SIMPLE LOGGER II MULTI-CHANNEL RECORDER

ML914
AL834

ENGLISH

User's manual

CHAUVIN® ARNOUX
CHAUVIN ARNOUX GROUP

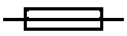
CHAPTER 1

INTRODUCTION

Thank you for purchasing a **Simple Logger II AL834 or ML914 multi-channel recorder**. For best results from your instrument:

- **Read** these operating instructions carefully,
- **Comply with** the precautions for use.

1.1 Meanings of the symbols used on the device

	Double insulation.
	WARNING, risk of DANGER! The operator must refer to these instructions whenever this danger symbol appears.
	Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.
	Applicable to type B ammeter sensors. This symbol means that the sensor must not be placed on nor removed from bare conductors at hazardous voltages.
	Applicable to type A ammeter sensors. This symbol means that the sensor can be placed on or removed from bare conductors at hazardous voltages.
	Ground/Earth
	Important instructions to read and understand completely.
	Important information to acknowledge.
	Batteries
	Fuse
	USB socket
	Compliance with the Low Voltage & Electromagnetic Compatibility European directives (73/23/EEC & 89/336/EEC)
	Waste electrical and electronic equipment must be sorted for recycling in the European Union. In compliance with Directive WEEE 2002/96/EC. This equipment must not be treated as household waste.

1.2 Definition of measurement categories

CAT II: Circuits directly connected to low-voltage installations.

Example: power supply to domestic electrical appliances and portable tools.

CAT III: Power supply circuits in the building installation.

Example: distribution panel, circuit-breakers, machines or fixed industrial devices.

CAT IV: Source circuits of the low-voltage installation of the building.

Example: power feeders, counters and protection devices.

1.3 Precautions of use

The precautions for use ensure the safety of persons and the safe and proper operation of the devices. Failure to observe them may result in electric shock, explosion, or fire.

If you use these devices other than as specified, or without observing elementary safety rules, the protection they provide may be compromised, endangering you.

These devices comply with safety standard EN 61010-1 and/or EN 61010-2-032 for the stated voltages and categories of installation, at an altitude of less than 2000m, indoors, with a degree of pollution of not more than 2.

- Do not use the device in an explosive atmosphere or in the presence of flammable gases or fumes.
- Do not use the instrument on networks of which the voltage or category exceeds those mentioned.
- The safety of any system incorporating the device is the responsibility of the system integrator.
- Do not exceed the rated maximum voltages and currents between the terminals and with respect to earth.
- Do not use the instrument if it seems to be damaged, incomplete, or poorly closed.
- Before each use, check the condition of the insulation on the leads, housing, and accessories. Any item of which the insulation is deteriorated (even partially) must be set aside for repair or scrapping.
- Use leads and accessories of which the voltage ratings and categories are at least equal to those of the device. The use of a device, lead, or accessory of which the category or voltage rating is lower reduces the use of the system as a whole (device + lead + accessory) to the lowest category and/or voltage.
- Observe the environmental conditions when using the device.
- Do not modify the device, and use only certified OEM replacement parts. Repairs and adjustments must be done only by accredited persons.
-  Replace the batteries when the "Low Bat" (batteries low) LED blinks. Disconnect all leads from the device and/or remove the clamps from the cables before opening the battery compartment cover.
-  Use individual safety protections when conditions require.
-  Keep your hands away from the unused terminals of the device.
-  When handling the probes, probe tips, current sensors, and crocodile clips, keep your fingers behind the physical guards.
- For measurements of hazardous voltages, first connect the black lead to the black terminal of the device, then connect the lead to the lowest voltage of the source to be measured (the potential closest to earth). Then connect the red wire to the red terminal of the device and the wire to the live point to be measured. Disconnect the leads in the reverse order, disconnecting the live point first, then the red lead, and finally the black lead.
- If the device must be used to check whether or not hazardous voltages are present, we recommend testing the continuity of the leads used and checking the proper operation of the device on a known voltage source.

CHAPTER 2

PRESENTATION

In this manual, the Simple Logger® II may be referred to as the "SLII".

2.1 Description

The recorders of the Simple Logger® II Bluetooth series are four-channel recording devices powered by alkaline batteries.

The frequency is monitored by capturing 64 samples in one cycle (period) of the mains voltage. This is done around the nominal 50/60 Hz frequency. The measurements of harmonics are calculated from these 64 samples (the measurements of harmonics are possible only from the configuration panel of the SLII in the DataView® software).

The Simple Logger® II records at a speed of up to eight times per second. The samples are collected at a storage rate defined by the user. This means that the input signals between measurement intervals are ignored.

Battery-powered operation of the SLII make it possible to use it in stand-alone mode, with no external power supply. A series of LEDs on the front panel indicate the status of the recorder and memory occupancy.

The main advantage of the recorder, due to its simple and intuitive configuration, Bluetooth communication, and long battery life, is the possibility of using DataView® software to run various recording tasks from a computer.

The analogue signals applied to the inputs are sampled and converted into digital values. The digital signal is processed and recorded along with the scale and time information. A built-in Bluetooth module is used to transfer data between the internal memory of the device and the computer for analysis.

2.2 Controls

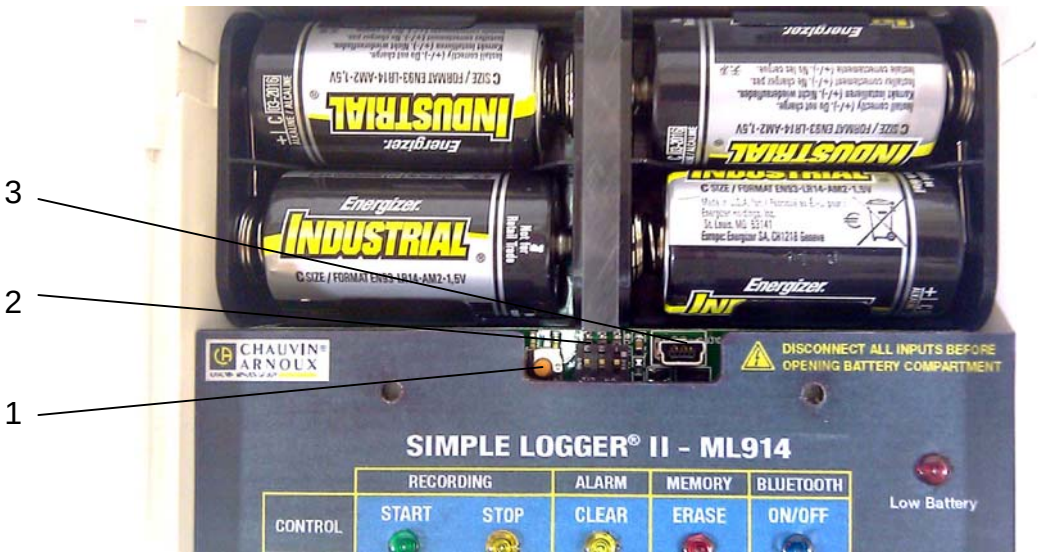


Figure 2-1

1. **Reset button**

   The **RESET** button resets the central processing unit. To reach this switch, **disconnect** all inputs and remove the battery compartment cover. The button is located on the circuit (see § 4.10).

