

- AC CURRENT • AC/DC VOLTAGE
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Simple Logger® II

Data Loggers

(Bluetooth Edition)



ENGLISH

User Manual

 **AEMC®**
INSTRUMENTS
CHAUVIN ARNOUX GROUP

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 [.](#)

Serial #: _____

Catalog #: _____

Model #: _____

Please fill in the appropriate date as indicated:

Date Received: _____

Date Calibration Due: _____



Chauvin Arnoux®, Inc.
d.b.a AEMC® Instruments

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CHAPTER 1

INTRODUCTION

⚠️ WARNING ⚠️

These instruments comply with safety standard EN 61010-1 (Ed 2-2010) or EN 61010-2-032 (2002) for voltages and categories of installation, at an altitude below 2000m and indoors, with a degree of pollution at most equal to 2.

- Do not use in explosive atmosphere or in the presence of flammable gases or fumes.
- Do not use on voltage networks greater than listed on the instrument label.
- Observe the maximum voltages and intensities assigned between terminals and earth.
- Do not use it if appears damaged, incomplete or improperly closed.
- Before each use, check the condition of the insulation of cables, case and accessories. Anything which appears damaged (even partially) must be reported for repair or scrapping.
- Use leads and accessories of voltages and categories at least equal to those of the instrument.
- Observe the environmental conditions of use.
- Do not modify the instrument and use only original replacement parts. Repairs or adjustments must be performed by authorized personnel.
- Replace the batteries when the “Low Bat” LED is blinking.
- Disconnect all cables from the instrument or remove the clamp on from the cable before opening the access door to the batteries.
- ⚡ Use protective equipment when security conditions are required.
- ⚡ Keep your hands away from unused terminals of the device.
- ⚡ When handling probes, probe tips, current sensors and alligators clips, keep fingers behind the guards
- For measurements of dangerous voltages, first connect the black lead to the black terminal of the instrument and then connect this lead to the low voltage point of the source to measure (potential closer to Earth). Then connect the red lead to the red terminal of the instrument and connect the lead to the hot source to measure. Disconnection must be done in reverse order: first disconnect the hot lead and then the black lead.

1.1 Symbols Used

| | |
|--|---|
| | Signifies that the instrument is protected by double or reinforced insulation. |
| | CAUTION - Risk of Danger! Indicates a WARNING and that the operator must refer to the user manual for instructions before operating the instrument in all cases where this symbol is marked. |
| | Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous. |
| | Refers to a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted. |
| | Ground/Earth |
| | Important instructions to read and understand completely. |
| | Important information to acknowledge. |
| | Battery |
| | Fuse |
| | USB socket |
| | Compliance with the Low Voltage & Electromagnetic Compatibility European directives (73/23/CEE & 89/336/CEE) |
| | In the European Union, this product is subject to a separate collection system for recycling electrical and electronic components in accordance with directive WEEE 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 (AC supply wall outlet). 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 ordering information. 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.

1.4 Ordering Information

Simple Logger® II Model L104 Cat. #2126.10

(4-Channel, TRMS, Bluetooth, 0-1VAC)

Includes Bluetooth USB adapter, mounting hardware, DataView® software, 4x1.5V C-cell alkaline batteries and user manual. Probes purchased separately.

Simple Logger® II Model AL834 Cat. #2126.14

(4-Channel, TRMS, Bluetooth, Captive AmpFlex® 300/3000AAC)

Includes Bluetooth USB adapter, mounting hardware, DataView® software, 4x1.5V C-cell alkaline batteries and user manual.

Simple Logger® II Model L264 Cat. #2126.23

(4-Channel, TRMS, Bluetooth, 600VAC/DC)

Includes Bluetooth USB adapter, set of 5 color-coded (4-red/1-black) 5 ft leads with color-coded alligator clips, twelve color-coded input ID markers, mounting hardware, DataView® software, 4x1.5V C-cell alkaline batteries and user manual.

Simple Logger® II Model L564 Cat. #2126.36

(4-Channel, TRMS, Bluetooth, Voltage & Current)

Includes Bluetooth USB adapter, set of 3 color-coded (red/black/white) 5 ft leads with color-coded alligator clips, twelve color-coded input ID markers, mounting hardware, DataView® software, 4x1.5V C-cell alkaline batteries and user manual. Probes purchased separately.

Simple Logger® II Model ML914 Cat. #2126.40

(4-Channel, TRMS, Bluetooth, Captive MiniFlex® 100/1000AAC)

Includes Bluetooth USB adapter, mounting hardware, DataView® software, 4x1.5V C-cell alkaline batteries and user manual.

1.4.1 Recommended Probes for Models L104 & L564

(see § 6 for probe specifications)

AC Current Probe Model MN93-BK (200A) Cat. #2140.32

AC Current Probe Model SR193-BK (1000A) Cat. #2140.33

AC Current Probe Model MN193-BK (5A/100A) Cat. #2140.36

1.4.2 Accessories and Replacement Parts

| | |
|--|----------------------|
| Type A to 5-pin mini-B 2M USB Firmware Upgrade Cable | Cat. #2126.49 |
| Bluetooth USB Adapter Class 2 | Cat. #2126.45 |
| Small Classic Carrying Bag | Cat. #2133.72 |
| Replacement - Set of 12, Color-coded Input ID Markers..... | Cat. #2140.45 |
| Lead - Replacement Set of 3, Color-coded (Red/Black/White) 5 ft with Color-coded Alligator Clips (L564) | Cat. #2152.03 |
| Lead - Replacement Set of 5, Color-coded (4-Red/1-Black) 5 ft with Color-coded Alligator Clips (L264) | Cat. #2152.04 |

CHAPTER 2

PRODUCT FEATURES



Throughout the content of this user manual, the Simple Logger® II may be referred to as the “SLII”.

21 Description

The Simple Logger® II Bluetooth Series of loggers are four channel recording devices powered by alkaline batteries.

