



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

## QUICK REFERENCE GUIDE

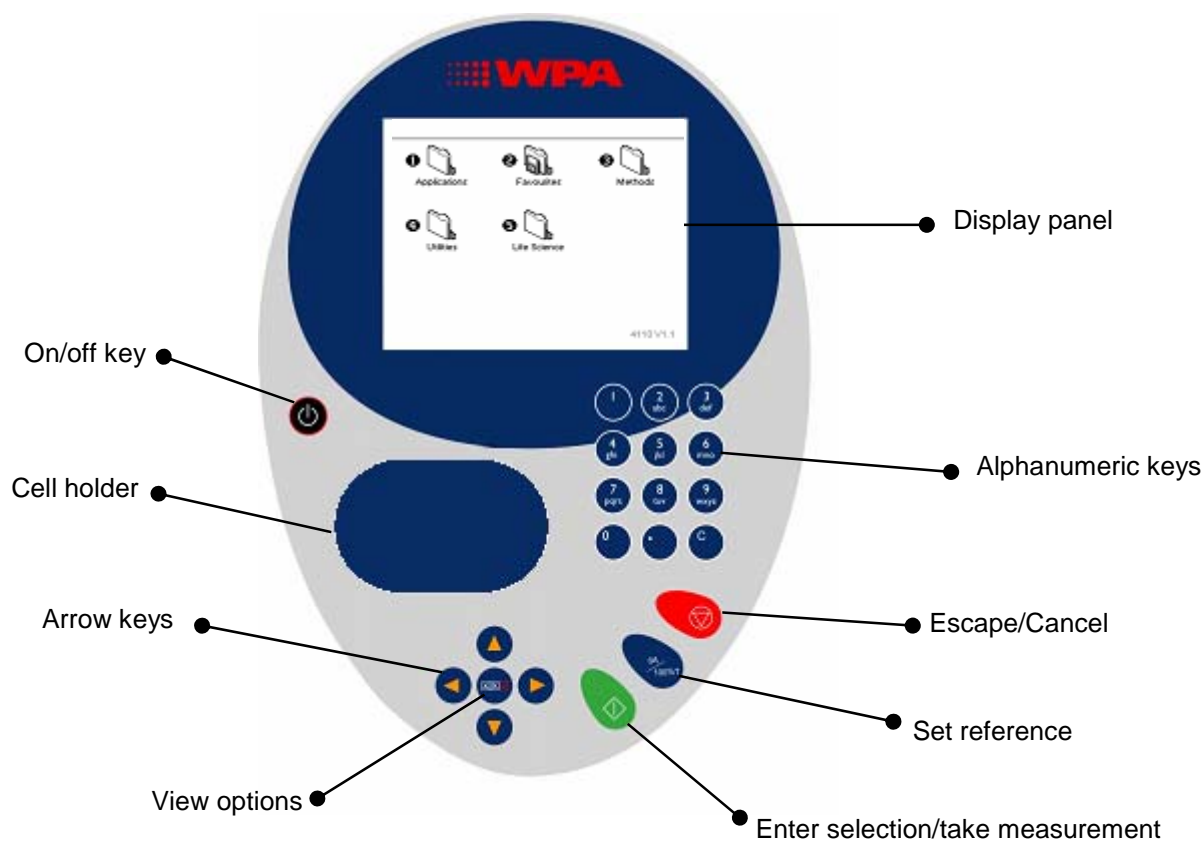
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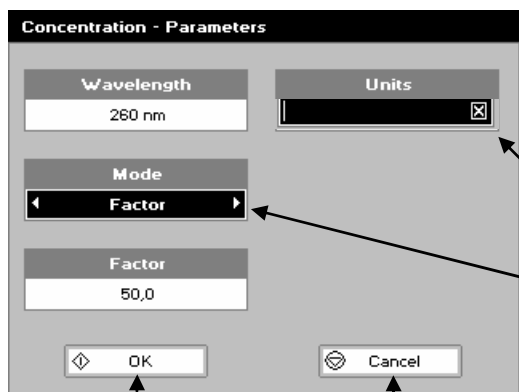
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## The Instrument



