Chapter 10: Settings to change these defaults.

4. The Date/Time Settings are displayed. Tap **Next** to continue after making any adjustments.

SELECT TIME FORMAT:	12-hour or 24-hour format
SELECT DATE FORMAT:	DD/MM/YYYY, MM/DD/YYYY, or YYYY/MM/DD
SELECT TIME ZONE:	Time zone offset from Greenwich Mean Time
SET DATE:	Set the current date
SET TIME:	Set the current time in the selected time zone



WARNING

FAILURE TO PROPERLY INSTALL LEAD TERMINAL ADAPTERS, OR USING ADAPTERS THAT ARE DIRTY OR WORN, MAY CAUSE FALSE TEST RESULTS.

When testing side-post or Group 31 batteries, always use lead terminal adapters provided with the tester—do not test at the battery’s steel bolts. To avoid damage, never use a wrench to tighten the adapters more than ¼ turn.



CAUTION

Do not connect the tester to a voltage source greater than 30 Vdc.

CHAPTER 1

INTRODUCTION

5. The Test Settings are displayed. Tap **Next** to continue after making any adjustments.

DEFAULT BATTERY RATING	Default: EN (others can be selected)
DEFAULT TEMPERATURE UNITS	Default: Celsius (Fahrenheit can be selected)
DECIMAL SEPARATOR	Select decimal point or comma

6. A list of devices connected to the Tablet Controller is displayed. To add a device, tap the plus (+) sign and follow the on-screen instructions. To unlink from a device, tap the displayed serial number to select it. Tap the trash can icon (3) to delete it.

NOTE: A passkey number is automatically generated once the Bluetooth pairing has been established.

Tap the check box to require an Amp Clamp when performing a System Test.

7. A listing of detected Configured WiFi networks is displayed.

TO SELECT A NETWORK: FOR INITIAL SETUP, NO NETWORKS WILL BE DISPLAYED HERE YET.

TO ADD A NETWORK: TAP THE PLUS (+) SIGN, THEN SELECT FROM ONE OF THE DISPLAYED DETECTED NETWORKS.

To manually add a network, tap the plus (+) sign again. Follow the on-screen instructions to select the Network SSID, Security, and IP Settings. Tap Next when finished.

Use the onscreen keypad to manually enter the Network SSID, security type, and IP settings. If necessary, enter the WiFi network password. Tap Next when finished.

A confirmation screen is displayed when the analyzer has successfully connected to the WiFi network.

TO DELETE A NETWORK: TAP A DISPLAYED NETWORK TO SELECT IT. TAP TRASH CAN ICON (3) TO DELETE IT.


8. The BMIS (Battery Management Information System) Account screen is displayed. Tap **NO** to skip this step.

Optionally tap **YES** to connect the analyzer to an existing BMIS account. Enter a BMIS User Name and Password

for the analyzer to use when transmitting test data to the BMIS database.

9. The Email Address Book screen (Admin Only) is displayed.

TO ADD AN EMAIL ADDRESS: TAP THE PLUS (+) SIGN, THEN USE THE DISPLAYED KEYBOARD TO ADD THE ADDRESS.

TO EDIT AN EMAIL ADDRESS: TAP THE PENCIL  ICON, THEN USE THE DISPLAYED KEYBOARD TO EDIT THE ADDRESS.

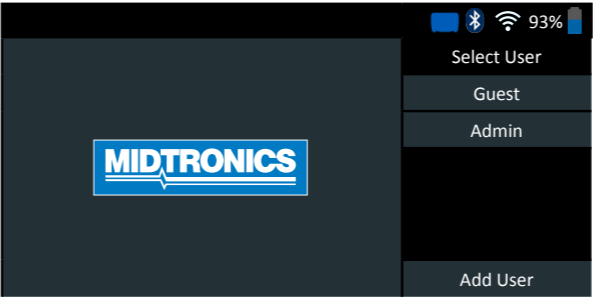
TO DELETE AN EMAIL ADDRESS: TAP A DISPLAYED EMAIL ADDRESS TO SELECT IT. TAP TRASH CAN ICON (3) TO DELETE IT.

TO USE THE DEFAULT EMAIL SERVER SETTINGS: TAP THE GEAR  ICON TO USE THE DEFAULT.

10. The Shop Information screen (Admin Only) is displayed. Use the onscreen keypad to enter the store name, address, and phone number. Tap **NEXT** to continue.

Store Name	<input type="text" value="Please enter"/>
Street Address	<input type="text" value="Please enter"/>
Street Address 2	<input type="text" value="Please enter"/>
City	<input type="text" value="Please enter"/>
State	<input type="text" value="Please enter"/>
Zipcode	<input type="text" value="Please enter"/>
Phone #	<input type="text" value="Please enter"/>

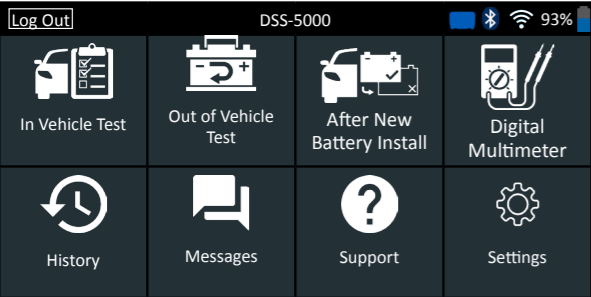
11. The login screen is displayed.



CHAPTER 1

INTRODUCTION

MAIN MENU



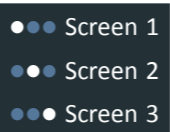
1 Menu Bar

Log Out	Log out current user		WiFi signal strength
	Diagnostic device internal battery level	93%	Tablet controller internal battery level
	Bluetooth connectivity status		Tablet controller internal battery status

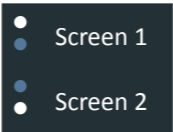
2 Main Menu Selection Area

ADDITIONAL SCREENS

The dots at the bottom or side of a menu or results screen indicate additional screens are available. Use your finger to swipe horizontally left, right, up or down across the tablet screen to view all of the results.



