■ MICRO-OHMMETER

6240

AEMC®
INSTRUMENTS

Statement of Compliance

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments certifies that this instrument has been calibrated using standards and instruments traceable to international standards.

We guarantee that at the time of shipping your instrument has met its published specifications.

An NIST traceable certificate may be requested at the time of purchase, or obtained by returning the instrument to our repair and calibration facility, for a nominal charge.

The recommended calibration interval for this instrument is 12 months and begins on the date of receipt by the customer. For recalibration, please use our calibration services. Refer to our repair and calibration section at **www.aemc.com**.

Serial #: _____

Catalog #: 2129.80

Model #:   6240

Please fill in the appropriate date as indicated:

Date Received: _____

Date Calibration Due: _____

Table of Contents

INTRODUCTION

> ⚠️ **WARNING** ⚠️
>
> These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.
>
> - This instrument is protected from accidental voltages of not more than 50V with respect to earth in measurement Category III.
>
> - Do not attempt to perform any tests with this instrument until you have read the user manual.
>
> - Tests are to be carried out on de-energized circuits only! **Never connect the unit to a live circuit.**
>
> - Make sure that none of the input terminals are connected and that the switch is set to OFF before plugging in the AC power to recharge the battery of the instrument.
>
> - Make sure the internal battery is fully charged prior to testing. If the instrument has been left unused for several months, recharge the battery.
>
> - If the case needs cleaning, do not use any alcohol or oil based cleaners. Preferably use soapy water with a damp cloth or sponge. Do not immerse the 6240 micro-ohmmeter in water.
>
> - Use connection accessories of which the overvoltage category and the service voltage are greater than or equal to those of the measuring instrument (50V CAT III). Use only accessories that comply with safety standards (IEC 61010-2-031).
>
> - The test leads and measuring wires must be in good condition and should be replaced if there is any evidence of deterioration (insulation split, burnt, etc.).
>
> - Troubleshooting and metrological verification procedures must only be performed by qualified approved personnel, or the factory.

1.1 International Electrical Symbols

▣	Signifies that the instrument is protected by double or reinforced insulation.
⚠	This symbol on the instrument indicates a WARNING and that the operator must refer to the user manual for instructions before operating the instrument. In this manual, the symbol preceding instructions indicates that if the instructions are not followed, bodily injury, installation/sample and/or product damage may result.
⚡	Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.
♻	When disposed of, this product must be sorted for the recycling of electrical and electronic equipment in accordance with WEEE directive 2002/96/EC.

1.2 Definition of Measurement Categories

CAT IV: For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

CAT III: For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.

CAT II: For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.

1.3 Receiving Your Shipment

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage. Save the damaged packing container to substantiate your claim.

⚠ **NOTE:** Charge the instrument fully before use. ⚠

1.4   Ordering Information

Micro-ohmmeter Model 6240 .... **Cat. #2129.80**
Includes extra large tool bag, set of two 10ft Kelvin clips (10A - Hippo), optical USB cable,
US 115V power cord, one pad of measurement results forms, two spare fuses (12.5A), NiMH
rechargeable battery pack, and USB stick supplied with product user manual and DataView®
software.

1.4.1   Accessories and Replacement Parts

Kelvin clips (10A - Hippo), 10 ft color-coded leads
with spade lug terminations .... **Cat. #1017.84**

Kelvin clips (10A - Hippo), 20 ft color-coded leads
with spade lug terminations .... **Cat. #2118.70**

Kelvin Probes (1A - Spring Loaded), 10 ft with 4mm banana
plug termination (includes set of 5 fork terminals) .... **Cat. #2118.73**

Kelvin Probes (1A - Spring Loaded), 20 ft with 4mm banana
plug termination (includes set of 5 fork terminals) .... **Cat. #2118.74**

Kelvin Probes Pistol Grip 10 ft (10A) Spring Loaded .... **Cat. #2118.75**

Kelvin Probes Pistol Grip 20 ft (10A) Spring Loaded .... **Cat. #2118.76**

Kelvin Probes 10 ft (10A) Spring Loaded .... **Cat. #2118.77**

Kelvin Probes 20 ft (10A) Spring Loaded .... **Cat. #2118.78**

Kelvin Clips 10 ft (1-10A) .... **Cat. #2118.79**

Kelvin Clips 20 ft (1-10A) .... **Cat. #2118.80**

Thermo-Hygrometer Model CA846 .... **Cat. #2121.24**

Optical USB Cable .... **Cat. #2135.41**

Kelvin Clips 25 ft (200A - Hippo) .... **Cat. #2129.72**

Kelvin Clips 50 ft (200A - Hippo) .... **Cat. #2129.73**

Replacement Battery 6.5V, 8.5AH .... **Cat. #2129.91**

Fuse, set of 5, 12.5A/500V, 6.3 x 32mm .... **Cat. #2129.92**

Extra Large Classic Tool Bag .... **Cat. #2133.73**

Inverter – 12Vdc to 120Vac 200 Watt for vehicle use .... **Cat. #2135.43**

115V Power Cord US .... **Cat. #5000.14**

Order Accessories and Replacement Parts Directly Online
*Check our Storefront at **www.aemc.com/store** for availability*

PRODUCT FEATURES

2.1   Description

The Micro-ohmmeter Model 6240 is used to perform low resistance measurements from 5μΩ to 400Ω. There are six ranges with test currents from 10mA to 10A.

The front end of the micro-ohmmeter employs a four-wire Kelvin configuration, which eliminates test lead resistance for a measurement accuracy of 0.25%. A built-in circuit filters out AC signals.

The Micro-ohmmeter Model 6240 is packaged in a sealed field case well suited for shop and field use. Power is supplied by a long-life NiMH battery pack with a built-in recharger (110/220V).

The large, easy-to-read liquid crystal display is 2.25 x 4.00". It displays the value of resistance, current or voltage test, polarity and battery charge.

For operator safety and instrument protection, the micro-ohmmeter is fuse protected at the inputs. One fuse, accessible from the front panel, protects against stored energy in inductive loads.

Enhanced internal circuitry protects against possible inductive kickback when the current is shut off.

A built-in thermal switch protects the micro-ohmmeter against overheating on the 10A range when in continuous use.