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:

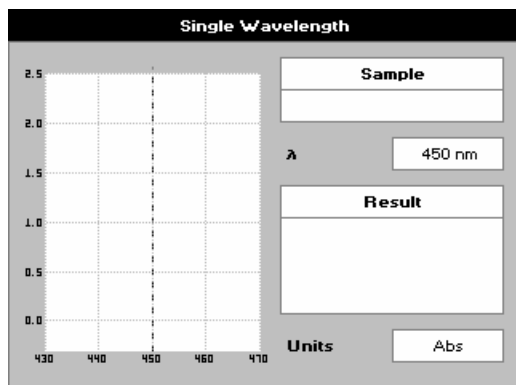
using the key pad numbers

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

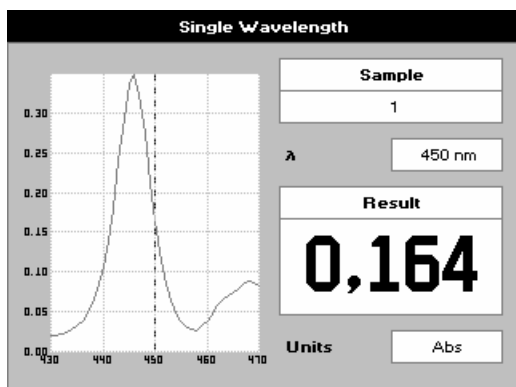
If the box contains arrow symbols, use the left and right arrow keys to select the required parameter.



### 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.

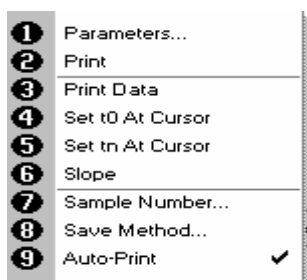


### Results

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	55	Select whether to use a standby mode after defined periods. Options: 1 hour, 2 hours, at night or off
Autodetect peaks	Applications	Wavescan	14	Yes/No – turns on and off the automatic peak detection
Auto-Print	Utilities	Printer	54	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	25	Select whether a background correction is applied to both wavelengths
Background	Life Science	Nucleic acids – DNA	27	Select whether the background correction at 310 nm is used or not. Options: On or Off
		Nucleic acids – RNA	29	
		Nucleic acids – Oligo	33	
		Protein – Protein UV	36	
Brightness	Utilities	Contrast	55	Adjust the brightness using the left and right arrows
Calibration	Applications Life Science	Standard curve	20	Select the calibration mode. Standard, measure prepared standard or Manual, enter values using key pad numbers
		Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
		Protein – Biuret	47	
Coeff. 1	Life Science	Protein – Protein UV	36	Enter coefficient 1 (for absorbance at 280 nm). Default is 1.55 as in Christian and Warburg equation: $\text{protein (mg/ml)} = 1.55 \cdot \text{Abs } 280 - 0.76 \cdot \text{Abs } 250$
Coeff. 2	Life Science	Protein – Protein UV	36	Enter coefficient 2 (for absorbance at 250 nm). Default is 0.76 as in Christian and Warburg equation: $\text{protein (mg/ml)} = 1.55 \cdot \text{Abs } 280 - 0.76 \cdot \text{Abs } 250$
Contrast	Utilities	Contrast	55	Adjust the contrast using the left and right arrows
Correction	Life Science	OD600	50	Enter the correction factor to compensate for different optical configurations between this and other instruments. Default value is 2
Curve Fit	Applications Life Science	Standard curve	20	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
		Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
		Protein – Biuret	47	
Day	Utilities	Date and Time	54	Enter the day of the month
Delay time	Applications	Kinetics – Parameters 1	17	Enter the delay time in seconds before measurements are taken. Maximum 600 seconds (10 minutes)
Diluent	Applications Life science	Absorbance Ratio – Parameters	25	Enter the volume of the diluent. Range: 0.01 – 9999
		Nucleic Acids – DNA	29	
		Nucleic Acids – RNA	31	
		Nucleic acids – Oligo	33	
		Protein – Protein UV	36	

