

Palintest
pool
& spa



**Lumiso
Pooltest 3
Pooltest 4
Pooltest 6
User Manual**

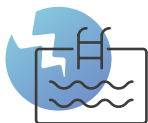


Palintest Deliver:



Swimmer safety

Safeguard pool users through effective disinfection and water balance control



Pool integrity

Regular pool testing helps maintain your pool and protects the pool infrastructure



Water balance

Maintain optimum water balance to avoid corrosion or scaling



Cost efficiency

Optimise your pool treatment plan

Backed by over 100 years of research, our equipment has been designed to make testing simple and easy.

Our technology delivers reliable results, to drive confident water quality management, ensuring that we can all bathe and play safely.

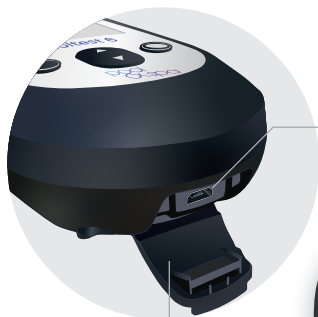
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4 Getting Started

Thank you for choosing a Palintest Lumiso Photometer.
Please take time to read and follow the advice in this manual.
If this instrument is used in ways not specified, the protection
it provides and its accuracy may be impaired.





Waterproof USB port

Integral
Dust Cover

Non-Slip
Rubberised Base

Serial Number

Battery Cover
with Captive Screw

Non slip rubber feet

Integral USB
Dust Cover



LP123456789

Made in the UK

3x

LRE




www.palintest.com


How to Select and Perform a Test

This is the basic procedure for all tests. For specific test details please refer to the Test Instructions.







The test selection menu appears when first starting up Lumiso.


From most other screens, pressing “back”  once or twice, will take you back to the test selection menu.

Select a test, using the up and down keys  until the desired test is highlighted.



These tube icons   will usually appear.

These indicate that the left key  is for “blinking” and the right key  is for “reading”

Please Note: The read icon  only appears after the blanking stage has been completed. Lumiso will require blanking to be repeated after 50 minutes or if it registers a significant change in environmental temperature.

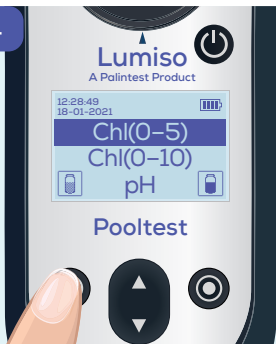
3



To blank the instrument, place a test tube containing pool or spa water (without test tablets) in the cell holder.

Blanking enables the instrument to set the correct zero value. This ensures the final result will be accurate, even when testing water that is cloudy or coloured.

4



Press blank



5




The screen will show that the blank is being measured.

6



This indicates that blanking was successful.

If after blanking, you want to read a different parameter press the back key  to go to the test menu. A different test can then be "Read" without needing to blank again.


7



Prepare a 10mL sample by adding reagents according to the test instructions. Place this sample tube in the cell holder.

8




Press read. 


Depending upon test selected, Lumiso will either go to step 9, or show intermediate steps 8a or 8b.

For Chlorine Tests Only



A choice of free or total chlorine is offered. See test instructions.

Highlight FChl and press read  to read and display free chlorine result. (see step 10)

Highlight TChl and press read  to display a preset timer which will automatically count down and then read the total chlorine result.

For Tests with a Wait Time Only



For tests with a "wait time" (see test instructions), a preset timer will count down and then automatically commence reading.

Press read  to override

9



The screen will show that the sample is being measured.

10




The result will be displayed with the following information

Time and Date

The Test Name from the Menu

The Measured Result

Depending upon the test, pressing back  from this screen will either go back to the test selection menu or to the free/total chlorine selection.

