Palintest®

Green Drop Instrument Instructions

Contents

1. GENERAL INFORMATION

Thank you for purchasing this Palintest product.

Palintest instruments and reagents are renowned as being simple to use, whilst providing rapid and reliable results for the testing of water. Our instruments are of the highest quality and fully waterproof.

Palintest's experience, built-up over the last 50 years, is the reason why our instruments and reagents are used in laboratories, treatment plants, leisure facilities and industrial premises throughout the world.

Our products are packaged carefully and the product should reach you in the state it left our factory; if this product has reached you in a state that is less than satisfactory, please contact the transportation company.

This booklet describes the best way to use Palintest products, and provides instructions for the range of water tests that can be performed using this instrument.

Palintest instruments are calibrated for Palintest reagents. To guarantee the high accuracy and performance that our instruments give, you must ensure that only Palintest reagents are used with Palintest instruments. Failure to do so can lead to erroneous results.

2. KIT CONTENTS

This kit contains:

- Palintest 7500 Photometer
- Palintest 800 Multiparameter meter
- Palintest Micro 600 Dissolved Oxygen meter
- 100ml sample container
- 10ml plastic syringe
- Test tube brush
- Crush Rods
- Zero Oxygen Calibration Solution
- pH buffers for Calibration
- 1413uS/cm Conductivity Calibration Solution
- 100 Nitricol tablets (for Nitrate/Nitrite testing)
- 50 Phosphate LR #1 tablets
- 50 Phosphate LR #2 tablets
- 50 Ammonia #1 tablets
- 50 Ammonia #2 tablets
- Instrument Instructions
- Palintest photometer methods

3. TEST PROCEDURES

Blanks and Samples

Palintest photometers use a BLANK tube to set the instrument to blank and a SAMPLE tube to take the reading.

A BLANK tube is a test tube filled with untreated water sample. A SAMPLE tube is a test tube containing the sample to which reagents have been added in accordance with the test procedure described.

The blank setting is held in memory. It is not necessary to reset the blank each time a reading is taken if the water samples are similar and the conditions of use are the same. The blank setting can be confirmed if necessary by taking a test reading on the blank tube.

For detailed instructions on individual test methods, consult the Palintest photometer methods instructions

4. INSTRUMENT OPERATION

4.1. Palintest 7500 Photometer

This set of instructions is a quick guide to using your photometer. For more details on the full range of functions that are available on your 7500 Photometer, please contact sales@palintest.com.

4.1.1 General Photometer Operation

The photometer is controlled by a simple intuitive menu system.

- The highlight indicates the active line or section of the screen.
- The ↑ and ↓ keys move the highlight through the menu choices.
- The ← and → keys allow selection of options.
- The flashing cursor in the ‘Options’ menu at the bottom of the screen indicates the action which will occur if the [**OK**] button is pressed.

4.1.2 Operating Modes

The photometer has two distinct operating modes - the **PHOTOMETER** mode and the **SYSTEM** mode.

The **PHOTOMETER** mode is the normal operating mode for taking photometer readings. This mode is engaged automatically when the instrument is turned on by pressing the ⏻ key.

In order to conserve battery life the photometer will switch off automatically after use. The switch off period is five minutes in normal use, but may be adjusted in **System** mode.

The **SYSTEM** mode is used to set the system options. This mode is engaged when the photometer is turned on using the ⏻ key and then selecting 'System' using the ← and → keys and pressing [**OK**].

Scroll through the menu box to view all the options available.

4.1.3 Taking Photometer Readings

The photometer is very simple to use. Screen prompts guide the user towards the test result. The following sections describe how to get the best out of the system.

4.1.4 Program Numbers and Test Instructions

Each test is identified by a separate program number or named key. Program numbers are shown in Palintest photometer methods instructions.

For some tests, a choice of different programs is offered in order to give the option of the result in different forms (eg for Nitrate - NO_3 or Nitrate Nitrogen - NO_3-N).

In certain methods, the test can be continued to a further stage - for example in the tests free chlorine and total chlorine. This is allowed for in the programming of the photometer. In these tests, once the first stage result is obtained, the 'Follow-On' option may be selected to progress the test to the next program stage or stages. The result will be calculated automatically.

These continuation programs have their own program number for reference purposes although direct access to these programs may be restricted.

4.1.5 Sample Dilution

The photometer has a sample dilution option. This enables a factor to be entered when samples have been diluted to bring them within the measuring range of the test. For example if a five times dilution of the sample has been made, then the dilution factor x5 should be entered. The photometer will multiply the observed result by this factor so that the correct result for the original sample is displayed.

This option may be used in conjunction with the Palintest Dilution Tube which enables dilutions of x2, x3, x4, x5 and x10 to be made; or with Palintest syringes which enable higher dilutions factors. Higher dilution factors may be entered subject to the limitation of the number of digits available on the result display for each test. When the display capabilities are exceeded, the symbol [xxx] will appear on the result display.

The sample should not be diluted prior to carrying out a pH test, or Transmittance or Absorbance reading.

4.1.6 Getting the Best Results

Success in obtaining accurate and consistent test results will depend on the care with which test procedures are carried out. Always follow the test instructions carefully and observe the stated standing periods and temperature conditions where applicable.

Wipe test tubes free from condensation before placing in the photometer. Test tubes should always be kept in a clean condition. Wash and dry tubes carefully after use. Dirty tubes may be soaked in weak detergent solution if necessary. Tubes which become stained or scratched in use should be replaced.

Success in obtaining accurate and consistent test results will depend on the care with which test procedures are carried out. Always follow the test instructions carefully and observe the stated standing periods and temperature conditions where applicable.

