



**Operators Manual
For the CariScreen
ATP Meter**

Operating Precautions and Limitations of Use

IMPORTANT: CaMBRA's products are designed and constructed to be safe and without risk to health when properly used (in accordance with the supplied documentation, etc) and when the operating precautions outlined in this document are fully observed.

IMPORTANT

IT IS ESSENTIAL THAT THE USER OF THIS MANUAL IS AWARE OF THE POTENTIAL HAZARDS ASSOCIATED WITH THE UNIT AND ITS ACCESSORIES.

ALL OPERATORS SHOULD BE FAMILIAR WITH THE SAFETY PRECAUTIONS AND WARNINGS GIVEN IN THIS SECTION PRIOR TO ATTEMPTING TO OPERATE THE UNIT.

IF THE UNIT IS USED IN A MANNER NOT SPECIFIED BY THE MANUFACTURER, THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED.

The following symbol is used in this manual:



Description: **CAUTION / WARNING**

The precautions to be observed relate to the transportation and use of all types of solid state electrical/electronic instrumentation and to the handling of the CariScreen Swab devices.

These precautions are outlined below:

Operating Environment and Electrostatic Precautions



WARNING: Do not use the unit in any area which has been, or is thought to have been, exposed to explosive or flammable gases or vapors.



CAUTION: Do not expose the unit to extremes of temperature (see section 13), and minimise any exposure to electrostatic charges.

Unit Handling



CAUTION: Care should be taken not to drop the unit or subject it to rough physical handling.

Batteries



WARNING: Use only non-rechargeable alkaline batteries, or rechargeable NiMH or NiCD batteries, of types specified in section 13.



WARNING: Do not use batteries with individual cell voltages greater than 1.65V, as this will cause permanent damage to the unit.



CAUTION: Old batteries should be disposed of in accordance with your local regulations.

Use and Insertion of CariScreen Swab Devices



CAUTION: Refer to the CariScreen Swab data sheet and kit insert for details before using the device, and observe all federal, state and local environmental regulations.



CAUTION: Do not force CariScreen Swab devices into the unit. Do not attempt to insert any object other than an approved CariScreen Swab device into the unit.



CAUTION: Ensure that the CariScreen Swab device is clean and dry before inserting it into the unit.

Keypad Buttons



CAUTION: Do not use excessive force when pressing any of the buttons on the unit's keypad.

Unit Casework



WARNING: There are no Operator serviceable parts inside the unit. Removal or opening of the unit's casework will void the warranty.

Regulatory Limitations of Use

The CariScreen unit has been designed to meet the following general, safety and EMC requirements:

- General**
 - Low Voltage Directive 73/23/EEC
 - EMC Directive 89/336/EEC

- Safety**
 - BS EN 61010-1:2001, IEC 61010-1:2001
 - UL 61010B-1
 - CAN/CSA C22.2 1010.1-92

- EMC**
 - EN 55022:1998
 - EN 61000-4-2:1995
 - EN 61000-4-3:1995
 - FCC Class A - Sub Part J

The CariScreen unit is manufactured under ISO 9001 controls.

Declaration of Conformity

The CariScreen unit has been designed in accordance with, and satisfies the requirements of, article 11 of the Low Voltage Directive 73/23/EEC as realigned by 93/68/EEC on the harmonisation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits, to the essential requirements of BS EN 61010-1:2001.

The CariScreen unit has been type tested by EMC Projects Limited (a UKAS and CAA approved test facility and UK appointed Notified Body), and issued a Certificate of Compliance No. 5569/03 to the following EMC standard:

EN61326 : 1997

Covering:

Radiated Emissions	(EN 55022 : 1998)
Electrostatic Discharge	(EN 61000-4-2 : 1995)
Radiated Immunity	(EN 61000-4-3 : 1995)

Satisfying the EMC Directive(s) 89/336/EEC and 92/31/EEC as realigned by 93/69/EEC.

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1. Introduction

The CariScreen system is intended to provide a fast, easy screening test for dental caries via the use of an ATP bioluminescence test.

The CariScreen system consists of two elements: the CariScreen handheld meter unit and the disposable CariScreen swab.

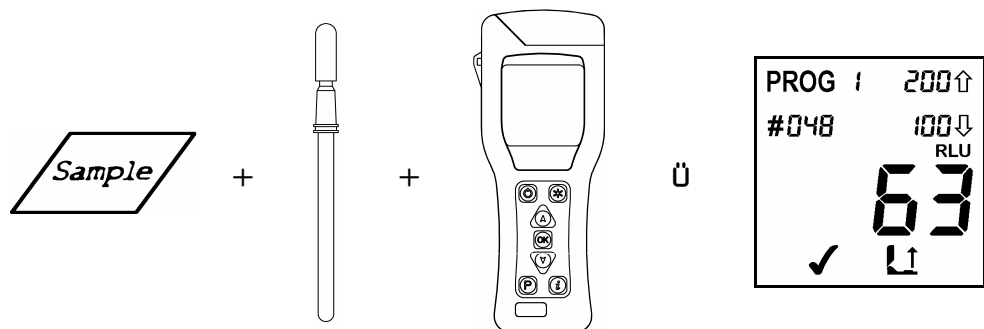
This Operator's Manual provides a detailed description of how to use the CariScreen unit, and how to handle maintenance and troubleshooting.

For full details on the CariScreen swab device, please refer to the CariScreen swab kit insert.

1.1 Principle of Operation

The CariScreen Swab device uses bioluminescent chemistry technology to convert an *invisible* concentration of ATP (present in the swabbed sample) into a *visible* light output.

The low-level light output is measured by the CariScreen unit to produce both a quantitative and qualitative result.



The quantitative result is a number in the range 0 to 9999, expressed in terms of Relative Light Units – RLUs.

Although Relative Light Units are not a tangible unit of light measurement (such as lux), they do provide a real measure of the amount of light output by the ATP bioluminescent test.

In this application, 1 RLU is roughly equivalent to 1 fmol of ATP.

The quantitative RLU reading is further compared against user programmable thresholds to provide an overall qualitative low (✓), medium (!) or high (✖) result.