Lumiso will display these messages as M numbers, if it detects unexpected readings when making its optical measurements

Message Number	Likely Cause	Suggested Action
M1 and M2	Blank is too dark	Check and clean all glass tubes used. Repeat blanking process
	Contamination obscuring optics	See "Keeping the Optics Clean"
M3 and M4	Blank, sample tube, or NDF standard moved or removed too early	Carefully repeat blanking and reading procedure
M5	Light cap not fitted correctly	Check or change light cap on tube
	External light entering the optical cell	Move instrument away from external light

A common cause that can trigger any of these messages to be displayed is contamination of the optical windows or stained glassware. See sections Keeping the Optics Clean and How to Get Accurate Results. If messages continue to be displayed, please contact your local Palintest branch or distributor.

Keeping the Optics Clean

Contamination in the optical cell may effect the accuracy of readings and can trigger an information message to be displayed.

Clean optical windows gently with a soft, non-abrasive cloth dampened with water or anti-static foam cleaner. Do not use solvents.

Instrument failure due to contamination is not covered by warranty.




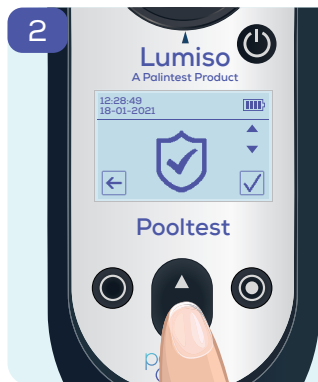
The Settings Menu


A number of additional functions and settings can be accessed from within the Settings Menu.



The Settings Menu is accessed from the opening Test Selection Menu.







Select  and confirm



Use the  key to scroll through the options.

Press confirm to explore that option

Press back to go back to the Test Selection Menu.

	<p>Check Standard Mode: Verify instrument performance using NDF check standards</p>
	<p>Label Mode: Assign a label to your measurement</p>
	<p>Log Mode: Access the last 50 measurement results</p>
	<p>QR Log Mode: Access a QR code that contains the current log.</p>
	<p>Date & Time Mode: Manually edit the date & time in the instrument. Date format can also be changed.</p>
	<p>Brightness Control Mode: Adjust the brightness of the screen backlight.</p>

16 Using Check Standards

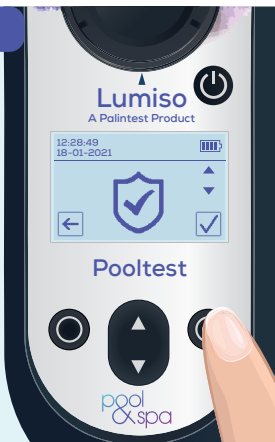
Check Standards can be purchased separately for your Lumiso instrument. These standards contain Neutral Density Filters (NDFs) and can be used to verify that the instrument is within calibration and performing correctly.






Why is Percentage Transmission of Light being measured with Lumiso Check Standards?

Lumiso works by measuring the amount of light that passes through the sample. This value is known as the "Percentage Transmission" or "%T". Lumiso's software then converts this %T value into a concentration, such as mg/L of chlorine. So, to verify that the instrument is within calibration it is only necessary to check that the instrument correctly measures %T for each wavelength of light it uses. This simplifies the process for using check standards.

1



Check Standard Mode is accessed from the Settings Menu 

Scroll to the Check Standard icon  and confirm 

2



The wavelengths of light the instrument uses are shown in nanometres (nm).

To ensure that all the test parameters on Lumiso are being measured correctly, use the standards to verify both of these wavelengths.

If nothing is shown here, it is because Lumiso has not been “blanked” on the wavelength highlighted.

3



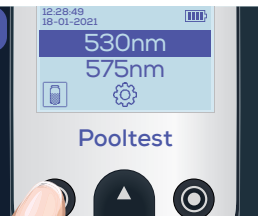
To set the blank (zero) value for the selected wavelength. Insert the "Blank" from the set of standards.

4



Ensure that the wavelength being checked is aligned with the mark on the Lumiso instrument.