Frequency tracking is performed such that 64 samples over one line cycle are taken. Frequency tracking is performed around the nominal frequency of 50/60Hz. Harmonic measurements are calculated from these 64 samples (harmonics are only available from the Simple Logger II Control Panel within the DataView® software).

The Simple Logger® II records at a rate of up to eight times per second. Samples are taken at a user defined storage rate. This means that the input(s) are ignored between measurement intervals.

The SLII’s battery operation allows operation without the need for external power. A series of front panel LEDs provide a quick status of the logger’s state, memory usage and low battery indication.

The main advantage of the logger is its ability to perform a variety of recording tasks with easy and intuitive setup from a computer using DataView® software, Bluetooth communication and long battery life.

Analog information on the input is sampled and converted to a digital value. This digital signal is processed and stored along with scale and time information. An integrated Bluetooth module provides for the transfer of data from the instrument’s internal memory to the computer for analysis.

2.2 Control Features

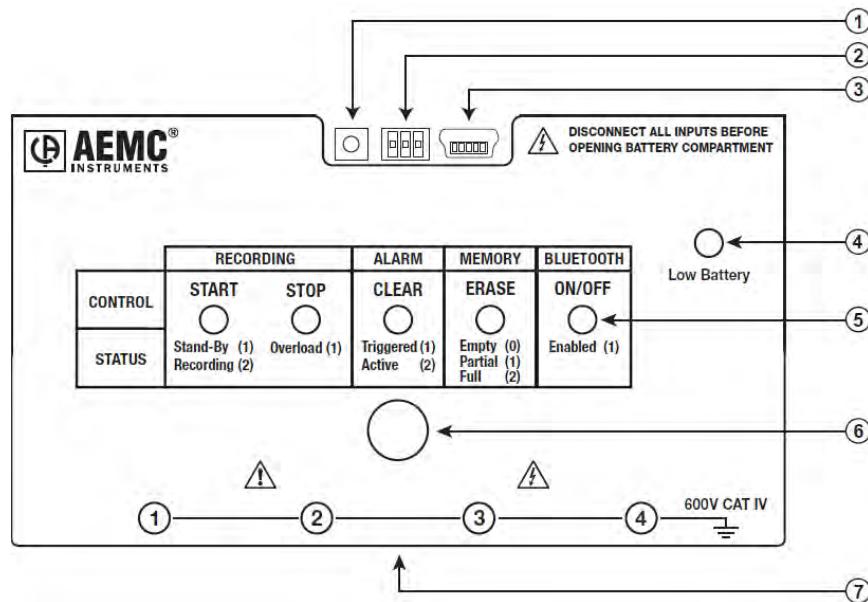


Figure 2-1

1. Reset Switch

The **RESET** switch resets the CPU. To access this switch, **disconnect** all inputs and remove the battery compartment cover. The reset switch is located on the exposed PCB (refer to § 3.10).

2. Flash Upgrade Switches

These three switches (accessible from under the battery cover), the **RESET** switch and upgrade software are used to recover from a failed flash upgrade procedure (refer to § 3.1).

3. Female Type Mini-B USB Connector

This connector is located under the battery cover and is used for performing firmware upgrades when available

4. Low Battery Indicator

The instrument contains protection circuitry to prevent it from being turned on when the battery voltage is below 1.7V.

There are two thresholds for the battery voltage:

- **The first is used to indicate low battery.** The low battery indicator (Red LED single blink) will blink when the battery voltage drops below 2.2V.
- **The second is used to determine when to terminate recording and turn the unit off.** The shutdown threshold is when the battery voltage drops below 1.7V.

Communication from the instrument to DataView® is disabled below 2.2V.

5. Five LED Indicators

The LEDs on the logger serve two functions: **Control Operation** and **Status Indication**.

- The control operation (when holding down the button) is indicated with text above each LED.
- The status indication (when the button is not being held down) associated with each LED is indicated with text below each LED.
- Refer to § 3.1 for detailed descriptions of each LED.

6. CONTROL Button

This button selects the mode of operation. Use this button to start or stop recordings, erase the memory, clear alarms and turn the Bluetooth ON/OFF.

7. Input (model dependent)

AL834: Four captive AmpFlex® flexible sensor

ML914: Four captive MiniFlex® flexible sensor

L264: Five 4mm banana plugs

L564: Three 4mm banana plugs and two custom CA connectors for current inputs

L104: Four custom CA connectors for current inputs



WARNING: If the **RESET** switch is pressed when the logger is recording, data in memory may be lost.

CHAPTER 3

OPERATION

3.1 LED Control Operation and Status Indication

The ON/SLEEP state of the SLII can be determined by pressing the **CONTROL** button for less than 0.5 seconds. If the instrument is ON, the status of the instrument will be shown by the LEDs. If the instrument is in the SLEEP mode, all the status LEDs will light until the **CONTROL** button is released. Once released, the status indication resumes.

Control of the instrument is performed by pressing and holding the **CONTROL** button until the control LED corresponding to the desired operation lights. Releasing the **CONTROL** button when the desired control LED is illuminated results in the corresponding operation being performed.

When pressing the **CONTROL** button each LED will light in sequence. Continuing to press the **CONTROL** button will result in all LEDs being off after the last LED lights. If you continue to hold the **CONTROL** button down, the sequence will repeat with the first LED. Releasing the **CONTROL** button after the last LED turns off and before the first LED turns on will result in no action being taken by the instrument. This provides a mechanism to cancel (or ignore) the button press.



The Instrument will turn ON from the SLEEP mode if a recording is scheduled to start.