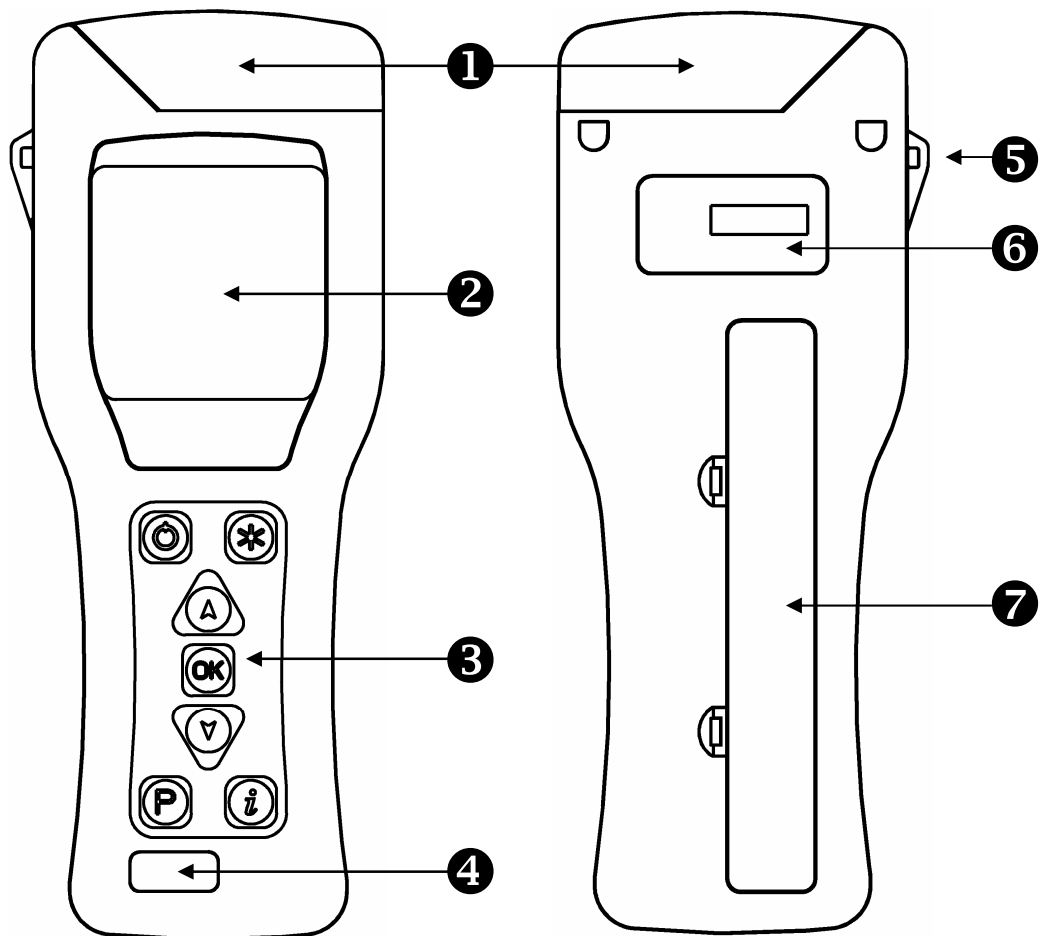
The CariScreen unit is a highly sensitive measurement device and, as such, should be treated with respect at all times.

2. Before You Begin!

IMPORTANT: Please ensure that you have read and understood all the "Operating Precautions and Limitations of Use" section at the beginning of the manual before continuing any further.

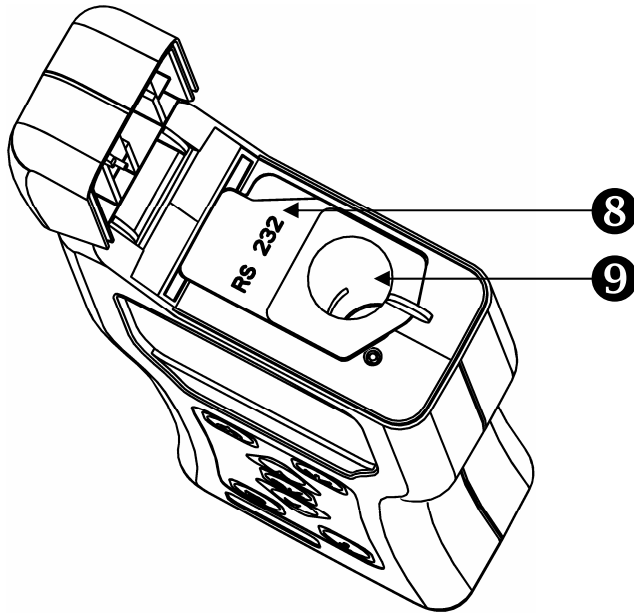
2.1 Unit Description

The unit has the following external front and rear features:



- | | | | |
|----------|------------------------|----------|---------------------|
| 1 | Unit lid | 5 | Neck strap anchor |
| 2 | Liquid crystal display | 6 | Serial number label |
| 3 | Keypad | 7 | Battery compartment |
| 4 | Front label | | |

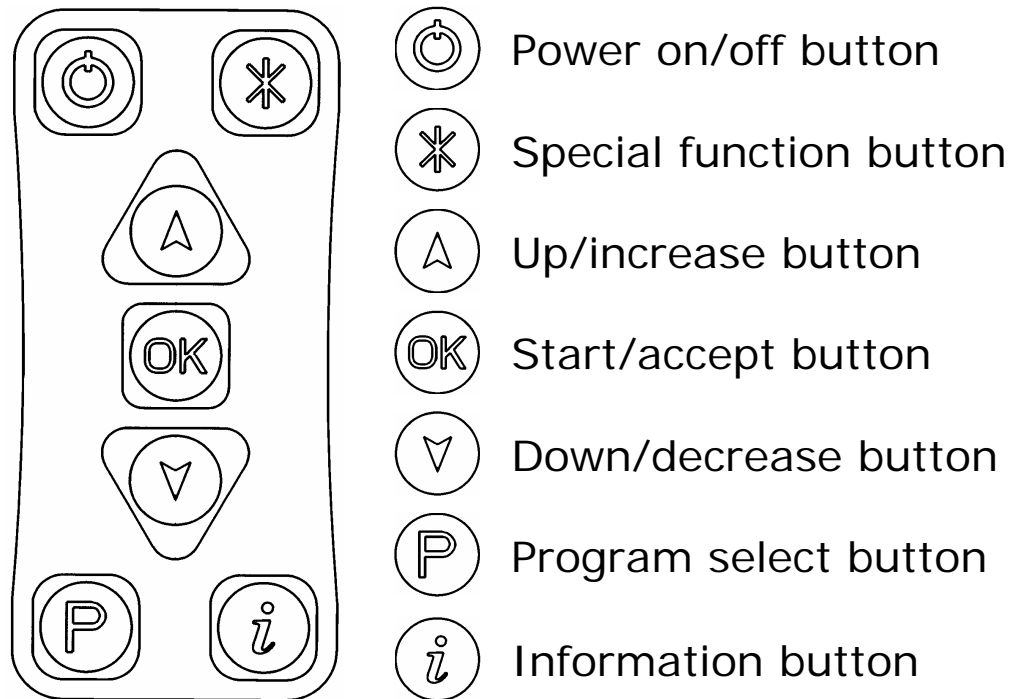
Opening the lid reveals the following internal features:



- ⑧ RS232 connector cover (Not Used)
- ⑨ Protective pocket and sample insert port

2.2 Keypad Symbols

The keypad is arranged with the following buttons:



The function of the buttons is explained in more detail in the following sections.


In general, the button is used to select special functions such as set-up modes, and the button is used to display additional information.

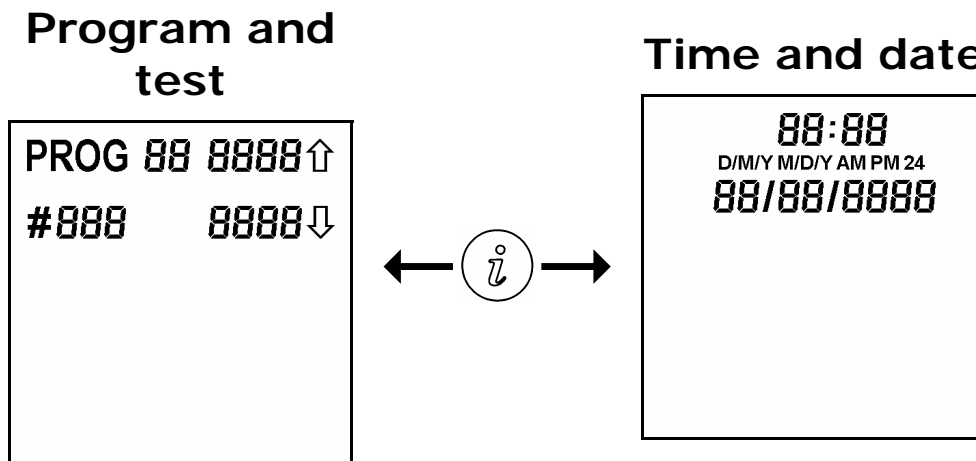
TIP: Holding down the or button will make it automatically repeat. The longer you hold it down, the faster it goes.