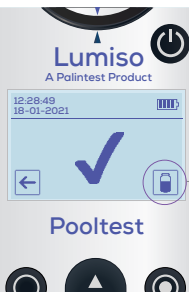
5



Press blank



6



The instrument will measure the blank and show when this has been successful.


A read icon now appears.

7



Insert Standard A from the set of standards

Ensure that the correct wavelength is aligned.

Then press read 

8



The measurement of %T (Percentage Transmission) is shown on screen.

This value needs to be compared with that on the certificate for the correct wavelength and standard.

Please Note: The certificate shown here is for illustration only. Please refer to the certificate supplied with the set of standards.

Lumiso Check Standard Certificate		
Wavelength	Standard A	Standard B
530 nm	12.5 ± 2 %T	81.2 ± 2 %T
575 nm	8.3 ± 2 %T	79.2 ± 2 %T

9



Continue, by inserting Standard B, pressing read, and comparing the result with certificate.

Then repeat the entire process (blank, read A, read B) from step 2 onwards for the second wavelength.

Should any standards read outside the values shown on your certificate, the most likely cause is contamination on the optical windows in the cell holder. Please clean the cell holder carefully and remeasure the standards. (See 'Keeping the Optics Clean')


If this does not resolve the issue, please contact your local Palintest branch or distributor.

22 Accessing the Results Log

Lumiso stores the most recent 50 test results along with the test time, date and sample label. The oldest test result will be automatically overwritten once this capacity is reached.




The Results Log is accessed from the Settings Menu 

Select the "Results Log" icon  and confirm



The screen will show the most recent result with its time and date.

Use the up and down keys  to scroll through up to 50 results.

This is a reminder that you are looking at a stored result in the log.

3

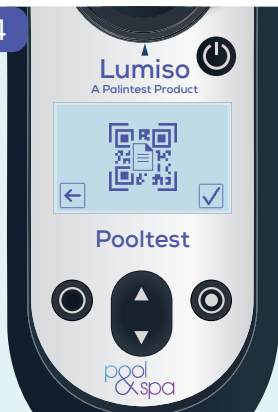


The log of results can be downloaded as a text file via the USB port.

Alternatively, use the QR code function (see below).


Displaying a QR Code

4



It is possible to display the entire content of the Results Log as a QR code for scanning by other devices.

From the Settings Menu 

Select the QR code icon  and confirm

An alpha numeric, version 30, QR code will be displayed.


24 Changing Lumiso Settings


Setting Time and Date

Changes to the instrument settings are accessed through the Settings Menu.

1



From the Settings Menu 


Scroll to the Time and Date icon  and confirm

2




Three items are adjustable:

- Date Format
- Time (24 hour clock)
- Date

To make changes to the highlighted item, use the up and down key 


 Advances to the next item


 Goes back to previous item

To exit without saving any changes press back  from this first screen.

3



To save changes, advance  until the tick shows to confirm.




To exit without saving any changes keep pressing back 

Adjusting the Display Backlight

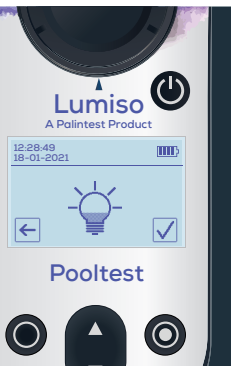
Lumiso's screen brightness is adjustable and there are five levels to choose from.


1





From the Settings Menu 
Select the light bulb icon 
and confirm 

2

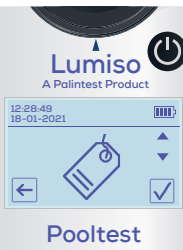


Use the up and down keys 
to adjust the brightness of
the screen as required.



Confirm  to save the new
setting.

Press back  to exit without
making any changes.

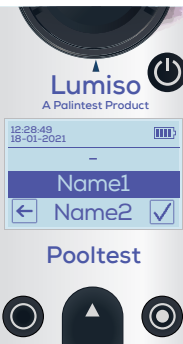
1




Sample readings can be tagged to indicate a sample name, project or sampling location.