The **Control and Status Operation** of each LED is as follows:

| GREEN LED | | |
|-----------|--------------------|---|
| CONTROL | Starts a Recording | |
| STATUS | Single-blink | Logger is in Standby Mode (and not recording) |
| | Double-blink | Logger is in Record Mode |

| AMBER LED | | |
|-----------|-------------------|---|
| CONTROL | Stops a Recording | |
| STATUS | OFF | Logger is not in an Overload condition |
| | Single-blink | One or more inputs are in an Overload condition |

| YELLOW LED | | |
|------------|------------------------------------|---|
| CONTROL | Clears the Alarm State (see § 3.6) | |
| STATUS | OFF | No alarm has been seen on any input |
| | Single-blink | At least one channel has seen an alarm at least once |
| | Double-blink | At least one channel is currently in an alarm condition |
| | Fast-blink | Armed to clear alarm indication |

| RED LED | | |
|---------|-------------------------------|----------------------------|
| CONTROL | Erases the Memory (See § 3.7) | |
| STATUS | OFF | No data in memory |
| | Single-blink | Memory is partially filled |
| | Double-blink | Memory is full |
| | Fast-blink | Armed to erase memory |
| | Slow-blink | Erase memory in process |

| BLUE LED | | |
|----------|-------------------------------|--------------------|
| CONTROL | Turns the Bluetooth ON or OFF | |
| STATUS | OFF | Bluetooth Disabled |
| | Single-blink | Bluetooth Enabled |

| RED LED (Low Battery) | | |
|-----------------------|--------------|---|
| STATUS | OFF | Batteries OK |
| | Single-blink | Low Battery Condition. Batteries should be replaced |



Overload occurs when any input is 10% above its input range. When the battery voltage goes below 1.7 volt the instrument will shut down (terminating and saving the recording, if it is recording).

- **SLEEP mode:** The instrument enters the low power state if the button is not pressed for one minute. It will remain in this state until either the button is pressed or the internal clock reaches the start time for a scheduled recording.
- **RECORD mode:** The instrument enters the low power state between sample sets. The slower the storage rate, the greater the portion of time the instrument is in the low power state. Thus, the slower the storage rate, the longer the instrument can record.

3.2 Connecting the Simple Logger® II to a Computer



INSTALL DATAVIEW® BEFORE CONNECTING TO THE COMPUTER.

The SLII comes with both USB and Bluetooth connectivity.

The USB connector is located underneath the battery cover and is used for firmware updates and may not be used for realtime measurements.



WARNING: The USB is not isolated from the inputs for safety. Connecting to a computer while the inputs are connected may damage your computer and/or your person. **The instrument must never be operated with the battery cover removed.**



The logger can be connected to the computer via Bluetooth during a recording session, however, an additional drain on the batteries will occur to support the communications.

3.2.1 Bluetooth Connection

The SLII is designed to connect to a computer wirelessly via Bluetooth for real-time measurements, data downloads and instrument setup.

The instrument is supplied with a Bluetooth USB adapter for computers without Bluetooth capability. If this is the case, connect it to an available

USB port on your computer. The default Windows driver will automatically install the device.

The pairing procedure varies depending on your operating system, Bluetooth equipment and driver software.



NOTE: The information in the following sections are only necessary the first time an instrument is connected, or when the Bluetooth USB adapter has been removed then reconnected.

3.2.2 Pairing

1. Make sure Bluetooth is enabled on the instrument.
2. Open the Bluetooth Devices dialog on your computer to pair the instrument with your computer. Different operating systems have different steps for opening this dialog, so consult your computer's documentation for instructions.
3. Once the dialog is displayed, click Add a Device. A dialog box appears listing the locally available Bluetooth devices. There may be several devices of varying types listed, depending on the location of your computer.
4. Find the instrument, which will appear listed by its Bluetooth name. Click the name. Depending on the operating system, you may be prompted to enter a pairing code. If so, enter 1234.
5. Click Next. A screen appears informing you that the instrument has been successfully connected with the computer. Click Close to exit the screen.
6. To complete the connection, open the Simple Logger II Control Panel. In the menu bar at the top of the screen, select Help. In the drop-down menu that appears, click the option Help Topics. This opens the Simple Logger II Control Panel Help system.
7. Use the Contents window in the Help system to locate and open the topic "Connecting to an Instrument." This topic provides instructions explaining how to connect your instrument to the computer.

3.3 Turning Bluetooth ON/OFF

By default, Bluetooth is enabled.

To conserve battery power, Bluetooth can be turned OFF.

To turn Bluetooth OFF, press and hold the Control button until the Blue LED turns on solid, then release the button. Repeat this step to turn Bluetooth back ON.

If all LEDs light instantaneously, the instrument was in SLEEP mode. Releasing the Control button will show the status (every 5 seconds).

3.4 Recording Data



The Simple Logger® II must first be configured before a recording can be performed (see § 4).

Once a configuration is written to the instrument, it will no longer need to be connected to DataView® to start the scheduled recording.

When data is stored in the memory, the user may download the information onto a hard-disk (see § 4).



A scheduled recording will still start even if the logger is in SLEEP mode.

3.4.1 Starting a Recording Session



A new recording cannot be started if the memory is full.

1. Connect the instrument to the measurement source.
2. Press and hold the **CONTROL** button. When the START (GREEN) LED lights up, release the button.
3. The GREEN LED double-blinks every 5 seconds when the logger is recording.



It may take a few seconds before the instrument starts recording. The recording status LED will single blink during this period.

3.4.2 Stopping a Recording Session

1. Press and hold the **CONTROL** button. When the STOP (AMBER) LED lights up, release the button.
2. The GREEN LED will change from a double-blink to a single-blink, indicating STANDBY mode.

The data will be retained, even if the instrument is in SLEEP mode. The recorded data is stored in Flash memory (maintained even in the absence of batteries). The recorded data may be downloaded to a computer.

3.5 Downloading Recorded Data

Recorded measurements stored in the instrument are transferred to a computer via the download command in the Simple Logger II Control Panel.

3.6 Clearing Alarm Indication

Clearing alarms can be performed in the **STANDBY** or **RECORD** mode.

