



*Battery Management Innovation*

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# **inTELLECT EXP**

**Expandable Electrical Diagnostic Platform**

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*For testing 6 and 12-volt automotive batteries  
and 12- and 24-volt charging systems*

# ***INSTRUCTION MANUAL***



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## Chapter 1: Before You Begin

### Safety

#### General Precautions

- **DANGER—RISK OF EXPLOSIVE GASES:** 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. Never smoke or allow a spark or flame in the vicinity of a battery.
- Battery acid is highly corrosive. If acid enters your eyes, immediately flush them thoroughly with running cold water for at least 15 minutes and seek medical attention. If battery acid gets on your skin or clothing, wash immediately with 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 it.

### Conventions Used in This Manual

To help you learn how to use your analyzer, the manual uses these symbols and typographical conventions:



The safety symbol followed by the word **WARNING** or **CAUTION** indicates instructions for avoiding hazardous conditions and personal injury.

#### **CAUTION**

The word **CAUTION** without the safety symbol indicates instructions for avoiding equipment damage.



The wrench symbol indicates procedural notes and helpful information.

#### **UP ARROW**

The text for keypad buttons and soft-key functions are in bold capital letters.

#### **POST TYPE**

The text for screen options are in regular capital letters.

## Registering Your Analyzer

Before using your tester, we recommend that you register it online to activate your warranty. Registration will also make it faster and easier for you to obtain technical support and service, and order parts and accessories. In addition, you'll be alerted to any important information, like product updates and special offers.

To register, log on at [www.midtronics.com/warranty.html](http://www.midtronics.com/warranty.html) and have your serial number ready. The number is at the bottom of the label on the back of the analyzer (*Figure 1*).

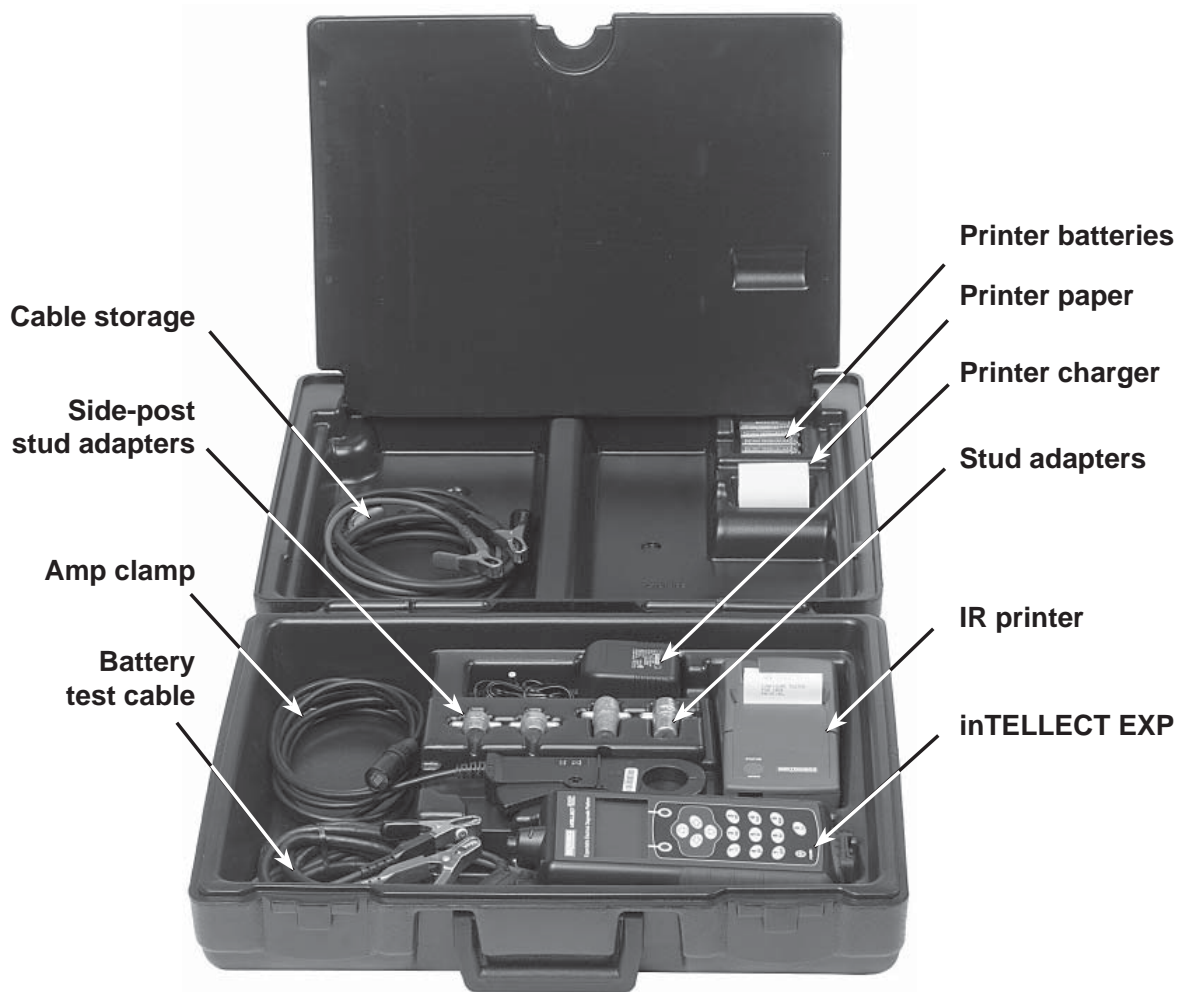


*Figure 1:*  
*Serial Number Location*



## Chapter 2: Description

Every inTELLECT™ EXP model includes a handy, hard-sided, molded carrying case, as shown in *Figure 2*. Regardless of which configuration you choose, the carrying case will hold all accessories, with room **for future options**, so you can add to your Tester at any time.