2.2   Applications

Some of the more popular and most frequent uses of the micro-ohmmeter are in applications for:

- Checking metallic coating resistance, especially in aeronautics
- Ground connections and continuity measurement
- Resistance measurements on motors and small transformers
- Contact resistance measurements on breakers and switches
- Component measurement
- Electrical cable resistance measurement
- Mechanical bond tests
- Wire to terminal connections
- Aircraft and rail bonds

2.3   Key Features

- Measures from 5μΩ to 400Ω
- Test current selection from 10mA to 10A
- Manual temperature compensation (with DataView® software)
- Front panel polarity reverse function
- Stores up to 99 test results
- Operator safety by automatic discharge of residual charge on the equipment under test
- Instantaneous, continuous or multiple test operation
- Auto store of multiple test results
- Internal, rechargeable batteries conduct up to 850, 10A tests
- A built-in battery pack recharger recharges the batteries by connecting to the AC line (110V-230V, 50/60Hz) using a standard line cord
- 4-Wire measurement with automatic compensation of undesirable voltages and lead resistance
- Large multi-function backlit display
- Direct display of the measurement with units, range and test current
- Rugged, sealed case
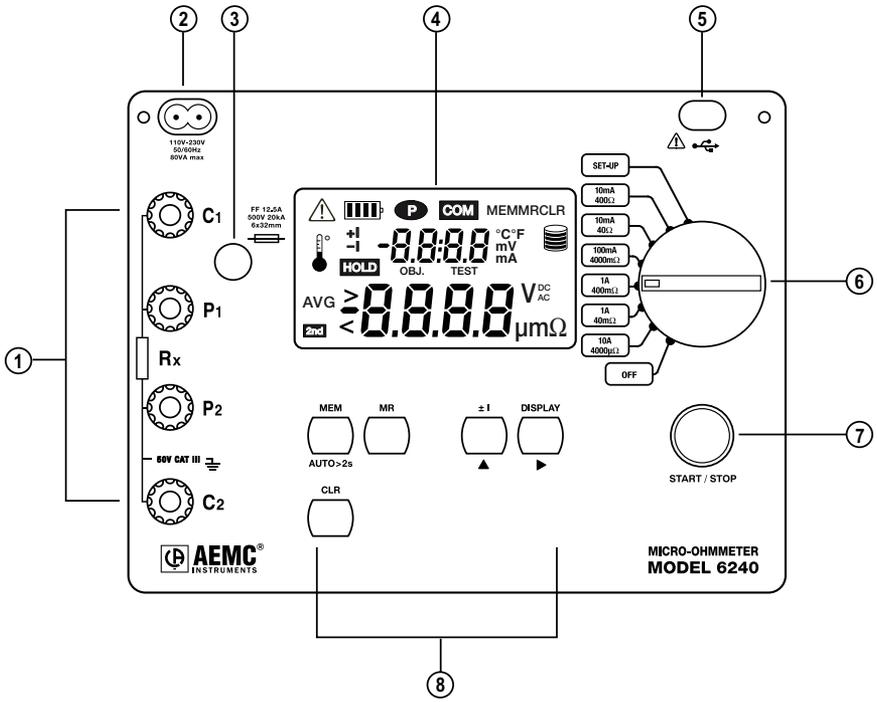
2.4   Control Features

Figure 2-1

1. Kelvin input terminals

2. AC line recharging receptacle

3. Output fuse - 12.5A, 500V, 6x32mm

4. Large multi-line backlit liquid crystal display (see § 2.6)

5. Optical interface connector for connection to a computer

6. Range selection switch

7. Start/Stop button

8. Program/function buttons (see § 2.5)

2.5   Button Functions

MEM	Stores the measurement at an address identified by an object number (OBJ) and a test number (TEST). Two presses on this button are required, one to select the location (use the ▲ and ► buttons to change the location) and another to store the measurement.
MR	Retrieves stored data except for the OFF and SET-UP positions (this function is independent of the selector setting of the switch). Data is viewed using the ▲ and ► buttons.
± I	Reverses the direction of the current and displays the average.
DISPLAY	Displays the current or voltage on the terminals.
AUTO>2s	Activates automatic recordings.
▲	Used in the SET-UP and memory mode, selects a function or increments a flashing parameter.
►	Used in the SET-UP and memory mode, accesses the function to be modified.
CLR	Erases the memory

2.6   Display Symbols

The display incorporates two lines of characters to display test results, as well as a library of symbols to assist the operator in determining conditions at a glance. The symbols that can appear are shown in Figure 2-2.
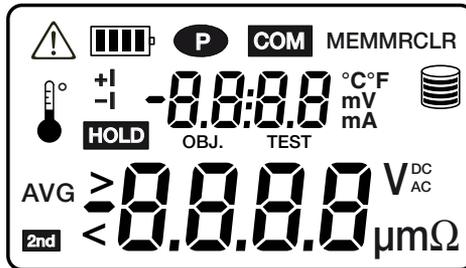

Figure 2-2

⚠	Indicates the measurement is noisy; accuracy is not guaranteed
🔋	Indicates the battery charge condition; the segments represent energy
P	Indicates that power down is deactivated
COM	Not used
MEM	Displayed measurement about to be stored in memory
MR	Memory recall
CLR	Indicates the memory is being erased
🌡°	Indicates internal overheating
+ I	Indicates the direction of current
- I	Indicates the direction of current
HOLD	Indicates that a measurement has been stopped
OBJ.	First position locator for data stored in memory
TEST	Second position locator for data stored in memory
°C / °F	Not used
💾	Memory utilization indicator
AVG	Displays average $\frac{R\,(+I) + R\,(-I)}{2}$
2nd	Not used
>	Indicates an overrange

SPECIFICATIONS

3.1 Electrical

Specifications are given for an ambient temperature of 23°C ± 3°C, relative humidity of 45 to 55%, supply voltage of 6V ± 0.2V and magnetic field of <40A/m.

RESISTANCE						
Measurement Range	5.0 to 3999µΩ	4.0 to 39.99mΩ	40.0 to 399.9mΩ	400 to 3999mΩ	4.0 to 39.99Ω	40.0 to 399.9Ω
Resolution	1µΩ	10µΩ	100µΩ	1mΩ	10mΩ	100mΩ
Accuracy	± 0.25% ± 2ct					
Measurement current	10.2A ± 2% [1]	1.02A ± 2%		102mA ± 2%	10.2mA ± 2% [2]	
Open voltage	4 to 6V					
Inductance	0.5H Max					

(1) With nominal value of 10.2A, the measurement current is at least 10A whatever the charge condition of the battery.
(2) The current is 10mA only up to 300Ω. If the battery is low, it can fall to as low as 8mA.

VOLTAGE MEASUREMENT INDICATION					
Measurement Range	0.01 to 3.999mV	4.0 to 39.99mV	40.0 to 399.9mV	0.40 to 3.999V	4.0 to 4.70V
Resolution	1µV	10µV	100µV	1mV	10mV

CURRENT MEASUREMENT INDICATION				
Measurement Range	5.0 to 39.99mA	40.0 to 399.9mA	0.40 to 3.999A	4.0 to 11.00A
Resolution	10µA	100µA	1mA	10mA

Influences on the Resistance Measurement

Quantities of Influence	Range of use	Variation of the measurement	
		Typical	Maximum
Temperature	-10 to +55°C	0.1%/10°C	0.5%/10 °C + 2cts
Relative Humidity	10 to 85% RH @ 45°C	0.1 %	0.5% + 2cts
Supply Voltage	5 to 7V	2cts	0.2%/V + 2cts
Series Mode Rejection, 50/60Hz*	U (AC) = (R measured x I measurement)	< 0.2%	2% + 1ct
Common Mode Rejection, 50/60Hz AC	0 to 50 V AC	> 80 dB	> 60 dB

*Example: If the measured resistance is 1mΩ and the measurement current is 10A, an alternating voltage of 1mV RMS in series with the resistance to be measured will induce an error of not more than 2%.