2. **Flash memory update switches**

   These three switches (accessible below the battery compartment cover), the **RESET** switch, and the updating software are used to recover from a failed flash memory update procedure (see § 4.11).

3. **Female mini-B USB connector**

   This connector is located under the battery compartment cover; it is used to update the internal microprogram of the device when necessary.

Figure 2-2

4. **Batteries low indicator**

   The device contains a protection circuit intended to prevent powering it up when the battery voltage is below 1.7 V.

There are two battery voltage thresholds.

- **The first is used to indicate that the battery voltage is low. This indicator blinks (single blinking of the red LED) when the battery voltage falls below 2.2 V.**
- **The second stops recording and switches the device off. The switching-off threshold is reached when the battery voltage falls below 1.7 V.**

Communication between the device and DataView® is broken off below 2.2 V.

5. Five LED indicators

The LEDs on the recorder have two functions: **command function** and **status indication.**

The control function (when the button is pressed) is indicated by the text located above each LED.

The status indication (when the button is not pressed) associated with each LED is indicated by the text below each of the LEDs.

See § 4.1 for detailed descriptions of each LED.

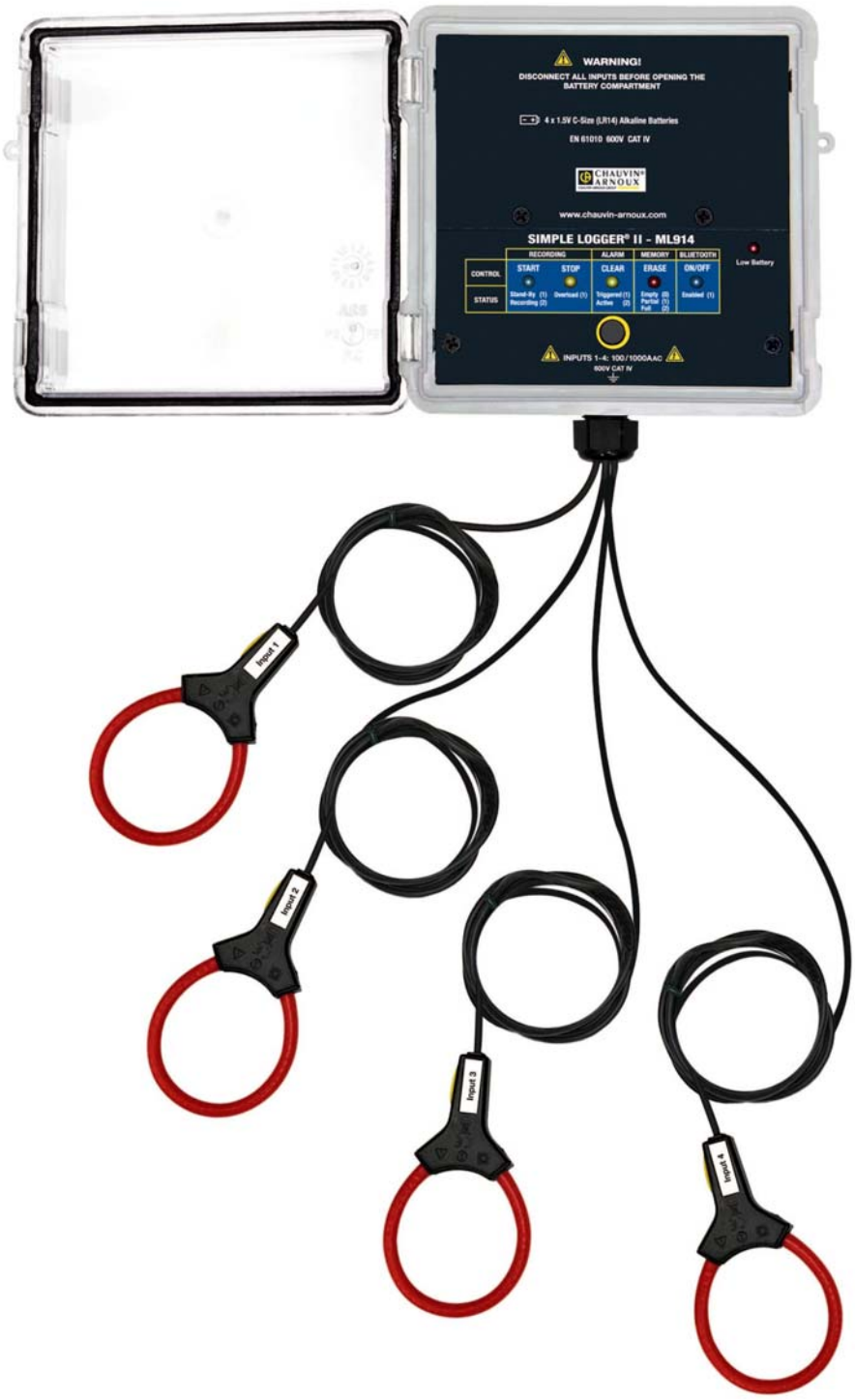
6. Control button

This button selects the operating mode. Use this button to start or stop recording, erase the memory, and ACTIVATE or DEACTIVATE Bluetooth transmission.

7. Input (depends on the model)

AL834 – Four integrated flexible probes of the AmpFlex® type

ML834 – Four integrated flexible probes of the MiniFlex® type



WARNING: if the **RESET** button is pressed when recording is in progress, the recording session will be interrupted and the stored data may be lost.

CHAPTER 3

TECHNICAL CHARACTERISTICS

3.1 Reference conditions

Influence quantities	Reference values
Temperature	20 ± 3 °C
Relative humidity	30 to 50% RH
Supply voltage	3 V± 10%
Frequency range	50 or 60 Hz
Electric field	< 1 V/m
Magnetic field	< 40 A/m
Position of the conductor in the current sensor	Centred

3.2 Electrical characteristics of the ML914

Number of channels	Four	
Input	Flexible AC current probes of the MiniFlex® type	
Range	100 AAC	1 000 AAC
Intrinsic uncertainty	0 to 1 A: not specified 1 to 100 A: ± (1% of the reading + 0.5 A)	0 to 5 A: not specified 5 to 1.000 A: ± (1% of the reading + 1 A)
Resolution	0.1 A	
Sampling rate	64 samples / period	
Recording interval	Programmable from 125 ms to 1 day	
Recording modes	Start / Stop, FIFO, and extended recording mode * (XRM™), Recording on alarm	
Duration of recording	15 minutes to 8 weeks; can be programmed using DataView®	
Memory	1,000,000 measurements (2 MB). Data stored in non-volatile memory and preserved even if the batteries are low or removed.	
Communication	Bluetooth (Class 2)	
Power supply **	4 1.5 V alkaline batteries (LR14, UM2, C)	
Battery life	> 200 hours (at 125 ms) to more than 180 days (depends on recording interval and duration)	

* This specific recording mode has the advantage that recording can continue for a long time, but this is at the expense of the frequency of data storage. Progressively, each time the memory becomes full in the XRM™ mode, every other item already recorded is deleted, making room for new data. The rate of recording of the new data is slowed accordingly. This process continues until recording is deliberately stopped.