Swipe
Horizontally



Swipe
Vertically

MAIN MENU ICONS

ICON	DESCRIPTION
 In Vehicle Test	Perform a battery test on a 12 V battery in the vehicle.
 Out of Vehicle Test	Perform a battery test on a 12 V battery outside the vehicle.
 After New Battery Install	Perform a battery test on a new 12V battery in the vehicle.
 Digital Multimeter	Measure the voltage and current (AC and DC) — voltage measurement range: 0–60 V DC; 0–24 V AC; current measurement range: 0–700 A (AC and DC). Additional functions are described in the user manual.
 History	Access all previous battery tests, with the option to send them by email.
 Messages	Receive notifications about updates, email delivery, Wi-Fi connections etc.
 Support	Access the user manual.
 Settings	Access the tablet configuration.

CHAPTER 2:

IN VEHICLE TEST



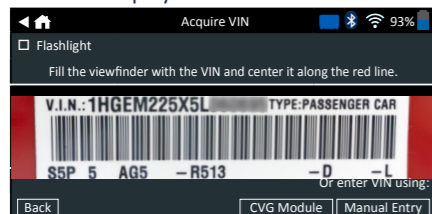
Use In Vehicle Test to perform Battery Tests on in-vehicle batteries using test parameters determined by the VIN of the vehicle being tested. A full System Test using an optional Amp Clamp is available as well.

NOTE: An In Vehicle Test test will always associate the in-vehicle battery with the VIN of the vehicle in which it is installed.

At any time during the test tap to return to the previous screen or to return to the Main Menu.

BATTERY TEST

1. Connect the Diagnostic Device test clamps to the battery.
2. At the Main Menu tap **IN VEHICLE TEST**. The Acquire VIN screen is displayed.



3. Use the built-in Tablet Controller camera to scan the VIN bar code, usually located on the driver's side door frame. Or: enter the number plate or search library by entering the vehicle year, vehicle make and model.

CVG MODULE: The test begins immediately when this option is selected. Skip to Step 5.

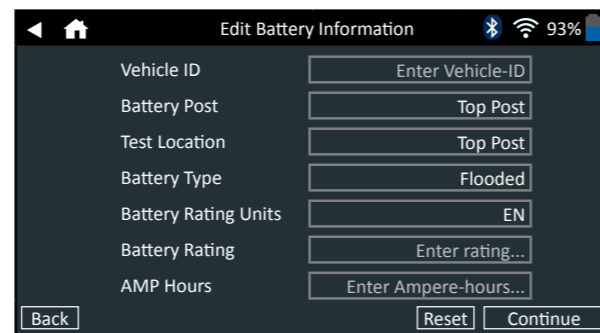
MANUAL ENTRY: Use the on-screen keypad to manually type the 17-digit VIN and tap **NEXT**.

1	2	3	4	5	6	7	8	9	0
W	E	R	T	Y	U	P			
A	S	D	F	G	H	J	K	L	
Z	X	C	V	B	N	M			
Back									
Next									

The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

4. An Edit Battery Information screen is displayed showing vehicle and battery information based on the VIN.

If the displayed information is correct, tap **NEXT** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.



See Appendix A at the back of this manual for parameter descriptions.

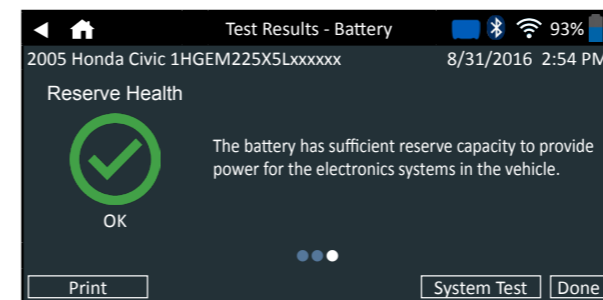
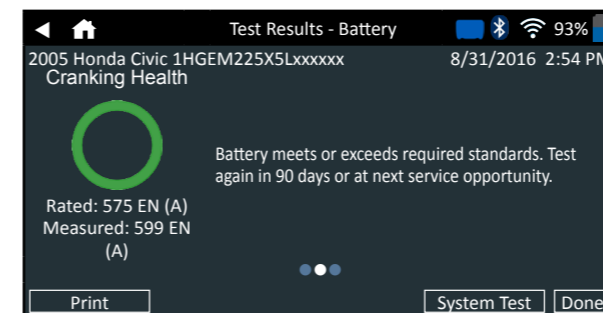
NOTE: Tap **FIND BATTERY** to search for the battery location based on the vehicle year, make, and model based on the VIN.

5. Make sure the temperature sensor on the bottom of the Diagnostic Device is over the battery and tap **CAPTURE**.

The test results are displayed on the tablet screen.

NOTE: If the CVG was used to acquire the vehicle information, the Edit Battery Information screen is displayed (See Step 3). Tap **NEXT** to display the test results.

BATTERY TEST RESULTS



To print or send the test results to a configured printer tap **SEND RESULTS**. To return to the Home Screen, tap **DONE** or **SYSTEM TEST** to continue with the System Test.

Decision	Cranking Health	Reserve Capacity	Description
 GOOD BATTERY	Good Battery	Good Battery	Battery meets or exceeds required standards.
	Good Battery	Unknown Reserve	Battery meets or exceeds required standards.
	Good Recharge	Good Battery	Battery is good, but low on charge.
 GOOD RECHARGE	Charge & Retest	Good Battery	Fully charge the battery for optimal performance and life.
	Good Recharge	Unknown Reserve	Check for causes of low charge.
 CHARGE & RETEST	Charge & Retest	Unknown Reserve	Battery requires charge to determine condition.
 REPLACE BATTERY	Badcell Replace Short	Replace Battery	Battery fails to meet industry accepted standards.
	Charge & Retest	Replace Battery	Battery is low in charge and shows low reserve capacity. Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
	Good Battery	Replace Battery	Battery is good for cranking purpose but shows low reserve capacity.
	Good Recharge	Replace Battery	Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
 BADCELL SHORT REPLACE	Replace Battery	Good Battery	Battery fails to meet industry accepted standards
	Replace Battery	Replace Battery	
	Replace Battery	Unknown Reserve	
	Badcell Replace Short	Good Battery	
 BADCELL SHORT REPLACE	Badcell Replace Short	Unknown Reserve	Battery fails to meet industry accepted standards
	Badcell Replace Short	Unknown Reserve	