Power Supply: 6V, 8.5Ah rechargeable NiMH battery pack

Battery Life: Range dependent

Range	Number of measurements*
10A	850
1A	3500
100mA	4500
10mA	5000
In Standby or Off	battery life 4 to 6 months

*Established for measurements lasting 5s, every 25s.

3.2   Mechanical

Dimensions:
10.70 x 9.76 x 7.17" (272 x 248 x 182mm)

Weight:
10 lbs (4.5kg approx)

Case Protection:
ABS plastic polycarbonate: watertight to IP54 (cover closed), water resistant to IP53 (cover open).

Color:
Safety yellow case with gray faceplate

3.3   Environmental

Operating Temperature:
14° to 132°F (-10° to 55°C), 10 to 85% RH

Storage Temperature:
-40° to 158°F (-40° to 70°C); 10 to 90% RH

Altitude: <2000m

⚠️   **NOTE:** For long-term storage (>1 year) with the battery installed, the stor-
age range is -4 to 86°F (-20 to 30°C); 85% RH, otherwise the battery will
deteriorate. For short-term storage (1 month) the temperature can reach
up to 122°F (50°C).

3.4   Safety

Electrical safety as per EN 61010-1 (Ed. 2 of 2001), EN 61557 (Ed. 97)
parts 1 and 4.
Degree of pollution: 2
Protection: Measurement CAT III, 50V with respect to earth, 500V
differential between terminals, and 300V CAT II on the charger input

Electromagnetic Compatibility:
The instrument satisfies the CEM and DBT directives required for the CE
marking and product standard EN 61326-1 (Ed. 97) + A1 (Ed. 98)
Emissions in residential environment
Immunity in industrial environment

Specifications are subject to change without notice

OPERATION

⚠ **NOTE:** Charge the instrument fully before use. ⚠

4.1   Precautions Before Use ⚠

- **Never** use test leads or measuring wires if there is any evidence of deterioration (insulation split, burnt, etc).
- **Never** exceed the safety values indicated in the specifications
- **Never** connect the unit to a live circuit.
- **Never** disconnect the connection wires before the ⚠ icon disappears from the display.

4.2   Instrument Configuration (SET-UP mode)

The **SET-UP** mode is used to modify the instrument's configuration. This can also be performed by using the **DataView® software** that came with the instrument (see § 5).

To configure   the Model 6240 directly from the display, turn the rotary switch to the **SET-UP** position. The following screen will appear:

```
 ┌──────────────────────┐
 │  ▭▭▭▶        MEM      │
 │        ELr           │
 │       ALL            │
 └──────────────────────┘
```
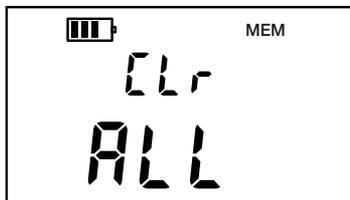
- **The display order of the parameters that can be modified is:**
    - Clear all memory (see § 4.9.2)
    - Time
    - Date
    - Automatic Power Off
    - Display of the Internal Parameters (e.g. serial number, software version, date of last calibration, lighting of all segments on display)

To display and modify parameters:

- To move through parameters, press the ▶ button.
- To change the displayed parameters or view additional ones, press and hold the ▶ button.
- To modify the parameters, use the ▲ button.
- To accept the changes, press and hold the ▶ button >2s until the display stops blinking.

4.3   Resistance Measurements

⚠ **WARNING:** Before performing the resistance test, verify that the sample under test is not energized.

1. Clean all surfaces before connecting test leads.
2. Connect the two leads to the four terminals, then the two Kelvin clips to the object to be tested.
3. Set the range selector switch to the desired range for the test. If the anticipated resistance is not known, begin with the highest range (400Ω) and successively lower the range selection until adequate resolution is achieved.
4. Press the **START/STOP** button to start the measurement.

⚠ **NOTE:** The **START/STOP** needs to be pressed each time the range is changed. The range selection may be changed while the instrument is on.
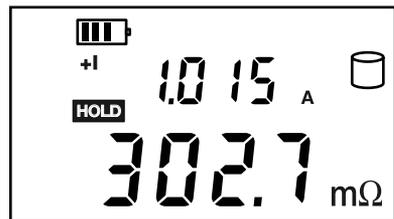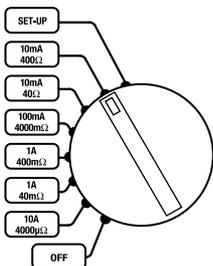
5. Press the **START/STOP** button again to stop the measurement or disconnect one of the Kelvin clips. The last measurement made is displayed along with the **HOLD** symbol.

⚠️ **NOTE:** If the measurement was stopped by disconnecting a Kelvin clip, simply connect it to another object to start the next measurement; it is not necessary to press the **START/STOP** button.

6. To display the voltage on the terminals of the resistance instead of the measurement current, press the **DISPLAY** key.

Current results are displayed before pressing DISPLAY button
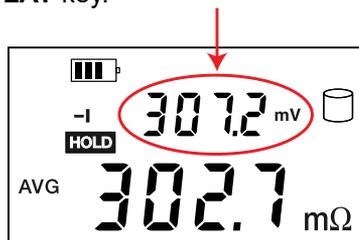
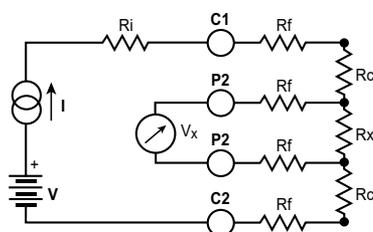*Voltage results are displayed after pressing DISPLAY button*

4.3.1   Measurement Readings

When testing resistive samples, the meter reading will stabilize within the first few hundred milliseconds. On inductive loads (e.g. small transformers), the measurement reading may take from several seconds to a few minutes to stabilize and depends greatly on the type of equipment and the impedance of the equipment under test.

4.3.2   Connections and Readings

The Model 6240 generates a current (I) from the internal voltage source (V). A voltmeter measures the voltage drop V_x at the Kelvin probe contact points to the resistance to be measured (R_x) and displays the resistance measurement (R_x) directly using the formula $R_x = V_x / I$.