1. Press and hold the **CONTROL** button. When the ALARM (YELLOW) LED lights up, release the button. The YELLOW LED will blink at a fast rate for a period of five seconds
2. Press the **CONTROL** button for another 0.5 second to complete the operation.



This does not clear any stored alarms, only indications. Stored alarms can only be cleared when memory is erased (see § 3.7 - *Erasing Data from Memory*).

3.7 Erasing Data from Memory

Erasing data from the instrument's memory can only be performed while in the STANDBY mode.

There are two ways to erase the memory:

Erasing the Memory using the Control Button:

1. Press and hold the **CONTROL** button. When the ERASE (RED) LED lights up, release the button. This will arm the instrument for an erase operation (when not in record mode). While armed to erase memory, the RED LED will blink at a fast rate for a period of five seconds
2. Press the **CONTROL** button for another 0.5 seconds to start the erase operation. During the erase operation the LED will blink once every second. Erasure takes about 1 minute to complete.



If the button is not pressed within five seconds of arming, the erase operation will automatically disarm and memory will be maintained. For this reason, if you do not intend to erase memory, simply wait until the RED LED stops blinking at the fast rate.

Erasing the Memory using the Simple Logger II Control Panel:

1. Connect the instrument to the computer and launch the Simple Logger II Control Panel.
2. Select **Erase Memory** from the **Instrument** menu.
3. A dialog box will appear asking to confirm the erasure of the instrument's memory. Select **Yes** to confirm or **No** to cancel the operation.



Erasing the memory will also clear any stored alarms.

3.8 Data Storage

The logger captures Trend measurements. The following are definitions of terms used in this section:

Input Channel: Source for the measurement channel of the instrument.

Measurement Channel: Measurement of input. This can be a simple direct measurement, the result of complex mathematical operations on a single or multiple input, or other channels.

Sample Rate: The rate at which the instrument measures inputs.

Storage Rate: The rate at which channel measurements are stored.

3.8.1 Trend Measurements

The logger stores the measurement of each of the inputs. In addition, the user can define the storage rate, recording period and measurement format using the **Configure Instrument** dialog box in the Simple Logger II Control Panel software. Control Panel trend measurements are stored at this fixed storage rate.

3.9 Logger Operation

When the instrument is in use, the following occurs (provided there is sufficient battery voltage and no data is stored in the instrument's memory):

- The GREEN LED single-blanks every 5 seconds (STANDBY mode is active and the logger is not recording).
- The RED LED is OFF, indicating there is no data in memory.
- The **CONTROL** button is used to Start/Stop a Recording Session.
- If the **CONTROL** button is not pressed for a period of one minute, the instrument will enter SLEEP mode and wait for either another button press or the recording start time to arrive (if a recording is scheduled). While in SLEEP mode, the LEDs will not blink.
- A button press of 0.5 seconds will return the unit back to the normal STANDBY mode.

3.9.1 Recording with Memory Cleared

When a recording starts, the logger will continue to record until one of the following occurs:

- The Session is complete.
- The Memory is full and the recording mode is Start/Stop or Alarm.
- The **CONTROL** button is pushed until the STOP (AMBER) LED lights up and is released before the next LED lights.
- The Stop Recording command from the Simple Logger II Control Panel is sent to the unit.
- The battery voltage falls below 1.7V.

3.9.2 Recording with a Partial or Full Memory

If the RED LED is double-blinking every 5 seconds, the memory is full and must be erased before any further recording can be performed.

If the RED LED is single-blinking every 5 seconds prior to starting a New Recording Session, the memory is partially full.

To save, clear or check memory availability, use the Simple Logger II Control Panel software.

There may be instances where the GREEN LED is also double-blinking every 5 seconds indicating that the logger is still recording. The user can choose to stop the Recording Session and download the session and/or erase the memory.



The logger memory cannot be erased while in the Record mode. The recording must be stopped first.

3.9.3 Memory Filled During Recording Session (Start/Stop Mode)

If the logger is recording using the Start/Stop or Store on Alarm mode and the memory is filled before the Recording Session has finished, the session will end.

The following happens after the **CONTROL** button is pushed for 0.5 seconds:

- The GREEN LED single-blinks (standby mode).
- The RED LED double-blinks (full memory).

At this time:

- The memory can be downloaded and erased.
- A new recording can be started or scheduled once memory is erased.

3.9.4 Recording with Memory Cleared

When a recording starts, the logger will continue to record until one of the following occurs:

- The Session is complete.
- The Memory is full and the recording mode is Start/Stop or Alarm.
- The **CONTROL** button is pushed until the STOP (AMBER) LED lights up and is released before the next LED lights.
- The Stop Recording command from the Simple Logger II Control Panel is sent to the unit.
- The battery voltage falls below 1.7V.

3.9.5 Recording with a Partial or Full Memory

If the RED LED is double-blinking every 5 seconds, the memory is full and must be erased before any further recording can be performed.

If the RED LED is single-blinking every 5 seconds prior to starting a New Recording Session, the memory is partially full.

To save, clear or check memory availability, use the Simple Logger II Control Panel software.

There may be instances where the GREEN LED is also double-blinking every 5 seconds indicating that the logger is still recording. The user can choose to stop the Recording Session and download the session and/or erase the memory.



The logger memory cannot be erased while in the Record mode. The recording must be stopped first.

3.9.6 Memory Filled During Recording Session (Start/Stop Mode)

If the logger is recording using the Start/Stop or Store on Alarm mode and the memory is filled before the Recording Session has finished, the session will end.

The following happens after the **CONTROL** button is pushed for 0.5 seconds:

- The GREEN LED single-blinks (standby mode).
- The RED LED double-blinks (full memory).

At this time:

- The memory can be downloaded and erased.
- A new recording can be started or scheduled once memory is erased.



If in either the XRM or FIFO mode, the recording will continue even after memory becomes full. Memory will be freed to make room for new samples. The method of freeing memory will depend on the recording mode.