** A backup capacitor keeps the date-time function in operation for more than 10 seconds to allow replacement of the batteries. Beyond 10 seconds, the date and time information must be reset (the configuration and data are not lost). If the device remains connected to DataView® via a desktop computer, the battery life will be 100 hours, whatever the recording interval chosen.

3.3 Mechanical characteristics of the ML914

Dimensions	150 x 150 x 91 mm (5.904 x 5.904 x 3.568") without probe
Weight (with batteries)	1.1 kg (2.4 lbs)
Length of the probes / cables	Probes: 152 mm (6") / Cables: 2 m (6.5 ft)D
Maximum diameter of the conductors	Ø 45 mm (1.77")
Cover / Housing	Cover: UL94-V0 / Housing: UL94-5VB
Vibration	CEI 68-2-6 (1.5 mm, 10 to 55 Hz)
Shock	CEI 68-2-27 (30 G)
Fall	CEI 68-2-32 (1 m)

3.4 Environmental characteristics of the ML914

Operating temperature	- 10 °C to 50 °C (14 °F to 122 °F)
Storage temperature	-20 °C to 60°C (4 °F to 140 °F)
Relative humidity	Up to 85% at 35°C (95°F) without condensation
Altitude	2000 m

3.5 Safety and electromagnetic compatibility of the ML914

Compliance	EN 61010-1; EN 61010-2-032; 600 V CAT IV, 1 000 V CAT III; degree of pollution 2
Degree of protection	IP50 (with cover closed)
Electromagnetic compatibility	EN 61326-1
CE conformity	Yes

3.6 Electrical characteristics of the AL834

Number of channels	Four	
Input	Flexible AC current probes of the AmpFlex® type	
Range	300 AAC	3.000 AAC
Intrinsic uncertainty	0 to 5 A: not specified 5 to 300 A: ± (1% of the reading + 0.5 A)	0 to 15 A: not specified 15 to 3.000 A: ± (1% of the reading + 1 A)
Resolution	0.1 AAC	0.5 AAC
Sampling rate	64 samples / period	
Recording interval	Programmable from 125 ms to 1 day	
Recording modes	Start / Stop, FIFO, and extended recording mode * (XRM™), Recording on alarm	
Duration of recording	15 minutes to 8 weeks; can be programmed using DataView®	
Memory	1,000,000 measurements (2 MB). Data stored in non-volatile memory and preserved even if the batteries are low or removed.	
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Power supply **	4 1.5 V alkaline batteries (LR14, UM2, C)	
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*This specific recording mode has the advantage that recording can continue for a long time, but this is at the expense of the frequency of data storage. Progressively, each time the memory becomes full in the XRM™ mode, every other item already recorded is deleted, making room for new data. The rate of recording of the new data is slowed accordingly. This process continues until recording is deliberately stopped.

**A backup capacitor keeps the date-time function in operation for more than 10 seconds to allow replacement of the batteries. Beyond 10 seconds, the date and time information must be reset (the configuration and data are not lost). If the device remains connected to DataView® via a desktop computer, the battery life will be 100 hours, whatever the recording interval chosen.

REMARK: *this model measures, for each channel, the voltage generated by the ammeter clamp, automatically applying the coefficient appropriate to the type of clamp used. The uncertainties mentioned below are those of the instrument without the sensor.*

3.7 Mechanical characteristics of the AL834

Dimensions	150 x 150 x 91 mm (5.904 x 5.904 x 3.568") without probe
Weight (with batteries)	1.77 kg (3.9 lbs)
Length of the probes / cables	Probes: 152 mm (24") / Cables: 2 m (6.5 ft)
Maximum diameter of the conductors	Ø 203 mm (8")
Cover / Housing	Cover: UL94-V0 / Housing: UL94-5VB
Vibration	CEI 68-2-6 (1.5 mm, 10 to 55 Hz)
Shock	CEI 68-2-27 (30 G)
Fall	CEI 68-2-32 (1 m)

3.8 Environmental characteristics of the AL834

Operating temperature	- 10 °C to 50 °C (14 °F to 122 °F)
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Relative humidity	Up to 85% at 35°C (95°F) without condensation
Altitude	2.000 m

3.9 Safety and electromagnetic compatibility of the AL834

Compliance	EN 61010-1; EN 61010-2-032; 600 V CAT IV, 1 000 V CAT III; degree of pollution 2
Degree of protection	IP65 (with cover closed)
Electromagnetic compatibility	EN 61326-1
CE conformity	Yes

CHAPTER 4

USE

4.1 Use of the control and status indication LEDs

The ON/SLEEP (Operation/Standby) status of the SLII can be determined by pressing the Control button for less than 0.5 second. If the device is in Operation, its status will be indicated by the status of the LED. If the device is in Standby mode, all of the status LEDs will be lit until the button is released. Once the button is released, the status indication is restarted.

The device is controlled by pressing the button and holding it down until the LED corresponding to the desired operation lights. Releasing the button when the desired LED is lit results in execution of the corresponding command.

When the button is pressed, the LEDs light one after another. If the button is kept pressed, all of the LEDs will go off after the last LED lights. If the button is still kept pressed, the sequence repeats, starting with the lighting of the first LED. If the button is released after the last LED goes off and before the first lights again, no command is executed by the device. This mechanism makes it possible to cancel (or ignore) a press on the button.

Stopping the device does not end any recording in progress or prevent the starting up of a programmed recording session. In the standby mode, the device starts itself automatically for each programmed recording session

Control and status operation:
The command follows the pressing of the button, while the status is displayed every five seconds for one minute.

the meanings of the lighting of each of the LEDs are as follows:

GREEN LED		
CONTROL	Starting up of a recording session	
STATUS	Single blinking	The recorder is in standby mode (and not recording)
	Double blinking	The recorder is in record mode

ORANGE LED		
CONTROL	Stops recording	
STATUS	Off	The recorder is not in overload condition
	Single blinking	One or more inputs are in overload condition

YELLOW LED		
CONTROL	Clears the alarm status (see § 4.6)	
STATUS	Off	No alarm has been detected on any of the inputs
	Single blinking	At least one alarm has been detected in at least one channel
	Double blinking	At least one channel is currently in alarm condition
	Rapid blinking	Ready to clear the alarm indication

RED LED		
CONTROL	Erases the memory (see § 4.7)	
STATUS	Off	No data in memory
	Single blinking	The memory is partially full
	Double blinking	The memory is full
	Rapid blinking	Ready to erase the memory
	Slow blinking	Erasure of the memory

BLUE LED		
CONTROL	ACTIVATES or DEACTIVATES the Bluetooth function	
STATUS	Off	Bluetooth function deactivated
	Single blinking	Bluetooth function activated

RED LED (Batteries low)		
STATUS	Off	Batteries OK
	Single blinking	Batteries low. The batteries must be replaced.

An overload occurs when the signal applied to any input exceeds its nominal range by 10%. When the battery voltage falls below 1.7 volt, the device stops (terminating and saving the recording in progress if applicable).