In the settings menu  scroll to the tag icon  and confirm

2



Use the up and down keys  to highlight a name.

Select confirm and that name will then be used to label all future measurements until it is changed.

Press back  to leave the current label name unchanged.

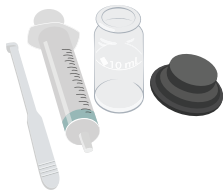
3



To set up a list of names, use the USB port to connect Lumiso to a PC and visit: www.palintest.com/palintestconnect

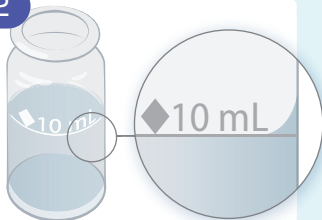
How to Get Accurate Results

1



Rinse all equipment thoroughly with the water that is being tested.

2



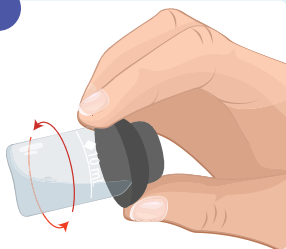
When filling tubes to the 10 mL line ensure the level is as shown

3



Use **Palintest Photometer tablets**. Rapid dissolving and Comparator tablets are not suitable.

4



During sample testing or blanking, remove any attached bubbles by capping the tube and rotating as shown.

5



Ensure tubes are dry on the outside before placing them in the instrument.

6



Ensure that your Lumiso Instrument is clean and dry. Place tubes in the instrument with white diamond aligned to the mark on the instrument.

Blanking

The blank is a sample of the water to be tested that sets the zero value on the instrument. This ensures that any colour or cloudiness in the sample does not affect the final result.

Blanking is required whenever a different pool or spa is being tested or if significant time has elapsed since the pool or spa was last tested.

In the test instructions, blanking is not described specifically. However, it is important that the photometer is blanked using the water that is being tested.

Sample Dilution



If a result is above the range of the test a '>' symbol will appear in front of the result. In this case it will be necessary to dilute the sample with deionised water and repeat the test.

Important: It is not valid to test pH on diluted samples.



A dilution tube is available from Palintest to simplify this.

Example for a x2 dilution: Fill with sample to x2 line and top up to 100 mL with deionised water. Mix and use this as the new blank and sample for the test. Multiply result by x2.

Depending upon model, any of the following tests may be present in the menu.

Test Parameter	Menu Abbreviation	Range	Pooltest 3	Pooltest 4	Pooltest 6	Page
Chlorine (Free and Total)	Chl (0-5)	0 - 5 mg/L	●	●	●	31
Chlorine (Free and Total)	Chl (0-10)	0 - 10 mg/L	●	●	●	31
pH (Phenol Red)	pH	6.5 - 8.4 pH	●	●	●	35
Cyanuric Acid	CyA	0 - 150 mg/L	●		●	37
Total Alkalinity	TA	0 - 500 mg/L		●	●	39
Calcium Hardness	CaH	0 - 500 mg/L			●	41
Calcium Hardness for Salt Pools	CaH Salt	0 - 500 mg/L			●	41
Bromine	Br	0 - 10 mg/L		●	●	43

Free and Total Chlorine - Chl(O-5) and Chl(O-10)**Colour Change:** Colourless to Pink**Two Ranges:** 0 – 5 mg/L use DPD 1 and DPD 3 Tablet
0 – 10 mg/L use DPD XF and DPD XT Tablet

1

Rinse tube with sample leaving **a few drops**.

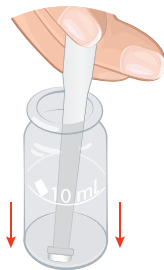


2

Add **one DPD 1** or **one DPD XF** Tablet.

3

Crush tablet to form a paste.



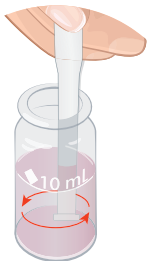
4

Fill with further sample to the **10mL** line.