3.9.7 Battery Power Insufficient for a Full Recording Duration

If the battery voltage drops below 1.7V, the following will occur:

- The Recording Session will terminate.
- The Data will be saved.
- The GREEN and RED LED will turn OFF.

The logger continues to record until the battery voltage drops below 1.7V. Pressing the **CONTROL** button will have no effect. The battery voltage may rise slightly after the unit turns itself off. In this event, the unit may turn on momentarily as a result of a button press.

The batteries must be replaced before the recorded session(s) can be downloaded from the instrument (refer to § 5.1).



Replacing the batteries while the unit is in SLEEP mode will not result in the loss of data memory. The internal backup capacitor will maintain the clock and memory while the batteries are being replaced. If the battery level falls below the usable level or if the batteries have been removed for an extended period of time, the clock time will be lost. However, the recorded memory will be maintained.

3.9.8 Recording Session has Ended

The logger will be in STANDBY mode if one of the following occurs:

- The session terminates due to recording end time being reached.
- The recording in START/STOP or Store on Alarm mode fills the memory.
- The user terminates the session by pressing the **CONTROL** button until the STOP (AMBER) LED lights up and releasing the button before the next LED lights, or issues a Stop Recording command from the Simple Logger II Control Panel.

The logger is now ready for a New Session or Download. Pressing the **CONTROL** button until the START (GREEN) LED lights up and releasing the button before the next LED lights, will start a New Session depending on the available memory.

3.10 Reset Switch Operation



CAUTION: Risk of electric shock. Disconnect the unit from any input source before opening the battery cover.

Resetting the instrument takes about 10 seconds, at which time the instrument will be non-responsive.

The **RESET** button resets the CPU and is located under the battery cover.

To access it, remove the battery compartment cover. The reset button is located on the exposed PCB (see § 2.2 for location).



It is recommended to only press the **RESET** switch when the logger stops responding to a normal press button control when not connected to Data-View®. It is not recommended to reset the instrument when the logger is recording, downloading or being configured.

If the logger is not responding to a button press, make sure the unit has sufficient battery power. If the battery voltage is below 1.7V, the unit will not respond to a button press. In this condition, pressing the **RESET** button will not restart the unit.

It is recommended to download any desired session and erase the memory before starting a new recording.



The resumption of the logger operation in the above situations assumes that the **RESET** button cleared the fault(s). The logger will not resume normal operation if the fault condition still exists. The instrument will try to recover normally. However, under certain conditions, the clock and memory full state may reset, meaning that the memory is marked as full and the clock date/time is lost.

3.11 Flash Upgrade Switches



CAUTION: Risk of electric shock. Disconnect the unit from any input source before opening the battery cover.

The Flash Upgrade Switches are used to recover from a failed flash upgrade.

To access them, remove the battery compartment cover. The Flash Upgrade Switches are located on the exposed PCB (see § 2.2 for location).

All three switches should be turned to the **ON** position in order to flash upgrade the instrument using the “Fail Safe” method of upgrade from within the “SLIIFlashUp1xx” utility program.

All switches **MUST** be set to the **OFF** position once the upgrade has completed.



Failure to set the Flash Upgrade Switches OFF after the upgrade will prevent the instrument from operating properly and deplete the batteries.

CHAPTER 4

DATAVIEW SOFTWARE

4.1 Installing DataView®



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

When you purchase an AEMC instrument supported by DataView, the software is included as part of the product package. DataView program files are stored on a USB stick.

1. Insert the DataView thumb drive into an available USB port on your computer. If Autorun is enabled, an AutoPlay window appears on your screen. Click “Open folder to view files” to display the DataView folder. **NOTE:** If Autorun is not enabled or allowed, use Windows Explorer to locate and open the USB drive labeled “DataView.”
2. When the DataView folder is open, find the file Setup.exe located in the root directory and double-click it to run the installation program. The DataView setup screen appears.
3. In the upper left corner of the screen, choose the language version of the Setup interface. (All Setup screens and dialogs will immediately appear in the selected language.)

In the lower left corner are the available installation options. In addition to the DataView software, you can select “Adobe Reader.” This links to the Adobe web site where you can download the latest version of Reader. This program is required to view DataView .pdf documents. The option Firmware Upgrades links to the website where you can check for new firmware updates for the instrument. Finally, User Manuals displays a list of .pdf files contained in the USB drive that accompanies DataView. (DataView also comes with a Help system that is installed with the program files.)

To install DataView, select DataView in the Options list and click Install.

4. Select the language version of DataView you want to install (English, French, or Spanish) then click Next. (By default, the language selected in step 3 is highlighted.).
5. You are now prompted to select the software you want to install. Each AEMC product family has its own specially designed Control Panel. By default all available Control Panels are selected (a check mark next to the Control Panel indicates it is selected). Control Panels take up disk space on the computer; so unless you have other types of AEMC instruments, we recommend that you select Simple Logger II and deselect the rest. You should also check the option DataView Core, which is a requirement if you plan to create DataView reports.

After you finish selecting and deselecting Control Panels and/or DataView Core, click Next.

6. The Setup program now informs you that it is ready to install DataView. If you want to review any of your previous selections, click the Previous button to return to earlier screens. Otherwise, click Install to begin installation.
7. The InstallShield program installs the selected software. If an earlier version of the software is already installed on your computer, for each selected program the InstallShield program will:
 - (a) Ask you to confirm the installation of the program. Click Next.
 - (b) Display a status bar indicating the progress of the installation.
 - (c) Inform you when the program is installed. Click Finish to install the next selected program.

If the software is not installed (or if the installed software is the same version as the selected software), the software is installed without requesting confirmation.

When all programs are installed, a message appears informing you of this. Click Finish to return to the Setup screen.

8. You can now select additional Setup options to install (see step 3 above). When finished, click Exit.

After you finish selecting and deselecting Control Panels, click Next.