STANDBY Mode: the device changes over to the power-saving mode if there is no press on the button for more than one minute. It remains in this mode until the button is pressed or the internal clock reaches the programmed starting time of a recording session.

RECORD mode: the device changes over to power-saving mode between recording sessions. The slower the Recording interval, the longer the device will remain in this power-saving mode. Which means that, the slower the recording interval, the longer the device will be able to record.

4.2 Connecting the Simple Logger® II to a desktop computer

INSTALL the DATAVIEW® software BEFORE connecting the recorder to the computer.

The SLII allows connection by USB or Bluetooth.

The USB connector is under the battery compartment cover and is used to update the internal microprogram; it must not be used for real-time measurements.

WARNING: the USB connector provides no electrical safety, since it is not insulated from the voltage inputs. Making any USB connection when the voltage inputs are connected entails a very large risk of harm to persons and equipment. **No voltage input must ever be connected when the battery compartment cover is open.**

The recorder can be connected to the computer using the Bluetooth function during a recording session. However, this communication will increase the demand on the batteries.

4.2.1 Bluetooth connection

The SLII is designed to be connected to a computer wirelessly using the Bluetooth function for real-time measurements, data transfers, and the configuration of the device.

The device is delivered with a USB Bluetooth adapter, for computers that do not have the Bluetooth function. If this is the case, connect the adapter to an available USB port on the computer. The default Windows driver will install the peripheral automatically.

The connection procedure depends on the operating system, on the Bluetooth equipment, and on the driver software.

REMARK: the information in the sections that follow is necessary only for the very first connection of the device, or when the USB-Bluetooth adapter has been removed, then reconnected.

4.2.2 Connection under Windows Vista or Windows 7

1. Check that the Bluetooth function is activated on the device (see § 4.3)
2. Start by connecting the USB-Bluetooth adapter supplied to an available USB port. Windows will automatically install all necessary drivers.
3. A Bluetooth symbol, similar to this  , will appear in the system folder once the driver has been installed.
4. Right-click on the icon and select "**Add equipment**".
5. In the "**Add equipment**" window, select the model Simple Logger® II to be connected, then "**Next**".

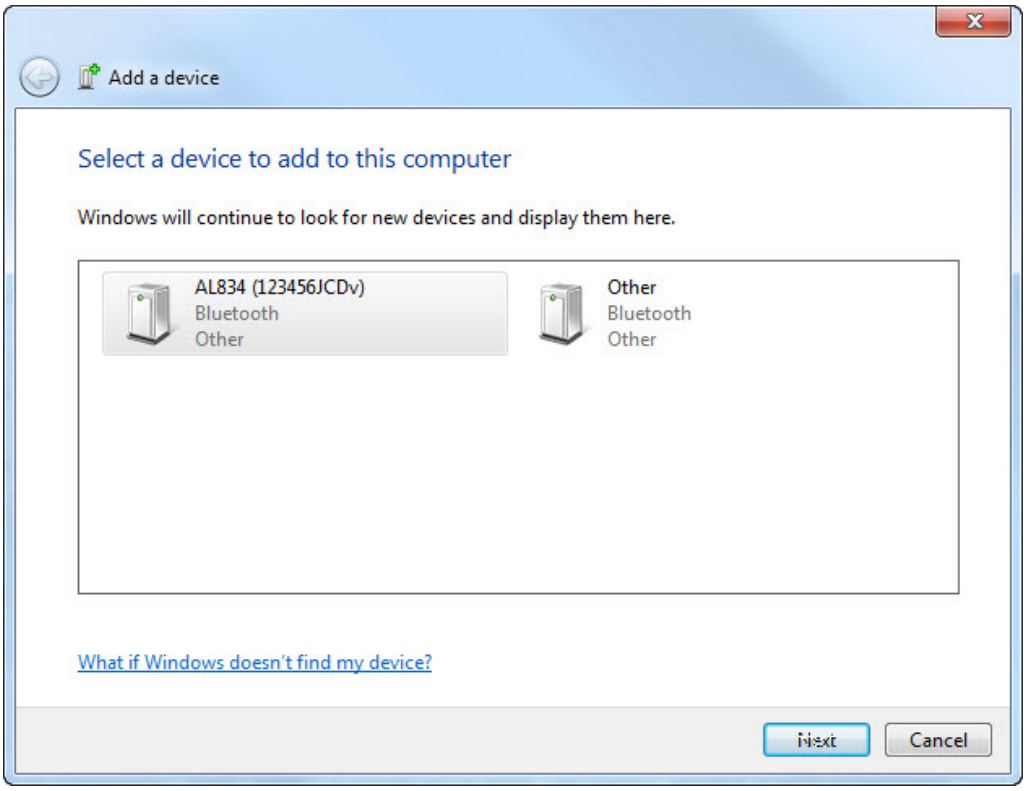

Figure 4-1

REMARK: depending on the Bluetooth configuration and the operating system, it may be necessary to enter an access key to finalize the connection of the device. If this is the case, the default access key is: **1234**.

6. Once the device has been successfully added to the computer, a window like the one shown below will open. Select "**Close**".

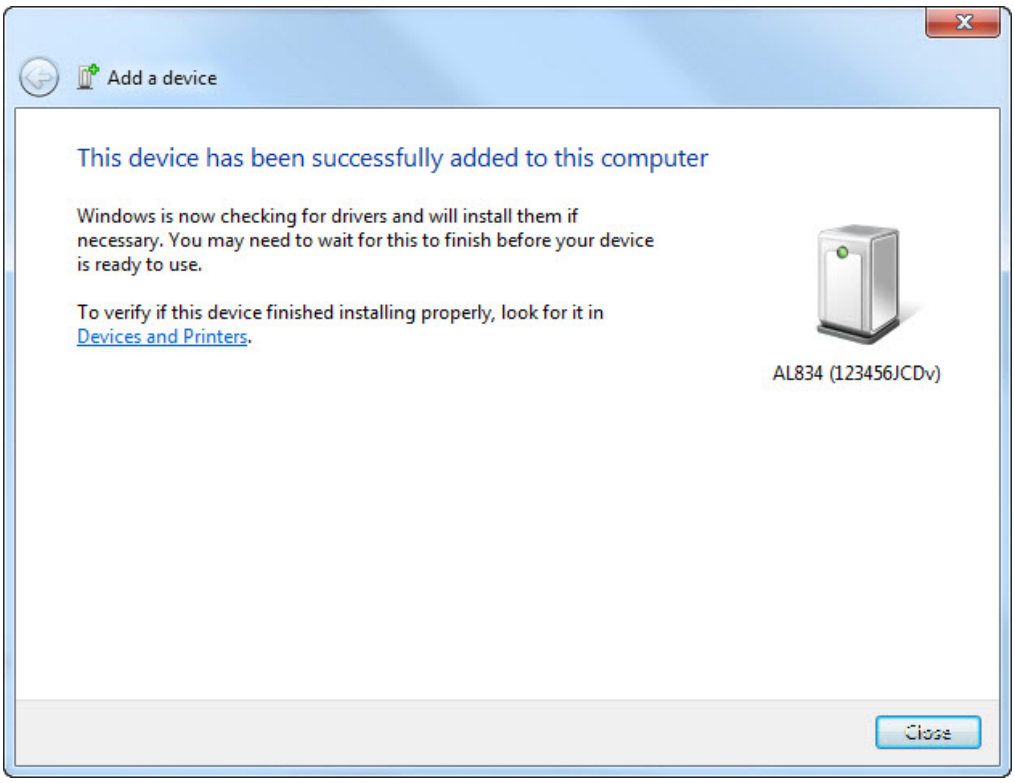

Figure 4-2

7. Open the instrument panel of the SLII by clicking on the icon placed on the desktop when the Dataview® software was installed. The device connects itself automatically only if only one device has been installed. If several devices are already installed, select the device to be connected in the scrolling list of the connection window.