R_i = Unit internal resistance
R_f = Lead resistance
R_c = Contact resistance
R_x = Resistance to be measured

The result is not affected by the other resistances encountered in the current loop (R_i, R_f, R_c), as long as the total voltage drop induced across R_x remains below the voltage supplied by the source which is between 5 to 6V. The maximum admissible lead resistance level is $R_f \approx (V - V_x) / I$. The use of Kelvin probes helps, as they eliminate the effect of the lead resistance (R_f).

4.3.3   Test Lead Connection

The measurement leads are connected using the four binding posts on the left side of the front panel as shown below.

Connect the two red leads to terminals C1 and P1. Connect the two black leads to terminals C2 and P2.

Any drop in the voltage on the load terminals is measured between the two "voltage" (V) leads, P1 and P2. The current leads (C1 and C2) can deliver current from 10mA to 10A.
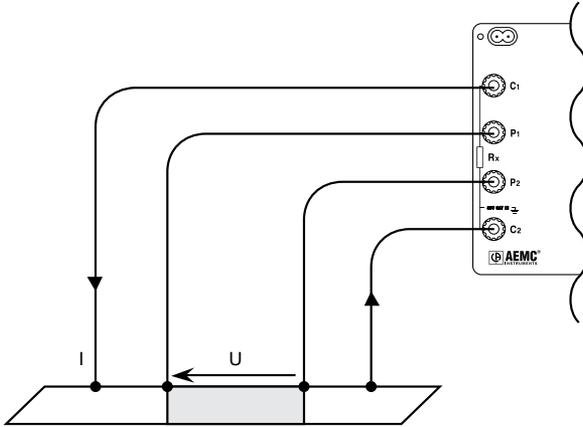
4.4   Repetitive Measurements

1. Connect the Kelvin clips to the first object. Press **START/STOP**.

2. Disconnect the clips. The measurement stops and result is displayed.

3. Connect the clips to the second object. The measurement restarts automatically. Repeat as necessary.

4. After the last measurement, press **START/STOP** again.

⚠ **NOTE:** This operation is valid only if all of the objects to be measured have substantially the same value and all of the measurements are made in the same range.

4.5   Measuring Very Low Resistance

When measuring very low resistive values in the µΩ range, the presence of stray DC currents may affect the accuracy of the measurements. These currents can be present due to a variety of reasons including chemical or thermal EMF in samples made of dissimilar metals.

You can eliminate the effects of this by reversing the direction of current flow (see example below) and using the average of forward and reverse readings.

The presence of AC interference in the sample under test may cause the measured value on the display to fluctuate. This interference may become more noticeable in the presence of strong electric fields. The effect of this interference may be reduced by twisting the leads around each other.

1.   Reverse the direction of the current by pressing the **±I** button and the instrument displays the average:

$$R_{AVG} = \frac{R(+I) + R(-I)}{2}$$
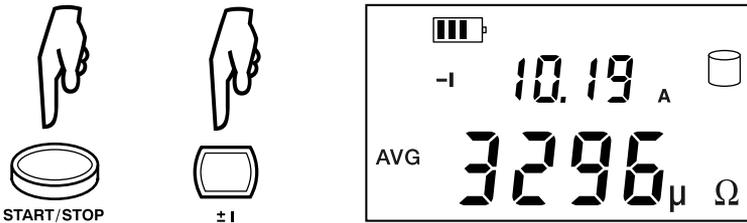

2.   To display the values R(+I) and R(-I), press the **DISPLAY** button.
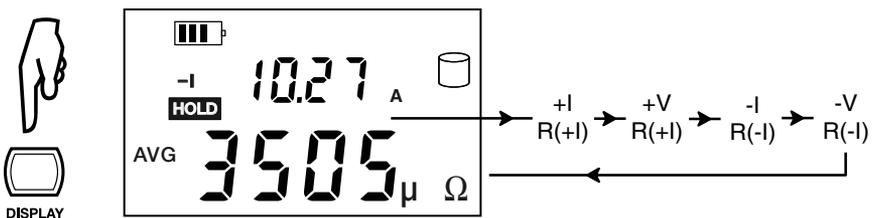
Press the DISPLAY button to cycle through the values

4.6 Automatic Recording

1. Before making measurements, press the **AUTO >2s** button.

2. When the button is pressed, the **MEM** symbol flashes and the small display indicates the first free **OBJ : TEST** number (e.g. 01 : 01). The main display indicates F r E E.

3. Use the ▶ button to switch between the **OBJ** and **TEST** option, then use the ▲ button to change the number of the test or object.

4. When finished press the **MEM** button for >2s. Automatic recording is activated (the **MEM** symbol flashes).

Use the arrow buttons to change the values of the OBJ and TEST

> 2s
MEM

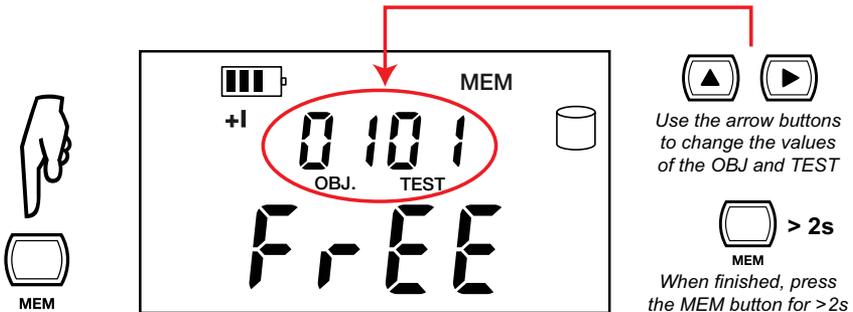*When finished, press the MEM button for >2s*

AUTO>2s
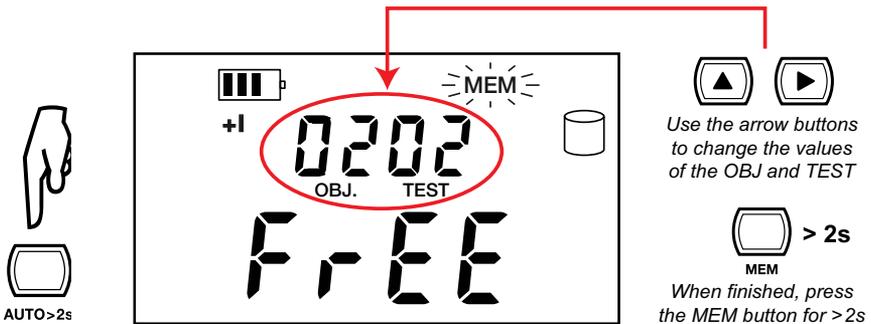
5. Press the **START/STOP** button to begin measuring.
   At each new measurement, the test number is incremented and the measurement is recorded.