5

Stir.



6

Cap the tube.



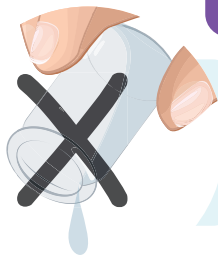
7

Take the **Photometer Reading**.
Result = Free Chlorine



8 **Keep** tube and contents to measure Total Chlorine.

If no MPS based shock treatment has been used, continue to step 12.

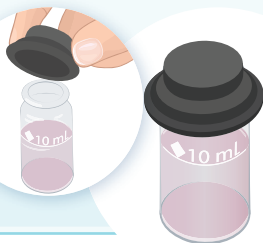
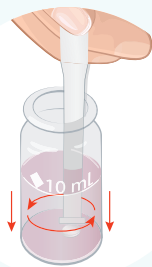


Add 1 Oxystop Tablet.

9

10

Crush and stir.



11

Replace cap and **wait 1 minute.**

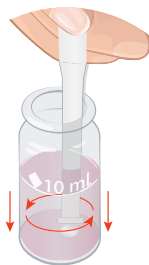


12

Add **one DPD 3 or DPD XT Tablet**.

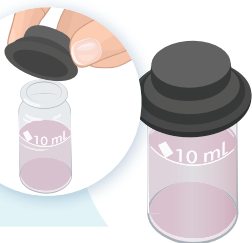
13

Crush and stir.



14

Replace cap and **wait 2 minutes**.



15

Take the **Photometer reading**.

Result = Total Chlorine



NB: Combined Chlorine =
Total Chlorine – Free Chlorine

pH (Phenol Red)**Colour Change:** Yellow to Red**Range:** 6.5 – 8.4 pH**1**

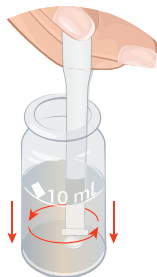
Fill tube with sample
precisely to 10mL.

**2**

Add one **Phenol Red** tablet.

3

Crush and stir.



4

Replace cap.



5

Take the **Photometer** reading.



Cyanuric Acid - CyA

Colour Change:	Clear to Cloudy
Range:	0 - 150 mg/L CyA

1

Fill tube with sample to the **10 mL** line.



2

Add **one Cyanuric Acid tablet**. **DO NOT CRUSH.**

3

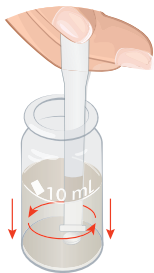
Wait 2 minutes
(to let tablet disintegrate).

Please Note: Lumiso provides a timer for this which will not automatically read. This allows step 4 to be carried out before reading.



4

Crush any remaining tablet and **mix**.



5

Replace cap.



6

Take the **Photometer** reading.



Total Alkalinity -TA**Colour Change:** Yellow to Green to Blue**Range:** 0 – 500 mg/L CaCO₃**1**

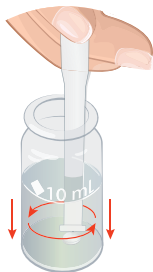
Fill tube with sample to the **10 mL** line.

**2**

Add one **Alkaphot** tablet.

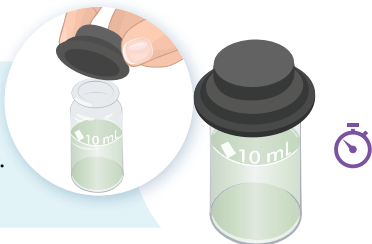
3

Crush thoroughly and mix. Ensure all particles have completely dissolved.



4

Replace cap
and **wait 1 minute.**



5

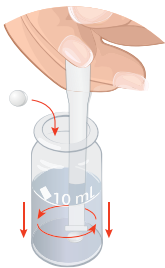
Take the **Photometer reading.**

Please Note: Not crushing the tablet completely in step 3 will produce a layering of the colour in the tube. If this is observed re-mix the tube and read again.