Wipe test tubes free from condensation before placing in the photometer. Test tubes should always be kept in a clean condition. Wash and dry carefully after use. Dirty tubes may be soaked in weak detergent solution if necessary. Tubes which

become stained or scratched in use should be replaced.

Taking Test Readings

1 Press ⏻ key.

The instrument displays the ‘Choose a Test’ menu box, with the last test program used highlighted as the active line.

The cursor will flash on the [**OK**] symbol of the ‘options menu' at the bottom of the screen.

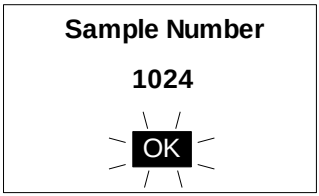
Press [**OK**] to accept this program.

2 To choose a different test program, **either** use the 🡅 and 🡇 keys to scroll through the menu options, **or** use the numeric keys to enter the **Phot** number of the desired test.

The four most recently used tests are listed at the top of the ‘Choose a Test’ screen for convenience.

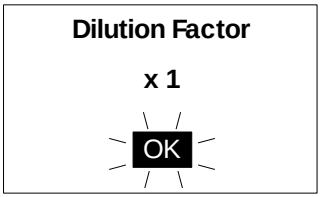
Press [**OK**] to accept the selected test.

3 If the sample number option is pre-selected (see system menu for options), then the following display will appear, for example :-



Enter or confirm the sample number (up to 10 digits), then press [**OK**].

4 If the dilution factor option is pre-selected (see system menu for options), then the following display will appear:-



Press [**OK**] to accept the default value (x1, no dilution), or key in new dilution factor then press [**OK**].

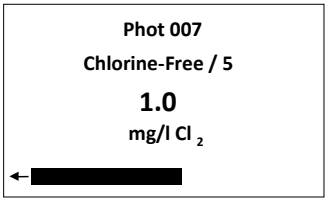
5 The following display will now appear:-

Place a **BLANK TUBE** in the test chamber, then press [**OK**].

6 The instrument will be set automatically, and after a few seconds the following display will appear:-

Place **SAMPLE TUBE** in the test chamber, then press [**OK**].

7 The instrument will take the reading and



display the result as follows, for example :-

The following symbols indicate the result is out of test range:-

Result is higher than range **>>**

Result is lower than range **<<**

8 The ‘options menu' offers the choice to :-

‘Choose a Test’ - return to the menu of test programs and select another test

‘Read’ - read further sample tubes of the currently selected test

‘Blank’ - re-blank the instrument

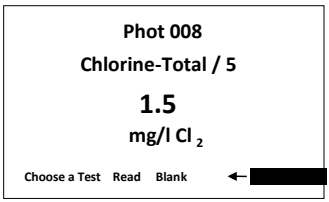
‘Follow-On’ - carry out a continuation test if available.

Continuation Tests (*Certain Tests Only*)

1 Select ‘Follow-On’ and press [**OK**] during the result display period of the foregoing test stage. The photometer applies the previously entered sample number and dilution factor, and the ‘Insert Sample’ screen will appear.

Place **SAMPLE** tube in the test chamber, then press [**OK**].

2 The instrument will take the reading and calculate the result from the combination of



readings (where appropriate). The result will be displayed as follows, for example :-

3 During the display period, similar options are available as at the end of a normal test program. Select ‘Return’ from the ‘options menu' to take the program back to the start of the first stage of a multiple test procedure to enable further samples to be tested for the same parameters.

Note that some continuation test procedures involve a standing period. The photometer may switch off automatically during this time. To avoid the instrument switching off, set for continuous operation or use the timer function to time any standing period. The timer will over-ride the auto switch off function.

Favourite Tests List

The four most recently used tests are listed at the top of the 'Choose a Test' screen for convenience.

Expressing Different Chemical Forms

If the test result can be expressed in different chemical forms, the chemical symbol will have flashing ↑ and ↓ to indicate this. Use the keys to step through the options available.

Note that the log stores the result in the primary form.

4.1.6 Reading in Transmittance and Absorbance

When taking readings in Transmittance (%T) or Absorbance mode, use the ↑ and ↓ keys to step through the wavelengths until the required wavelength is reached.

4.1.7 Care and Maintenance

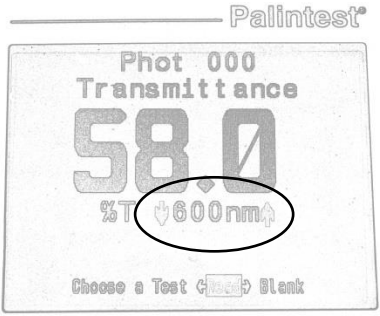
The photometer is designed to give long and trouble-free operation. Care must be taken, however, to avoid test solutions being spilt over the instrument, and to prevent contamination of the instrument. Spillages or moisture should be wiped off immediately with a dry cloth. On no account should solvents or abrasive materials be used to clean the instrument. Care should be taken to keep the test chamber clean.

You can check the performance of your instrument with the check standards provided in this kit. Each standard is characterised in %T at particular wavelengths and to check your instrument, simply read each standard using the transmittance (%T) setting on your photometer and compare the %T value on the certificate with that shown on screen (ensuring you are comparing the %T value on the

certificate with the correct %T value on the certificate, i.e. the wavelength is the same on both the photometer screen and the certificate).

For example,

Standard B is characterised at 450 and 500nm. Therefore when measuring the standard using the photometer, ensure the result on screen relevant compared to the certificate value. In the image below, the %T value on screen would be compared to the %T value on the certificate (standard D, at 600nm).