6. Press the **START/STOP** button again to stop automatic recording.


START/STOP
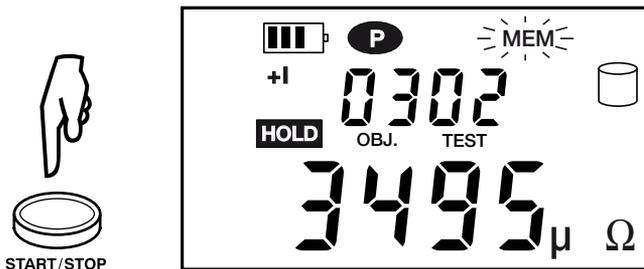
4.7   Storing Results into Memory

Data storage is organized into objects (**OBJ**), each of which can contain several tests (**TEST**). **OBJ** corresponds to the object tested and each test corresponds to a measurement made on the object. The instrument can store 99 measurements.

1. Start and Stop a measurement (see § 4.3).

2. Press the **MEM** button.

3. When the button is pressed, the **MEM** symbol flashes and the small display indicates the first free **OBJ : TEST** number (e.g. 01 : 01). The main display indicates $FrEE$.

4. Use the ▶ button to switch between the **OBJ** and **TEST** option, then use the ▲ button to change the number of the test or object.

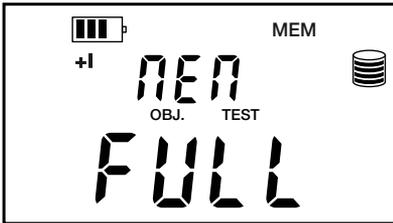**5.** When finished press the **MEM** button for >2s. The measurement is stored.

6. If the user selects a memory address that is already occupied, oCC appears on the main screen. To overwrite the location, press the **MEM** button for >2s.
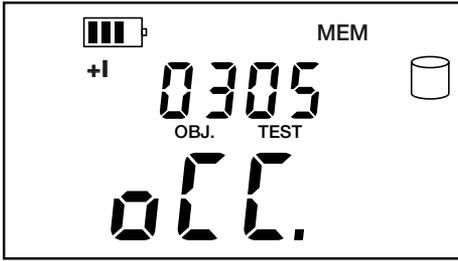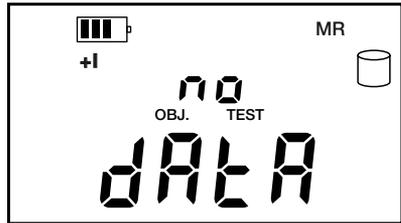
Indicates address is already occupied

either > 2s or

Overwrites the Memory   *Exits without Recording*
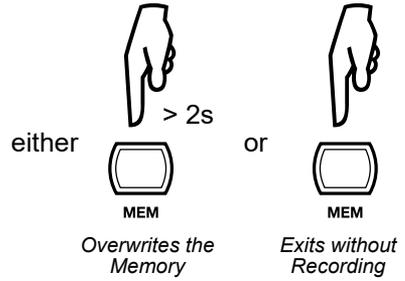
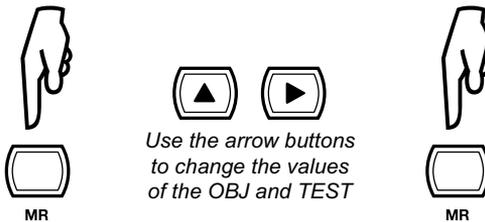Display shown if memory is **full**:   Display shown If memory is **empty**:


4.8   Recalling Results from Memory

1.   Make sure there is no measurement in progress.

2.   Press the **MR** button.

3.   Use the ▶ and ▲ buttons to select the desired OBJ and TEST.

4.   Press the **MR** button again to exit the memory function.

Use the arrow buttons to change the values of the OBJ and TEST

4.9   Erasing Measurements from Memory

4.9.1   Erasing Selected Measurements

1. Press the **CLR** button.

2. Use the ▶ and ▲ buttons to select the desired OBJ and TEST.

3. Press the **CLR** button for >2s to delete the selected record.

Use the arrow buttons to select the desired OBJ and TEST

> 2s

When finished, press the CLR button for >2s
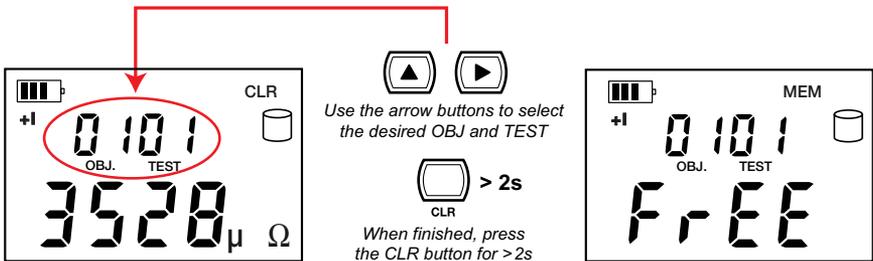
4.9.2   Erasing All Measurements

1. Turn the rotary switch to **Set-up**. The default display appears:
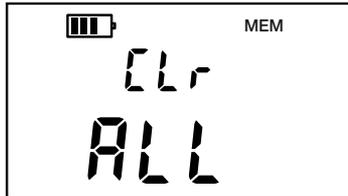
2. Press ▶ for >2s. ALL will blink.

3. Press ▶ again. FrEE will display.

4. Press ▶ again for >2s. All measurements are erased and the screen returns to the default display.

DATAVIEW® SOFTWARE

5.1   Installing DataView®

⚠ **DO NOT CONNECT THE INSTRUMENT TO THE PC BEFORE INSTALLING THE SOFTWARE AND DRIVERS.**

NOTE: When installing, the user must have Administrative access rights during the installation. The users access rights can be changed after the installation is complete.

DataView® must be reinstalled for each user in a multi-user system.

USB Flash Drive Install

1. Insert the USB stick into an available USB port (wait for driver to be installed).

2. If Autorun is enabled then an AutoPlay window should appear as shown.
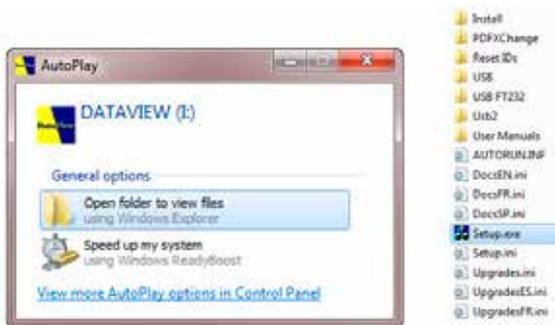
3. In the AutoPlay window, select **Open Folder to view Files**.