CHAPTER 2: IN VEHICLE TEST



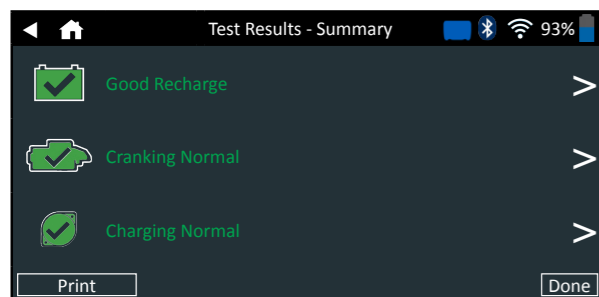
SYSTEM TEST

1. Connect the Amp Clamp to the Diagnostic Device and hold the clamp away from any cables with the jaws closed.
2. Tap **NEXT** to zero out the clamp or **SKIP** if the Amp Clamp is not being used.
3. With the engine and electrical loads off, place the Amp Clamp around the negative (-) battery cable and tap **NEXT**.
4. Start the engine and let it idle.
5. Tap **NEXT**. The analyzer tests the alternator output.
6. When prompted, rev the engine to between 1000 to 1500 rpm. The analyzer tests the alternator output again.
7. When prompted Idle the engine and then turn it off.
8. Tap **NEXT** to display the test results.

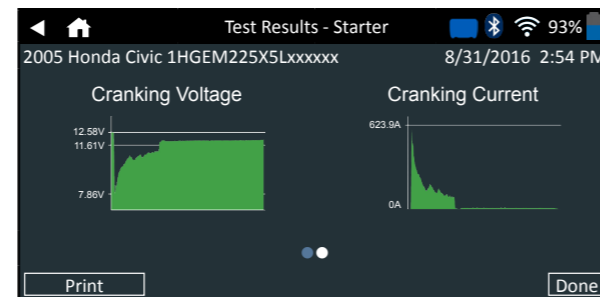
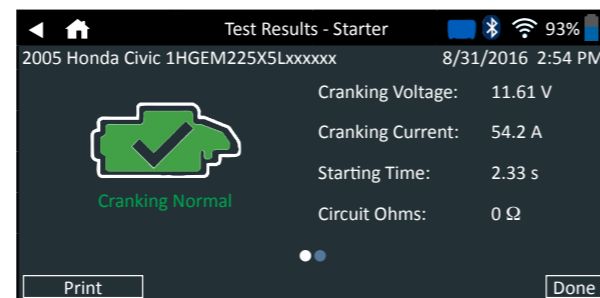
TEST RESULTS-SUMMARY

A Test Results-Summary screen is displayed following a System Test. Tap > to view detailed test results for each part of the test.

To send the test results to a configured printer or via email tap **SEND RESULTS**. To return to the Home Screen, tap **DONE** or to return to the Main Menu.



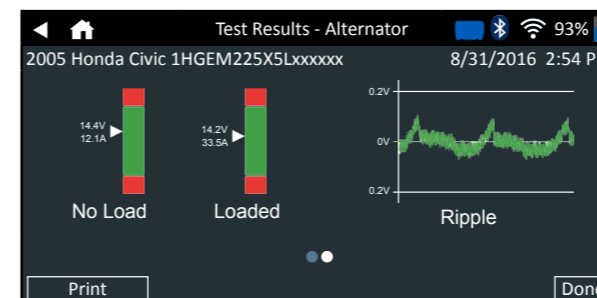
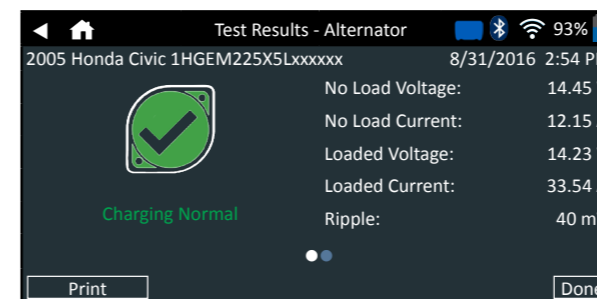
STARTER TEST RESULTS



Decision	Action
CRANKING NORMAL	The starter voltage is normal and the battery is fully charged.
LOW VOLTAGE	The starter voltage is low and the battery is fully charged.
CHARGE BATTERY	The starter voltage is low and the battery is discharged. Fully charge the battery and repeat the starter system test.
REPLACE BATTERY	(If the battery test result was (REPLACE or BAD CELL.) The battery must be replaced before testing the starter.

LOW CURRENT	The starter voltage is high but the cranking amps are low.
NO START	The engine didn't start and the test was aborted or the vehicle's starting profile was not detected and the Starter Test was skipped.

ALTERNATOR TEST RESULTS



Decision	Action
CHARGING NORMAL	The output from the alternator is normal.
NO OUTPUT	No output detected. Check belts to ensure alternator is rotating when engine is running. <ul style="list-style-type: none"> ✓ Check all alternator connections including to the battery. Clean or replace if necessary and retest. ✓ If the belts and connections are in good working condition, replace alternator or external voltage regulator.

Decision	Action
LOW OUTPUT	Alternator not providing enough current to power electrical loads and charge the battery. <ul style="list-style-type: none"> ✓ Check belts to ensure the alternator is rotating with the engine running. ✓ Check alternator connections to and from the battery. If loose or heavily corroded, clean or replace the cable and retest.
HIGH OUTPUT	Alternator voltage to the battery exceeds normal limits of a functioning regulator. <ul style="list-style-type: none"> ✓ Check for loose and normal ground connections. If no connection problems are found, replace the regulator. <p>The normal high limit of a typical automotive regulator is 14.5 volts +/-0.5. Refer to the manufacturer specifications for the correct limit, which may vary by vehicle type.</p>

DIODE TEST RESULTS

Decision	Action
EXCESSIVE RIPPLE	One or more diodes in the alternator are not functioning or there is stator damage, which is shown by an excessive amount of AC ripple current supplied to the battery. <ul style="list-style-type: none"> ✓ Make sure the alternator mounting is sturdy and that the belts are in good shape and functioning properly. If the mounting and belts are good, replace the alternator.
OPEN PHASE	Replace the alternator.
OPEN DIODE	
SHORTED DIODE	

CHAPTER 3:

OUT OF VEHICLE TEST



Use Out Of Vehicle Test to test and verify the condition of customer batteries that are out-of-vehicle for possible return and/or warranty claim.

At any time during the test tap to return to the previous screen or to return to the Main Menu.