2.3 Display Layout and Icons

The liquid crystal display has the following layout:



The top section of the display has dual functions, which are switched between by pressing the  button:









The program and test functions are:

- PROG 88** Program number
- 8888**↑ Program upper threshold
- 8888**↓ Program lower threshold
- #888** Test number

While the time and date functions are:

88:88	Time
AM PM	12-hour clock
24	24-hour clock
D/M/Y M/D/Y	Date format (European or American)
88/88/8888	Date

The lower section of the display has the following digits and icons meanings:

MEM	Memory icon – flashes when the memory is over 95% full; lit when in memory review mode
ERASE?	Memory erase confirmation prompt
CAL	Calibration icon – flashes when internal self-calibration is required
RLU 8888	Sample measurement reading in Relative Light Units (RLUs)
	Busy icon
	Result pass icon
	Result caution icon
	Result fail icon
	Lid icon – flashes when the lid needs to be closed
	Insert icon – arrow flashes when the CariScreen Swab device should be inserted



Remove icon – arrow flashes when an CariScreen Swab device needs to be removed



Low battery icon

2.4 Fitting the Batteries

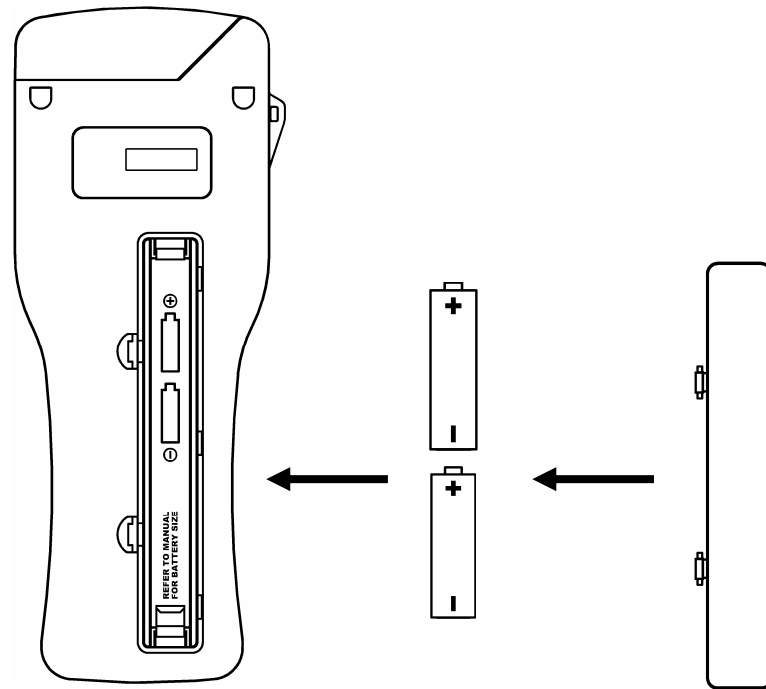
The unit is designed to operate from both non-rechargeable alkaline batteries and rechargeable Nickel Metal Hydride (NiMH) or Nickel Cadmium (NiCD) batteries:

Type	Nominal Voltage	Relative Capacity
Alkaline	1.5V	1.0
NiMH	1.2V	0.6
NiCD	1.2V	0.5

⚠ WARNING: Never mix batteries of different types, and never use recharged alkaline batteries as these are prone to leaking and overcharging and will cause permanent unit damage.

The unit requires two batteries of the size AA, LR6 or E91.

The batteries are fitted by unclipping the battery compartment cover on the back of the unit, and inserting two batteries with the positive ends (+) towards to top of the unit:



(1) Remove cover (2) Insert batteries (3) Replace cover

⚠ CAUTION: Be careful not to insert the batteries the wrong way round, as this may cause permanent damage to the unit's electronics.

When the batteries are inserted correctly, the unit automatically turns on and enters the clock set-up mode. Refer to section 4 on how to set the time and date.

TIP: For best results, use a quality brand of alkaline batteries and replace them as soon as they become low (see section 3.6).

3. Basic Unit Operation


3.1 Turning On the Unit

To turn the unit on, press the  button. The unit will beep once and display the power-up self-check display:



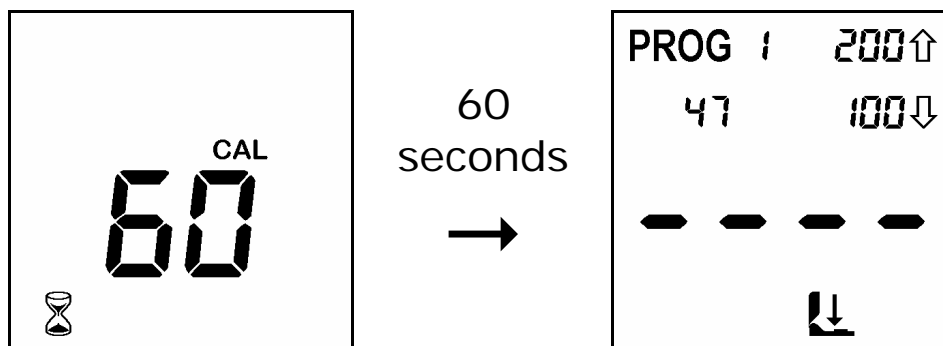
Following this the unit will perform its internal self-calibration routine (see section 3.2).



NOTE: If the clock is not set, the unit will enter the time and date set-up mode first (see section 4) and then perform its self-calibration when the clock is set.

NOTE: If the batteries are flat, the unit may not turn on at all; or may turn on, flash the  icon and beep three times, and then turn off again. If this happens, change the batteries.

3.2 Internal Self-Calibration

When the unit is turned on (see section 3.1), it performs an internal self-calibration check, with the display counting down from 60 to 0 seconds:



NOTE: During self-calibration, there must be no CariScreen Swab device in the unit and the lid must remain closed. If the  icon is shown with the arrow flashing, open the lid and remove the CariScreen Swab device from the unit. If the  icon is flashing, close the lid.

The unit will automatically perform the self-calibration routine (as above, with the flashing **CAL** icon) under the following circumstances;

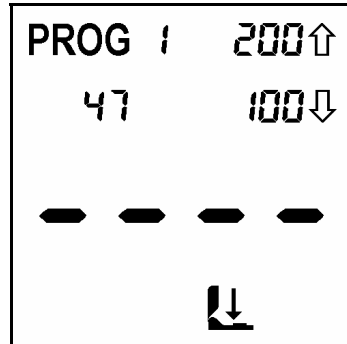
- a) When the instrument is in continuous operation for a prolonged period of time (typically >30 minutes), and
- b) The instrument is used in an environment where the temperature changes significantly (typically >5°C).

TIP: If the protective pocket is missing or incorrectly inserted, the unit will show an **E1** error code (see to section 10.3). In this event, turn off the unit, open the lid and ensure that the pocket is fully inserted. Refer to section 8.3 for further details.








When self-calibration is complete, the unit is ready to perform a measurement.


3.3 Ready for Use

Once the unit has successfully performed its self-calibration, it is ready to perform a measurement:



At this point several keypad options are available, all of which are explained in more details in the following sections:


Button	Action	Section
	Show current time and date	4
	Set new time and date	4
	Select program number	5
	Start new measurement	6
 	View previous test results	6.2
	Turn off unit	3.4

NOTE: The  button performs different functions depending on the unit mode – see individual sections of specific details.

Refer to section 9 for a quick overview of the available keypad options.