Parameter	Folder	Sub-Folder	Manual page	Description and options
Dilution Factor	Applications	Absorbance Ratio – Parameters	25	Enter the dilution factor using the keypad numbers or press $\boxtimes\boxtimes\boxtimes$ to calculate the dilution factor
	Life science	Nucleic Acids - DNA	29	
		Nucleic Acids – RNA	31	
		Nucleic acids – Oligo	33	
		Protein – Protein UV	36	
DP	Applications	Concentration	12	Determines the number of decimal places in the results (0-2). Results have a maximum of 5 figures
		Kinetics – parameters 2	17	
		Standard Curve	20	
	Life Science	Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
Protein – Biuret	47			
Draw peaks	Applications	Wavescan, options 4 – peak detection	14	Yes/No – switches display of peak cursors on and off
Duration	Applications	Kinetics – Parameters 1	17	Enter the time in minutes over which measurements are taken. Maximum 60 minutes
End wavelength	Applications	Wavescan	14	Enter the end wavelength for the spectral scan. Range: 200 – 950 nm
Factor	Applications	Absorbance Ratio – Parameters	25	Set the factor by which the result is multiplied to give the result within a chosen range. Range 0.01 – 9999
		Kinetics – Parameters 2	17	
Factor	Life Science	Nucleic acids – DNA	29	Enter the factor. Default is 50, range: 0.01-9999
Factor	Life Science	Nucleic acids – Oligo	33	Enter the factor. Default is 33, range: 0.01-9999
Factor	Life Science	Nucleic acids – RNA	31	Enter the factor. Default is 40, range: 0.01-9999
Factor	Life Science	OD600	50	Enter the factor. Range 0 – 9999. Only available if units are cells/ml
Folder	Utilities	Folder Names	55	Select a folder to rename. Options: Methods 1-9 or Favourites
Game #	Utilities	Sudoku - Setup	56	Select the game number. Range 1-50. Only available if 'Computer' (the 50 preset games) is selected as the game mode
Games	Utilities	Preferences	56	Select whether the games function is on or off. Options: yes or no
History	Utilities	Preferences	55	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	54	Enter the hour. Range 1-24
Interval	Applications	Kinetics – Parameters 1	17	Enter the interval time in seconds between measurements: 5, 10, 20, 29 or 60 seconds
Language	Utilities	Regional	54	Select the language used on the display screen. Options: French, English or Spanish
Minimum peak height	Applications	Wavescan, options 4 – peak detection	14	This selects the minimum height above the highest of the two adjacent minima, that a peak must be if it is to be detected

Parameter	Folder	Sub-Folder	Manual page	Description and options
Minimum peak width	Applications	Wavescan, options 4 – peak detection	14	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	54	Enter the minute. Seconds are zeroed when OK is pressed
Mode	Applications	Concentration	12	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	17	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	10 14	Select the mode of measurement – Absorbance or % Transmission
Mode	Utilities	Sudoku - Setup	56	Select the mode – Computer, for 50 preset games, or User to enter your own pattern
Month	Utilities	Date and Time	54	Select the month
Multiplier	Life Science	OD600	50	Select the multiplier: 1000 or 1,000,000. Only available if units are cells/ml
New Name	Utilities	Folder Names	55	Enter a new name for the folder
Number Format	Utilities	Regional	54	Set the decimal point style: 999,9 or 999.9
Pathlength	Applications Life science	Absorbance Ratio - Parameters	25	Select the relevant path length – 5 or 10 mm
		Nucleic Acids – DNA	29	
		Nucleic Acids – RNA	31	
		Nucleic acids – Oligo	33	
		Protein – Protein UV	36	
Peak detect on zoom	Applications	Wavescan, options 4 – peak detection	14	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	54	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 Life Science	Standard curve	20	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
		Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
		Protein – Biuret	47	
Sort peaks by	Applications	Wavescan, options 4 – peak detection	14	Select how peaks are sorted – by wavelength, peak height or peak width
Standards	Applications Life Science	Standard curve	20	Enter the number of standard concentration points to be used in the curve. Range 1-9.
		Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
		Protein – Biuret	47	