4.1.8 Cleaning the Optics

Any build-up of dirt or deposits may interrupt light transmission and affect readings.

To clean the optics, undo the two screws to remove the optics base plate. Gently clean the internal surfaces of the optics with a soft, non-abrasive cloth. Deposits may be removed with a slightly dampened cotton bud. Replace the optics base plate and re-fasten the screws.

The photometer is fitted with long-life light sources and contains no user-serviceable components.

If the instrument requires servicing or repair, this can be arranged through our Technical Services Department.

4.1.9 Replacing the Batteries

The battery compartment in the base of the instrument is secured by four screws. To replace the batteries, remove the cover and install the batteries, observing the correct polarity as indicated. Use 3 x 1.5V 'AA' alkaline batteries or equivalent.

To avoid corrosion damage through leakage, remove batteries from the instrument if it is to be stored or left unused for a long period of time.

4.1.10 Guarantee

Palintest photometers are guaranteed for a period of two years from the date of purchase, excluding accidental damage or damage caused by unauthorised repair or misuse. The guarantee specifically excludes damage caused by water or by ingress of chemical solutions. Should repair be necessary, contact our Technical Services Department quoting the serial number shown on the back of the instrument. This guarantee does not affect your statutory rights.

4.2. Palintest 800 Multiparameter Meter

This set of instructions is a quick guide to using your multiparameter meter, capable of measuring pH, conductivity/TDS and temperature. For more details on the full range of functions that are available on this instrument, please contact **sales@palintest.com.**

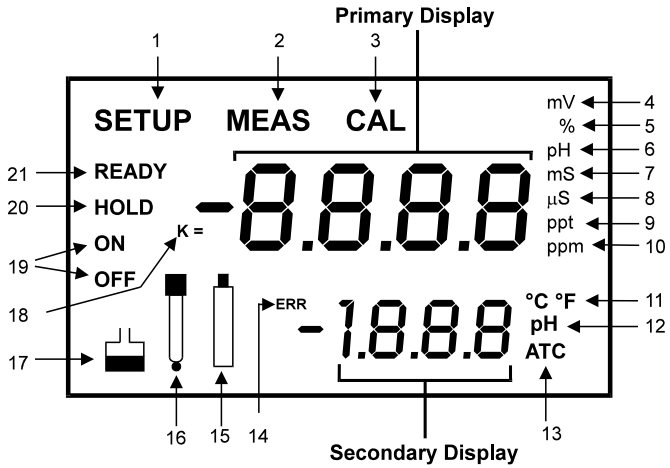
4.2.1 General Information

The LCD has a primary and secondary display:

The primary display shows the measured pH or conductivity.

The secondary display shows the measured temperature.

The display also shows error messages, keypad functions and program functions.



1. SETup mode indicator

2. MEASurement mode indicator

3. CALibration indicator

4. mV indicator

5. % indicator

6. pH measurement indicator

7. milli-siemens indicator

8. micro-siemens indicator

9. parts per thousand indicator

10. parts per million indicator

11. Temperature indicator

12. pH indicator

13. Automatic Temperature Compensation indicator

14. ERRor indicator

15. Low battery indicator

16. Probe indicator

17. Calibration solution Indicator

18. Cell constant indicator

19. ON / OFF indicator

20. HOLD indicator

21. READY indicator

Key	Function
ON/OFF	Powers on and shuts off the meter. When you switch on the meter, the meter starts up in the mode that you last switched off from. For example, if you shut the meter off in conductivity measurement mode, the meter will be in conductivity measurement mode when you switch the meter on.
HOLD	Freezes the measured reading. To activate, press HOLD while in measurement mode. To release, press HOLD again.
MODE	Selects the measurement parameter. Press MODE to toggle between pH and TDS or conductivity measurement mode.
CAL/MEAS	Toggles between Calibration and Measurement mode. 1. If you are in pH measurement mode, press CAL/MEAS to enter pH calibration mode. 2. If you are in conductivity measurement mode, press CAL/MEAS to enter conductivity calibration mode. 3. If you are in TDS measurement mode, press CAL/MEAS to enter TDS measurement calibration mode. While in SETUP sub-menu, pressing CAL/MEAS once takes you out to the SETUP main menu and pressing CAL/MEAS second time takes you directly into the measurement mode.
ENTER / RANGE	*ENTER function:* Press to confirm values in Calibration mode and to confirm selections in SETUP mode. *RANGE function (for conductivity &TDS measurements only):* Press to enter manual ranging function. The MEAS indicator

	blinks while in manual ranging function.
▲ ▼	In Calibration mode: During conductivity and TDS calibration, press to scroll through calibration values. In SETUP mode: Press to scroll through the setup subgroup programs.
SETUP	Takes you into the SETUP mode. This mode lets you customize meter preference and defaults, view calibration, electrode offset data, adjust for temperature coefficient and normalization temperature.

Inserting the Batteries

Four AAA batteries are included with your meter.

Use a Philips screwdriver to remove the two screws holding the battery cover at the back of the instrument

Remove battery cover to expose batteries.

Insert batteries. Follow the diagram inside the cover for correct polarity.

Replace the battery cover into its original position using the two screws removed earlier.

This meter shuts off automatically 20 minutes after the last key press.

Probe Information

Your meter includes two probes:

- pH electrode with BNC connector.
- conductivity/temperature probe with a notched 6-pin connector

The temperature sensing element built into the conductivity probe will also compensate for pH readings as long as both probes are in your solution at the same time.