4. Double-click on **Setup.exe** from the opened folder view to launch the DataView setup program.

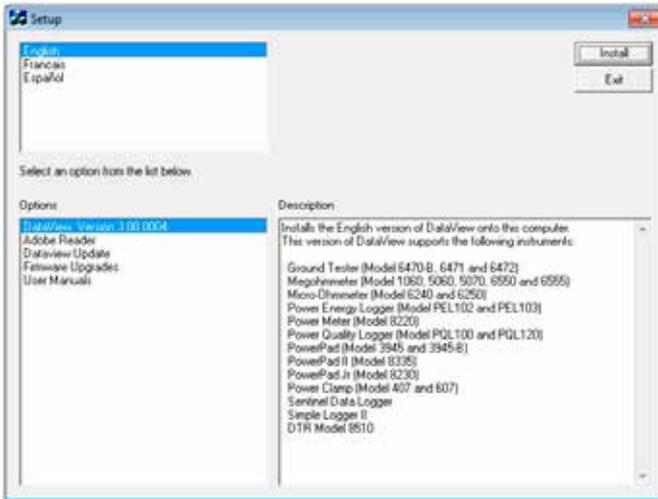5. A **Set-up** window, similar to the one below, will appear.

Figure 5-1

There are several differen options to choose from. Some options^(*) require an internet connection.

- • **DataView, Version x.xx.xxxx** - Installs DataView® onto the PC.

- • **Adobe Reader* - Links to the Adobe® website to download the most recent version of Adobe® Reader to the computer. *Adobe® Reader is required for viewing PDF documents supplied with DataView®.*

- • **DataView Updates* - Links to the online DataView® software updates to check for new software version releases.

- • **Firmware Upgrades* - Links to the online firmware updates to check for new firmwar   version releases.

- • **Documents** - Shows a list of instrument related documents that you can view. Adobe® Reader is required for viewing PDF documents supplied with DataView®.

6. **DataView, Version x.xx.xxxx** option should be selected by default. Select the desired language and then click on **Install**.

7. The **Installation Wizard** window will appear. Click **Next**.

8. To proceed, accept the terms of the license agreement and click **Next**.

9. In the **Customer Information** window, enter a Name and Company, then click **Next**.

10. In the **Setup Type** window that appears, select the **"Complete"** radio button option, then click **Next**.

11. In the **Select Features** window that appears, select the instrument's control panel that you want to install, then click **Next**.

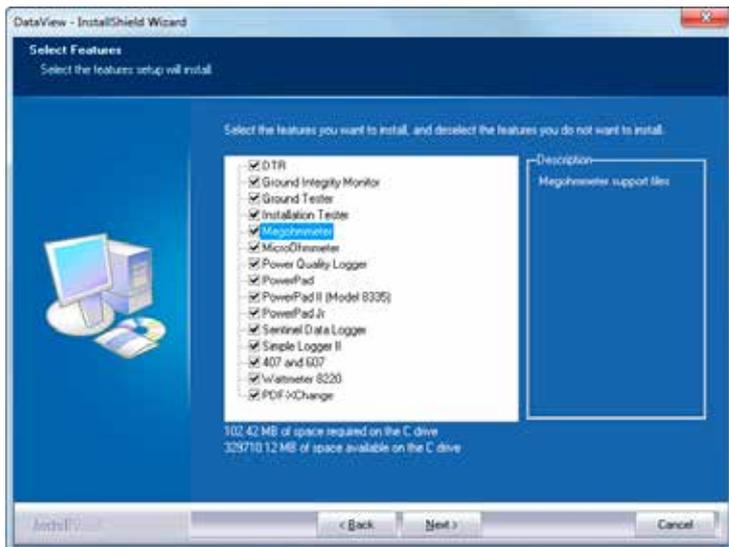ℹ️ **NOTE:** The **PDF-XChange** option must be selected to be able to generate PDF reports from within DataView®.

Figure 5-2

12. In the **Ready to Install the Program** window, click on **Install**.

13. If the instrument selected for installation requires the use of a USB port, a warning box will appear, similar to Figure 5-3. Click **OK**.
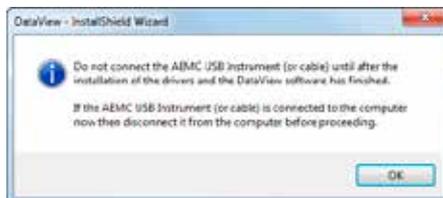
Figure 5-3

| | **NOTE:** The installation of the drivers may take a few moments. Windows may even indicate that it is not responding, however it is running. Please wait for it to finish. |

---

14. When the drivers are finished installing, the **Installation Successful** dialog box will appear. Click on **OK**.

15. Next, the **Installation Wizard Complete** window will appear. Click on **Finish**.

16. A **Question** dialog box appears next. Click **Yes** to read the procedure for connecting the instrument to the USB port on the computer.

⚠ **NOTE:** The Set-up window remains open. You may now select another option to download (e.g. Adobe® Reader), or close the window.

17. **Restart** your computer, then connect the instrument to the USB port on the computer.

18. Once connected, the **Found New Hardware** dialog box will appear. Windows will complete the driver installation process automatically.

The DataView folder containing shortcuts for DataView® and each control panel selected during installation has been added to your desktop.

⚠ **NOTE:** If you connected your instrument to the computer before installing the software and drivers, you may need to use the **Add/Remove Hardware** utility to remove the instrument driver before repeating the process.

5.2   Connecting the Instrument to your Computer

The Model 6240 is supplied with a USB interface cable **(Cat. #2135.41)** necessary for connecting the instrument to the computer. This cable is equipped with a type-A USB connector on one end and an optical connector on the other end, thus providing the ability to interface with computers that have USB connectors.

To connect the instrument to your computer:

- Connect the optical connector end of the cable to the optical communications port on the front panel of the Model 6240.
- Connect the type-A USB end of the cable to an available USB port on your computer.

The first time this cable is connected to the computer, Windows will install the drivers for it. Once this has finished the system is ready to communicate using the DataView® software with the micro-ohmmeter.