1. Connect the Diagnostic Device test clamps to the battery.
2. At the Main Menu, tap **OUT OF VEHICLE TEST**. The Edit Battery Information screen is displayed.

3. Enter the correct battery information for each field.

BATTERY APPLICATION	Automotive		
BATTERY POST	Top Post		
TEST LOCATION	Top Post		
BATTERY TYPE	Flooded		
BATTERY RATING UNITS	EN(A)	Europa-Norm	100 to 1700
BATTERY RATING	Enter the Battery Rating Units value.		
AMP HOURS			

VEHICLE TECHNOLOGY/FUEL TYPE *ONLY FILL IN WHEN AUTOMOTIVE*

4. Make sure the temperature sensor on the bottom of the Diagnostic Device is over the battery and tap **CAPTURE**.

The test results are displayed on the tablet screen.

NOTE: See Battery Test Results in Chapter 2: In Vehicle Test for a full explanation of all possible test outcomes.

5. To send the test results to a configured printer tap **SEND RESULTS**. Tap Email to send the results via email. Tap **DONE** or to return to the Main Menu.

CHAPTER 4:

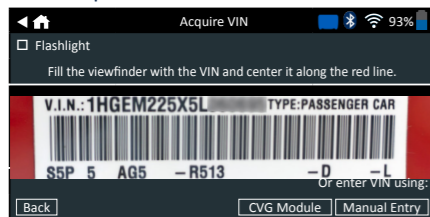
AFTER NEW BATTERY INSTALL



Use After New Battery Install to test and verify the condition of customer batteries that are in-vehicle and are newly put in place.

At any time during the test tap to return to the previous screen or to return to the Main Menu.

1. Connect the Diagnostic Device test clamps to the battery.
2. At the Main Menu, tap **AFTER NEW BATTERY INSTALL**. A menu, Vehicle Selection, appears. Previously saved vehicles are seen in this menu; choosing one will skip the next step. If the correct vehicle is not in the list, click skip.



3. Use the built-in Tablet Controller camera to scan the VIN bar code, usually located on the driver's side door frame. Or: enter the number plate or search library by entering the vehicle year, vehicle make and model.

CVG MODULE: The test begins immediately when this option is selected. Skip to Step 5.

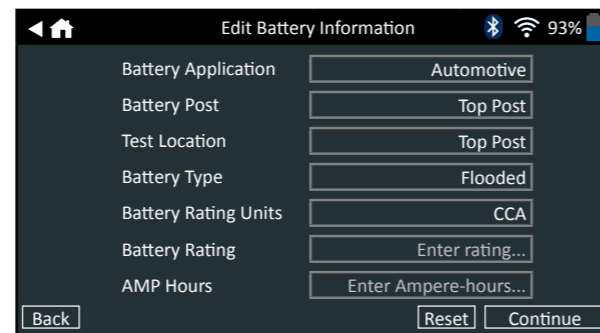
MANUAL ENTRY: Use the on-screen keypad to manually type the 17-digit VIN and tap **NEXT**.

1	2	3	4	5	6	7	8	9	0
W	E	R	T	Y	U	P			
A	S	D	F	G	H	J	K	L	
Z	X	C	V	B	N	M			
Back									Next

The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

4. An Edit Battery Information screen is displayed showing vehicle and battery information based on the VIN.

If the displayed information is correct, tap **NEXT** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.



See Appendix A at the back of this manual for parameter descriptions.

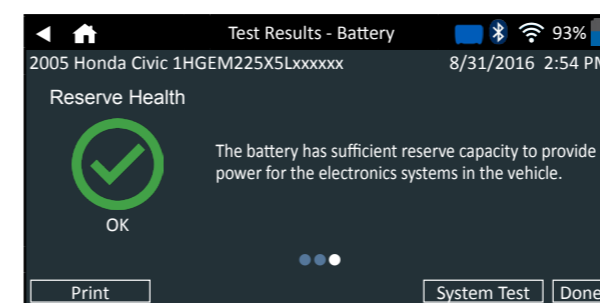
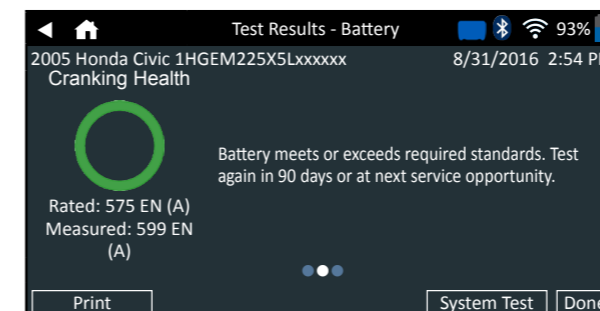
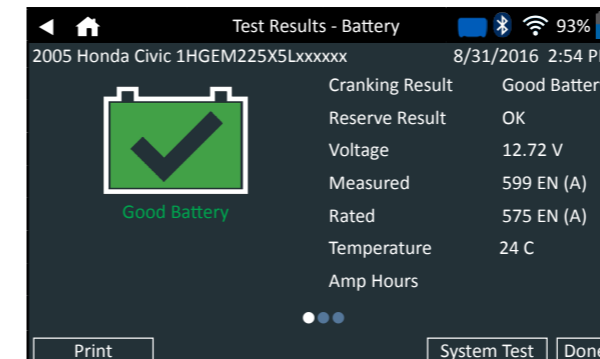
NOTE: Tap **FIND BATTERY** to search for the battery location based on the vehicle year, make, and model based on the VIN.

5. Make sure the temperature sensor on the bottom of the Diagnostic Device is over the battery and tap **CAPTURE**.

The test results are displayed on the tablet screen.

NOTE: If the CVG was used to acquire the vehicle information, the Edit Battery Information screen is displayed (See Step 3). Tap **NEXT** to display the test results.

BATTERY TEST RESULTS



To print or send the test results to a configured printer tap **SEND RESULTS**. To return to the Home Screen, tap **DONE** or **SYSTEM TEST** to continue with the System Test.

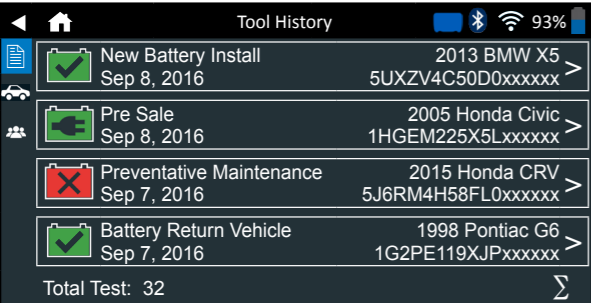
CHAPTER 5:

HISTORY



Use History to access the tool usage history, a vehicle history based on VIN, and user histories. The search function can also be used find test records for specific vehicles and technicians.