Calcium Hardness - CaH & CaH Salt**Colour Change:** Violet to Orange**Range:** 0 – 500 mg/L CaCO₃**1**

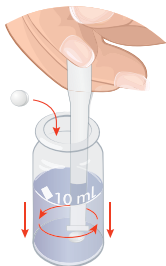
Fill tube with sample to the **10mL** line.

**2**

Add **one Calcicol No 1** tablet, crush and mix.

3

Add **one Calcicol No 2** tablet, crush and mix.



4

Replace cap.



5

Wait 2 minutes.

6

Take the **Photometer** reading.



Bromine - Br**Colour Change:** Colourless to Pink**Range:** 0 – 10.0 mg/L Br₂

1

Rinse tube with sample leaving **a few drops**.

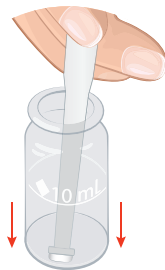


2

Add **one DPD 1** Tablet.

3

Crush tablet to form a paste.



4

Fill with further sample to the **10mL** line.



5

Stir.



6

Cap the tube.



7

Take the **Photometer Reading**.
Result = mg/L Total Bromine



Instrument	Dual wavelength, direct-reading colorimeter
Optics	Palintest dual LED light source optical system with narrow band wavelength filters and photodetectors
Wavelengths	Automatic wavelength selection of 530 nm or 575 nm
Wavelength Tolerance	± 2 nm
Filter Bandwidth	5 nm
LCD Display	226 x 138 pixel with adjustable backlight
Instrument Operating Conditions	0 – 50°C 90% Relative Humidity (non-condensing)
Waterproof Rating	IP67 (Waterproof)
Test Cells	25 mm diameter tubes
Blank/Zero setting	Held in memory, but to maintain test accuracy, instrument will prompt for re-blanking after 50 minutes or if environmental temperature has changed.
Power Supply	3 x 1.5V AA batteries USB Port 6V max, 200mA max (DC)
USB Port	Micro USB Type B
Size	163 x 70 x 45 mm
Weight	275g (including batteries)

46 Changing the Batteries

Please take care when changing the three AA/LR6 batteries in order to maintain the waterproof rating of the instrument.

1



To change the batteries, first disconnect the USB lead.

Then use a suitable screwdriver to loosen the captive screw

2

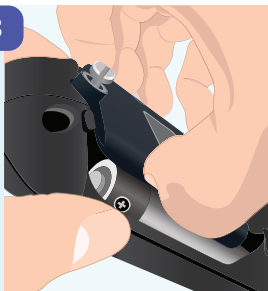


The watertight seal built into the battery cover means that a firm pulling force needs to be applied to remove it.

This is best done by gripping the sides of the cover, as shown, as close as possible to the end with the captive screw.

Please note: Levering the cover off with a screwdriver or sharp implement risks damaging the cover and seal.

3



The cover will lift and, if necessary, the captive screw can be further loosened so the cover can be removed completely.



4



The batteries are held firmly in place by the clips to enhance Lumiso's resilience to physical shock.

To remove the batteries, push them towards the negative contact and lift the positive end.

5



Insert new batteries in the same way, pushing towards the negative contact, but this time, down at the positive end.

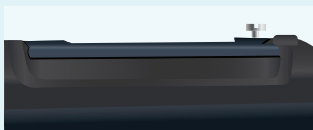
Note the polarity guidance in the compartment.

6



Replace the cover, hinge end first.

Then firmly push the cover down until it is parallel to the case as below. This ensures that the waterproof seal is complete.



7



Secure the captive screw so that it gently holds the cover in place.

Please Note: Do not tighten the screw excessively. The level of torque applied to this screw has no effect on the performance of the waterproof seal.

Thank you for choosing your Palintest Lumiso Photometer. For any further questions or information on Lumiso consumables and accessories please visit **www.palintest.com**

Palintest

Water Analysis Technologies

A **Halma** company

www.palintest.com