5.3   Opening the Micro-ohmmeter Control Panel

To open the control panel:

1. Double-click the **Micro-ohmmeter Icon** in the DataView folder that was created during installation, located on the desktop. The Micro-ohmmeter Control Panel will open.
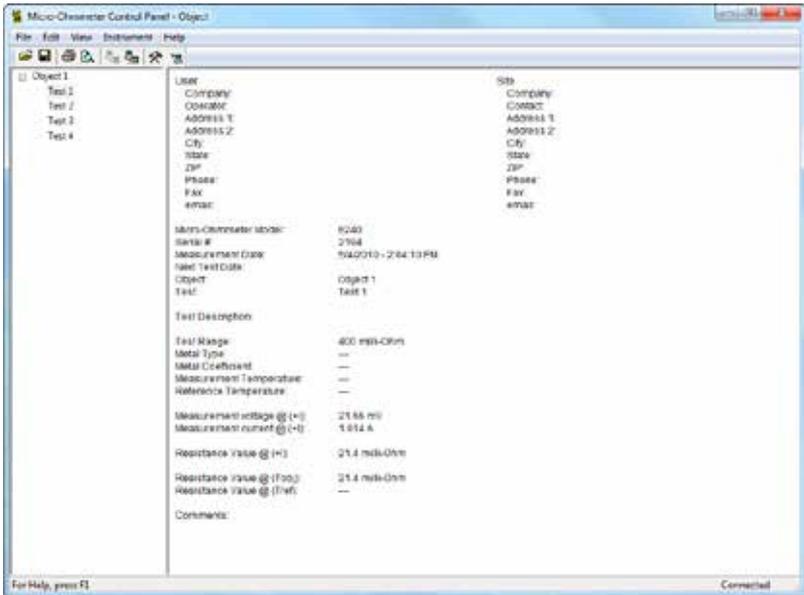

Figure 5-4

2. To establish a communication link with the instrument, go to **Instrument > Connect** in the main menu.

3. The Communication dialog box will appear. Make sure that the communication port displayed in the dialog box matches the port that the serial cable is plugged into.

Figure 5-5

4. Once the proper communication parameters have been specified click **OK**.

5.4   Configuring the Instrument

To configure the instrument perform the following steps.

1. Double-click the Micro-ohmmeter icon in the DataView folder.

2. Go to **Instrument > Configure** from the main menu of the Micro-ohmmeter Control Panel.
    NOTE: If a connection has not been previously established, the Communication dialog box will appear allowing you to select the Communication Port and Instrument Model.

3. Once identification is complete, the Configuration dialog box will appear on the screen, allowing you to configure the Date Format and Auto Power OFF options.

Figure 5-6

This setup dialog box also contains five command buttons:

*   **Set Clock:** Programs the computer's time and date into the configuration of the instrument.
*   **Delete Tests:** Displays a dialog box which allows the deletion of selected tests.
*   **Write to Instrument:** Programs the micro-ohmmeter using the current settings.
*   **Read from Instrument:** Reads the current configuration of the micro-ohmmeter attached via the communications cable.
*   **Cancel:** Closes the Configuration dialog box and brings up the Control Panel.

Once all of the fields have been configured click on the **Write to Instrument** button to configure the instrument and close the Configuration dialog box.

☞ **TIP:** While connected, both the DataView® and Micro-ohmmeter windows may be open. They have similar main menu options. To determine which window is active, look at the top left corner of the window. It will either display "DataView" or "Micro-ohmmeter". Use the Windows taskbar at the bottom of your screen to access the appropriate window.

5.5 Downloading Stored Tests

The Download command initiates the transfer of test measurements stored in the instrument. To download stored tests perform the following steps:

1. Select the download command (either from the **Instrument** menu or the **Download** button).

2. The software will build a list of tests stored in the instrument and the **Select Tests** dialog box will appear, allowing you to select which tests to download.
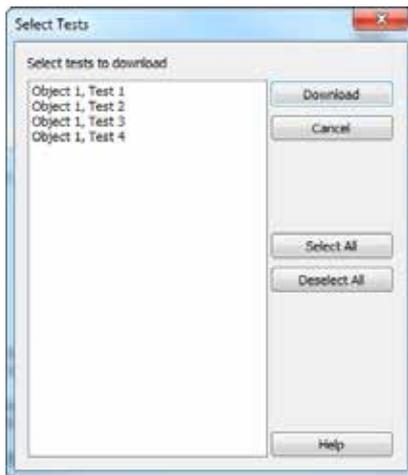

Figure 5-7

3. Highlight the desired tests using the Shift or Ctrl keys and select the **Download** button.

⚠ **NOTE:** For additional help on using the software, use DataView's "Help" Menu, which is located on the menu bar.

5.6   Saving/Exporting Data to a Spreadsheet or PDF File

Measurement values stored in a database can be saved to a spreadsheet (.csv file, which can be opened in Microsoft® Excel) or exported to a PDF file (which can be opened using free Adobe® Reader software).

⚠️ **NOTE:** Exporting to a PDF file can only be performed from within DataView itself, not the Micro-ohmmeter Control Panel.

5.6.1   Saving Data to a Spreadsheet from the Control Panel

To save data to a spreadsheet:

1. With a database open, go to **File > Save As**.
2. In the Save As dialog box that appears, choose a location to save the file from the "Save in" drop-down menu.
3. Select **CSV (Comma delimited)** from the "Save as type" drop-down menu, then click **Save**.

⚠️ **NOTE:** To be able to export the data to a PDF from the Micro-ohmmeter Control Panel, first go to **File > Create Dataview Report,** save as a .dvb, then open the saved .dvb file from within DataView and perform the steps below.

5.6.2   Exporting Data to a PDF from DataView®

To export data to a PDF file:

1. With a database open, go to **File > Generate PDF**.
2. In the Print dialog box that appears, make sure that **PDF-XChange 3.0** is selected from the drop-down menu, then click **OK**.
3. When the PDF is complete, the Save As dialog box will appear. Choose a location to save it to and click **Save**.
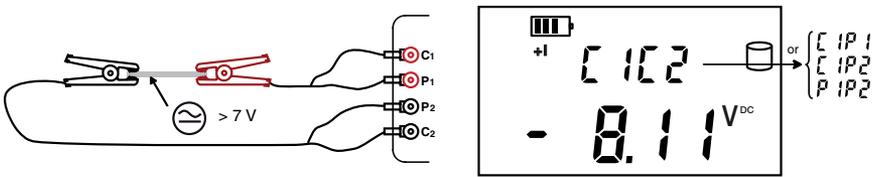
NOTE: Data can also be exported to a spreadsheet from within DataView by going to File > Export to Spreadsheet.

TROUBLESHOOTING

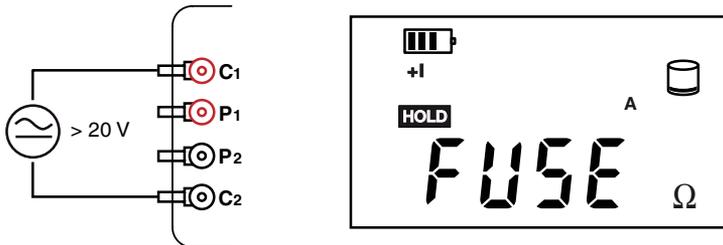## 6.1   Error Messages

6.1.1   Voltage Present

An error message will appear when an external voltage is present on the device being measured (e.g. C1C2 or C1P1). Before a measurement is possible the voltage must be removed from the test object.
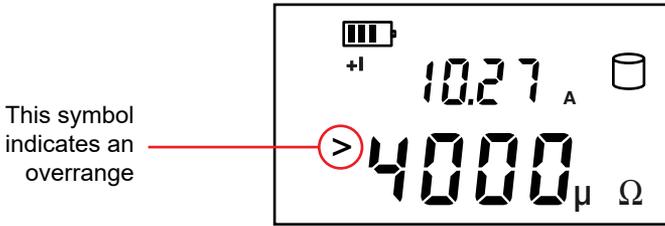

A voltage greater than 20V applied across the C1-C2 terminal will cause the fuse on the front panel to blow. (See §7.4 for fuse replacement)

6.1.2 Overrange

The **>** symbol indicates an overrange condition. Switch to a higher measurement range and restart the measurement until the **>** symbol no longer appears.