At the Main Menu, tap **HISTORY**. By default the Tool History screen is displayed.



TOOL HISTORY

Use Tool History to view test total history as well as in vehicle and out of vehicle test totals. Individual test results are also displayed.

Tap **>** to view individual test details.
Tap **Σ** to view Total By Test Decision, Total By Test Type, and Total By Date And Location.
Tap **DONE** to return to the Tool History screen.

TOTALS BY TEST DECISION

The totals are displayed by possible results for all battery chemistries and potential test results.

Good Battery	BC Open Or Load Fail Replace
Good Recharge	Broken Weld Replace
Charge & Retest	Temp Sensor Failed
Replace Battery	Aborted
Badcell Short Replace	Invalid Test
Remote Post	Aborted / 24V
Side Post	Out Of Balance

TOTALS BY TEST TYPE

Displays test totals by test type.	
HD 24V Test	After New Battery Install
Out of Vehicle Test	Battery Return Vehicle

TOTALS BY DATE AND LOCATION

Displays test totals by time interval. Also displays the number of tests performed in and out of vehicle.	
Last 7 Days	In Vehicle
Last 30 Days	Out Vehicle
Last 90 Days	

VEHICLE HISTORY

Vehicle History displays test totals conducted on specific vehicles based on the VIN. It is also possible to enter a VIN to search for test records for a specific vehicle by tapping the displayed buttons.

Tap on the records displayed on the right side of the screen to view the individual test results.

VEHICLE SELECT OPTION

Tap **Q** to select vehicle search option.
MANUAL LOOKUP: Use the on-screen keypad to manually type the 17-digit VIN and tap **NEXT**.
VIN SCAN: Use the camera built into the Tablet Controller to capture a VIN barcode, usually located on the driver's side door frame.



SEARCH: Search records by Vehicle Year, Make, and Model.

USER HISTORY

User History displays test totals for the user that is currently logged in to the analyzer.

Tap **>** to view individual test details.
Tap **Σ** to view Total By Test Decision, Total By Test Type, and Total By Date And Location.

CHAPTER 6:

MESSAGES



The Messages function displays alerts and notifications for upcoming tests and activities. This includes scheduled testing as well as tool software updates and maintenance opportunities.



Tap to return to the previous screen or to return to the Main Menu.

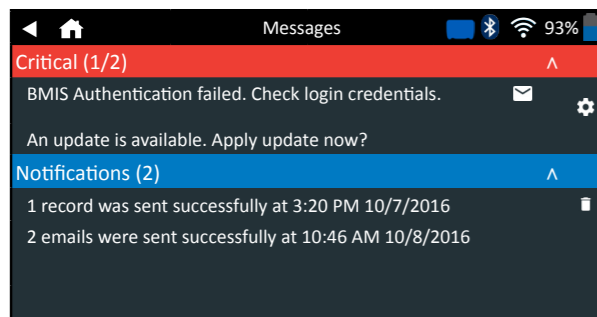
ACCESSING MESSAGES



A number is displayed next to the Messages icon when the analyzer has received any critical messages. The number does not include non-critical Notifications.

- Unread Critical messages
- Read critical messages

1. Tap **MESSAGES** on the Main Menu screen.



2. Tap to read a message.
Tap to perform the message action item.
Tap to delete a message.
3. Tap ^ to collapse a list of messages or v to expand the list.

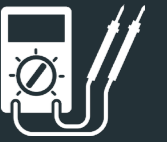
MESSAGE TYPES

Critical: An important action cannot be performed and may require user action.

Notifications: Indicates an action has been performed or data has been sent.

CHAPTER 7:

DMM



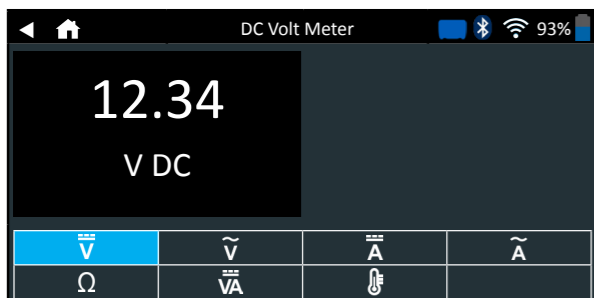
Use this function to troubleshoot low voltage electrical circuits in a car or truck. Electrical specifications for each function are listed at the table at the end of this chapter.

A measurement that is out of the limit displays as OL. Refer to the manufacturer specifications for the correct limits, which may vary by component or vehicle type. Tap ◀ to return to the previous screen or 🏠 to return to the Main Menu.

DC VOLTmeter



The DC voltmeter measures voltage between two points in a circuit. The voltmeter is connected in parallel with the circuit.

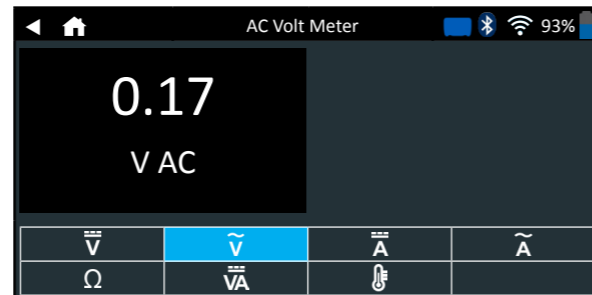


1. Connect the DMM test lead to the accessories port on the Diagnostic Device.
2. Connect the clamps or probes in the correct polarity: red clamp or probe to positive (+); black to negative (-).
3. Tap DC Voltmeter.
4. The meter autoranges and displays the measurement.
5. Tap Back to return to the Digital Multimeter screen.

AC VOLTmeter



The AC voltmeter measures voltage between two points in a circuit. The voltmeter is connected in parallel with the circuit.