9. The DataView folder now appears on your computer desktop, within which is the Simple Logger II icon  and the icon(s) for any other Control Panel(s) you have installed.

4.2 Simple Logger II Control Panel

After you install DataView, the DataView folder appears on your desktop. This folder contains the DataView icon, which opens the core DataView program. The folder also contains the Simple Logger II Control Panel icon. Clicking this icon opens the Simple Logger II Control Panel.

In general, core DataView features are for creating, viewing, editing, and storing DataView reports; while the Control Panel is for connecting to, configuring, viewing real-time measurements, and downloading data from the instrument. You can access all DataView features through either the DataView icon or the Control Panel icon. For users who interact with a single type of AEMC instrument, we recommend primarily using the Control Panel. However, there are situations where using the core DataView icon may be more convenient for some users, such as when viewing multiple archived reports from different AEMC product families.

NOTE: *For further information about DataView and its capabilities, or for information about using the Simple Logger II Control Panel, consult the Help system that comes with the product. Access this Help by clicking the option Help in the Control Panel's menu bar at the top of the screen.*

CHAPTER 5

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.

5.1 Replacing the Batteries



CAUTION: Risk of electric shock. Disconnect all input(s) from the unit or remove the current sensors from any conductor before opening the battery cover to change the batteries. Terminate any recordings before changing the batteries or loss of recorded data may occur.

- Remove the two screws from the battery cover.
- Slide and lift up the cover to remove.
- Replace the four 1.5V C-cell (LR14) alkaline batteries (the backup capacitor provides backup power for approximately 10 seconds while the main batteries are being changed).
- Replace the cover and the screws.

NOTE: When changing the batteries, always replace both sets of batteries.



If the instrument is stored without the batteries installed, the internal clock will need to be reset using the Simple Logger II Control Panel software once the batteries are installed. Only store the unit with the batteries installed for short periods of time. For prolonged storage of the unit, it is recommended to remove the batteries.

5.2 Cleaning



CAUTION: Risk of electric shock. Remove the clamp from any conductor or disconnect all input(s) from the unit.

The body of the logger should be cleaned with a damp and soapy cloth. Do not submerge the logger in water. Do not use solvent.

CHAPTER 6

SPECIFICATIONS

Reference Conditions: 23°C ± 3°C, 30-50% RH, 50/60 Hz, no AC external magnetic field, DC magnetic field ≤ 40A/m, centered conducto , battery voltage: 3V ± 10%.

| MODEL | ML914 | |
|--|---|---|
| ELECTRICAL | | |
| Channels | Four | |
| Input | Captive MiniFlex® AC Current Flexible Sensors | |
| Range | 100A _{AC} | 1000A _{AC} |
| Accuracy (50/60Hz) | 0 to 1A unspecified 1 to 100A: ±(1% of Reading + 0.5A) | 0 to 5A unspecified 5 to 1000A: ±(1% of Reading + 1A) |
| Resolution | 0.1A | |
| Sample Rate | 64 samples/cycle | |
| Storage Rate | Programmable from 125ms to 1 per day | |
| Storage Modes | Start/Stop, FIFO and Extended Recording Mode* (XRM™), Store on Alarm | |
| Recording Length | 15 minutes to 8 weeks, programmable using DataView® | |
| Memory | 1,000,000 measurements (2MB). Recorded data is stored in non-volatile memory and retained even if battery is low or removed. | |
| Communication | Bluetooth (Class 2) | |
| Power Source** | 4x1.5V C-cell alkaline batteries | |
| Battery Life | >200hrs at 125ms up to 180 days (dependent on storage rate/recording length) | |
| MECHANICAL | | |
| Dimensions | 5.904 x 5.904 x 3.568" (150 x 150 x 91mm) w/o Sensor | |
| Weight (with battery) | 2.4lbs (1.1kg) | |
| Sensor/Cable Length | Sensor: 6" (152mm) / Cable: 6.5 ft (2m) | |
| Maximum Conductor | Ø 1.77" (45mm) | |
| Cover/Case | Cover: UL94-VO / Case: UL94-5VB | |
| Vibration | IEC 68-2-6 (1.5mm, 10 to 55Hz) | |
| Shock | IEC 68-2-27 (30G) | |
| Drop | IEC 68-2-32 (1m) | |
| ENVIRONMENTAL | | |
| Operating Temperature | 14° to 122°F (-10° to 50°C) | |
| Storage Temperature | -4° to 140°F (-20° to 60°C) | |
| Relative Humidity | Up to 85% at 95°F (35°C), Non-condensing | |
| Altitude | 2000m | |
| SAFETY & ELECTRO-MAGNETIC COMPATIBILITY | | |
| Safety Rating | EN61010-1; EN61010-2-32; 600V CAT IV, 1000V CAT III; Pollution Degree 2 | |
| Protection Degree | IP50 (cover closed) | |
| Electro-Magnetic Compatibility | EN 61326-1; 07/1997 (+A1 10/1998, +A2 09/2001, +A3 05/2004) | |
| CE Approved | Yes | |