3.4 Turning the Unit Off

To turn the unit off, press the  button. The unit will beep once and the display will go blank.


NOTE: To avoid accidental turn off, the  button is disabled while the unit is performing a sample measurement.


3.5 Power Saving Standby Mode


If the unit is turned on, but has not been used for more than 10 minutes, it will automatically enter a power saving standby mode.

To turn the unit back on, simply press the  button, as per section 3.1.

3.6 Low Battery Indicator

The  icon indicates the state of the batteries:


 Icon	→	Battery State
Not visible	→	Good
Visible	→	Low – replace soon
Flashing	→	Flat – replace now!

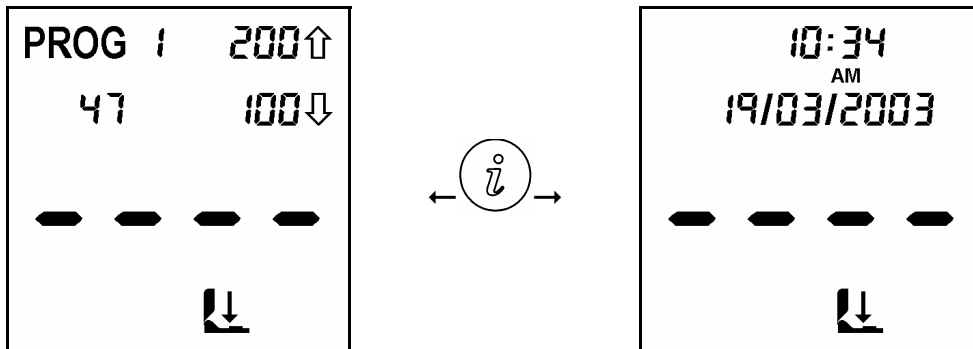
When the batteries are flat, the unit will flash the  icon, beep three times, and then automatically turn off.





NOTE: If the batteries are too flat, the unit will not turn on at all.

TIP: Store the unit in a cool dry place when not in use, as elevated temperatures will shorten the battery life.

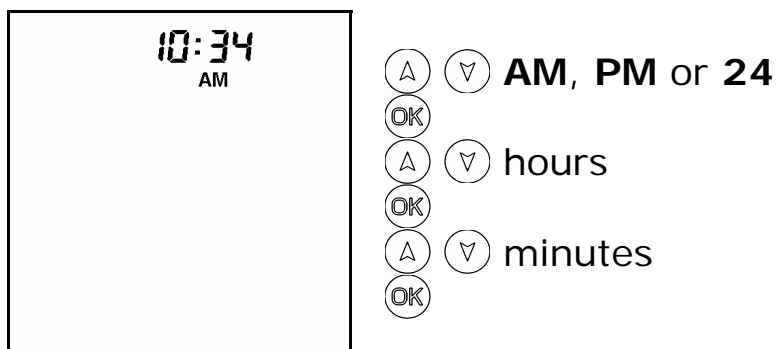
4. Checking and Setting the Clock

With the unit turned on, and having performed its internal self-calibration checks, the current time and date can be displayed by pressing the  button:

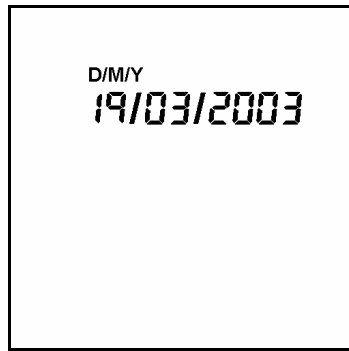


To change the time and date, press the  button. Then use the  and  buttons to change the flashing value, and the  button to accept each new value in turn.

First the time is set (style, hours, minutes), and can be configured as either a 12-hour clock (select **AM** or **PM**) or a 24-hour clock (select **24**):



Next the date is set (format, date/month, month/date, year), and can be configured as either European format (select **D/M/Y** for date, month, year) or American format (select **M/D/Y** for month, date, year):



- ⬆️ ⬇️ **D/M/Y or M/D/Y**
- ⓄⓀ
- ⬆️ ⬇️ date (D/M/Y) or month (M/D/Y)
- ⓄⓀ
- ⬆️ ⬇️ month (D/M/Y) or date (M/D/Y)
- ⓄⓀ
- ⬆️ ⬇️ year
- ⓄⓀ

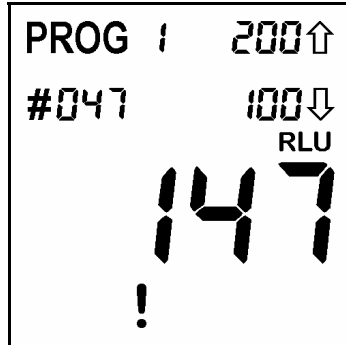
TIP: Pressing the Ⓚ button at any point will cancel this set-up mode, leaving the time and date unchanged.

NOTE: When the batteries are first inserted (or removed and replaced) the unit will automatically enter the clock set-up mode. Once the clock is set, the unit will continue with its internal self-calibration.

NOTE: The clock does not have automatic daylight saving adjustment. If this is required, the time must be manually changed when necessary.

5. Programmable Result Thresholds

The unit can store up to 100 programs (**PROG** 0 to 99), each of which defines a pair of upper (\uparrow) and lower (\downarrow) thresholds for the measurement result:



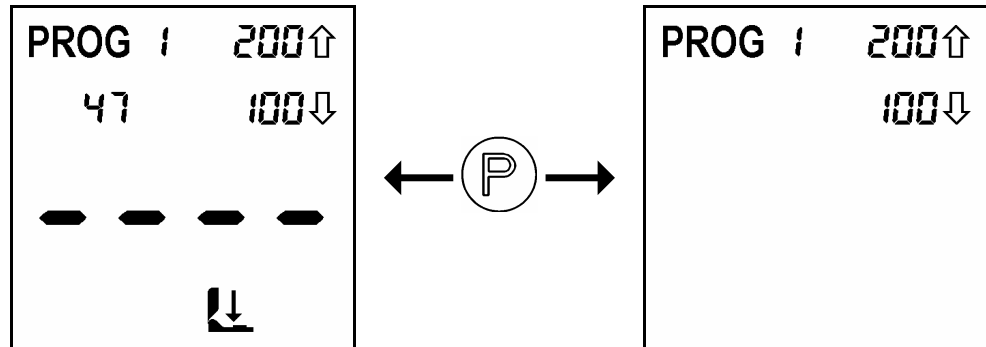
When a measurement reading is displayed, it is compared against these thresholds to determine the overall pass/caution/fail result:

Banding	Result
Reading \leq lower threshold (\downarrow)	✓ Low
Reading $>$ lower threshold (\downarrow) but \leq upper threshold (\uparrow)	! Moderate
Reading $>$ upper threshold (\uparrow)	* High

For details on how to determine the appropriate program thresholds for your particular operating procedures, please contact your local distributor.

5.1 Changing the Program Number

With the unit turned on and ready for a measurement, the **PROG** program number can be changed by pressing the \textcircled{P} button:



Now use the $\textcircled{\Delta}$ and $\textcircled{\nabla}$ buttons to change the flashing **PROG** number, then press the \textcircled{OK} button to accept the new value.

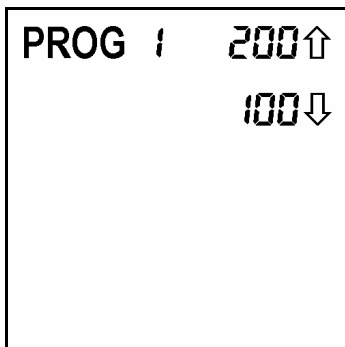
TIP: Pressing the \textcircled{P} button again will exit this set-up mode, leaving the program number unchanged.

