



# LIGHTWAVE II AND II<sup>+</sup>

## QUICK REFERENCE GUIDE

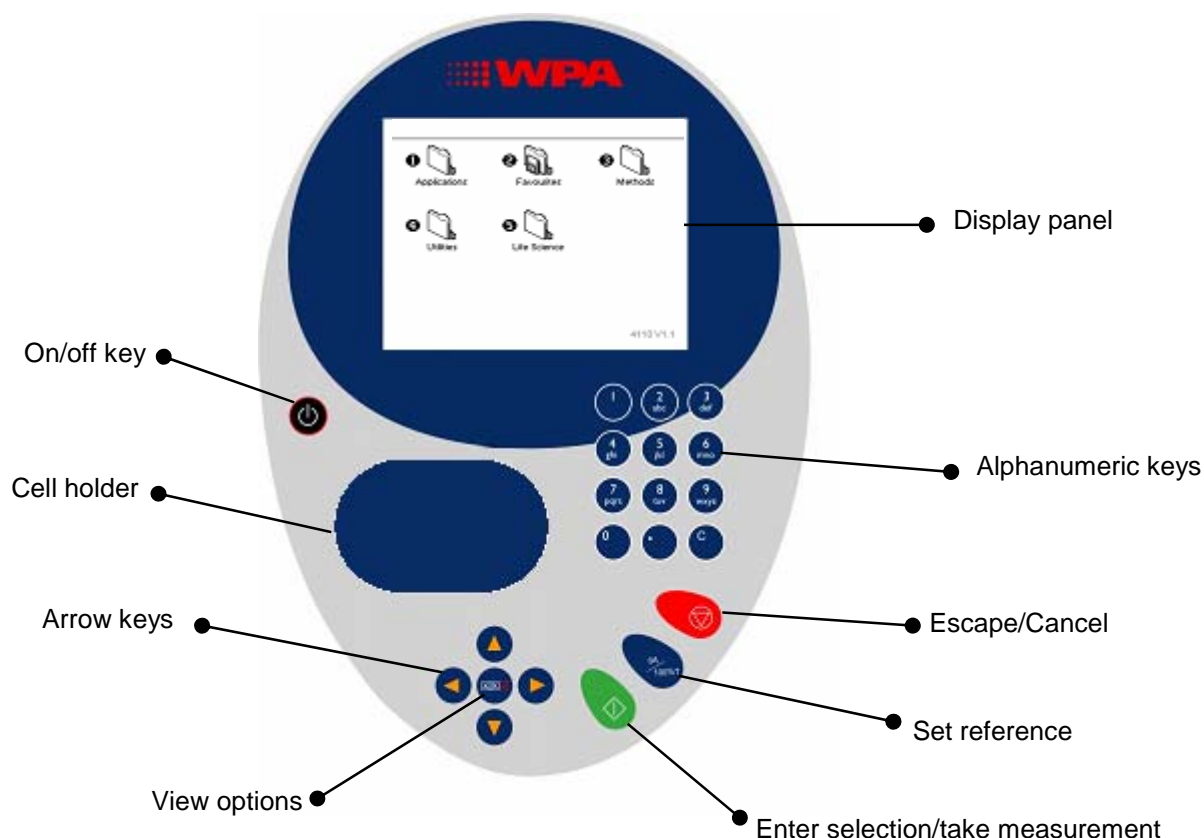
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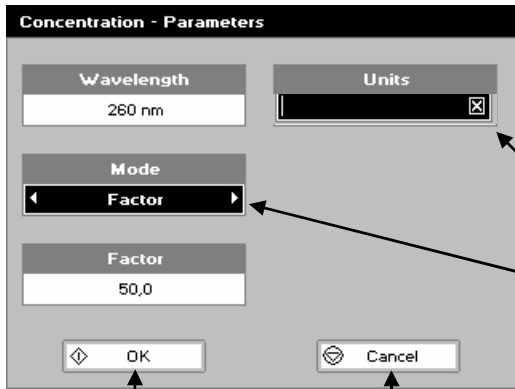
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## The Instrument