8. Selecting OK sets up the connection between the device and the computer. It is now possible to configure the device, to see the measurements in real time, and to download the stored data using Dataview®

4.2.3 Connection under Windows XP

1. Check that the Bluetooth function is activated on the device (see § 4.3)

2. Connect the USB-Bluetooth adapter supplied to an available USB port. Windows will automatically install all necessary drivers.

3. In the "**Start**" menu, select **Settings > Control Panel > Bluetooth devices**.

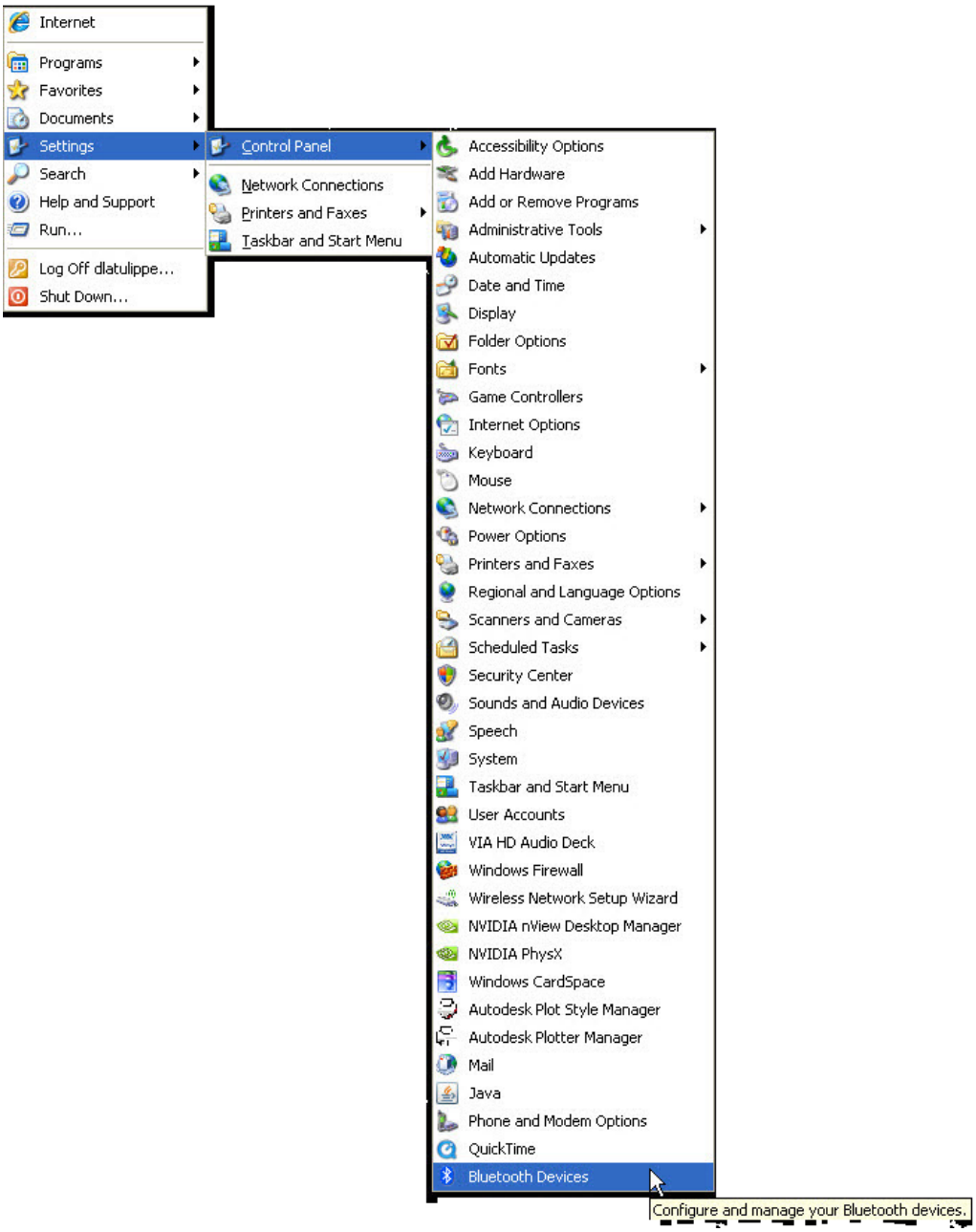

Figure 4-3

4. In the "**Bluetooth Devices**", window, select "**Add…**".

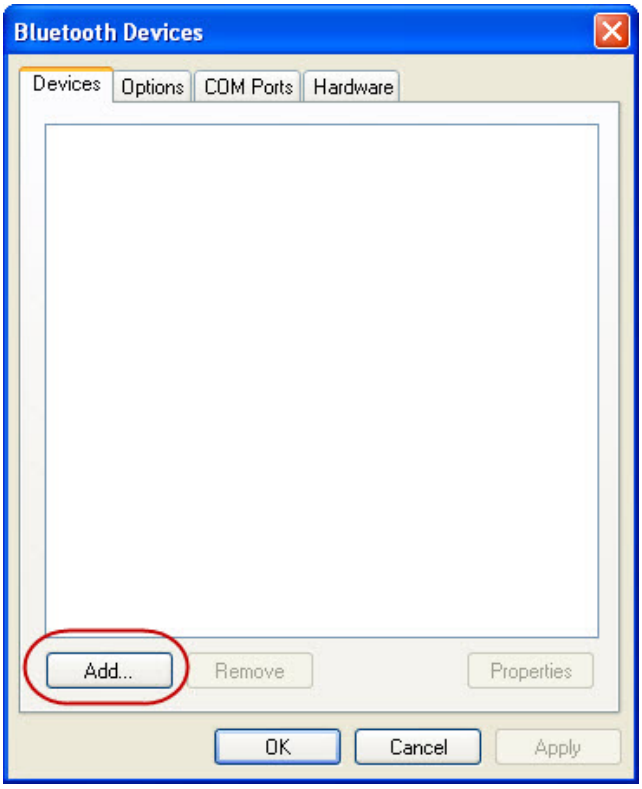

Figure 4-4

5. In the "**Add Bluetooth Device Wizard**", window, check the "**My device is set up and ready to be found**" box, then click on **"Next"**.