| MODEL | | | AL834 |
|--|---|--|-------|
| ELECTRICAL | | | |
| Channels | Four | | |
| Input | Captive AmpFlex® AC Current Flexible Sensors | | |
| Range | 300A _{AC} | 3000A _{AC} | |
| Accuracy (50/60Hz) | 0 to 5A unspecified 5 to 300A: ±(1% of Reading + 0.5A) | 0 to 15A unspecified 15 to 300A: ±(1% of Reading + 1A) | |
| Resolution | 0.1A _{AC} | 0.5A _{AC} | |
| Sample Rate | 64 samples/cycle | | |
| Storage Rate | Programmable from 125ms to 1 per day | | |
| Storage Modes | Start/Stop, FIFO and Extended Recording Mode* (XRM™), Store on Alarm | | |
| Recording Length | 15 minutes to 8 weeks, programmable using DataView® | | |
| Memory | 1,000,000 measurements (2MB). Recorded data is stored in non-volatile memory and retained even if battery is low or removed. | | |
| Communication | Bluetooth (Class 2) | | |
| Power Source** | 4x1.5V C-cell alkaline batteries | | |
| Battery Life | >200hrs at 125ms up to 180 days (dependent on storage rate/recording length) | | |
| MECHANICAL | | | |
| Dimensions | 5.904 x 5.904 x 3.568" (150 x 150 x 91mm) w/o Sensor | | |
| Weight (with battery) | 3.9lbs (1.77kg) | | |
| Sensor/Cable Length | Sensor: 24" (610mm) / Cable: 6.5 ft (2m) | | |
| Maximum Conductor | Ø 8" (203mm) | | |
| Cover/Case | Cover: UL94-V0 / Case: UL94-5VB | | |
| Vibration | IEC 68-2-6 (1.5mm, 10 to 55Hz) | | |
| Shock | IEC 68-2-27 (30G) | | |
| Drop | IEC 68-2-32 (1m) | | |
| ENVIRONMENTAL | | | |
| Operating Temperature | 14° to 122°F (-10° to 50°C) | | |
| Storage Temperature | -4° to 140°F (-20° to 60°C) | | |
| Relative Humidity | Up to 85% at 95°F (35°C), Non-condensing | | |
| Altitude | 2000m | | |
| SAFETY & ELECTRO-MAGNETIC COMPATIBILITY | | | |
| Safety Rating | EN61010-1; EN61010-2-32; 600V CAT IV, 1000V CAT III; Pollution Degree 2 | | |
| Protection Degree | IP65 (cover closed) | | |
| Electro-Magnetic Compatibility | EN 61326-1; 07/1997 (+A1 10/1998, +A2 09/2001, +A3 05/2004) | | |
| CE Approved | Yes | | |

NOTE: The native measurement of the Model L104 is voltage. This voltage is scaled to displace current by a factor that corresponds to the users probe selection. This accuracy specification does not account for probe errors.

| MODEL | L104 |
|--|---|
| ELECTRICAL | |
| Channels | Four |
| Input | One connector per channel |
| Range | 0 to 1V _{AC} |
| Resolution | 0.1A (1mV/A scale) |
| Accuracy (50/60Hz) | 0 to 10mV unspecified 10 to 50mV: $\pm(0.5\% \text{ of Reading} + 1\text{mV})$ 50 to 1000mV: $\pm(0.5\% \text{ of Reading} + 0.5\text{mV})$ |
| Maximum Input Voltage*** | 5Vrms (-7.07Vpeak to +7.07Vpeak) |
| Input Impedance | 100KΩ |
| Sample Rate | 64 samples/cycle |
| Storage Rate | Programmable from 125ms to 1 per day |
| Storage Modes | Start/Stop, FIFO and Extended Recording Mode* (XRM™), Store on Alarm |
| Recording Length | 15 minutes to 8 weeks, programmable using DataView® |
| Memory | 1,000,000 measurements (2MB). Recorded data is stored in non-volatile memory and retained even if battery is low or removed. |
| Communication | Bluetooth (Class 2) |
| Power Source** | 4x1.5V C-cell alkaline batteries |
| Battery Life | >200hrs at 125ms up to 180 days (dependent on storage rate/recording length) |
| MECHANICAL | |
| Dimensions | 5.904 x 5.904 x 3.568" (150 x 150 x 91mm) w/o Sensor |
| Weight (with battery) | 2.1 lbs (0.95kg) |
| Cover/Case | Cover: UL94-V0 / Case: UL94-5VB |
| Vibration | IEC 68-2-6 (1.5mm, 10 to 55Hz) |
| Shock | IEC 68-2-27 (30G) |
| Drop | IEC 68-2-32 (1m) |
| ENVIRONMENTAL | |
| Operating Temperature | 14° to 122°F (-10° to 50°C) |
| Storage Temperature | -4° to 140°F (-20° to 60°C) |
| Relative Humidity | Up to 85% at 95°F (35°C), Non-condensing |
| Altitude | 2000m |
| SAFETY & ELECTRO-MAGNETIC COMPATIBILITY | |
| Safety Rating | EN61010-1; 600V CAT IV, 1000V CAT III; Pollution Degree 2 |
| Protection Degree | IP50 (cover closed) |
| Electro-Magnetic Compatibility | EN 61326-1; 07/1997 (+A1 10/1998, +A2 09/2001, +A3 05/2004) |
| CE Approved | Pending |

| MODEL | L264 |
|--|---|
| ELECTRICAL | |
| Channels | Four |
| Input | Five Recessed Banana Jacks |
| Range | 0 to 600V _{AC/DC} |
| Resolution | 0.1V |
| Accuracy (50/60Hz) | 0 to 5V unspecified 5 to 50V: ±(0.5% of Reading + 1V) 50 to 600V: ±(0.5% of Reading + 0.5V) |
| Maximum Input Voltage*** | 1.2 x 600V |
| Input Impedance | 16MΩ |
| Sample Rate | 64 samples/cycle |
| Storage Rate | Programmable from 125ms to 1 per day |
| Storage Modes | Start/Stop, FIFO and Extended Recording Mode* (XRM™), Store on Alarm |
| Recording Length | 15 minutes to 8 weeks, programmable using DataView® |
| Memory | 1,000,000 measurements (2MB). Recorded data is stored in non-volatile memory and retained even if battery is low or removed. |
| Communication | Bluetooth (Class 2) |
| Power Source** | 4x1.5V C-cell alkaline batteries |
| Battery Life | >200hrs at 125ms up to 180 days (dependent on storage rate/recording length) |
| MECHANICAL | |
| Dimensions | 5.904 x 5.904 x 3.568" (150 x 150 x 91mm) w/o Sensor |
| Weight (with battery) | 2.1 lbs (0.95kg) |
| Cover/Case | Cover: UL94-VO / Case: UL94-5VB |
| Vibration | IEC 68-2-6 (1.5mm, 10 to 55Hz) |
| Shock | IEC 68-2-27 (30G) |
| Drop | IEC 68-2-32 (1m) |
| ENVIRONMENTAL | |
| Operating Temperature | 14° to 122°F (-10° to 50°C) |
| Storage Temperature | -4° to 140°F (-20° to 60°C) |
| Relative Humidity | Up to 85% at 95°F (35°C), Non-condensing |
| Altitude | 2000m |
| SAFETY & ELECTRO-MAGNETIC COMPATIBILITY | |
| Safety Rating | EN61010-1; 600V CAT IV, 1000V CAT III; Pollution Degree 2 |
| Protection Degree | IP50 (cover closed) |
| Electro-Magnetic Compatibility | EN 61326-1; 07/1997 (+A1 10/1998, +A2 09/2001, +A3 05/2004) |
| CE Approved | Pending |