NOTE: If the selected program number does not have any thresholds defined, they must be set by pressing the $\textcircled{*}$ button (see below) before the program can be used.

5.2 Changing the Program Thresholds

To change the program upper (\uparrow) and lower (\downarrow) thresholds, press the $\textcircled{\text{P}}$ button, use the $\textcircled{\text{A}}$ and $\textcircled{\text{V}}$ buttons to select the required **PROG** number, and then press the $\textcircled{*}$ button.

Now use the $\textcircled{\text{A}}$ and $\textcircled{\text{V}}$ buttons to first change the value of the upper threshold (\uparrow), followed by the $\textcircled{\text{OK}}$ button; and then to change the value of the lower threshold (\downarrow), followed by the $\textcircled{\text{OK}}$ button to store the new values:



- $\textcircled{\text{P}}$
- $\textcircled{\text{A}}$ $\textcircled{\text{V}}$ **PROG** number
- $\textcircled{*}$
- $\textcircled{\text{A}}$ $\textcircled{\text{V}}$ upper threshold (\uparrow)
- $\textcircled{\text{OK}}$
- $\textcircled{\text{A}}$ $\textcircled{\text{V}}$ lower threshold (\downarrow)
- $\textcircled{\text{OK}}$

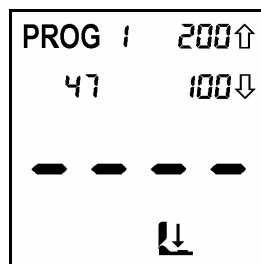
TIP: Pressing the $\textcircled{*}$ button at any point will exit this set-up mode, leaving both the **PROG** number and program thresholds unchanged.

6. Sample Measurements and Test Results

IMPORTANT: Please refer to the CariScreen Swab data sheet and Kit Insert for full details on how to use the CariScreen Swab device.

6.1 Taking a Measurement

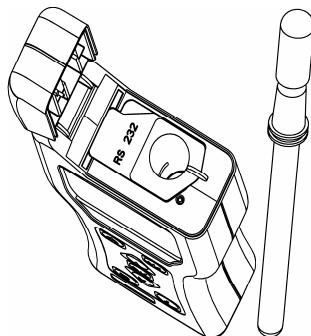
With the unit turned on, and having performed its internal self-calibration checks, it is then ready to perform a new sample measurement:



The display shows the **PROG** number, the program upper (↑) and lower (↓) thresholds, and the total number of test results stored in the memory (e.g. 47).

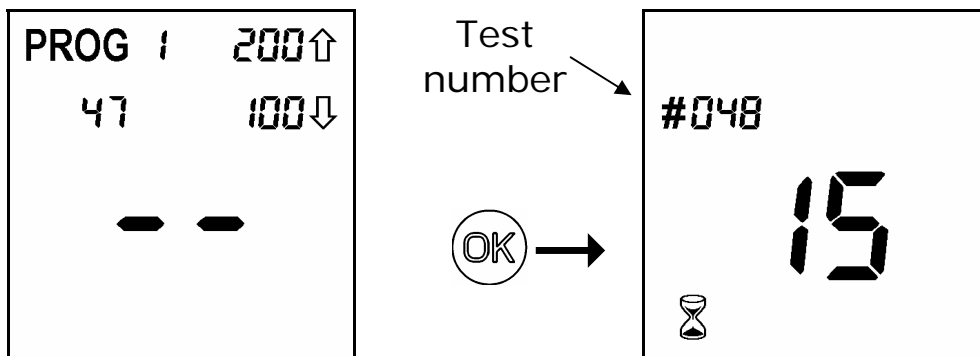
NOTE: When the results memory is more than 95% full (i.e. space for less the 25 results remaining), the **MEM** icon will flash. When the memory is completely full, no more tests can be performed until the memory has been erased or uploaded to the PC – refer to sections 6.3 and 7 respectively.

To perform a sample measurement, follow the steps below:



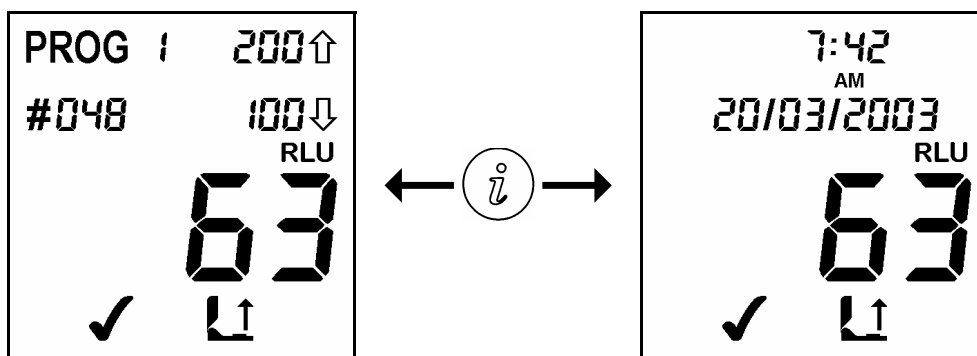
- ❑ Activate the CariScreen Swab device (see Kit Insert)
- ❑ Ensure that the outside of the CariScreen Swab device is clean & dry
- ❑ Open the unit lid, insert the CariScreen Swab device into the unit, and close the lid
- ❑ Press the **OK** button and wait 15 seconds for the result to be displayed

While the measurement is being performed, the display shows the new test number while the timer counts down to zero:



NOTE: For consistent results, always keep the unit upright and steady while it is performing a measurement to ensure that the liquid in the CariScreen Swab device is at the bottom of the tube.

When the measurement is complete, the new test reading and pass/caution/fail result (see section 5) are displayed:

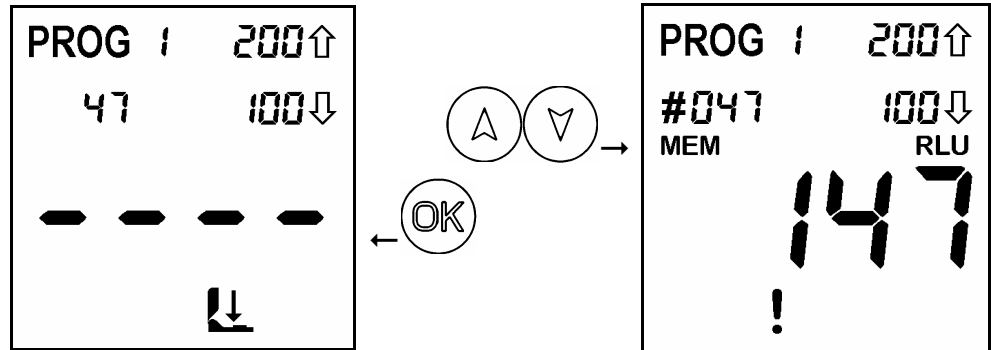


TIP: For best results, and to prevent dust and dirt ingress, always keep the unit lid closed when not inserting or removing a CariScreen Swab device.

⚠ WARNING: Always ensure that the exterior of the CariScreen Swab device is clean and dry before inserting it into the unit. Never insert anything other than a CariScreen Swab device into the unit. Never insert a device when the protective pocket has been removed for cleaning (refer to section 8.3).