Figure 4-5

6. The computer looks for Bluetooth equipment to connect. Once the software has found the Simple Logger® II concerned, select it and click on "**Next**".

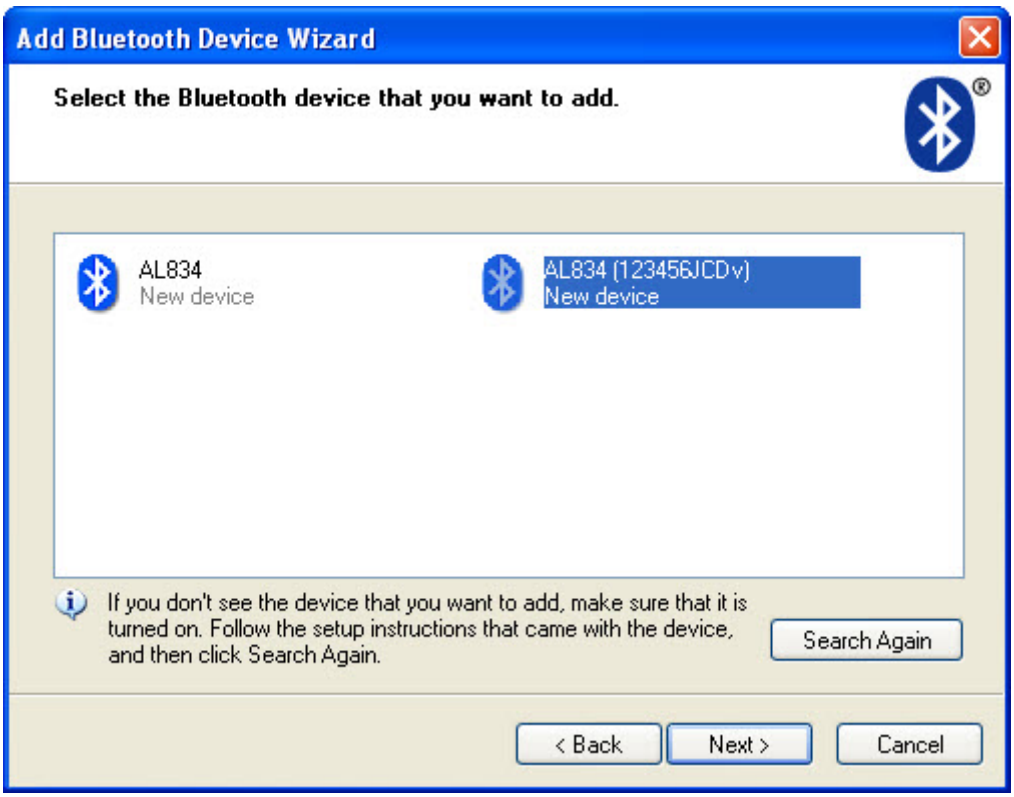

Figure 4-6

7 If an access key is requested, select "**Let me choose my own passkey**" and enter the default code **1234** used by all Simple Logger® II models that have the Bluetooth function.

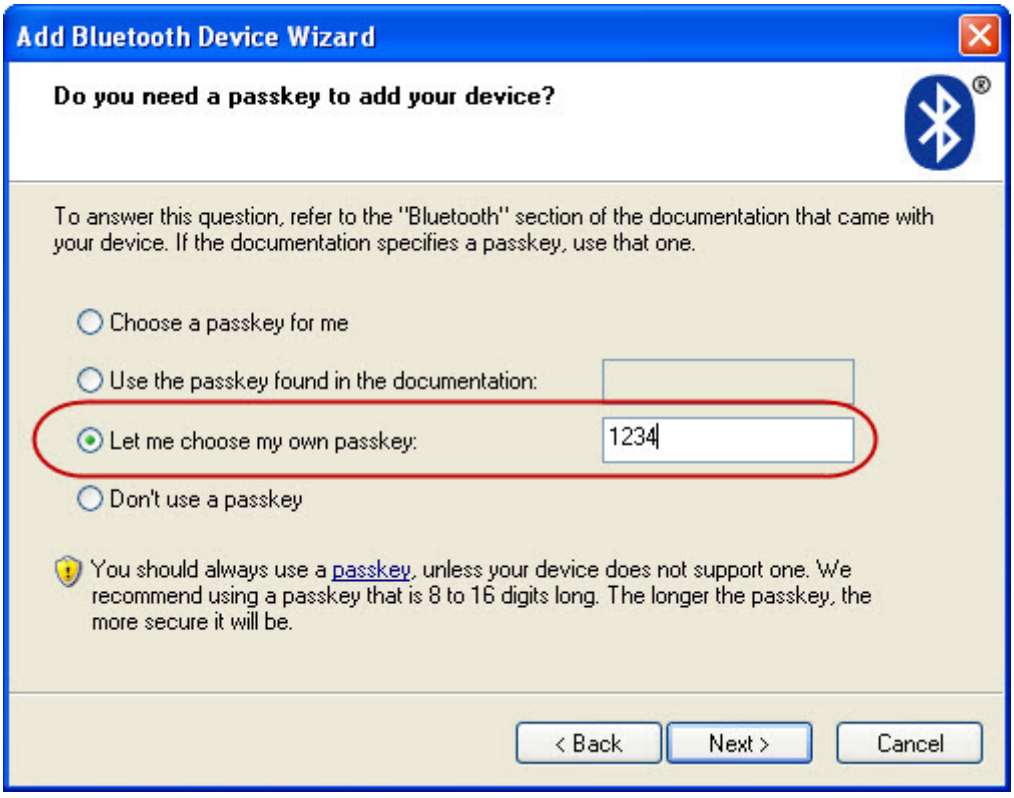

Figure 4-7

8 When the computer has finished installing the Simple Logger® II, a window indicating the end of the process will be displayed. The computer is now ready to communicate using the Bluetooth function. Select "**Finish**" to close the window.

9 Open the instrument panel of the SLII by clicking on the icon placed on the desktop when the DataView® software was installed. The device connects itself automatically only if only one device has been installed. If several devices are already installed, select the device to be connected in the scrolling list of the connection window.

10 Selecting OK sets up the connection between the device and the computer. It is now possible to configure the device, to see the measurements in real time, and to download the stored data using Dataview®.

4.3 ACTIVATION/DEACTIVATION of the Bluetooth function

As default, the Bluetooth function is activated.

To increase the battery life, the Bluetooth function can be DEACTIVATED.

To deactivate the Bluetooth function, press and hold the button of the SLII until the blue LED lights continuously, then release the button. Repeat this operation to reactivate the Bluetooth function.

NOTE: if the SLII was communicating, Bluetooth cannot stop until 15 seconds after the end of the communication.

If all of the LEDs light instantaneously, the device was in STANDBY mode. When the button is released, the device will display its status every 5 seconds for one minute.

4.4 Recording data

The Simple Logger® II must be configured before it can make a recording (see § 2.3 *– Configuration of the Simple Logger, in the Dataview user manual).*

Once the configuration has been loaded into the device, the device no longer needs to be connected for a programmed recording session to start.