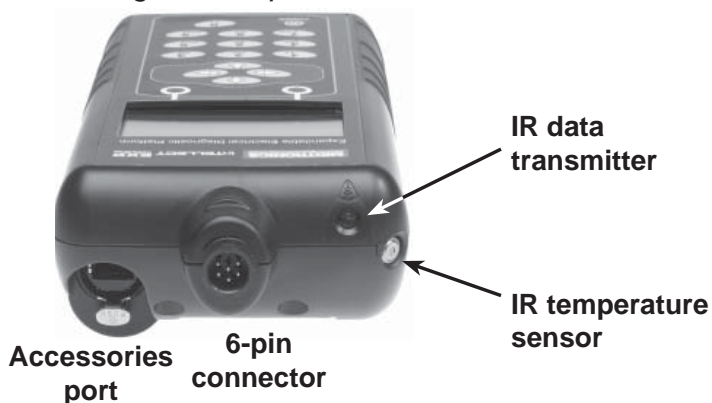
*Figure 2*

## Test Leads, Connectors, and Data Ports

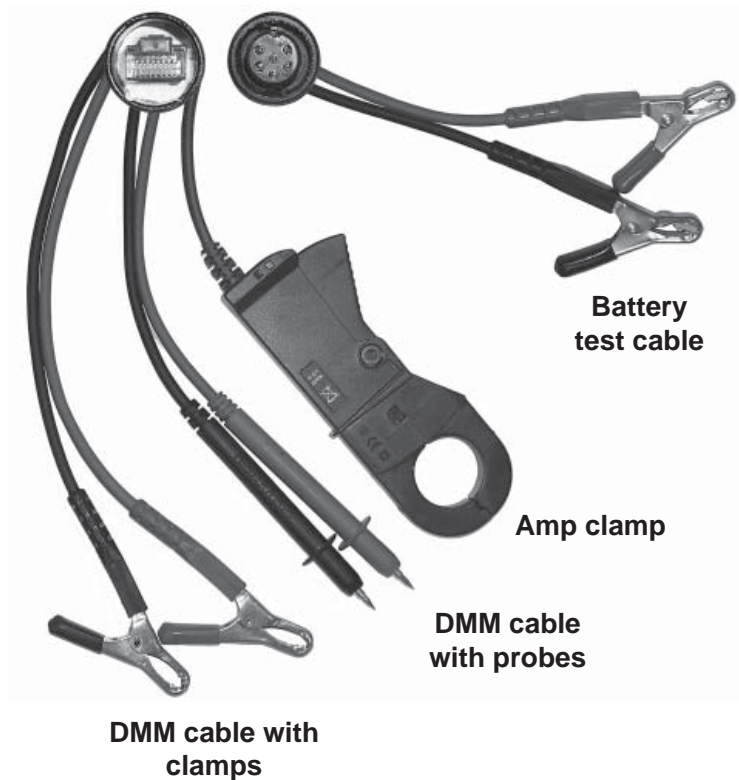
For the cable test leads (*Figure 5*), there are two connectors on the top of the tester (*Figure 3*).

- For the battery test cable, there is a 6-pin connector with a locking ring.
- For the amp clamp and the multimeter test cables, the Tester has an accessories port, which is a RJ45 connector with a release lever.

*Figure 3: Top of EXP*



*Figure 4: Bottom of EXP*



There are two IR data ports on the top of the Tester (*Figure 3*).

- An IR data transmitter, which transmits test results to the optional IR printer.
- An IR temperature measurement sensor.

The tester also has a DB-9 connector for future expandability and an SD card slot for future software upgrades or data logging. (*Figure 4*).

*Figure 5: Test Leads*

## Display and Keypad

The keypad and display work together to help you quickly find and use the right tools at the right time. The display also keeps you on track with on-screen navigation aids, directions and messages. *Figure 6* shows how the elements on the screen relate to the keypad.

The **Internal Batteries Status Indicator**, which appears in the screen's top left corner, lets you know the status and charge level of the analyzer's 6 1.5 V batteries. The X shown in the figure shows that the tester is powered by the battery you're testing to conserve the internal batteries.

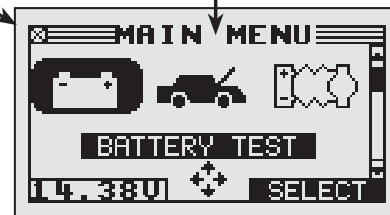
Press the two **Soft Keys** linked to the bottom of the screen to perform the functions displayed above them. The functions change depending on the menu or test process. So it may be helpful to think of the words appearing above them as part of the keys. Some of the more common soft-key functions are SELECT, BACK, and END.

When you connect the tester to a battery it functions as a voltmeter. The voltage reading appears above the left soft key until you move to other menus or functions.

In some cases, you can use the **Alphanumeric Keypad** to enter numerical test parameters instead of scrolling to them with the **ARROW** keys.

You'll also use the Alphanumeric Keys to create and edit customer coupons. The keypad includes characters for punctuation. To add a space, press the **RIGHT** and **LEFT ARROW** keys simultaneously.

The **Title Bar** shows you the name of the current menu, test tool, utility, or function.



The **Selection Area** below the **Title Bar** contains items you select or into which you enter information. The area also displays instructions and warnings.

The **Directional Arrows** on the display show you which **Arrow Keys** to press to move to other icons or screens. The Up and Down Directional Arrows, for example, let you know to press the **UP** and **DOWN ARROW** keys to display the screens that are above and below the current screen.

The Left and Right Directional Arrows let you know to use the **LEFT** or **RIGHT ARROW** keys to highlight an icon for selection.

Another navigational aid is the **Scroll Bar** along the right side of the screen. The position of its scroll box tells you which menu screen you're viewing.



Press the **POWER** button to turn the Tester on and off. The Tester also turns on automatically when you connect its test leads to a battery.

Whichever way you turn on the Tester, it always highlights the icon and setting you last used for your convenience.