This symbol indicates an overrange

6.1.3 Noisy Measurement

The ⚠ symbol indicates noise in the measurement. The measurement accuracy is not guaranteed.

This symbol indicates noisy measurement
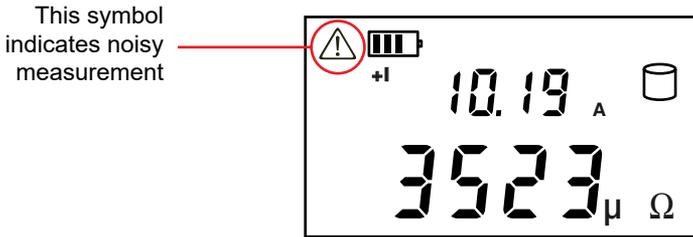
6.1.4 Overheating

Internal overheating can occur if a measurement in the 10A range last for several minutes. No measurement is possible until the temperature symbol and too Hot indication are no longer visible.

MAINTENANCE

Use only factory specified replacement parts. AEMC® will not be held responsible for any accident, incident, or malfunction following a repair done other than by its service center or by an approved repair center.
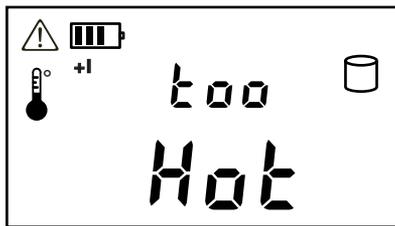
7.1 Warning ⚠

- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.

- Do not perform any service while the micro-ohmmeter is on any circuit.

- To avoid electrical shock and/or damage to the instrument, do not get water or other foreign agents into the electronic module.

- Make sure the internal battery is fully charged prior to testing. If the instrument has been left unused for several months, recharge the battery.

- We recommend recharging the micro-ohmmeter every month to ensure a full battery charge when used.

- When replacing the fuse, install only the fuse which is a direct replacement.

7.2 Cleaning

⚠ **WARNING:** Disconnect the instrument from any source of electricity.

- If the case needs cleaning, do not use any alcohol or oil based cleaners. Preferably use soapy water with a damp cloth or sponge.

- Dry immediately after cleaning. Avoid water penetration into the electronic module.

- Make sure the micro-ohmmeter and all leads are dry before further use.

7.3   Charging/Recharging the Battery

AC POWER SELECTION

The Model 6240 may be recharged from 110 to 230VAC (50/60Hz). The instrument includes a 110V line cord, which provides the charging voltage for the rechargeable battery.

CHARGING THE BATTERY

- The Model 6240 should be charged to a full charge before using it for the first time.
- Charging to full capacity may take up to 6 hours for a completely discharged battery.
- If the battery symbol shows as an empty cell, the battery needs to be recharged.

The battery will only charge in the OFF mode.

- In the ON mode, the charging halts and the battery level indication is shown in the battery symbol to the top left of the display.
- In the OFF mode, indication is as described in the charging indicator section below.

Connect the Model 6240 to 110VAC using the power cord provided (charging starts automatically if the instrument is in the OFF mode).

⚠️ **NOTE:** Measurement can be obtained while the power cord is connected but the charging process will be stopped until the instrument is turned OFF again.

CHARGING INDICATORS

OFF Mode:

- **bAtt** on the small display and **###** on the main display, signifies fast charging in progress. Where **###** is the percent of battery charge (only in the OFF position).
- **bAtt** on the small display and **FULL** on the main display, signifies that charging is complete. At this point a low charge current is applied to maintain the battery charge.

ON Mode:

- **bAtt** shown when instrument is turned on and battery is low. There will be a 5 second delay then 4 beeps before the instrument shuts down.

- **bAtt** shown during high current measurement indicates a low battery condition (measurement will be possible on lower current range only).

Battery Indicator Status	Battery Charge (C)
▐█████▌	C > 87.5%
▐███▌	87.5% > C > 62.5%
▐██▌	62.5% > C > 37.5%
▐█▌	37.5% > C > 12.5%
▐▌	12.5% > C
▐▌ Blink	C = 0 (battery Indicator not initialized)
Automatic shutdown	C = 0

If the instrument is turned on and the battery voltage is >5V, then the normal use of the device is permitted.

7.4   Battery and Fuse Replacement

⚠ **NOTE:** Make sure that no terminals are connected and that the switch is in the OFF position before removing the instrument from the case.

BATTERY

⚠ **WARNING:** Replacing the battery causes data loss from memory.

- The battery should be replaced by an authorized repair facility recognized by AEMC® Instruments. See the Repair and Calibration section for return instructions.

- The battery is accessible using a Phillips Head screwdriver to remove the four screws on the bottom side of the case and pulling the chassis out from the top.

FUSE

- The fuse is located on the front panel between the C1 and P1 input terminals.

- Fuse F1, is a 6.3x32 mm, fast acting, 12.5A/500V, low internal resistance, protecting the current source from outside voltages on energized specimens.

Repair and Calibration

To ensure that your instrument meets factory specifications we recommend that it be scheduled back to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization Number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (Includes calibration certificate plus recorded calibration data).

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive
Dover, NH 03820 USA

Phone: (800) 945-2362 (Ext. 360)
        (603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
E-mail: repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: You must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support team:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
200 Foxborough Boulevard
Foxborough, MA 02035 USA

Phone: (800) 343-1391
        (508) 698-2115
Fax: (508) 698-2118
E-mail: techsupport@aemc.com
www.aemc.com

NOTE: Do not ship Instruments to our Foxborough, MA address.

Limited Warranty

The Model 6240 is warranted to the owner for a period of two years from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

Full warranty coverage and product registration is available on our website at www.aemc.com/warranty.html.

Please print the online Warranty Coverage Information for your records.

What AEMC® Instruments will do: If a malfunction occurs within the warranty period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

REGISTER ONLINE AT: www.aemc.com

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Ship To: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive • Dover, NH 03820 USA
Phone: (800) 945-2362 (Ext. 360)
        (603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
E-mail: repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: You must obtain a CSA# before returning any instrument.

Notes:

AEMC®
INSTRUMENTS

03/18

99-MAN 100324 v19