Note: Keep connector dry and clean. Do not touch connector with soiled hands.

To connect the pH electrode:

1 Slide the BNC connector of the probe over the BNC connector socket on the meter. Make sure the slots of the connector are in line with the posts of the socket. Rotate and push the connector clockwise until it locks.

2 To remove electrode, push and rotate the connector anti-clockwise. While holding onto the metal part of the connector, pull it away from the meter.

Caution: Do not pull on the probe cord or the probe wires might disconnect.

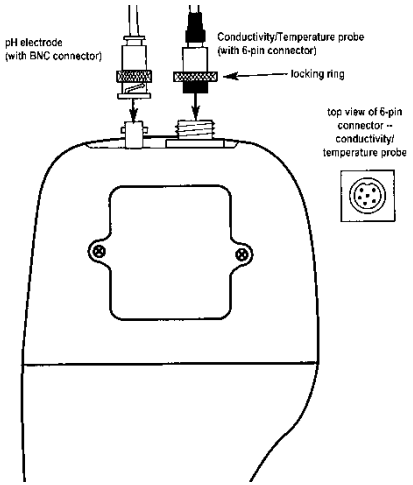
To Connect the Conductivity/Temperature Probe:

1 Line up the notch and 6 pins on the probe connector with the holes in the connector located on the top of the meter. Push down and screw the metal sleeve to lock the probe connector into place. See Figure 4.

2 To remove probe, unscrew the metal sleeve and slide up the probe connector. While holding onto metal sleeve, pull probe away from the meter.

Note: Follow the same directions to connect an optional separate temperature element.

Caution: Do not pull on the probe cord or the probe wires might disconnect.



Preparing the Meter for Calibration

Before starting calibration, make sure you are in the correct measurement mode.

pH Calibration

***NOTE**: We recommend that you perform at least 2-point calibration using standard buffers that bracket (one above and one below) the expected sample range.*

Preparing for pH Calibration

The meter automatically recognises and calibrates to these standard buffer values, which makes pH calibration faster and easier.

Be sure to remove the protective electrode storage bottle before calibration or measurement.

Wash your electrode in deionised water before and after calibration/use, and store in the protective electrode storage solution.

Do not reuse buffer solutions after calibration. Contaminants in the solution can affect the calibration and eventually the accuracy of the measurements.

4.2.2 To Calibrate pH:-

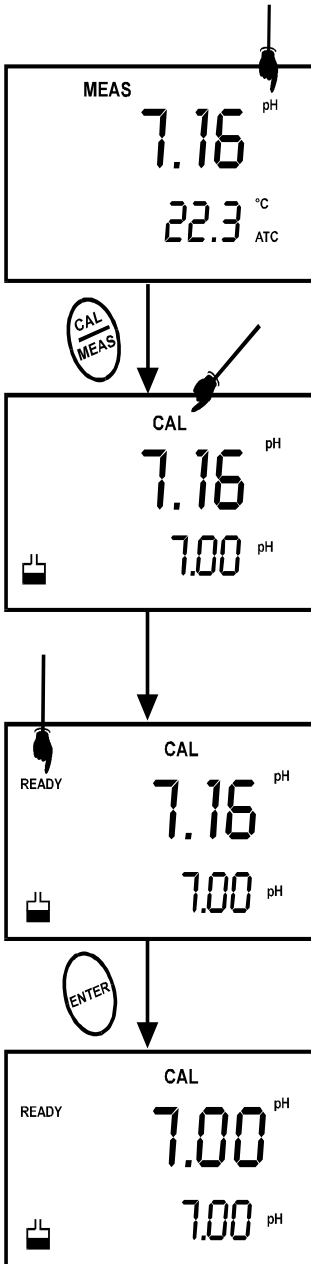
1 If necessary, press the **MODE** key to select pH mode. The pH indicator appears in the upper right hand corner of the display.

2 Rinse the probe thoroughly with deionised water. Do not wipe the probe; this causes a build-up of electrostatic charge on the glass surface.

3 Dip the probe into the calibration buffer. The end of the probe must be completely immersed into the sample. Stir the probe gently to create a homogeneous sample.

NOTE: The temperature element is in the conductivity cell. For temperature compensated readings, dip the conductivity cell into the calibration buffer as well.

4 Press **CAL/MEAS** to enter pH calibration mode. The CAL indicator will be shown. The primary display will show the measured reading while the smaller secondary display will



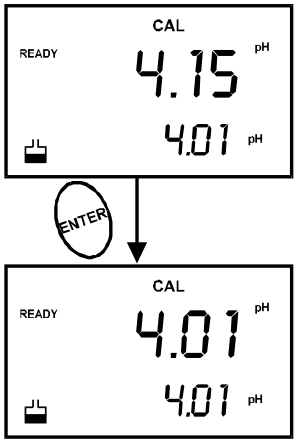
indicate the pH standard buffer solution.

5 Wait for the measured pH value to stabilize.

6 Press **ENTER** to confirm calibration. The meter is now calibrated to the current buffer. The lower display scrolls through the remaining buffer options.

If you are performing multi-point calibration, go to Step 7.

If you are performing one-point calibration, go to Step 9.



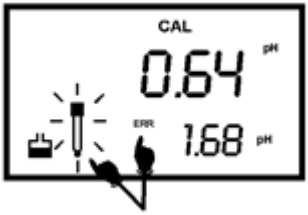
7 Rinse the electrode with deionised water or in rinse solution, and place it in the next pH buffer.