*This unique recording mode provides the opportunity to continuously record over long periods of time by reducing the storage resolution of the stored data and maintaining matching resolution for the newest data. Each time the memory fills up using XRM™, every other of the oldest stored samples is discarded making room for newer samples. This process continues until the recording is manually stopped.

**A memory backup capacitor provides backup power while batteries are being changed. This backup capacitor will maintain the instrument for up to 10 sec. without batteries installed. After 10 seconds the date and time will need to be reset (data and configuration will be maintained). If the unit is connected to DataView® via a PC, the battery life is 100 hours regardless of the storage rate.

***Voltages beyond this range may damage the instrument.

NOTE: When installing probes, face the arrow on the probe in the direction of the load.

| Model SR193 | |
|----------------------------------|--|
| Nominal Range | 1000AAC for $f \leq 1\text{kHz}$ |
| Measurement Range | 1A to 1000AAC max ($I > 1000\text{A}$ not continuously) |
| Probe Output Signal | 1mVAC/AAC |
| Maximum Clamping Diameter | 2" (52mm) |
| Safety | EN 61010-2-032, Pollution Degree 2, 600V CAT IV, 1000V CAT III |

| Model MN93 | |
|----------------------------------|---|
| Nominal Range | 200AAC for $f \leq 1\text{kHz}$ |
| Measurement Range | 2A to 200AAC max ($I > 200\text{A}$ not permanent) |
| Probe Output Signal | 5mVAC/AAC |
| Maximum Clamping Diameter | 0.8" (20mm) |
| Safety | EN 61010-2-032, Pollution Degree 2, 300V CAT IV, 600V CAT III |

NOTE: Currents $< 0.5\text{A}$ will be displayed as zero. Neutral current measures down to 0A.

| Model MN193 | |
|----------------------------------|---|
| Nominal Range | 5A and 100AAC |
| Measurement Range | 5A: 0.005A to 6AAC max (1A to 1000A with ratio 1000/5 selected) 100A: 0.1A to 100AAC max |
| Probe Output Signal | 5A: 200mV/AAC; 100A: 10mV/AAC |
| Maximum Clamping Diameter | 0.8" (20mm) |
| Safety | EN 61010-2-032, Pollution Degree 2, 300V CAT IV, 600V CAT III |

The 5A range of the MN193 is designed to work with secondary current transformers.

Best accuracy is available when entering the transformer ratio (e.g. 1000/5A). When used to measure 5A direct, the resolution will be limited to 0.1A max.

Specifications are subject to change without notice.

APPENDIX A

TROUBLESHOOTING

Symptom: After being in a damp, cold environment, the logger does not function.

Cause, Correction: Condensation may have formed inside the logger, shorting out the circuitry and discharging the battery. Allow the circuit board to dry thoroughly in a warm location.

Symptom: Simple Logger® II does not start recording.

Cause, Correction: Make sure battery power is present. Make sure the PRESS button is pushed long enough to light the GREEN LED and released before the next LED lights. Make sure the RED LED is not double-blinking. If it is, memory is full and you need to erase the data (see § 3.7). Make sure the SLII is properly configured so that you have Storage Rate, Recording Period and at least one Measurement Channel specified.

Symptom: Cannot find the instrument when pairing the Bluetooth connection.

Cause, Correction: Make sure the Blue LED is single blinking, indicating that the instrument Bluetooth module is active.

Symptom: Even though the pairing of the Bluetooth is established and the LED indication is active, the instrument will not connect to the Simple Logger II Control Panel.

Cause, Correction: Make sure the Low Battery LED is not blinking. If the batteries are below 2.2V the instrument will have enough power to run the circuit but not enough to maintain a stable connection. Replace the batteries.

APPENDIX B

GLOSSARY

Some general terminology associated with the data collection process is listed here for convenience.

Bps: Bits Per Second, a unit of signal transfer speed equal to the number of elements per second. The Simple Logger® II transfers data at the rate of 115200 bps.

Button: An actual key on the logger or computer keyboard or a soft key in the program on the computer screen.

Data logger: A device used to sample and store electrical signals that may be representative of physical phenomena such as temperature, pressure and flow for long periods of time in an unattended environment.

Download: The process of transferring data from the logger to the computer.

Hz: Hertz, a unit of measure of frequency equivalent to cycles per second.

I/O: Input/output, a device or port capable of sending or receiving digital information.

Port: A name given to any connector allowing input or output of information.

Processor: A computing device used to calculate and run a set of instructions.

Recording session: A recording session is defined as the time and data contained within the starting and ending of a recording.

Resolution: The last significant digit of the measurement.

Zoom: The ability to select a section of the graph and magnify it for better readability.

Bluetooth: Wireless communications device used to access the logger via a computer program (Dataview®).

USB: Universal Serial Bus, a communications port used to access the logger via a computer program (Dataview®).

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be sent 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).

(Or contact your authorized distributor)

Cost 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:

Limited Warranty

The Simple Logger® II 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

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.

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:

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.



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