6.2 Viewing Stored Test Results

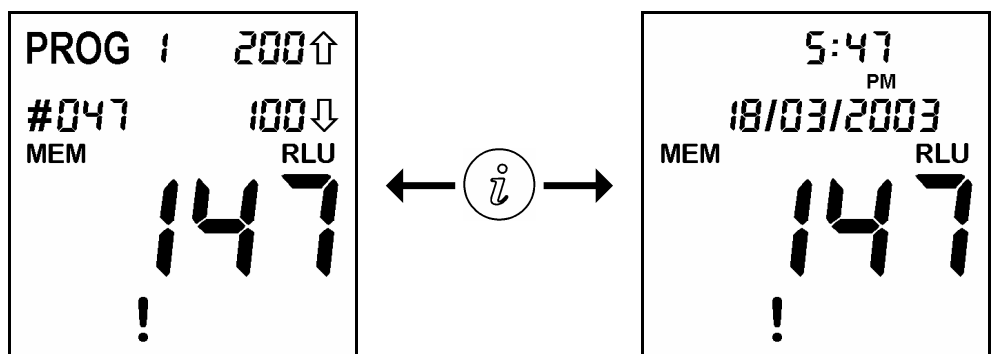
With the unit ready to perform a reading, the previous stored test results can be viewed by pressing the \uparrow and \downarrow buttons:



The display then shows the latest test result, with the **MEM** icon lit and the test number flashing.


Now use the \downarrow button to scroll backwards through the stored test results and the \uparrow button to scroll forwards.

Pressing the i button toggles between the result program number and thresholds and test number, and the time and date that the test was performed:

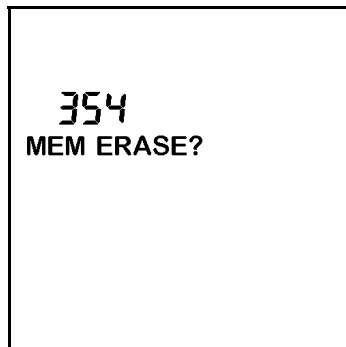



To exit the results review mode, simply press the OK button.

6.3 Erasing the Results Memory

The results memory can be completely erased by entering the results review mode (see section 6.2 above) and then pressing and holding down the  button for 2 seconds.

The display then shows the total number of results that will be erased, with the **ERASE?** Icon flashing:



The erase function is completed by pressing and holding down the  button for 2 seconds, or can be cancelled by pressing any other button.

It takes approximately ten seconds to erase a full 500 results.

⚠ CAUTION: Once the results have been erased from memory they are permanently deleted and can no longer be viewed.

7. Operator Maintenance

The CariScreen unit does not require any routine operator or service engineer maintenance.


7.1 Cleaning the Casework

Clean the unit casework when required using a dry or slightly damp cloth only.

⚠ WARNING: Never clean the unit using a wet cloth, or by washing it under running water.

⚠ CAUTION: Do not use solvents or strong cleaning solutions as these may attack and deform the unit's plastic components, and seriously degrade its performance.

7.2 Replacing the Batteries

For best results, the batteries should be replaced when the low battery  icon appears.

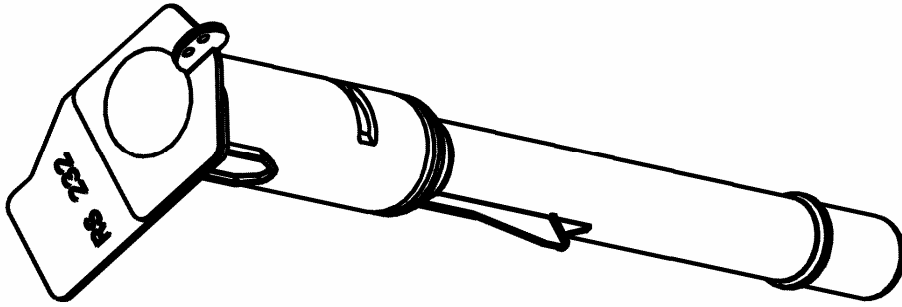
Refer to section 2.4 for how to fit new batteries – taking care not to mix the old batteries with the new ones.

IMPORTANT: Always dispose of old batteries in accordance with your local regulations.

7.3 Cleaning and Replacing the Protective Pocket

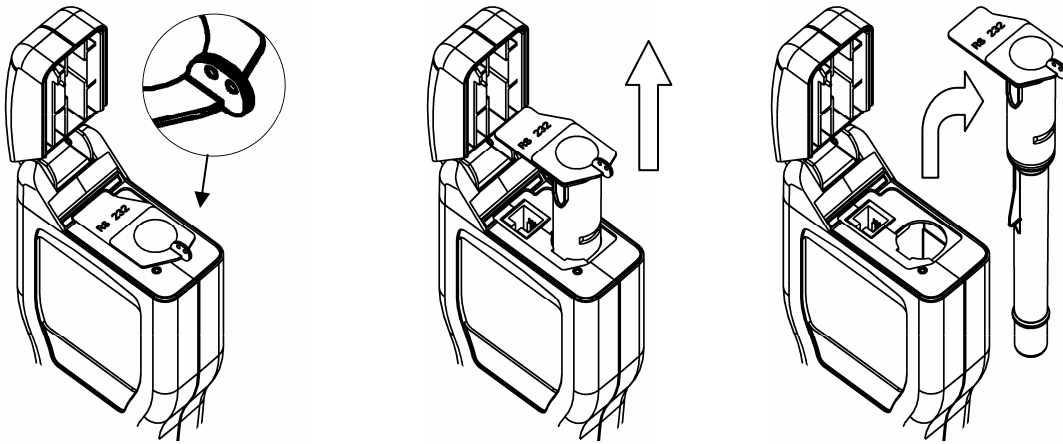
The unit is designed with a special protective pocket, which can be removed for cleaning or replacement if required.

See diagrams and cautionary notes below;



⚠ WARNING: Always turn off the unit before removing the protective pocket.

To remove the protective pocket, open the unit's lid, tightly grasp the finger grip of the pocket, gently pull the pocket upwards, and remove it from the unit.



(1) Grasp finger grip

(2) Pull pocket upwards

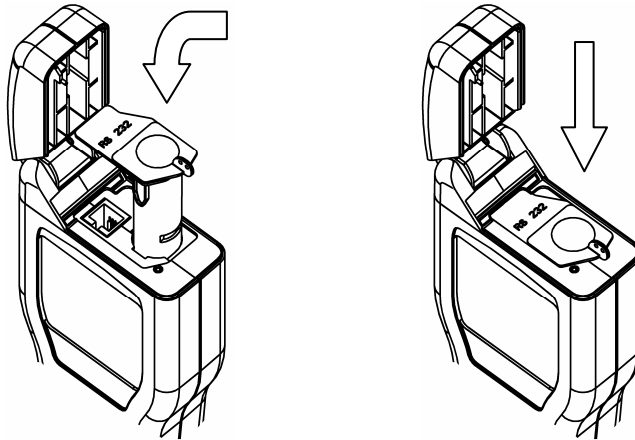
(3) Remove pocket

⚠ CAUTION: Great care should be taken when removing the pocket not to damage it or the surrounding casework. Do not use excessive force. Never use a tool to pry the pocket out.

Carefully clean the interior of the pocket using water or a very mild detergent solution – ensuring that the pocket is completely dry and clean before placing it back into the unit.

⚠ WARNING: Do not use solvents or other strong chemicals as these will degrade the clear optical section of the pocket and affect the performance of the unit.

To replace the pocket, carefully insert the pocket ensuring that it is correctly orientated, and then push it fully down until it clicks into position.