8 Follow Steps 5 to 8 for additional calibration points.

9 When calibration is complete, press CAL/MEAS to return to pH measurement mode.

NOTES: *To exit from pH calibration mode without confirming calibration, DO NOT press ENTER in Step 6. Press CAL/MEAS instead.*

If the selected buffer value is not within ± 1.0 pH from the measured pH value: the electrode and buffer icon blink and the ERR annunciator appears in the lower left corner of the display.



Err Message and Electrode Icon will appear if Incorrect Buffer are Used

4.2.3 To Calibrate conductivity:-

Ensure you wash the probe in deionised water and store it dry and calibrate the conductivity probe at least once a month.

If you take measurements at extreme temperatures, calibrate the meter at least once a week.

Calibrating for Conductivity:-

1 If necessary, press the MODE key to select conductivity mode.

2 Rinse the probe thoroughly with deionised water, and then rinse with a small amount of calibration standard.

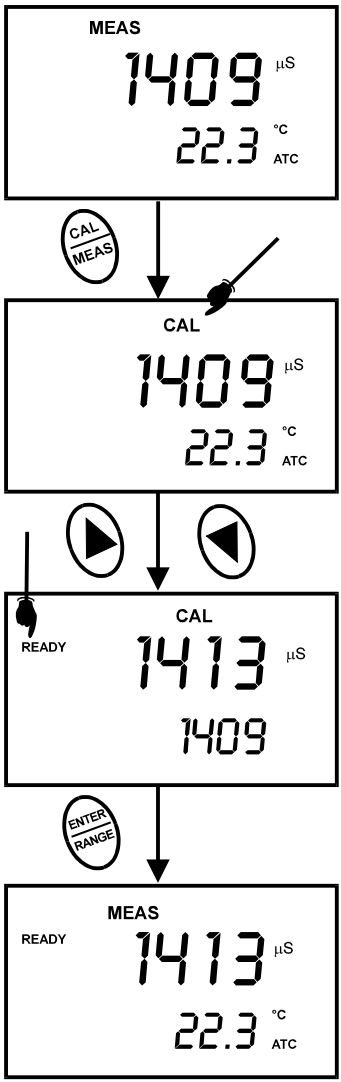
3 Dip the probe into the calibration standard. Immerse the probe tip beyond the upper steel band. Stir the probe gently to create a homogeneous sample.

4 Wait for the measured conductivity value to stabilize.

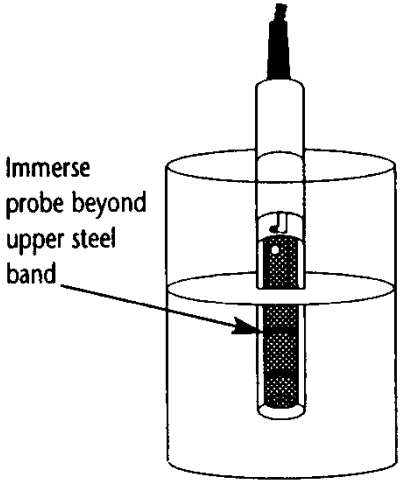
5 Press CAL/MEAS to enter conductivity. The CAL indicator will appear in the upper right corner of the display.

6 Press the ▲ or ▼ keys to change the value on the primary display to match the value of the calibration standard.

7 Press ENTER to confirm calibration value. The meter returns to the MEAS (measurement) mode.



Note

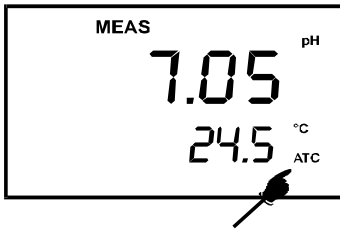


Ensure conductivity probes are fully submerged when taking measurements or calibrating.

To exit from Conductivity calibration mode without confirming calibration, DO NOT press the ENTER key in Step 7. Press CAL/MEAS instead. This will retain the meter's old calibration data in the measuring range of the calibration.

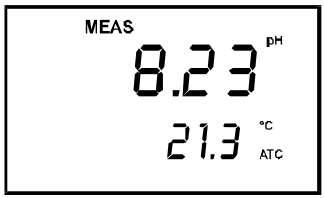
4.2.4 Taking pH measurements

Automatic Temperature Compensation



Automatic Temperature Compensation only occurs when a conductivity probe is plugged into the meter.

If there is no temperature sensor plugged into the meter, the default manual temperature setting is automatically 25°C. You can manually set the temperature to match your working conditions using a separate thermometer.



Be sure to remove the electrode soaker bottle on the electrode before measurement.

To rake readings:-

1 Rinse the pH electrode with deionised water before use to remove any impurities adhering to the probe body. If the pH electrode has dehydrated, soak it for 30 minutes in Palintest electrode storage solution solution (PT 105/4).

2 Press ON to switch on meter.

3 Press the MODE key to select pH measurement mode. The MEAS annunciator appears on the top center of the LCD.

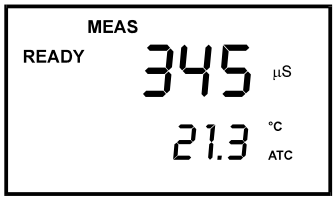
4 Dip the probe into the sample. Since the conductivity cell contains the temperature sensor, make sure it is also immersed in your solution.

When dipping the probe into the sample, the sensor or the glass bulb of the electrode must be completely immersed into the sample. Stir the probe gently in the sample to create a homogeneous sample.

5 Allow time for the reading to stabilise. Note the reading on the display.

4.2.5 Taking Conductivity (or TDS) measurements

1 Rinse the probe with deionised water before use to remove any impurities adhering to the probe body. Shake or air dry. To avoid contamination or dilution of your sample, rinse probe with a small volume of your sample liquid.