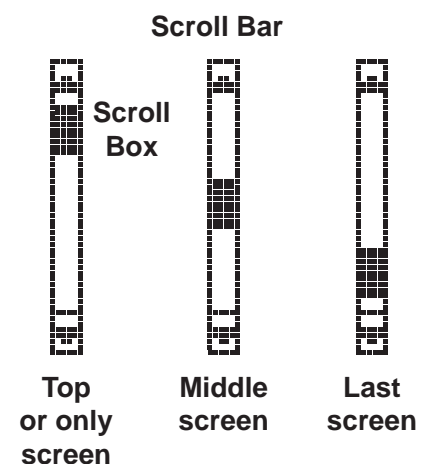


Figure 6: Main Menu and Keypad

## Data Entry Methods

To perform a particular test or function, the tester will ask for different types of information. This means that the methods you use to enter information will change depending on the type of information requested. The four types of entry methods are described below.


### Menu icons

A menu icon is a graphical representation of a function you can select, such as the Diode Icon in the DMM Menu. To select an icon, use the **LEFT** or **RIGHT ARROW** key to highlight it. Highlighting changes the icon to a white picture on a black background. To confirm your selection, press the appropriate soft key.

### Option Buttons

Some lists have option buttons before each item. To select an item, use the **UP/DOWN ARROW** keys to move the dot into the button next to the item you want. You can also use the alphanumeric keypad to enter the number preceding the option button. To confirm your selection, press the appropriate soft key.

### Scrolling Lists

Scrolling lists contain items that extend above and below the screen or the selection box that contains them. To indicate that there are more items, the symbols  appear to the right of the first visible or highlighted item on the list.

To select from this type of list, use the **UP/DOWN ARROW** keys to scroll to the item, or use the keypad to enter your choice, and press the appropriate soft key.

### Alphanumeric Entry

Some selections require you to use the alphanumeric keypad. These “user-defined” selections have a blinking horizontal line (cursor) to the right of the last character.

Use the **UP/DOWN ARROW** keys to highlight a line for editing. Display the character, symbol, or number you want by rapidly pressing its key as many times as needed. If you pause, the cursor moves to the right. To backspace, press the **LEFT ARROW** key. Use the **RIGHT ARROW** key to add a space. Use the **UP/DOWN ARROW** keys to highlight a line for editing. When finished, press the appropriate soft key to save your settings.

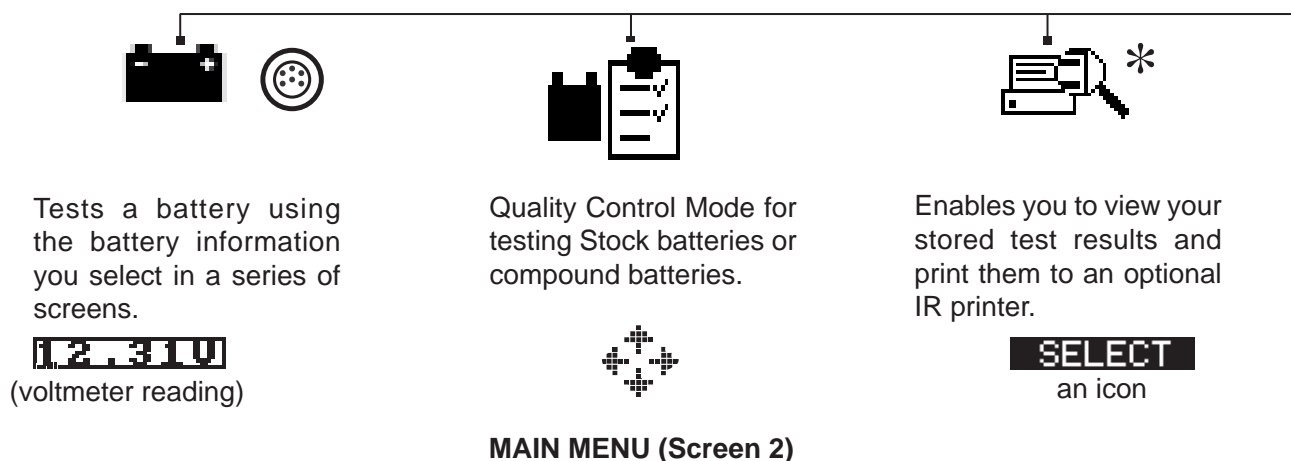
## Menu Maps

This section will help you get to your destination while letting you know what test leads you may need when you arrive. The test leads are represented by symbols for their connectors.

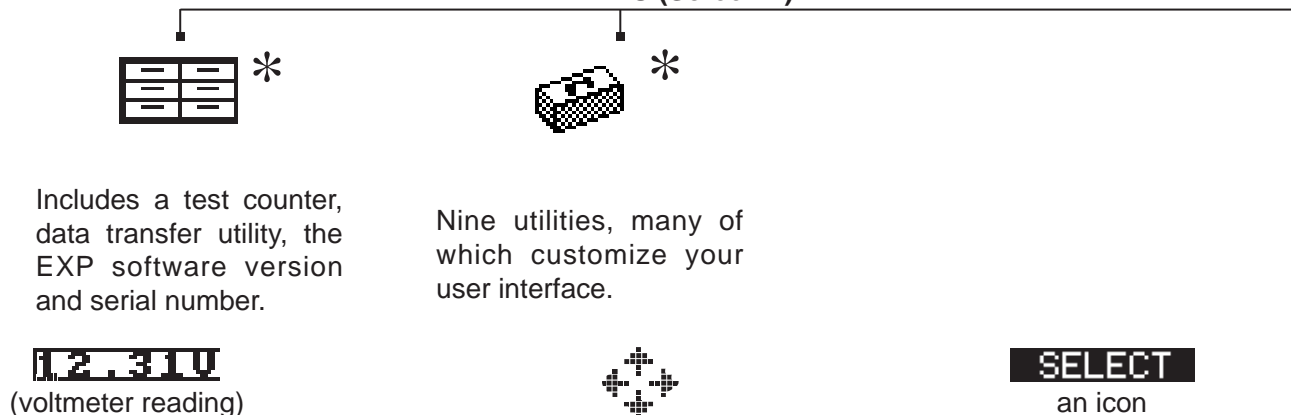
### Main Menu

The Main Menu is the starting point for all tools and utilities, which are depicted as icons. Some icons lead directly to the function they represent, while others are menu icons that lead to two or more functions. Menu icons are marked here with an asterisk (\*) and are mapped on the following pages.