Key	Action
On/off key	Turns the instrument on/off
Cell holder	Insert the cell here. The instrument accepts standard 10 mm pathlength quartz, glass or plastic cells. The light beam is directed from RIGHT to LEFT.
Arrow keys	Use the four arrow keys to navigate around the display and select the required setting from the active (highlighted) option.
View Options:	View options for that application mode.
Display panel	Displays folders, menu options that guide you through taking measurements and your results.
Alphanumeric keys	Use these to enter parameters and to write text descriptions where appropriate, or required. Use repeated key presses to cycle through lower case, number and upper case characters. Leave for 1 second before entering next character. Use C button to backspace and 1 to enter a space.
Escape/Cancel:	Escape from a selection and return to the previous folder. Stop making measurements.
Set Reference: 0A/100%T	Set reference to 0.000 A or 100%T on a reference solution at the current wavelength in the mode selected. When in scan mode, do a reference scan.
Enter/OK/Next:	Enter, or confirm, a selection. Take a measurement.

## The Display Screen



Press OK to save the selected parameters and go on to the next screen

Press Cancel to erase selections and return to the previous screen

### Navigation

Move between boxes using the up and down arrows.

### Enter parameters by:

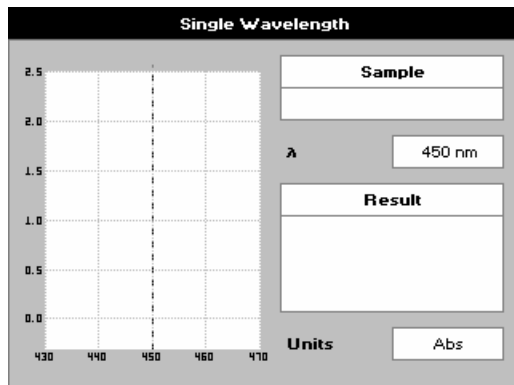
using the key pad numbers

OR

If the box contains the symbol  $\boxtimes$ , either type in a value or press the options key  $\boxtimes\boxtimes\boxtimes$ , and choose a parameter from the next screen.

OR

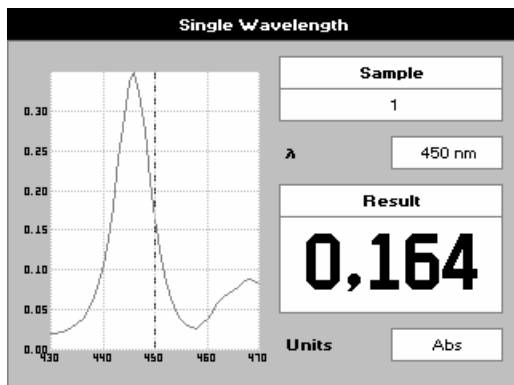
If the box contains arrow symbols, use the left and right arrow keys to select the required parameter.



### Taking Measurements

1. Insert the reference sample in chamber. Press the blue OA/100% key.
2. Insert the first sample and press the green Enter key  $\blacktriangledown$ .

Repeat 2 for each sample.

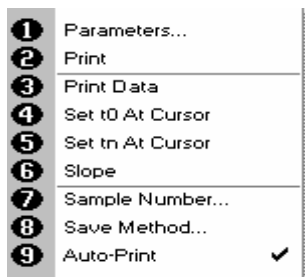


### Results

The results are displayed on screen.

Press the  $\boxtimes\boxtimes\boxtimes$  key, or use the number keys to select further options either relevant to the application used, to print the results, view the parameters etc. – see below for details.

Press Cancel:  $\text{V}$ , to exit the application.



### Options

1. View parameters for the experiments.
2. Print the results.
- 3,4,5,6 Depends on the application being used.
7. Define the sample number you wish to start from.
8. Save the parameters as a method to a defined folder name with a defined method name.
9. Toggle auto-print on/off. Default is off.

Exit options by pressing  $\text{V}$ , or wait.