The data recorded in the memory of the device can then be downloaded to a hard disc (see § 2.8 – *Downloading of data recorded in the device, in the Dataview user manual).*

A programmed recording session will start even if the recorder is in STANDBY mode.

4.4.1 Start-up of a recording session

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

1. Connect the device to the source to be measured.
2. Press and hold the control button. When the START LED (GREEN) lights, release the button.
3. The GREEN LED then blinks twice every 5 seconds to indicate that recording is in progress.

A few seconds may elapse before the device starts recording. The green recording LED will blink only once during this period.

4.4.2 Stopping a recording session

1. Press and hold the control button. When the STOP LED (ORANGE) lights, release the button.
2. The GREEN LED changes from double blinking to single blinking, indicating the STANDBY mode.

The data will be preserved, even if the device is in STANDBY mode. The recorded data are saved in Flash memory (preserved even in the absence of the batteries). The recorded data can be downloaded to a computer.

4.5 Downloading the recorded data

The measurements recorded in the device can be transferred to the computer using the download command of the instrument panel of the SLII. For the data download instructions, refer to § 2.8 – *Downloading the data recorded in the device, in the Dataview user manual.*

4.6 Clearing the alarm indication

Alarms can be cleared in the **STANDBY** or **RECORD** mode.

1. Press and hold the control button. When the ALARM LED (YELLOW) lights, release the button. The YELLOW LED blinks rapidly for five seconds.
2. Press the control button for another half-second to validate and terminate the operation.

This does not affect the recorded alarms, only their indications. Recorded alarms can be deleted only when the memory is erased (see § 4.7 – *Erasing data in the memory*).

4.7 Erasing data in the memory

Data can be erased only when the device is in STANDBY mode.

There are two ways to erase the memory.

Erasure of the memory using the control button:

1. Press and hold the control button. When the ERASE LED (RED) lights, release the button.
   This presets the device for an erase operation (when it is not in recording mode). Once preset for the erasure of the memory, the RED LED blinks rapidly for five seconds.

2. Press the control button for another half-second to confirm the erase operation. During the erase operation, the LED blinks once a second. The erase operation lasts approximately 20 seconds.

If the button is not pressed within five seconds after presetting, the erase operation will be automatically aborted and the content of the memory will be preserved. For this reason, if you do not want to erase the memory, simply wait until the RED LED stops blinking.

Erasing the memory using the Configuration panel of the SLII:

1. Connect the device to the computer and open the Instrument panel of the SLII.
2. In the **Device** menu, select **Erase the memory.**
3. A dialogue box opens to request confirmation of the erasure of the memory of the device. Select **Yes** to confirm or **No** to cancel the operation.

Erasing the memory also deletes all recorded alarms.

4.8 Nature of the data recorded

The SLII also records the ancillary parameters linked to the measurements.

Here are the definitions of the terms used in this section:

Input channel: nature of the source for each measurement channel.

Measurement channel: measurement of the input quantity. This may be a simple, direct measurement, or the result of a calculation using the data concerning one or several inputs.

Sampling rate: the rate at which the device samples the inputs.

Recording interval: the rate at which records are made.

4.8.1 Ancillary parameters linked to the measurements

The logger records the information used to calculate the RMS values for each of the inputs. In addition, the operator can define the sampling rate and the recording period, along with the storage format, from the instrument panel of the SLII. The parameters defined are then recorded at the specified rate.

4.9 Operation of the recorder

When the device is started up, its operation is as follows (if the battery voltage is sufficient and there are no data in memory):

The GREEN LED blinks once every 5 seconds (the STANDBY mode is active and the recorder is not recording).

The RED LED is off, indicating that there are no data in memory.

The control button is used to start / stop a recording session.

If the control button is not pressed for one minute, the device changes over to SLEEP mode and waits for another press on the button or for a recording session starting time (if a recording session is programmed). In the SLEEP mode, the LED does not blink.

Pressing the button for 0.5 second returns the device to the normal STANDBY mode.

4.9.1 Recording with memory emptied

When a recording session starts, the recorder continues recording until one of the following events occurs:

The session is terminated.

The memory is full (recording was in Operation / Stopped mode or Alarm mode).

The control button is pressed until the STOP LED (ORANGE) lights and is released before the next LED lights.

The stop recording command is sent to the device from the instrument panel of the SLII.

The battery voltage falls below 1.7 V.

4.9.2 Recording with memory full or part full

If the RED LED blinks twice every 5 seconds, the memory is full and must be emptied before a new recording session can be started.

If the RED LED blinks once every 5 seconds before the start of a new recording session, the memory is not empty.

To save, erase, or check the availability of the memory, use the commands of the instrument panel of the SLII.

There can be cases in which the GREEN LED also blinks twice every five seconds, indicating that a recording session is still in progress. The user can choose to stop the recording session and download the session and/or erase the memory.

It is not possible to erase the memory of the recorder when recording is in progress. Recording must first be stopped.

4.9.3 Memory filled during a recording session (Start / Stop mode)

If the recorder is recording in the Start / Stop mode or the alarm mode, and the memory becomes full before the end of the recording session, the session is ended.

The following events occur after the control button is pressed for 0.5 second:

The GREEN LED blinks once (Standby mode).

The RED LED blinks twice (memory full).

At this moment:

- The content of the memory can be downloaded and the memory erased.
- A new recording session can then be started or be programmed once the memory has been erased.

If either the XRM or the FIFO memory management mode is used, recording continues beyond the physical memory capacity, with memory being freed for the new data. The way memory is freed depends on the memory management mode chosen.

4.9.4 Batteries too low for the full duration of the recording session

The recorder continues recording until the battery voltage falls below 1.7 V. If the battery voltage falls below 1.7 V, the following events occur:

The recording session is ended.
The data are saved.
The GREEN and RED LEDs go off.

Pressing the control button no longer has any effect. The battery voltage may subsequently recover slightly after the device stops. In this case, the device may be restarted briefly if a button is pressed.

The batteries must be in good condition or be replaced for recorded data to be downloaded from the device to the computer (see § 2.8).

Replacing the batteries when the device is in the STANDBY mode will not cause the data in memory to be lost. The internal backup capacitor will preserve the clock time while the batteries are being replaced. If the battery voltage falls too far or if the batteries are not replaced rapidly enough, the date and time will be lost, but the data in the memory will be preserved.

4.9.5 The recording session ends

The recorder changes over to STANDBY mode if one of the following events occurs:

The session ends because the ending time is reached.

Recording is in Start / Stop mode or in alarm mode and the memory is full.

The user ends the session by pressing the control button until the STOP LED (ORANGE) lights and releases the button before the next LED lights, or stops recording from the instrument panel of the SLII.

The recorder is now ready for a new session or a download. Pressing the control button until the START LED (GREEN) lights and releasing it before the next LED lights starts a new session, depending on the free memory available

4.10 Using the reset switch

CAUTION: risk of electric shock. Disconnect all inputs of the device and remove the current sensors from any conductor before opening the battery compartment cover.

Resetting the device takes approximately 10 seconds, during which the device does not respond.

The **RESET** button under the battery compartment cover resets the CPU.