(1) Insert pocket in the orientation shown

(2) Push fully down until it clicks into place

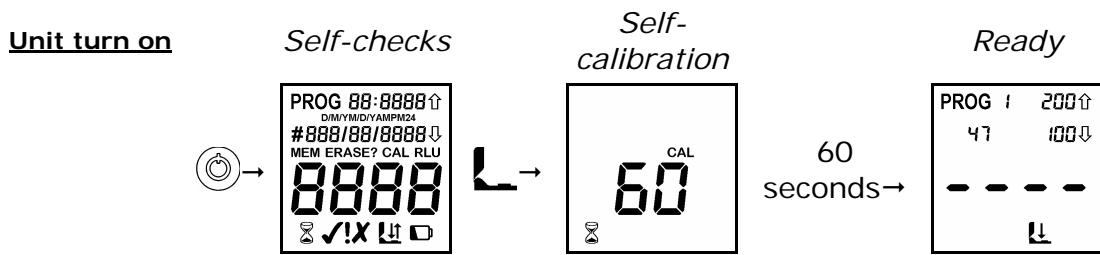
⚠ WARNING: Do not use excessive force when replacing the pocket. If the pocket jams during insertion, remove it fully, check for obstructions or damage, and then try again.

Finally ensure that the black rubber RS232 cover is pushed down and that the lid can be fully closed

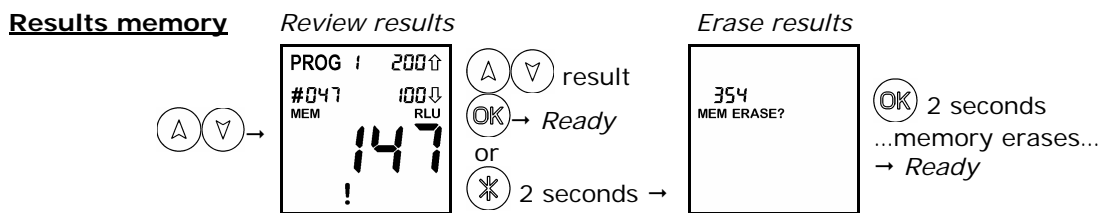
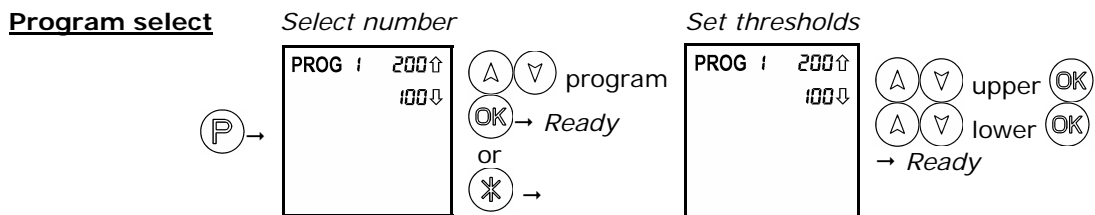
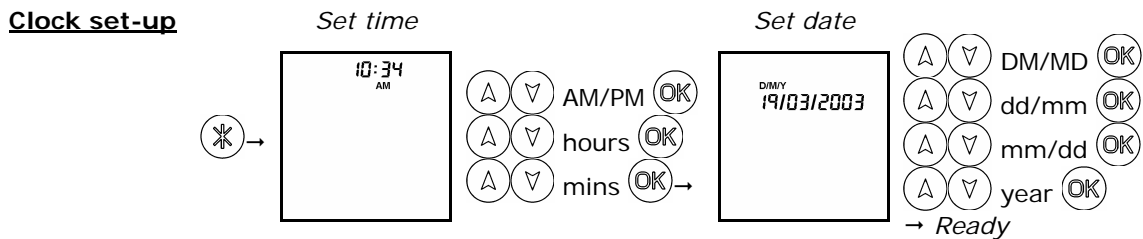
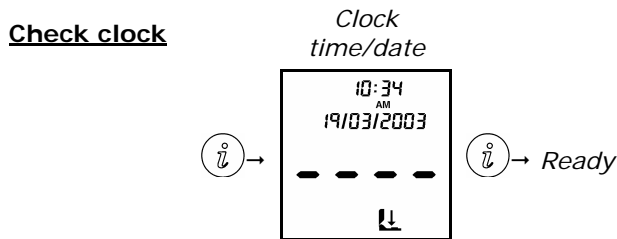
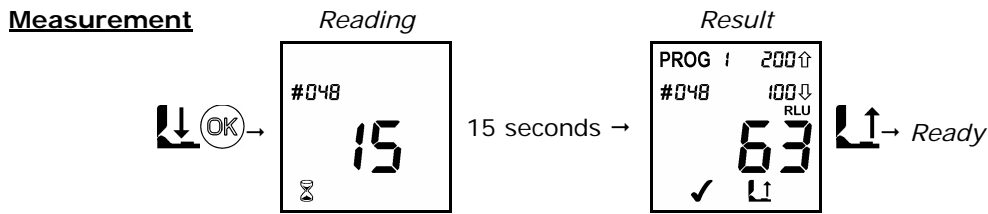
NOTE: If the protective pocket has not been fully or correctly inserted, the unit will show an **E1** error code (see to section 10.3). In this event, turn off the unit, open the lid and ensure that the pocket is correctly inserted.

8. Quick Reference Guide

The unit power-up sequence is as follows:



From this Ready state, all the other unit functions are available:



9. Troubleshooting

This section lists typical problems that might be encountered when using the unit, and their possible causes.

Some problems and causes can be rectified by the operator, while others may require technical assistant:

Severity	Action Required
-----------------	------------------------

- | | |
|---|---|
| ✓ | This indicates a cause which can be rectified by the operator. |
| ✘ | This indicates a cause which may require technical attention for rectification. Contact CaMBRA, LLC for further assistance. |

9.1 Unit Beeps

During normal use, the unit emits a variety of different beeping sounds:

Beep Type	Possible Causes
<i>Short high-pitched tone</i>	<ul style="list-style-type: none">✓ Unit turned on or off✓ Sample measurement started✓ Results memory being erased
<i>Long high-pitched tone</i>	<ul style="list-style-type: none">✓ Unit self-calibration complete✓ Sample measurement complete✓ Results memory erase complete

<i>Long low-pitched tone</i>	<ul style="list-style-type: none">✓ Invalid date entered✓ PROG thresholds not set-up✓ Invalid program threshold limits entered
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<i>Two short high-pitched tones</i>	<ul style="list-style-type: none">✓ Self-calibration required – remove CariScreen Swab device and close the lid
-------------------------------------	---

<i>Three short high-pitched tones</i>	<ul style="list-style-type: none">✓ Clock set-up required✓ Batteries are flat✓ Memory erase requested✓ Unit error – see section 9.3
---------------------------------------	--


9.2 Troubleshooting Tips


If the unit appears to be malfunctioning for any reason, carry out a thorough check for any obvious damage to the case, LCD display, lid, etc., caused by dropping or excessive physical mishandling.

The following table lists typical symptoms and their possible causes.