2 Press ON to switch on meter.

3 Press the MODE key to select conductivity or TDS measurement mode. The

MEAS annunciator appears on the top center of the LCD.

4 Dip the probe into the sample -

When dipping the probe into the sample, take care to ensure that the liquid level is above its upper steel band. Stir the probe gently in the sample to create a homogenous sample.

Allow time for the reading to stabilize. Note the reading on the display.

5 Press the MODE key to toggle between conductivity, TDS and pH readings.

Troubleshooting

Problem	Cause	Solution
Press 'ON' key but no display	a) Batteries not in place	a) Check that batteries are in place and making good contact.
	b) Batteries not in correct polarity (+ and – position).	b) Re-insert batteries with correct polarity.
	c) Weak batteries	c) Replace batteries.
Not responding to key press	a) HOLD mode in operation.	a) Cancel HOLD mode by pressing Hold key.
	b) Damaged key pad.	b) Return to dealer.
	c) Internal program error.	c) Reset all internal programs by reinserting batteries.
Unstable readings	d) Air bubbles in probe.	d) Tap probe to remove bubbles.
	e) Dirty probe.	e) Clean the probe and re-calibrate.
	f) Probe not deep enough in	f) Make sure sample entirely

	sample. g) External noise pickup or induction caused by nearby electric motor. h) Broken probe.	covers the probe sensors. g) Move or switch off interfering motor. h) Replace probe.
"OR" on upper display	a) Probe is shorted. b) Probe is in an out-of-range solution. c) Broken probe.	a) Test probe. Make sure probe is fully connected to meter. b) Use different solution. c) Replace probe. See "Accessories" on Page 56
Temperature reading erratic or lower display reads "OR"	a) Temperature of solution is out of range.	a) Heat or cool solution.
Slow response	a) Dirty / Oily probe.	a) Clean probe. See "Probe Care & Maintenance", page 50 – 52.

LCD Display	Indicates	Cause	Solution
Err annunciator	Unrecognized input from keypad	Wrong input in selected mode.	Release key. Select valid operations depending on mode.
CAL & Err annunciators on / Buffer and electrode indicators blink.	Calibration error.	Wrong value input at calibration. Dirty probe.	Check your input value, clean probe. See Calibration sections or Probe Maintenance section.
Battery indicator blinks	Low battery level.	Need new batteries or battery connection is bad.	Clean battery contacts. Replace batteries with fresh ones, noting polarity.

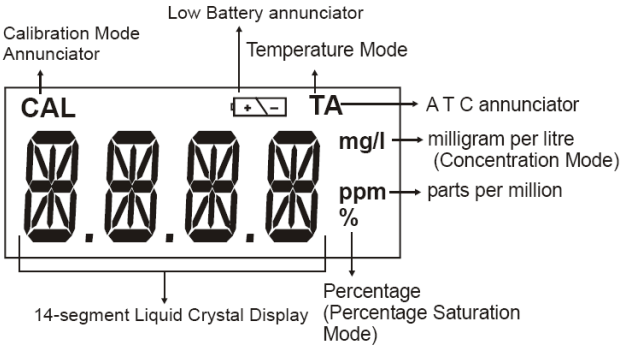
4.2.6 Guarantee

Palintest electrochemical meters are guaranteed for a period of one year from the date of purchase, probes are guaranteed for six months, excluding accidental damage or damage caused by unauthorised repair or misuse. The guarantee specifically excludes damage caused by water or by ingress of chemical solutions. Should repair be necessary, contact our Technical Services Department quoting the serial number shown on the back of the instrument. This guarantee does not affect your statutory rights.

4.3 Palintest Micro 600 Dissolved Oxygen (DO) Meter

This set of instructions is a quick guide to using your DO meter. For more details on the full range of functions that are available on this instrument, please contact **sales@palintest.com.**

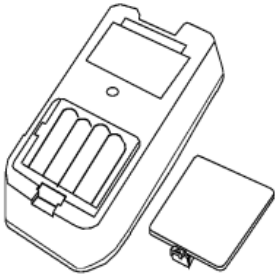
4.3.1 General Information



The meters have six keys on its splash-proof keypad; ON/OFF, HOLD/ENTER, CAL, MODE, ▲ and ▼ keys. Some buttons have several functions depending on its mode of operation.

ON / OFF	Powers on and shuts off the meter. Takes you directly into measurement mode when meter is switched on.
CAL	• Enters into calibration mode % saturation and Temperature. • To abort calibration or setup mode without confirming any set value.
HOLD / ENTER	HOLD: Freezes reading. Press HOLD to freeze, press hold again to release. ENTER: To confirm values in calibration mode and selections in SETUP mode.
▲ ▼	• In Calibration Mode: Press to scroll through calibration values. • In Setup Mode: Press to scroll through the setup sub-group programs.
MODE	• Selects measurement mode for DO%, DO and Temperature. • When pressed together with ON/OFF key, it will take you into the SETUP mode. This allows you to customise the meter preferences.

Inserting New Batteries



The battery compartment is found at the back of instrument. To open the battery compartment, push in the direction of arrow and lift up the cover. Note the polarity of battery before inserting into position. After replacement, place cover back and press down until it locks tight.

Battery Replacement

An indicator in the LCD alerts you when battery power is low.

Caution: Power off the meter when changing battery.