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## Parameter Dictionary

Parameter	Folder	Sub-Folder	Manual page	Description and options
Auto Standby	Utilities	Preferences	29	Select whether to use a standby mode after defined periods. Options: 1 hour, 2 hours, at night or off
Autodetect peaks	Applications	Wavescan	13	Yes/No – turns on and off the automatic peak detection
Auto-Print	Utilities	Printer	28	Select whether auto-print is on or off. When on, results are automatically printed after a measurement is taken. When off, printing has to be initiated manually
Background	Applications	Absorbance Ratio – Wavelengths	24	Select whether a background correction is applied to both wavelengths
Brightness	Utilities	Contrast	29	Adjust the brightness using the left and right arrows
Calibration	Applications	Standard curve	19	Select the calibration mode. Standard, measure prepared standard or Manual, enter values using key pad numbers
Contrast	Utilities	Contrast	29	Adjust the contrast using the left and right arrows
Curve Fit	Applications	Standard curve	19	Select the type of curve fit to be used. Options: straight line regression (forces the line through the origin), zero regression, interpolated or cubic spline
Day	Utilities	Date and Time	28	Enter the day of the month
Delay time	Applications	Kinetics – Parameters 1	16	Enter the delay time in seconds before measurements are taken. Maximum 600 seconds (10 minutes)
Diluent	Applications	Absorbance Ratio – Parameters	24	Enter the volume of the diluent. Range: 0.01 – 9999
Dilution Factor	Applications	Absorbance Ratio – Parameters	24	Enter the dilution factor using the keypad numbers or press <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> to calculate the dilution factor
DP	Applications	Concentration	11	Determines the number of decimal places in the results (0-2). Results have a maximum of 5 figures
		Kinetics – parameters 2	16	
		Standard Curve	19	
Draw peaks	Applications	Wavescan, options 4 – peak detection	13	Yes/No – switches display of peak cursors on and off
Duration	Applications	Kinetics – Parameters 1	16	Enter the time in minutes over which measurements are taken. Maximum 60 minutes
End wavelength	Applications	Wavescan	13	Enter the end wavelength for the spectral scan. Range: 200 – 950 nm
Factor	Applications	Absorbance Ratio – Parameters	24	Set the factor by which the result is multiplied to give the result within a chosen range. Range 0.01 – 9999
		Kinetics – Parameters 2	16	
Folder	Utilities	Folder Names	29	Select a folder to rename. Options: Methods 1-9 or Favourites
Game #	Utilities	Sudoku - Setup	30	Select the game number. Range 1-50. Only available if 'Computer' (the 50 preset games) is selected as the game mode
Games	Utilities	Preferences	29	Select whether the games function is on or off. Options: yes or no

<b>Parameter</b>	<b>Folder</b>	<b>Sub-Folder</b>	<b>Manual page</b>	<b>Description and options</b>
History	Utilities	Preferences	29	Select whether to use previously entered parameters when the instrument is switched on or to use default values. Options: On or Off
Hour	Utilities	Date and Time	28	Enter the hour. Range 1-24
Interval	Applications	Kinetics – Parameters 1	16	Enter the interval time in seconds between measurements: 5, 10, 20, 30 or 60 seconds
Language	Utilities	Regional	28	Select the language used on the display screen. Options: French, English or Spanish
Minimum peak height	Applications	Wavescan, options 4 – peak detection	13	This selects the minimum height above the highest of the two adjacent minima, that a peak must be if it is to be detected
Minimum peak width	Applications	Wavescan, options 4 – peak detection	13	This selects the minimum width, in nm, a peak must be to be detected (width = difference in wavelength between the higher of the two adjacent minima and the opposing intersection of that higher minimum level and the peak profile). Range 1-190 nm, default 5 nm
Minutes	Utilities	Date and Time	28	Enter the minute. Seconds are zeroed when OK is pressed
Mode	Applications	Concentration	11	Select 'Factor' if the factor is known or 'Standard' if it will be calculated from a standard of known concentration
Mode	Applications	Kinetics – Parameters 2	16	Select the measurement mode: Delta A – change in absorbance over the measurement duration; Final A – absorbance at the end of the measurement duration; slope – rate of change of absorbance over the measurement duration
Mode	Applications	Single Wavelength Wavescan	9 13	Select the mode of measurement – Absorbance or % Transmission
Mode	Utilities	Sudoku - Setup	30	Select the mode – Computer, for 50 preset games, or User to enter your own pattern
Month	Utilities	Date and Time	28	Select the month
New Name	Utilities	Folder Names	29	Enter a new name for the folder
Number Format	Utilities	Regional	28	Set the decimal point style: 999,9 or 999.9
Pathlength	Applications	Absorbance Ratio - Parameters	24	Select the relevant path length – 5 or 10 mm
Peak detect on zoom	Applications	Wavescan, options 4 – peak detection	13	Yes/No – determines whether peaks are reassessed and tabulated when the user zooms into a region of the wavescan or whether these stay as determined on the un-zoomed display
Printer	Utilities	Printer	28	Select the printer to send the results to. Options: Built in (internal printer), or to a computer via either USB port or Bluetooth
Replicates	Applications	Standard curve	19	Select the number of standards to be measured and averaged at each standard concentration point. Options: OFF (=1), 2 or 3. This parameter is only available if the calibration mode is set to Standards