Symptom

Possible Causes

<i>Unit will not turn on when the  button is pressed</i>	<ul style="list-style-type: none">✓ Batteries are flat✓ Batteries are the wrong type✓ Batteries inserted incorrectly✗ Unit or keypad damaged or faulty
---	---

Unit will not turn off when the  button is pressed

- ✓ Unit is busy performing a reading or self-calibration operation
- ✓ Unit lockup – remove the batteries for 10 seconds, then insert them again
- ✗ Unit or keypad damaged or faulty

Unit turns off unexpectedly

- ✓ Batteries are flat
- ✓ Batteries are loose within the battery compartment
- ✓ Unit dropped or subjected to shock or vibration
- ✓ Unit not used for 10 minutes and automatically turns off into standby mode
- ✗ Unit damaged or faulty

Unit beeps when turned on, but nothing is displayed

- ✓ Batteries are flat
- ✗ Unit or display damaged or faulty

The real time clock reverts to 12:00 01/01/2000

- ✓ Batteries have been changed
 - ✓ Batteries are flat
 - ✓ Batteries are loose within the battery compartment
 - ✓ Unit dropped or subjected to shock or vibration
 - ✗ Unit or display damaged or faulty
-

The display appears washed out or very dark

- ✓ Unit is too hot or too cold
- ✓ Unit is being used in inappropriate lighting

Segments missing from display or garbage displayed

- ✓ Display window is dirty
- ✗ Display window is scratched or dented
- ✗ Display or unit damaged or faulty

Keypad button has no effect when pressed

- ✓ Some buttons only work when selecting particular unit functions
- ✗ Keypad or unit damaged or faulty

*The **CAL** icon flashes and the unit beeps periodically*

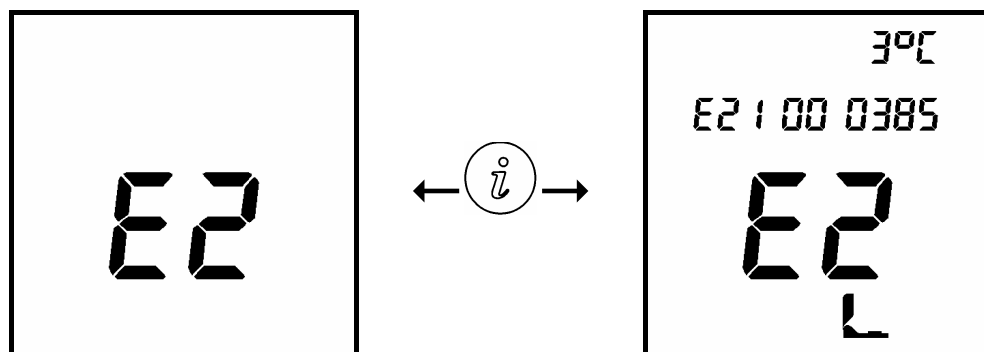
- ✓ Internal self-calibration required – remove CariScreen Swab device, close the lid and wait for the calibration to complete
 - ✗ Unit damaged or faulty
-


Measurement reading always shows zero RLU, or is much lower or high than expected


- ✓ Incorrect use of CariScreen Swab device
 - ✓ CariScreen Swab devices are out-of-date
 - ✓ Unit being used in an unstable environment – turn off unit and then back on again
 - ✓ Protective pocket dirty or severely scratched
 - ✗ Protective pocket damaged
 - ✗ Unit damaged or faulty
-

9.3 Unit Error Codes

During normal operation, the unit performs various self-checks on its internal components. If a problem is detected, the display will show an error number:



Pressing the  button shows additional engineering information, which should be recorded and included on any product returns report.

TIP: Most problems may be transient, and can be cleared by pressing the  button, or by removing the batteries for 10 seconds and inserting them again. If the problem persists, please seek technical assistance.

Error Code	Possible Causes
E1 <i>Missing Pocket</i>	<ul style="list-style-type: none"> ✓ The protective pocket has been removed ✓ The protective pocket is incorrectly inserted into the unit ✗ Protective pocket damaged ✗ Unit damaged or faulty
E2 <i>Temperature out of range</i>	<ul style="list-style-type: none"> ✓ The unit is being used outside of the specified operating temperature range (see section 13) ✓ The unit has been stored in an environment which is outside of its specified operating temperature range – allow unit to acclimatise before use ✗ Unit damaged or faulty
E3 <i>Erratic measurement</i>	<ul style="list-style-type: none"> ✓ Unit environment unstable or used in an area of high electromagnetic noise ✓ Unit tilted while measurement being performed ✓ Unit lid damaged and allowing light in ✓ Protective pocket dirty or severely scratched ✗ Unit damaged or faulty
E4 <i>User settings lost</i>	<ul style="list-style-type: none"> ✓ The unit has forgotten the user settings for the time and date format and the active PROG number – check the time and date and set the active PROG number
E5 <i>Program thresholds undefined</i>	<ul style="list-style-type: none"> ✓ The upper and lower thresholds for the active PROG number are not defined, and have been reset to the default values (200↑, 100↓)

E6 <i>Self-calibration failed</i>	<ul style="list-style-type: none">✓ Unit environment unstable✓ Protective pocket dirty or severely scratched✗ Protective pocket damaged✗ Unit damaged or fault
E7 <i>Internal memory failure</i>	<ul style="list-style-type: none">✓ Batteries are flat or loose✗ Unit's memory damaged or faulty
E8 <i>Internal reader fault</i>	<ul style="list-style-type: none">✓ Batteries are flat or loose✗ Unit's sample reader is damaged or faulty
E9 <i>Internal error</i>	<ul style="list-style-type: none">✓ Batteries are flat or loose✓ Unit dropped or subjected to shock or vibration✗ Unit's damaged or faulty

10. Warranty and Returns

The supplier warrants the CariScreen unit, when purchased new, to be free from defects in materials and workmanship and will repair or replace, at their discretion, any CariScreen unit which, used under proper conditions, exhibits such defects.

Under the terms of this warranty, the product must be returned in the original packaging, transportation prepaid, To CaMBRA, LLC

Contact CaMBRA, LLC to receive authorization to return the instrument, and enclose a detailed description of the problem.

10.1 Warranty Duration

This warranty is provided to the original purchaser for one year from the date of purchase.

In no event will CaMBRA, LLC be liable for indirect, incidental or consequential damages; the original user's remedies being limited to repair or replacement of the unit at the manufacturer's option.

10.2 Particular Exclusion

Unauthorized modification of any part of the CariScreen unit or the attachment of any peripheral not supplied by CaMBRA, LLC will void this Warranty.

⚠ WARNING: Use only the accessories and consumables supplied by CaMBRA, LLC. The use of any non CaMBRA supplied accessories and consumables will invalidate the warranty.

11. Glossary of Terms and Abbreviations

ATP	Adenosine Triphosphate – energy carrier molecule
EMC	Electro-Magnetic Compatibility
fmol	Femtomole – 10^{-15} moles
HACCP	Hazard Analysis Critical Control Point
LCD	Liquid Crystal Display
NiCD	Nickel Cadmium – rechargeable batteries
NiMH	Nickel Metal Hydride – rechargeable batteries
Reading	Measurement value in RLUs
Result	Measurement pass (✓), caution (!) or fail (✗)
RLU	Relative Light Units (unit of measurement)
RS232	Serial communications protocol for connecting the unit to a PC – Not Used
Unit	The CariScreen unit

12. Technical Specifications

General:

Unit dimensions (W x H x D)	72mm x 191mm x 32mm
Unit weight (including batteries)	approx. 260g
Operating temperature range	5°C to 40°C
Relative Humidity range	20 - 85%, non-condensing
Storage temperature range	-10°C to 40°C
Relative Humidity Range	20 - 95%, non-condensing

Unit Details:

Measurement range	0 to 9999 RLUs
Measurement time	15 seconds
Measurement noise	±5% or ±5 RLUs
Programmable result thresholds	100 programs
Result memory size	500 tests
Serial interface	EIA-232 compatible

Batteries:

Battery Size (2 off)	AA, LR6 or E91
Battery Types	
Non-rechargeable	nom. 1.5V Alkaline
Rechargeable (externally charged)	nom. 1.2V NiMH or NiCD
Battery Capacity (for 2600mAh Alkaline)	
Standby mode (at 20°C)	min. 6 months
Continuous reading	min. 500 tests