#### MAIN MENU (Screen 1)

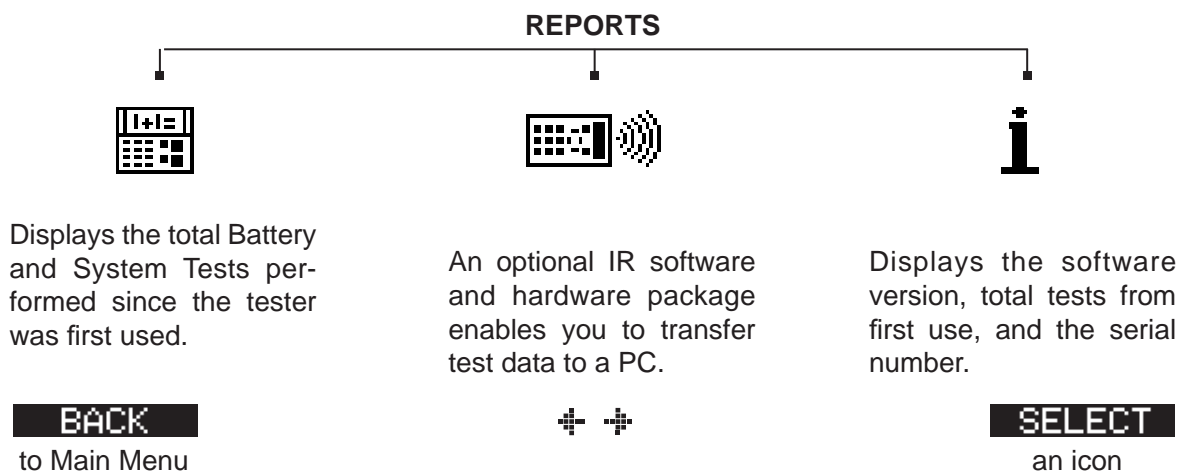


#### MAIN MENU (Screen 2)



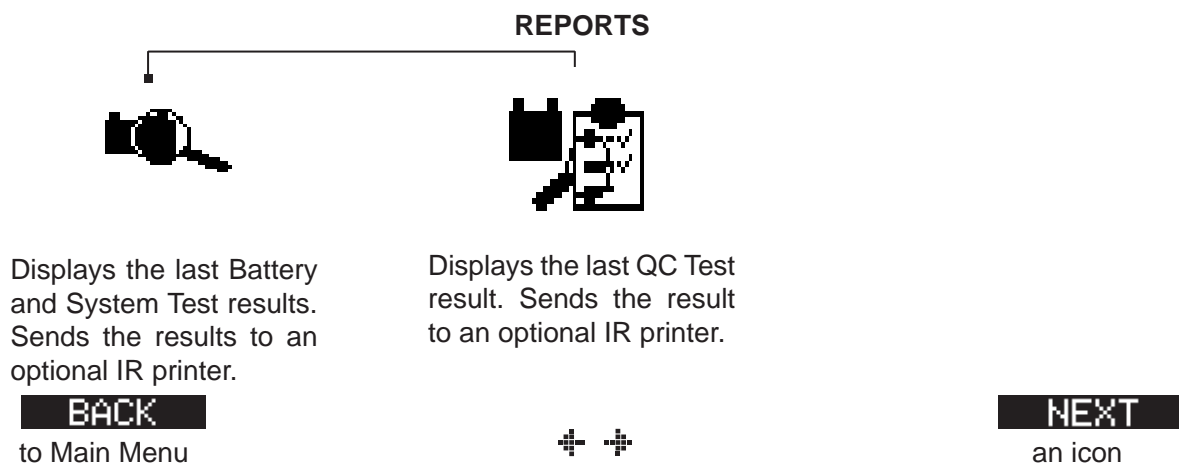
### Info Menu

The Info Menu has three utilities to help you manage your test data, and track the usage and history of your tester.



### Print/View Menu

The tester stores the last battery, system, QC and cable test results in its memory until you perform another test. To review or print results before you retest, select a test type in the Print/View Menu.



Utilities Menu

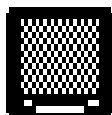
The Utilities Menu lets you customize your analyzer to suit your needs.

**SETUP (Screen 1)**

Settings to adjust the date and time.

**BACK**

to Main Menu



Settings to adjust the screen contrast and backlight time.



Enables you to configure the printer to IrDA.

**SELECT**

an icon

**SETUP (Screen 2)**

Enables you to select degrees C or F for temperature measurements.

**BACK**

to Main Menu



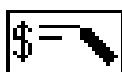
Enables you to add a custom header to printed test results.



If you've created a coupon in the Edit Coupon utility, use Coupon to turn it on and off.

**SELECT**

an icon

**SETUP (Screen 3)**

Enables you to create a coupon at the bottom of printed test results.

**BACK**

to Main Menu



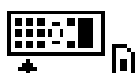
Sets the language of the display and printouts.



Formats the SD card to receive data. Also erases all data on the card.

**SELECT**

an icon

**SETUP (Screen 4)**

Updates the software using files on an SD card.

**BACK**

to Main Menu



Set QC Mode to Compound test or Stock control



**SELECT**

an icon

## Chapter 3: 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.
- Low electrolyte level. If the electrolyte level is too low, add distilled water to fill up to 1/2 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

**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 the Battery Test Cable

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

Connect the battery test cable to the tester by first aligning the cable connector's 6 pins with the holes on top of the tester. Firmly insert the connector and tighten the locking ring.