To reach it, open the battery compartment cover. The reset switch is located on the printed circuit (see § 2.2 for the location).

We recommended pressing the **RESET** button only when the recorder fails to respond to a normal press on the control button when the device is not connected to DataView®. It is best not to reset the recorder when it is recording, downloading, or being configured.

If the recorder fails to respond to a press on the button, check that the batteries of the device are not low. If the battery voltage falls below 1.7 V, the device does not respond to a press on the button. In this condition, pressing the **RESET** button will not restart the device.

We recommend downloading the desired session and erasing the memory before starting a new recording session.

Recovery of normal operation of the logger means that the Reset has in fact eliminated any fault(s). If the fault condition is still present, the device will attempt in vain to return to normal operation. However, in some conditions, the date and time and the emptying of the memory will have to be reset.

4.11 Flash memory update switch

CAUTION: risk of electric shock. Disconnect all of the inputs of the device and remove the current sensors from any conductor before opening the battery compartment cover.

The Flash memory update switches are used to recover from a failed update of the flash memory.

To reach them, open the battery compartment cover. The three switches are located on the printed circuit (see § 2.2 for the location).

The three switches must be set to **ON** in order to update the flash memory of the device using the Fail safe method from the "SLIIFlashUp1xx" utility program.

The switches must then all be set back to **OFF** when the update is done.

Failing to set the switches back to OFF may lead to defective operation and excessively fast discharging of the batteries.

Look for firmware and software updates at www.chauvin-arnoux.com.
Download and read the instructions before carrying out these updates.

CHAPTER 5

MAINTENANCE

Except for the batteries, the instrument contains no parts that can be replaced by personnel who have not been specially trained and accredited. Any unauthorized repair or replacement of a part by an "equivalent" may gravely impair safety.

5.1 Replacing the batteries

CAUTION: risk of electric shock. Disconnect all of the inputs of the device or remove the ammeter clamps from all conductors before opening the battery compartment cover to replace the batteries. Stop all recording before replacing the batteries, since otherwise you may lose data.

Remove the screws on the battery compartment cover.

Slide the cover and lift it off.

Replace the four 1.5 V alkaline batteries (LR14) (the backup capacitor supplies enough energy to preserve the clock for approximately 10 seconds while the batteries are being replaced).

Close the cover and screw it to the housing.

REMARK: always replace all of the batteries at the same time.

If the device is stored without the batteries, the internal clock will have to be reset from the Configuration panel of the SLII once the batteries have been put back in place. Store the device with the batteries in place only for short periods of time. For prolonged storage of the device, it is best to remove the batteries.

5.2 Cleaning

CAUTION: risk of electric shock. Disconnect anything connected to the device and switch it off.

The housing of the recorder must be cleaned with a soft cloth, moistened with soapy water. Rinse with a damp cloth and dry rapidly with a dry cloth or forced air. Do not use alcohol, solvents, or hydrocarbons.

Make sure that no foreign body interferes with the operation of the snap device of the sensors.

5.3 Metrological check

Like all measuring or testing devices, the instrument must be checked regularly.

This instrument should be checked at least once a year. For checking and calibration, contact one of our accredited metrology laboratories (information and contact details available on request), at our Chauvin Arnoux subsidiary or the branch in your country.

5.4 Repair

For all repairs before or after expiry of warranty, please return the device to your distributor.

5.5 Warranty

Except as otherwise stated, our warranty is valid for **twelve months** starting from the date on which the equipment was sold. Extract from our General Conditions of Sale provided on request.

The warranty does not apply in the following cases:

- Inappropriate use of the equipment or use with incompatible equipment;
- Modifications made to the equipment without the explicit permission of the manufacturer's technical staff;
- Work done on the device by a person not approved by the manufacturer;
- Adaptation to a particular application not anticipated in the definition of the equipment or not indicated in the user's manual;
- Damage caused by shocks, falls, or floods.

5.6 To order

Simple Logger® II AL834 ..... P01157140

(4 channels, True RMS value, Bluetooth, 4 inseparable 300/3000 ACA AmpFlex® sensors)

Includes a Bluetooth-USB adapter, the installation equipment, the DataView® CD-ROM, 4 1.5 V alkaline batteries (LR14, UM2, C), user manuals, safety data sheets, and the verification certificate.

Simple Logger® II ML914 ..... P01157135

(4 channels, True RMS value, Bluetooth, 4 inseparable 100/1000 AAC MiniFlex® sensors)

Includes a Bluetooth-USB adapter, the installation equipment, the DataView® CD-ROM, 4 1.5 V alkaline batteries (LR14, UM2, C), user manuals, safety data sheets, and the verification certificate.

Accessories and Replacement Parts

Type A USB cable with mini-B 2M pin contacts ..... Contact us
Bluetooth-Class 2 USB adapter..... Contact us
Set of 12 input identification markers ..... Contact us

APPENDIX A

TROUBLESHOOTING

Symptom: after some time in a cold, damp environment, the recorder no longer operates.

Cause, solution: condensation may have formed inside the recorder, disrupting the circuits. Let the device dry (leave it open in a place that is sufficiently warm and dry).

Symptom: the Simple Logger® II does not start recording.

Cause, solution: check that the batteries are not spent. Check that the PRESS button is pressed long enough to light the GREEN LED and release it before the next LED lights. Check that the RED LED is not blinking twice. If it is, the memory is full, and it will be necessary to download the data and erase the memory (see § 4.7). Check that the SLII is correctly configured (the start of a synchronized record is postponed to the first subsequent synchronization) and at least one of the measurement channels (or configured alarm) has been specified.

Symptom: the Bluetooth connection fails to find the device.

Cause, solution: check that the blue LED blinks only once, indicating that the Bluetooth module of the device is active.

Symptom: even when the Bluetooth connection is established and the LED indication is active, the device fails to connect to the SLII configuration panel.

Cause, solution: check that the batteries low LED is not blinking. If the battery voltage is below 2.2 V, the device will have enough energy to supply its circuits, but not enough to maintain a stable connection. Replace the batteries.

APPENDIX B

GLOSSARY

Some general terms associated with data collection are listed here for convenience.

Bps: bits per second, a unit of transmission rate equal to the number of bits of information per second. The Simple Logger® II transfers data at a rate of 115,200 bps.

Button: a physical key on the recorder or on the keyboard of the computer, or a software key that the program displays on the screen of the computer.

Data logger: a device used to sample and record electrical signals, which may represent physical phenomena such as temperature, pressure, and fluid flow rates, for long periods of time, in an environment without a human presence.

Download: process of data transfer between the recorder and the computer.

Hz: Hertz, unit of frequency equivalent to the number of cycles per second.

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

Port: name given to any connector used to send or receive information.

Processor: calculation device used to compute and to execute a set of instructions.

Recording session: a recording session is defined as the time and the data contained in an interval between the beginning and the end of a record.

Resolution: the last significant digit of a measurement.

Zoom: the possibility of selecting a section of a graph and enlarging it to make it easier to read.

Bluetooth: wireless communication device used for access to the recorder via a computer program (Dataview®).

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

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