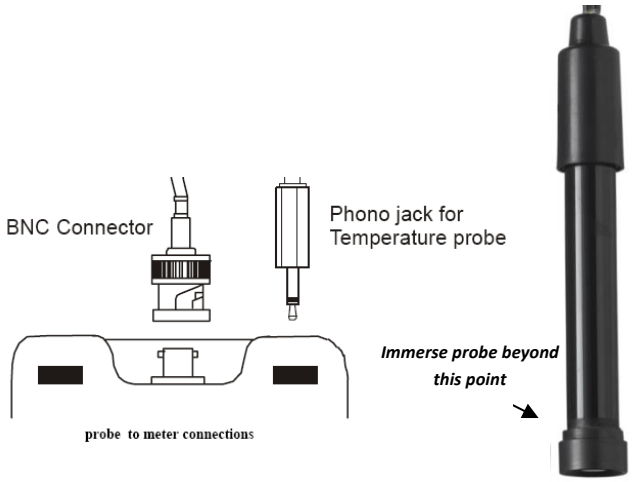
Connecting the Electrode and Temperature Sensor

a) Connecting electrode: Rotate the locking ring clockwise until it locks.

b) Removing electrode: Rotate the connector counterclockwise and slide the connector off the socket.

c) Insert the mini phono jack of temperature sensor into the meter as shown.

CAUTION: Do not pull on the electrode cord to avoid internal wire breakages.



4.3.2 Preparing the Meter for Calibration

Before starting calibration the meter must be in the correct mode. The temperature and % Saturation calibration must be done first before performing the mg/L (ppm) calibration.

In % Saturation, the meter is able to perform either a one point calibration or a two point calibration. For one point calibration, it is recommended to perform a 100% Saturation calibration in saturated air.

For a two point calibration, you can calibrate for 100% Saturation in saturated air and 0% Saturation using a zero oxygen solution (PT 125/3). The meter will take several minutes to reach 0% Saturation value after submersion into the solution.

For more accuracy it is recommended to enter barometric pressure and salinity values.

Note: The factory calibrated default value is 760 mm Hg or 101.3 kPa barometric pressure (sea level).

Calibrating to 100% Saturation will also calibrate mg/L corresponding to 100% Saturation.

Calibrate 100% Saturation:

1. Rinse the probe with DI water or rinse solution and let it dry. Do not touch the membrane.
2. Press MODE to select % Saturation mode.
3. Hold the probe in the air with the sensor downwards. Let the reading stabilise.
4. Press CAL. The ‘CAL’ indicator blinks.
5. Press HOLD/ENTER to confirm. ‘CO’ will be displayed.

Calibrate 0% Saturation:

1. Rinse the probe with DI water or rinse solution and let it dry. Do not touch the membrane.
2. Press MODE to select % Saturation mode.
3. Dip the probe into the zero oxygen solution. Let the reading stabilise.
4. Press CAL. The ‘CAL’ indicator blinks.
5. Press HOLD/ENTER to confirm. ‘CO’ will be displayed.

4.3.3 **Measurement Mode selection (mg/L or ppm)**

You can select to measure in mg/L or ppm:-

1. Enter SETUP menu by pressing ON and MODE simultaneously, holding both keys for 2 seconds.
2. Then release the ON key before releasing the MODE key. ‘StUP’ indicator will appear followed by ‘COF.1’.
3. Press HOLD/ENTER until you view ‘b.DO’.
4. Press ▲ or ▼ to select the desired mode of measurement.
5. Press HOLD/ENTER to confirm.
6. Press CAL to return to measurement mode.

Taking Measurements

1. Rinse the probe with DI water or rinse solution.
2. Press MODE to select % Saturation, Concentration (mg/L), (ppm) or Temperature (T).
3. Dip the probe into the sample. Stir the solution gently to homogenise the sample.
4. Take the measurements once the meter reading has stabilised.

Note: The probe membrane surface must not touch anything.

Note: Stir the solution to prevent air bubbles from being trapped on the membrane.

IMPORTANT: The DO probe consumes oxygen from the sample the sample must constantly flow past the membrane to achieve accurate readings.

4.3.4 Pressure/Salinity Compensated Measurements

For more accuracy it is recommended to set the barometric pressure and salinity values, the meter will automatically compensate for the entered values.

Set the barometric pressure before performing a calibration. The barometric differences caused by the weather have slight influences on the readings, for very accurate readings it is recommended to reset this value every time you take a measurement. Setting pressure is described overleaf.

Note: The average barometric pressure at 0 meters (sea level) is 760 mmHG, at 1829 meters it is 609 mmHG.

The salinity of the sample influences the readings. Set the salinity value as close as possible to the value of the sample. The salinity can be measured with a salinity meter; this measured value should be entered in the meter before performing a DO measurement. Setting pressure is described at paragraph overleaf.

Setting Pressure

1) Enter the SETUP menu as described in 4.3.3.

2) Press ▲ or ▼ until you view ‘DPr.7’.

3) Press HOLD/ENTER, display will show either ‘A.HG’ for mm Hg or ‘A.PA’ for kilo Pascal.

4) Press ▲ or ▼ to select.

5) Press ‘HOLD/ENTER’ to confirm.

6) Press ▲ or ▼ to set the pressure value.

7) Press ‘HOLD/ENTER’ to confirm, ‘CO’ will be displayed.

8) Press CAL to return to measurement mode.

4.3.5 Setting Salinity

1) Turn on the meter and select mg/L or ppm measurement mode.

2) Repeat steps 1 to 2 from Section 4.3.3

3) Press HOLD/ENTER until you view ‘b.SAL’.

4) Press HOLD/ENTER.

5) Press ▲ or ▼ to set the salinity value (in ppt).