Connect the clamps to the battery: 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 correctly.

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 Utility Menu. The menu has settings for the display's date and time, the contrast and backlight time, a utility to customize printouts for the optional IR printer, among others.



To conserve the analyzer's internal batteries, the tester will turn off after 30 seconds of inactivity.

## Chapter 4: Battery Test

The tester will guide you through the steps of selecting your battery test parameters and interpreting the results. Before you start the test, review the instructions in *Chapter 3: Test Preparation*.

1. *Select the LOCATION OF THE BATTERY*

- 1 ☒ UNDER HOOD
- 2 ☐ UNDER SEAT
- 3 ☐ TRUNK
- 4 ☐ FOOT WELL
- 5 ☐ OUT OF VEHICLE

Press the **NEXT** soft key to continue. The **BACK** soft key returns you to the Main Menu at the start of the test and to the previous screen as you progress.

2. *Select where you connect the TESTER CLAMPS*

- 1 ☒ JUMP START POST
- 2 ☐ BATTERY POST

Press the **NEXT** soft key to continue.

3. *Select the BATTERY RATING (ONLY WHEN JUMP START POST IS SELECTED)*

- 1 ☒ 800 A(EN)
- 2 ☐ 950 A(EN)

*More questions can be asked to determine the vehicle model*

4. *Select the BATTERY TYPE*


- 1 ☒ REGULAR
- 2 ☐ AGM
- 3 ☐ SPIRAL
- 4 ☐ GEL

Press the **NEXT** soft key to continue.

5. Select the battery's capacity rating standard. The standard, and the rating units required in step 5, are printed on the battery label. If the information is unreadable, contact the battery manufacturer.

- 1 ☒ EN
- 2 ☐ JIS
- 3 ☐ DIN
- 4 ☐ IEC
- 5 ☐ SAE
- 6 ☐ CCA

Press the **NEXT** soft key to continue.

6.  Press the **UP/DOWN ARROW** keys or use the numeric keys to select the battery rating or in the case of JIS, the part number. To increase your scrolling speed, hold down the **UP** or **DOWN ARROW** key.

Press the **NEXT** soft key to start the test.

For the next few seconds the tester will display the word TESTING and a stopwatch while it evaluates the battery.



### Additional Test Requirements

For a more decisive result the tester may ask for additional information or probe deeper into the battery's condition. The following messages and instructions may appear before the analyzer displays the results of your test.

#### Surface Noise/Unstable Battery

The battery will hold a surface charge if the engine has been running or after the battery has been charged. The tester may prompt you to remove the surface charge before it begins testing.

- 1. Follow the instructions indicating when to turn the headlights on and off.
- 2. The tester will resume testing after it detects that the surface charge is removed.

### Deep Scan Test

In some cases the tester may need to further analyze the battery to determine whether the battery should be replaced or it has a significant chance to be recovered. It will then conduct a Deep Scan Test of the battery for a few seconds.



For a more decisive result, the analyzer may ask if you are testing the battery before or after charging.

If the vehicle has just been driven, select BEFORE CHARGE. Press the **NEXT** soft key to continue.

TESTING



BATTERY  
TEST  
RESULTS

*Figure 13: Deep Scan Test and Decision Tree*

The next section describes the battery test decisions and suggests actions to take.

## Battery Test Results

After the test the tester will display the complete results in a series of screens as shown in *Figure 14*. Use the **UP/DOWN ARROW** keys to scroll through each result. To send the results to the IR receiver, point the tester towards the IR Receiver, press the **TRANSFER** soft key and wait until the hourglass has disappeared from the screen.