Parameter	Folder	Sub-Folder	Manual page	Description and options
Sort peaks by	Applications	Wavescan, options 4 – peak detection	13	Select how peaks are sorted – by wavelength, peak height or peak width
Standards	Applications	Standard curve	19	Enter the number of standard concentration points to be used in the curve. Range 1-9.
Start wavelength	Applications	Wavescan	13	Enter the start wavelength for the spectral scan – range 200 – 950 nm
Std. n (n=a number)	Applications	Standard curve	19	Enter the concentration value for each standard. These parameters are only available if the calibration mode is set to Manual
Theme	Utilities	Preferences	29	Define the screen layout of folders. Options are a grid format (the default) or a list
Units	Applications	Absorbance Ratio – Parameters	24	Select the units to measure the absorbance ratio in. Options: µg/ml, ng/µl or µg/µl
Units	Applications	Concentration Kinetics – Parameters 2 Standard Curve	11 16 19	Enter the units using the alphanumeric keys or press <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> and select pre-defined units using the left and right arrows (options: (µg/ml, µg/µl, pmol/µl, mg/dl, mmol/l, µmol/l, g/l, mg/l, µg/l, U/l, %, ppm, ppb, conc or none)
Volume	Applications	Absorbance Ratio – Parameters	24	Enter the volume of the sample. Range: 0.01 to 9999
Wavelength	Applications	Concentration	11	Enter the wavelength at which you want to do the colorimetric assay
Wavelength	Applications	Kinetics – Parameters 1	16	Enter the wavelength at which you want to measure absorbance over a period of time
Wavelength	Applications	single wavelength	9	Enter the wavelength at which you want to measure absorbance or % transmission
Wavelength	Applications	Standard curve	19	Select the wavelength at which you want to construct the calibration curve
Wavelength 1	Applications	Absorbance Ratio – Wavelengths	24	Enter the first wavelength which you want to use to measure the absorbance ratio
Wavelength 2	Applications	Absorbance Ratio – Wavelengths	24	Enter the second wavelength which you want to use to measure the absorbance ratio
Wavelength 3	Applications	Absorbance Ratio – Wavelengths	24	Enter the wavelength from which the background correction will be obtained. This parameter is only available if the background parameter has been set to On
Wavelengths	Applications	Multi Wavelength	23	Select the number of wavelengths at which you want to measure absorbance. Range 2-5
X axis limits	Applications	Wavescan, options 6 - Graph Scale	13	Set to On to define the start and finish points of the x axis, or off to retain default values
X1	Applications	Wavescan, options 6 - Graph Scale	13	Enter the minimum value for the x axis
X2	Applications	Wavescan, options 6 - Graph Scale	13	Enter the maximum value for the x axis
Y axis limits	Applications	Wavescan, options 6 - Graph Scale	13	Set to On to define the start and finish points of the y axis, or off to retain default values
Y1	Applications	Wavescan, options 6 - Graph Scale	13	Enter the minimum value for the y axis

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<b>Parameter</b>	<b>Folder</b>	<b>Sub-Folder</b>	<b>Manual page</b>	<b>Description and options</b>
Y2	Applications	Wavescan, options 6 - Graph Scale	13	Enter the maximum value for the y axis
Year	Utilities	Date and Time	28	Enter the year
Zoom mode	Applications	Wavescan, options 6 - Graph Scale	13	Allows you to choose to set the scale of the x and y axis on the wavescan graph. Options: x axis, y axis, x & y axes
$\lambda$ n (n= a number)	Applications	Multi Wavelength	23	Enter each of the wavelengths at which you want to measure absorbance. Range 190 – 1100 nm