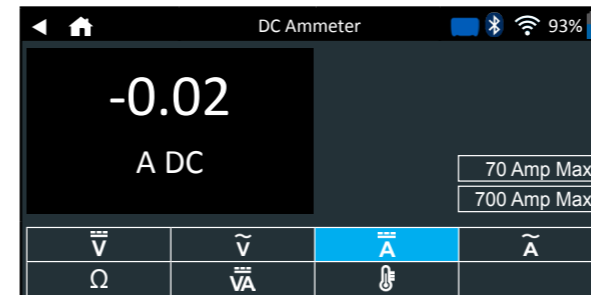


1. Connect the DMM test lead to the accessories port on the Diagnostic Device.
2. Connect the clamps or probes in the correct polarity: red clamp or probe to positive (+); black to negative (-).
3. Tap AC Voltmeter.
4. The meter autoranges and displays the measurement.
5. Tap Back to return to the Digital Multimeter screen.

DC AMMETER



The DC Amp function measures DC magnitude and flow of the DC current in a circuit.

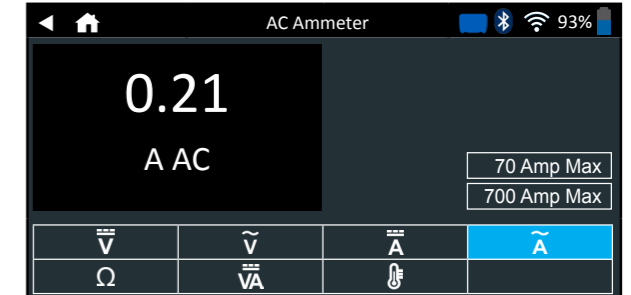


1. Connect the Amp Clamp lead to the accessories port on the Diagnostic Device.
2. Tap DC Ammeter.
3. Select the Amp Clamp range.
4. Follow the onscreen directions to zero the Amp Clamp.
5. Place the clamp's jaws around the negative (-) cable.
6. The tester displays the measurement.
7. Tap Back to return to the Digital Multimeter screen.

AC AMMETER



The AC Amp measures AC magnitude and flow of the AC current in a circuit.



1. Connect the Amp Clamp lead to the accessories port on the Diagnostic Device.
2. Tap AC Ammeter.
3. Select the Amp Clamp range.
4. Follow the onscreen directions to zero the Amp Clamp.
5. Place the clamp's jaws around the negative (-) cable.
6. The tester displays the measurement.
7. Tap Back to return to the Digital Multimeter screen.

CHAPTER 7:

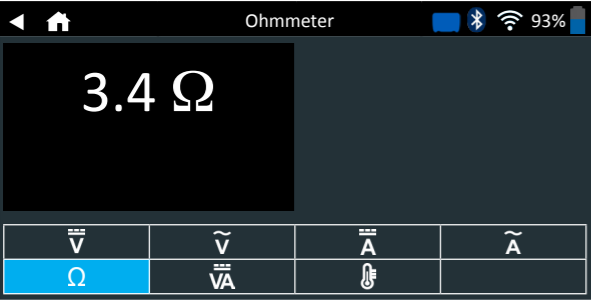
DMM



OHMMETER

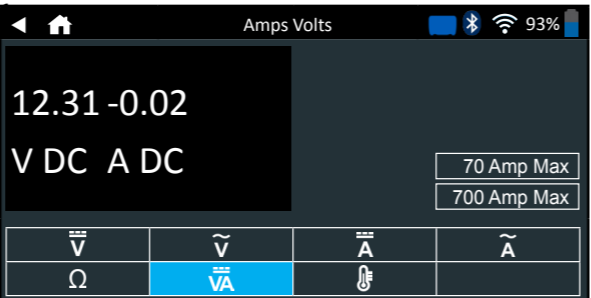


The meter is connected in parallel with the circuit under test and uses the power supplied by the analyzer's internal batteries to detect open or excessive resistance.



- Connect the DMM test lead to the analyzer's accessories port.
- Tap Ohmmeter.
- Connect the clamps or probes in the correct polarity: red probe to positive (+); black to negative (-).
- The meter will autorange and display the measurement.
- When finished, press END.
- Tap Back to return to the Digital Multimeter screen.

AMPS VOLTS

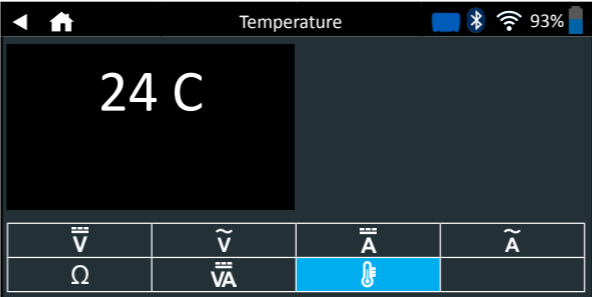


1. Connect the Amp Clamp lead to the analyzer's accessories port.
2. Tap Amps Volts.
3. Select the Amp Clamp range.
4. Follow the onscreen directions to zero the Amp Clamp.
5. Place the clamp's jaws around the negative (-) cable.
6. The tester displays the measurement.
7. Tap Back to return to the Digital Multimeter screen.

TEMPERATURE



The IR temperature sensor measures the ambient surface temperature within a range of -29 to 93 degrees Celsius. The tool can be used for checking the transmission for overheating, and the temperature levels of the heater and air conditioner.



METER SPECIFICATIONS

Meter	Range	Resolution	Accuracy	Overload Protection
Vdc	0-60 V	0.01 V	0.05% + 2	120 Vrms
Vac	0-24 Vac rms	0.01 Vac	0.1% + 3	120 Vrms
Adc	0-70 A	0.01 A	± 3% of reading ± 1A	1000 Arms
	0-700 A	0.1 A	± 3% of reading ± 1A	1000 Arms
Aac	0-70 A	0.01 A	± 3% of reading ± 1A	1000 Arms
	0-700 A	0.1 A	± 3% of reading ± 1A	1000 Arms

Accuracies are specified from 2% to 100% of range.

Meter	Range	Resolution	Accuracy	Overload Protection
OHM	0-60 V	0.01 V	0.05% + 2	120 Vrms
CONTINUITY	0-24 Vac rms	0.01 Vac	0.1% + 3	120 Vrms
TEMP-ERATURE	0-700 A	0.1 A	± 3% of reading ± 1A	1000 Arms

ACCURACY SPECIFICATION DEFINED AS
± (N% READING + [COUNT * RESOLUTION]) AT 25 DEGREES CELSIUS.