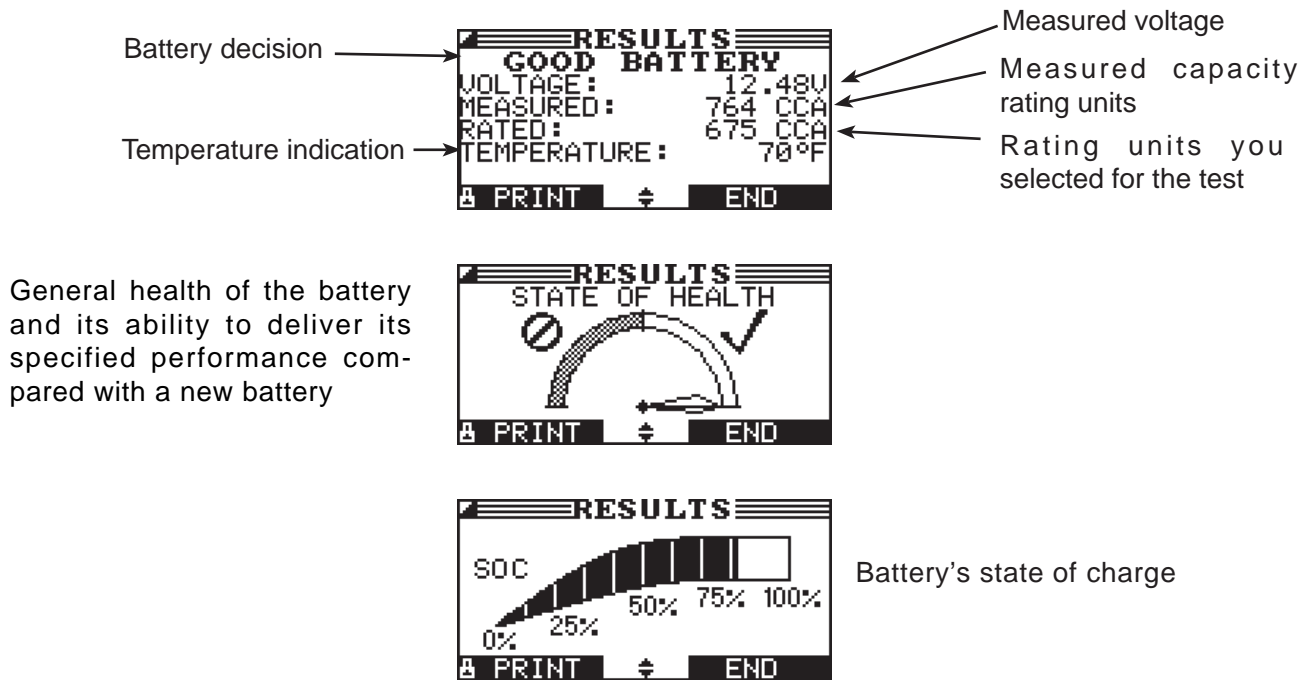


Figure 14: Good Battery Result

Table 1: Battery Decisions and Recommendations

Decision	Recommended Action
GOOD BATTERY	Return the battery to service.
CHARGE BATTERY	Fully charge the battery and return it to service.
CHARGE & RETEST	Fully charge the battery and retest. <b>Failure to fully charge the battery before retesting may cause false readings.</b> If CHARGE & RETEST appears again after you fully charge the battery, replace the battery.
REPLACE BATTERY	Replace the battery and retest. A REPLACE BATTERY result may also mean a poor connection between the battery cables and the battery. After disconnecting the battery cables, retest the battery using the out-of-vehicle test before replacing it.
BAD CELL–REPLACE	Replace the battery and retest.

## Chapter 5: QC Test

The tester has the ability to test multiple batteries one after the other without having to input the battery rating / settings.

There are two types of QC tests: the STOCK CONTROL or the COMPOUND TEST.

**STOCK CONTROL** is meant for batteries standing in a warehouse or on a pallet where as **COMPOUND TEST** is done when the battery is mounted in the vehicle. This function is ideally suited for areas such as compounds, parking lots etc

1. Go to the UTILITY MENU and select the STOCK CONTROL or COMPOUND TEST.  
After selecting one of the two options you can press END. The tester will use the selected option. If you want you can continue with ADDING or DELETING batteries or IMPORT / EXPORT the present battery list.
2.
  - 1 ☒ ADD BATTERY
  - 2 ☐ DELETE BATTERY
  - 3 ☐ IMPORT LIST
  - 4 ☐ EXPORT LIST

Press the **NEXT** soft key to continue.

4. Enter the battery information. You have now added a battery to the list where you can later on select from.
5. Go to the QC TEST in the MAIN MENU. The first screen shows you the amount of tests performed. Once you press both the arrow keys you reset the test counter and you can now enter a batch name for the to be tested vehicles.

## Chapter 6: Utilities

The Utility Menu allows you to easily set up your analyzer:

### Clock

The CLOCK ADJUST utility has four settings. Use the **UP/DOWN ARROW** keys to highlight the setting you want to change.

<b>MODE :</b>	<b>AM/PM</b>
<b>TIME :</b>	<b>9:07 PM</b>
<b>FORMAT :</b>	<b>MM/DD/YYYY</b>
<b>DATE :</b>	<b>6/17/2005</b>

#### Mode

Use the **UP/DOWN ARROWS** to move the dot to the option button of your choice.

1. Select the 24-hour or AM/PM mode
  - 1 ☒ 24 HOUR
  - 2 ☐ AM/PM
2. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the CLOCK ADJUST screen without saving the changes.

#### Time

1. Use the **LEFT/RIGHT ARROWS** to highlight the hour, minutes, or AM or PM. To rapidly scroll, hold down an **ARROW** key.

**9** : 19 PM

2. Press the **SAVE** soft key to save your setting or **BACK** to return to the CLOCK ADJUST screen.

#### Format

Use the **UP/DOWN ARROWS** or press the corresponding numerical key to move the dot to the option button of your choice or enter its number.

1. Select the 24-hour or AM/PM mode
  - 1 ☒ MM/DD/YYYY (month/day/year)
  - 2 ☐ DD/MM/YYYY (day/month/year)
2. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the CLOCK ADJUST screen without saving the changes.

## Date

1. Use the **LEFT/RIGHT ARROWS** to highlight the hour, minutes, or AM or PM. To rapidly scroll, hold down an **ARROW** key.

**6** / 17 / 2005

2. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the CLOCK ADJUST screen without saving the changes.

## Shop

The SHOP INFO utility enables you to create a header for your printed test results showing your business location information. Its two information screens contain eight lines of text with up to 16 characters on each line.

Screen 1

**1-YOUR SHOP NAME** —

**2-1000 ANY STREET**

**3-YOUR TOWN, STATE**

**4-YOUR POSTAL CODE**

Blinking cursor  
shows the starting  
location for editing

Screen 2

**5-YOUR COUNTRY** —

**6-YOUR PHONE NUMBER**

**7-WWW.WEBSITE.COM**

**8-YOUR SHOP ID NUMBER**

To create or overwrite a header:

1. Press the **UP** or **DOWN ARROW** to highlight the line you want to change. The cursor will be blinking to the right of the last character in the line.
2. To move the cursor backward to erase a character, press the **LEFT ARROW** key; to move the cursor forward, press the **RIGHT ARROW** key.
3. Insert a character by pressing the key associated with the character as many times as needed.
4. You can center text by selecting blank spaces before and after lines of text or insert spaces between words.
5. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the SHOP INFO screen without saving the changes.



## Display

The LCD OPTIONS utility enables you to adjust the contrast of the text on the display and the backlight time.

### Contrast Level

The contrast level is 0 (lightest) to 10 (darkest). To change it:

1. Press the **UP** or **DOWN ARROW** to highlight the option.

<b>CONTRAST LEVEL</b>	<b>10</b>	← Current settings
<b>BACKLIGHT TIME</b>	<b>60</b>	

2. Press the **ADJUST** soft key to display the option's numerical scroll box.

<b>10</b>		<b>(1-10)</b>
-----------	---	---------------

3. Press the **UP/DOWN ARROW** keys or the corresponding numerical key to select your preference.
4. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the CONTRAST LEVEL screen without saving the changes.