6) Press HOLD/ENTER to confirm, ‘CO’ will be displayed.

7) Press CAL to return to measurement mode.

Factory default is 0.0. Salinity values up to 50 ppt can be entered.

4.3.6 Troubleshooting

The DO in the sample is consumed by the cathode, it is essential that a new sample must flow past the membrane of the probe to prevent the occurrence of false readings. The probe uses very little oxygen for its measurement. This enables it to function correctly with liquid movement as low as 2 inch/sec across membrane.

The permeability of the membrane to oxygen varies greatly with temperature. Therefore compensation is needed for this variation. The probe comes with an in-built Temperature Compensation for the membrane variation.

Any deposits on the membrane surface act as a barrier to oxygen diffusing through the membrane, the membrane must be cleaned at regular intervals to assure maximum reliability.

After using the probe, rinse the probe with deionised water and wipe it with a soft cloth or paper to avoid any hardening of deposits if necessary. If growth develops on the probe, use a disinfecting chemical to clean.

Note: Wipe the membrane gently when cleaning. If the membrane is damaged or torn, the probe will no longer function. There are no special probe storage requirements.

Replacement of the pre-membraned cap is required when you cannot calibrate the probe, or if the membrane is damaged. Typical membrane damages are punctures or wrinkles caused during measurements or cleaning:-

1) Unscrew counter clockwise the cap from the probe sensing tip.

2) Wash the probe under running water.

3) Take the refill solution and assemble the needle tip on the tip of the plastic bottle.

4) Hold the probe upside down.

5) Insert the needle into one of the four holes surrounding the silver cathode.

6) Inject the fill solution into the probe until solution leaks out of the fill hole (± 5 mL).

7) Replace the cap by tightening clockwise until hand tightened.

8) Allow at least 1 hour for the electrode to equilibrate before usage.

Note: The electrolyte solution in the probe depletes on usage and needs to be replaced periodically.

Problem	Possible cause	Solution
No display when 'ON' key is pressed	a) Batteries not in place b) Batteries not in correct polarity (+ and – position) c) Weak batteries.	a) Check that batteries are in place and making good contact b) Re-insert batteries with correct polarity c) Replace batteries.
Unstable Readings	a) Insufficient electrolyte in probe b) Air bubbles around probe c) Dirty or damaged probe d) Probe not deep enough in sample	a) Fill probe with electrolyte and replace pre-membraned cap b) Stir or tap probe to remove bubbles. c) Clean the probe and re-calibrate d) Make sure sample entirely covers the probe

	e) External noise pickup or induction caused by nearby electric motor f) Broken probe.	sensor e) Move or switch off interfering motor f) Replace probe.
Slow Response	a) Dirty / oily electrode b) Temperature is changing.	a) Clean electrode b) Allow time for temperature to stabilise.
Meter is Not Responding to Keys	a) HOLD mode in operation b) Damaged key pad. c) Internal program error.	a) Cancel HOLD mode b) Return to dealer c) Reset all internal programs by reinserting batteries.

Error Message	Indicates	Possible Cause	Corrective Action
‘Err 1’ in % Saturation Mode	% Saturation Calibration error	Calibration is performed when factory calibrated absolute value is out of calibration range – 10.1% to 49.9%	Check the value of the calibration solution. If zero calibration is done, make sure the limit of 10% is not exceeded. If message persist, recondition your probe.
‘Err.1’ in mg/L (ppm) Concentration Mode	Concentration Calibration error	Calibration is performed when the calibration solution factory absolute measureme	Check the calibrating solution to be above 2 mg/L or ppm.

		nt is below 2.00 mg/L or ppm	Check that the correct temperature and salinity setting has been set prior calibration.
‘UR’ / ‘OR’ with blinking ‘A’ annunciator in Temperature Mode	ATC probe error, Under Range, Over Range	ATC probe is removed or broken while the meter has the ATC feature activated.	Check the probe’s temperature input phono jack connection to the meter. Ensure probe is not broken or punctured.
‘----‘ with blinking ‘A’ annunciator in % Saturation	ATC probe error	ATC probe is removed or broken while the meter has	Check the probe’s temperature input phono jack

and Concentration Mode		the ATC feature activated.	connection to the meter. Ensure probe is not broken or punctured.
Battery icon lights up	Low battery	Battery power is low	Replace batteries

5. Reorder codes and Accessories

Part Code	Description
AP 031	Free/Total Chlorine Reagents (250 pack)
AP 292	Iron MR Reagents (250 pack)
AP 188	Alkalinity Reagents (250 pack)
AP 168	Sulphide Reagents (250 pack)
AP 163	Nitrate Reagents (250 pack)
AP 109	Nitrite Reagents (250 pack)
AP 177	Phosphate Reagents (250 pack)
AP 152	Ammonia Reagents (250 pack)
PT 804	7500 Check Standards
Other reagents available on request	
PT 125/3	Zero Oxygen Solution
PT 105/3	pH 7 Calibration Solution
PT 105/1	pH 4 Calibration Solution
PT 105/2	pH 10 Calibration Solution
PT 142/3	1413µS/cm Conductivity Calibration Solution
PT 142/4	74µS/cm Conductivity Calibration Solution

PT 142/2	12.88mS/cm Conductivity Calibration Solution
PT 500	De-ion pack
PT 1250	Deionised Water Solution
PT 148/3	Replacement DO probe
PT 148/2	DO membrane maintenance set
PT 146/1	Replacement Conductivity/TDS probe
PT 146/2	Replacement pH probe
PT 105/4	Electrode Care pack

For any other accessories, please contact sales@palintest.com