Parameter	Folder	Sub-Folder	Manual page	Description and options
Start wavelength	Applications	Wavescan	14	Enter the start wavelength for the spectral scan – range 200 – 950 nm
Std. n (n=a number)	Applications Life Science	Standard curve	22	Enter the concentration value for each standard. These parameters are only available if the calibration mode is set to Manual
		Protein – BCA	38	
		Protein – Bradford	41	
		Protein – Lowry	44	
		Protein – Biuret	47	
Theme	Utilities	Preferences	55	Define the screen layout of folders. Options are a grid format (the default) or a list
Units	Applications	Absorbance Ratio – Parameters	25	Select the units to measure the absorbance ration in. Options: µg/ml, ng/µl or µg/µl
		Life Science	Nucleic acids – DNA	
		Nucleic acids – RNA	31	
		Nucleic acids - Oligo	33	
Units	Applications	Concentration	12	Enter the units using the alphanumeric keys or press <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" 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)
		Kinetics – Parameters 2	17	
		Standard Curve	20	
	Life Science	Protein – BCA	38	
		Protein – Bradford	41	
Protein – Lowry		44		
	Protein – Biuret	47		
Units	Life Science	OD600	50	Select the units of measurement: OD or cells/ml
Volume	Applications	Absorbance Ration – Parameters	25	Enter the volume of the sample. Range: 0.01 to 9999
	Life science	DNA	29	
Wavelength	Applications	Concentration	12	Enter the wavelength at which you want to do the colorimetric assay
Wavelength	Applications	Kinetics – Parameters 1	17	Enter the wavelength at which you want to measure absorbance over a period of time
Wavelength	Applications	single wavelength	10	Enter the wavelength at which you want to measure absorbance or % transmission
Wavelength	Applications	Standard curve	20	Select the wavelength at which you want to construct the calibration curve
Wavelength	Life Science	OD600	50	Select the wavelength. Default value is 600 nm
Wavelength	Life Science	Protein – BCA	38	Set at 562 nm
Wavelength	Life Science	Protein – Biuret	47	Set at 546 nm
Wavelength	Life Science	Protein – Bradford	41	Set at 595 nm
Wavelength	Life Science	Protein – Lowry	44	Set at 750 nm
Wavelength 1	Applications	Absorbance Ratio – Wavelengths	25	Enter the first wavelength which you want to use to measure the absorbance ratio
Wavelength 2	Applications	Absorbance Ratio – Wavelengths	25	Enter the second wavelength which you want to use to measure the absorbance ratio
Wavelength 3	Applications	Absorbance Ratio – Wavelengths	25	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	25	Select the number of wavelengths at which you want to measure absorbance. Range 2-5

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<b>Parameter</b>	<b>Folder</b>	<b>Sub-Folder</b>	<b>Manual page</b>	<b>Description and options</b>
X axis limits	Applications	Wavescan, options 6 - Graph Scale	14	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	14	Enter the minimum value for the x axis
X2	Applications	Wavescan, options 6 - Graph Scale	14	Enter the maximum value for the x axis
Y axis limits	Applications	Wavescan, options 6 - Graph Scale	14	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	14	Enter the minimum value for the y axis
Y2	Applications	Wavescan, options 6 - Graph Scale	14	Enter the maximum value for the y axis
Year	Utilities	Date and Time	54	Enter the year
Zoom mode	Applications	Wavescan, options 6 - Graph Scale	14	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	25	Enter each of the wavelengths at which you want to measure absorbance. Range 190 – 1100 nm