### Backlight Time

Backlight time is from 0 to 60 seconds. To change it:

1. Press the **UP** or **DOWN ARROW** to highlight the option.

<b>CONTRAST LEVEL</b>	<b>10</b>	
<b>BACKLIGHT TIME</b>	<b>60</b>	← Current settings

2. Press the **ADJUST** soft key to display the option's numerical scroll box.

<b>60</b>		<b>SEC</b>
-----------	---	------------

3. Press the **UP/DOWN ARROW** keys or the corresponding numerical key to select your preference.
4. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the BACKLIGHT screen without saving the changes.

## Coupon

The COUPON SELECT utility enables and disables the printing of the custom coupon you've created in the EDIT COUPON utility.

1. Use the **UP/DOWN ARROWS** or press the corresponding numerical key to move the dot to the option button of your choice.
  - 1 ☒ NO USER COUPON PRINTED
  - 2 ☐ USER COUPON
2. Press the **SAVE** soft key to save your setting or the **BACK** soft key to return to the COUPON SELECT screen without saving the changes.

## Edit Coupon

The EDIT COUPON utility enables you to create a promotional coupon for your customers that prints at the bottom of every test result. Its two information screens contain eight lines of text with up to 16 characters each.

The editing process is the same as when you create a header for your test results printouts. See the SHOP utility for more information.

## Temp

The TEMP. UNITS utility enables you to set the units of measure to either Celsius or Fahrenheit.

To set your preference:

1. Use the **UP/DOWN ARROWS** or press the corresponding numerical key to move the dot to the option button of your choice.
  - 1 ☒ DEGREES F
  - 2 ☐ DEGREES C
2. Press the **SAVE** soft key to save your setting.

## Language

The LANGUAGE utility enables you to select a language for the display and printouts. To set your preference:

1. Use the **UP/DOWN ARROWS** or press the corresponding numerical key to move the dot to the option button of your choice.
2. Press the **SAVE** soft key to save your setting.

## **Format Disk**

Select this utility to format an SD card to receive data or erase all data on the card. The Tester will warn you before formatting the disk and ask you if you want to continue.

## **Update**

As software updates become available you'll be able to use this utility to update the Tester software using files on an SD card.

## **Config printer**

Use this option to configure your printer. It's easy to switch your IrDA printer in to the correct protocol.

## **QC Mode**

Use this option to configure your way of quality control measurements. Select either the Compound mode or Stock control mode.

## Chapter 7: Info Menu

The Info Menu has 3 utilities to help you manage your test data and track the usage and history of your analyzer.

### Totals

The TOTALS report displays the total number of battery tests performed since the Tester was first used. Press the **LEFT** and **RIGHT ARROW** keys simultaneously to clear the total and reset the starting date.

### Transfer

The TRANSFER utility lets you transfer test data to a PC using an IR receiver.

### Version info

Version info displays the software version, the date the software was released, and the serial number of the analyzer. The utility keeps a permanent count of the number of battery tests performed since the analyzer was first used.

## Chapter 8: Print/View

The Print/View Menu enables you to view and print the results of the Battery, System, and Cable Drop Tests before you perform another test and overwrite the results in memory.

### View Test

VIEW TEST gives you the option of viewing and printing the results of the Battery and System Tests. To print the results, align the analyzer's IR transmitter with the printer's receiver, and select the **PRINT** soft key. To return to the Main Menu, press the **END** key.

### View QC Test

VIEW QC TEST gives you the option of viewing and printing all results of the Quality Control Test. To print the results, align the analyzer's IR transmitter with the printer's receiver, and select the **PRINT** soft key. To return to the Main Menu, press the **END** key.

## Chapter 9: Troubleshooting

If you have problems with the display or the Midtronics printer, try these troubleshooting suggestions:

### The Display Does Not Turn On

- Check the connection to the vehicle battery.
- Press the **POWER** button.
- The vehicle's battery may be too low to power the analyzer (below 1 volt). Fully charge the battery and retest.
- The analyzer's 6 AA batteries may need to be replaced.

### The STATUS LED Flashes

When a printer fault occurs, the **STATUS** LED flashes. You can identify the fault by the number of sequential flashes:

Table 6: Printer STATUS LED

Sequence	Condition	Solution
* * *	No paper	Insert new paper
** ** *	Thermal head too hot	Allow head to cool
*** ** *	Batteries weak	Recharge printer batteries for 16 hours

### Data Will Not Print

- If the IR transmitter and receiver are not aligned, all the data may not print. The infrared ports on the top of the analyzer and on the printer below the **MODE** button should be pointed directly at each other. The maximum distance for reliable transmission between the ports is 17 in (45 cm).

To realign, press the **END** button to cancel the print job. Verify alignment between the analyzer and printer; then try to print the test results again.

- Make sure the printer is on. The printer shuts off after 2 minutes of inactivity to conserve the batteries. To turn the printer on, briefly press the **MODE** button. The green **STATUS** light should turn on. Make sure you are using the Midtronics printer. Other printers may not be compatible.

- Direct sunlight interferes with infrared data transmission and receiving. If the printer is not receiving data, remove the printer and EXP from direct sunlight. If the printed characters are not clear or are partially missing, recharge the battery and reprint.
- If you are unable to print after ensuring the analyzer is functioning, the printer is on, the batteries are good, and the IR transmitter and receiver are aligned, check the printer manual for further instructions or call Midtronics at 800-776-1995 for assistance. (See “Patents, Limited Warranty, Service” for more information.)

## Chapter 10: Tester Internal Batteries

The Tester uses 6 AA, 1.5-volt batteries (alkaline recommended) to allow testing of batteries down to 1 volt and supply power while the menu is active. The analyzer can test batteries down to 5.5 volts when the internal batteries are not functioning.

### Battery Power Indicator

The square in the upper left corner of the display indicates the charge level of the battery pack. The square is black when the battery pack is fully charged. It gradually changes to white as the charge level declines. The Tester will display a warning message when the batteries need replacing.