CHAPTER 8:

SETTINGS



Use the Setup options to setup and adjust WiFi, printer setup and selection, email settings, user information, default language, display settings, sound settings, BMIS login information, shop information, user management, connected accessories, and device information.

Tap to return to the previous screen or to return to the Main Menu.

WIFI

Use WiFi to view, add, and delete wireless networks.

Tap on the WiFi icon to display a list of detected and configured WiFi networks.



ADDING A NETWORK

1. Tap to add a WiFi network.
A list of detected wireless networks is displayed with next to the selected network.
2. Tap > to access the network Security and IP Settings.

Security	None WEP WPA/WPA2 PSK
IP Address	DHCP Static
3. Tap > to configure the selected network.
4. Once the network has been successfully configured, tap > to return to the list of available configured networks. A indicates the selected network.

DELETING A NETWORK

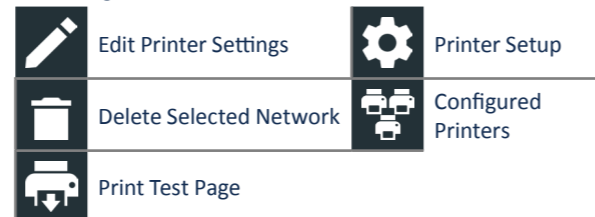
1. Tap a displayed network.
2. Tap to delete the network and tap **YES** to confirm.

PRINTER SETTINGS

The Printer Setup function detects and displays a list of connected and available WiFi and Bluetooth printers.

NOTE: WiFi network communication must be successfully established before a printer or printers can be detected and setup.

Tap on the Printer icon to display a list of available printers on the configured WiFi and Bluetooth networks.



ADDING A WIFI PRINTER (ADMIN ONLY)

1. Tap to access the Printer Setup functions.
2. Tap to add a WiFi printer.
Make sure the printer is on and connected to the same wireless network as the analyzer.
3. Tap > to add the printer to the list of eligible printers.
4. Tap > to connect to the selected printer. A message is displayed when the configuration is successful.
5. Tap > to return to the printer list.

ADDING A BLUETOOTH PRINTER (ADMIN ONLY)

1. Tap the + sign to add a Bluetooth printer.
2. Make sure the printer(s) is on.
3. Tap > to add the printer to the list of eligible printers.
4. Tap > to connect to the selected printer.
5. When prompted, enter the device PIN and tap >. A message is displayed when the pairing is successful.
6. Tap > to return to the printer list.

DELETING A PRINTER (ADMIN ONLY)

1. Tap to access the Printer Setup functions.
2. Tap a displayed printer.
3. Tap to delete the printer and tap Yes to confirm.

EMAIL

Displays all entered email addresses. Addresses can be added, edited, and deleted (Admin Only). Entered email accounts are added to the email address book. Frequently used email addresses can be selected from the displayed address list rather than being re-typed each time.



ADD ADDRESS (ADMIN ONLY)

1. Tap to add an email address.
2. Use the displayed keypad to enter the contact name and email address.

3. Tap Add to add the address to the email list or Cancel to exit and return to the email list.

EDIT ADDRESS (ADMIN ONLY)

1. Select a displayed email address by tapping it.
2. Tap to edit the address.
3. Use the displayed keypad to edit the contact name and email address.
4. Tap Add to add the address to the email list or Cancel to exit and return to the email list.

DELETING AN ADDRESS

1. Select the email address by tapping it.
2. Tap to delete the address and tap Yes to confirm or Cancel to exit and return to the email list.

SERVER SETTINGS

Enter and edit the email settings for sending outgoing email.

1. Tap to access the email sever settings.
2. Tap to enter or modify existing server settings including Host, Port, Login, Password, SMTP Authorization, Enable TLS, and From Email Address information.
3. Tap to clear all server settings.
4. Tap to return to the email Address Book.

CHAPTER 8:

SETTINGS



USER SETTINGS (ADMIN ONLY)

Modify Usernames and Passwords.



USER MANAGEMENT (ADMIN ONLY)

1. Tap to access User Management functions.
1. Tap to display the current logged in Admin user.
2. Select a displayed user by tapping it.
3. Tap to edit the Username, Password, and User Type (Standard or Admin).
4. Tap X when complete to return to the User Management screen.
5. Tap to delete the selected user and Yes to confirm.

LANGUAGE SETTINGS

Use the Language & Input function to select the default system language used by the tool. User defaults also include Test Results, Email, and Print languages.

SYSTEM LANGUAGE

Select the default standard language for the analyzer to on the Tablet Controller.

TEST RESULT LANGUAGE

Select the default language for the analyzer to use for all tests and results displayed on the Tablet Controller.

EMAIL LANGUAGE

Select the default standard language for the analyzer to use for all tests and results sent via email.

PRINT LANGUAGE

Select the default standard language for the analyzer to use for all tests and results printed using a networked printer.

DISPLAY SETTINGS

Adjust the Tablet Controller display including the Brightness, Sleep Time, and Dim Time. Auto Brightness can also be turned on and off.

BRIGHTNESS

Adjust the display Brightness by tapping and holding the slider, then moving it right or left to make the screen brighter or darker.

AUTO BRIGHTNESS

Enable and disable Auto Brightness by taping on the check box.

SLEEP TIME

Adjust the amount of elapsed time before the Tablet Controller goes into a power saving (Sleep) mode. Default = 2 minutes.

DIM TIME

Adjust the amount of elapsed time before the Tablet Controller goes into a power saving (Dim) mode. Default = 1 minute.

BMIS LOGIN (ADMIN ONLY)

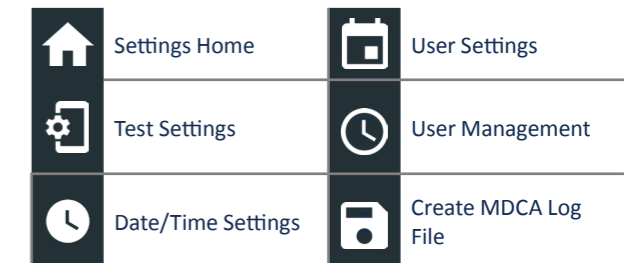
Enter and edit BMIS Login and Password information. Log into a BMIS account.

Login
Zone3@yourshop.com

Password
.....

SHOP INFORMATION (ADMIN ONLY)

Access default Shop Information including Store Name, address, and phone number. Also access battery test defaults including rating, temperature units, and decimal separator. Use also to adjust the tester date and time settings.