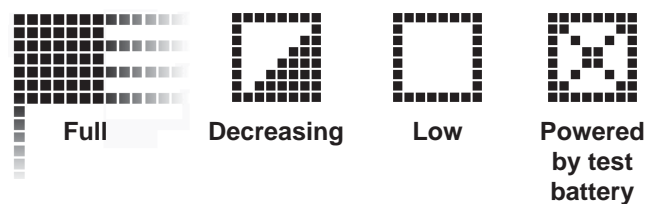


Figure 7: Power Level Indicator for AA Batteries

### Replacing the Tester Batteries

1. Turn the Tester face down.
2. Press gently on the ridges above the arrow on the battery compartment cover.
3. Slide the cover in the direction of the arrow and remove the cover.
4. Remove the discharged batteries.
5. Insert new batteries as shown in *Figure 22*. Make sure the positive and negative terminals are positioned correctly.
6. Insert the door's tabs into the slots on the analyzer and slide the door closed, making sure the latch locks.

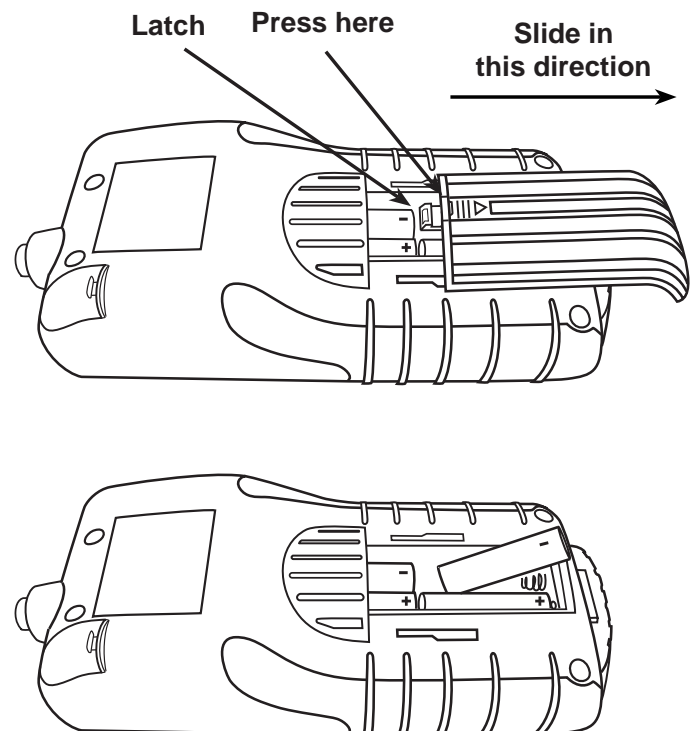


Figure 22: Battery Replacement



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## DECLARATION OF CONFORMITY

According to CEN/CENELEC EN 45014 and ISO/IEC Guide 22



**Manufacturer's Address:** 7000 Monroe Street  
Willowbrook, IL 60527  
USA

**Declares, that the product**

**Product Name:** Battery Analyzer  
**Model Number:** EXP-1000, NVS-1000  
**Product Options:** *This declaration covers all options of the above product(s).*

**Conforms to the following European Directives:**

*The product herewith complies with the requirements of the IEC Publication 61326-1:1997 and carries the CE Marking accordingly*

**Conforms to the following product standards\*:**

Emissions Tests Results				
Environmental Phenomena	Frequency Range	Basic Standard	Test Level	Test Result
RF Radiated Emissions	30-1000 MHz	EN 55022	Class A	Pass

Immunity Tests Results					
Port Tested	Environmental Phenomena	Frequency Range	Basic Standard	Test Level	Test Result
Enclosure	ESD	8 kV Air 4 kV Contact	EN 61000-4-2	B	Pass
Enclosure	RF EM Field	3 V/m; 80-2000 MHz	EN 61000-4-3	A	Pass

CE Product-Family Test Specifications and Results			
Document	Date	Title	Test Results
CENELEC EN 61326	2002	Electrical equipment for measurement, control and laboratory use – EMC requirements	Complied with all applicable tests

\*Radiometrics Midwest Corporation, Romeoville, Illinois, USA (NVLAP Lab Code 121191, Certification Number 1495.01) performed all tests on the product in a typical configuration required by the test specifications. A full list of Radiometrics capabilities can be accessed at [www.radiomet.com](http://www.radiomet.com).

16 June 2006

Date

Jacob C. Blevins  
Quality Manager

## PATENTS

The inTELLECT™ EXP Expandable Electrical Diagnostic Platform is made in the U.S.A. by Midtronics, Inc. and is protected by one or more of the following U.S. Patents: 4,816,768; 4,825,170; 4,881,038; 4,912,416; 5,572,136; 5,585,728; 5,592,093; 5,757,192; 5,821,756; 5,831,435; 5,914,605; 6,051,976; 6,091,245; 6,163,156; 6,249,124; 6,304,087; 6,310,481; 6,316,914; 6,323,650; 6,351,102; 6,359,441; 6,363,303; 6,392,414; 6,441,585; 6,445,158; 6,456,045; 6,469,511; 6,534,993; 6,544,078; 6,556,019; 6,566,883; 6,586,941; 6,707,303. Canadian Patents: 1,295,680; 1,280,164. United Kingdom Patent: 0,672,248; 0,417,173. German Patent: 693 25 388.6; 689 23 281.0-08; 93 21 638.6. And other U.S. and Foreign patents issued and pending. This product may utilize technology exclusively licensed to Midtronics, Inc. by Johnson Controls, Inc. and/or Motorola, Inc.

## LIMITED WARRANTY

This analyzer is warranted to be free of defects in materials and workmanship for a period of two years from date of purchase. Midtronics will, at our option, repair or replace the unit with a remanufactured unit. This limited warranty applies only to the analyzer, and does not cover any other equipment, static damage, water damage, overvoltage damage, 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.



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