SHOP INFORMATION

Use the onscreen keypad to enter the store name, address, and phone number.

Store Name	Midtronics
Street Address	Hoofdveste 6-8
Street Address 2	-
City	Houten
State	UT
Zipcode	3992 DG
Phone #	1-630-323-2800

TEST SETTINGS

1. Tap to access the test setting defaults. Tap the boxes or icons to change the values.

Battery Rating	EN
Temperature Units	20 C
Decimal Separator	00.00
Create MDCA Log File	

CHAPTER 8:

SETTINGS



BATTERY RATING

Default battery rating units used when testing batteries.

TEMPERATURE UNITS

Default temperature units used when measuring battery temperature.

DECIMAL SEPARATOR

Default number display using commas or periods separators.

CREATE MDCA LOG FILE

The MDCA function is used by Midtronics technical support.

2. Tap to return to the Shop Information screen.

DATE/TIME SETTINGS

1. Tap to access the Date/Time setting defaults.

Select Time Format	<input type="text" value="12 Hour"/>
Select Date Format	<input type="text" value="10/18/2016"/>
Select Time Zone	<input type="text" value="EST"/>
Set Date	
Set Time	

SELECT TIME FORMAT

12 or 24 Hour Format

SELECT DATE FORMAT

Month/Day/Year, Day/Month/Year, or Year/Day/Month

SELECT TIME ZONE

Time zone in which the analyzer will be operated.

SET DATE

Tap or to enter the month, day, and year. Tap Set to save the date or Cancel to exit without saving.

Sep	17	2015
Oct	18	2016
Nov	19	2017
CANCEL		SET

SET TIME

Tap or to enter the hours, minutes, and AM/PM. Tap Set to save the date or Cancel to exit without saving.

9	50	AM
10	51	PM
11	52	
CANCEL		SET

2. Tap to return to the Shop Information screen.

DEVICE LIST

Displays connected and linked accessory devices. Additional devices and CVG-2 modules can also be detected and linked to the analyzer.

	Add		Refresh
	Delete Paired Device		Enabled

ADD DIAGNOSTIC BASE

1. Tap to add a device.
2. Move the device to be linked within 30 feet of the Tablet Controller, turn on the device, then tap >.
3. A list of detected devices is displayed. Tap > next to the desired device to select it. If the desired device is not displayed, tap to refresh the list.



NOTE: A passkey number is automatically generated once the Bluetooth pairing has been established.

A confirmation message is displayed when the device has been successfully linked.

4. Tap > to return to the Device List screen.

DELETING A DIAGNOSTIC BASE

1. Tap next to the base to be deleted.
2. Tap Yes to delete.

ADD CVG DEVICE

1. Tap to add a CVG.
2. Plug the CVG into the OBDII port of any vehicle.
3. Turn the vehicle ignition on, but do not start the vehicle.
4. A list of detected CVGs is displayed. Tap > next to the desired CVG to select it. If the desired CVG is not displayed, tap to refresh the list.



NOTE: A passkey number is automatically generated once the Bluetooth pairing has been established.

A confirmation message is displayed when the CVG has been successfully linked.

5. Tap > to return to the Device List screen.

VERSION INFORMATION

Use Version Information to display WiFi connection data the DSS Controller, Diagnostic Device, and CVG-2 Device software version information.



Factory Reset



Check For Updates



Legal Information

DSS Serial Number

WiFi MAC Address

Configuration Version

Data Version

DSS Controller Version

Diagnostic Device Version

CVG-2 Device Version

No Device Configured

OS Version

FACTORY PRESET

Use this function to return the tool to the original as built configuration including all history and test settings.

IMPORTANT: All previous modifications to the original settings will be overwritten.

LEGAL INFORMATION

Displays software attribution information via the Midtronics website. The analyzer must be connected to the Internet.

CHECK FOR UPDATES

Use this function to check via the internet connection for any updates to the tester software.

APPENDIX 1:

BATTERY INFORMATION SCREEN DESCRIPTIONS

VIN	A unique code, including a serial number, used by the automotive industry to identify individual motor vehicles, motorcycles, scooters and mopeds, as defined in ISO 3833.
Vehicle Year	Model year that a vehicle was manufactured.
Vehicle Make	Vehicle manufacturer
Vehicle Model	Vehicle name or number
Vehicle Technology	DIESEL (FOR AUTOMOTIVE), PETROL (FOR AUTOMOTIVE), HYBRID, GASOLINE, ELECTRIC, START-STOP, HYBRID START-STOP.
Battery Installation	Single Battery or Dual Batteries
Battery Application	Automotive, Marine, Powersport, Group 31, Commercial 4D/8D, Lawn and Garden
Battery Post	Top Post, Side Post, Dual Post
Test Location	Top Post, Side Post, Dual Post
Battery Type	Flooded, AGM (Absorbed Gas Mat), AGM Spiral, Gel, Enhanced Flooded

Battery Rating Units

EN(A)	Europa-Norm	100 to 1700
EN2(A)	Europa-Norm	100 to 1700
CCA	Cold Cranking Amps: Battery current at -17.8 °C.	100 to 3000
CA	Cranking Amps: Battery current at 0 °C.	100 to 3000
JIS	Japanese Industrial Standard: Usually printed on battery label.	26A17 to 245H52
DIN(A)	Deutsche Industrie-Norm	100 to 1000
SAE(A)	European labeling of CCA	100 to 3000
IEC(A)	International Electrotechnical Commission	100 to 1000

Battery Rating

Enter the Battery Rating Units value.

PATENTS

This product is made by Midtronics, Inc., and is protected by one or more U.S. and foreign patents. For specific patent information, contact Midtronics, Inc. at +1 630 323-2800.

LIMITED WARRANTY

Midtronics products are warranted to be free of defects in materials and workmanship for a period of one (1) year from date of purchase. Midtronics will, at our option, repair or replace the unit with a re-manufactured unit. This limited warranty applies only to Midtronics battery testers and does not cover any other equipment, static damage, water damage, overvoltage, dropping the unit, or damage resulting from extraneous causes including owner misuse. Midtronics is not liable for any incidental or consequential damages for breach of this warranty. The warranty is void if owner attempts to disassemble the unit or to modify the cable assembly.



**Advancing
Battery Management**

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