

Operation Manual





Nano Spectrophotometer

Thank you for Choosing Biolab products. Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation.



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01 Brief Introduction

Nano Spectrophotometer BSNA-205 is designed for micro size samples, the wavelength range is 190-850nm. It can measure the samples with micro size from 1 to 3ul. All the operation should be finished by PC.

1.1 Pictures



P 1-1





1pc

1.2 Packing List

The following items would come standard with the instrument:

- 1. Power Adapter 1pc
- 2. Software Disc 1pc
- 3. USB Cord
- 4. User's Manual 1pc
- 5. Black Block 1pc



2.1 PC Requirement

1) Basic Hardware Requirement: 233MHz Processor, 32M ROM, 512M Hard Disc, CD ROM, USB Port_

2) Operating System: 32 Bits Microsoft Windows XP, Vista, or Windows 7. Can not be used on 64 Bits systems temporarily

2.2 Software Install

Note: Please don't link the instrument and PC before finishing the installation of the driving software.

Suggestion: Please build a new file folder in your hard disc, for example D:/BSNA-205, and then copy all the files in the CD to the Hard Disc, then run the install course. It can improve the install speed.

2.2.1 Install .NET Framework

Note: If your Operating System has installed the ".NET FRAMEWORK", you can skip this step, and install the driver directly.

You can follow the below step to see if your system have installed the ".NET FRAMEWORK".

Click Start-Control Panel-Add or Delete Program, if you can find the program of "Microsoft .NET Framework", then your system is ok.



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If not find, you should double click the file "DotnetFramework_2.0_32bit" in your new folder to install it. During the installation, you can choose the default setting when need choose.

2.2.2 Install Driver

1) Install Driver

Double Click the file of "OmniDriver-1.6-win32-redistributable-installer" in the new folder to finish the installation of Driver. Please choose the default value when need choose. Please see the below course, just as a reference.

2) Choose Language (Fig. 2-1)

Choose your local language, then press Ok to confirm.

anguage Selection	- 0
Please select the installation language	1
English - English	~

3) Installation Setting (Fig. 2-2)

Click Next(N) to continue the installation.

4) Installation Path (Fig. 2-3)

Please keep the default path, and click Next to continue. If you want to return to the former Interface, please click Back, or you can click Cancel to exit the installation.

🍰 Setup		🕞 Setup	
	Setup - OmniDriver	Installation Directory	5
	Welcome to the OmniDriver Setup Wizard.	Please specify the directory where OmniDriver will be installed.	
		Installation Directory C:\Program Files\Ocean Optics\OmniD	
		BitRock Installer	
	< Back Next > Cancel	< Back Next >	Cancel

Fig. 2-2 Installation Set



5) Click Next to continue the installation. (Fig. 2-4)

6) Click "Finish" to finish the installation. (Fig. 2-5)

📑 Setup		🔀 Setup	
Ready to Install		Installing	
Setup is now ready to begin installing OmniDriver on your computer.		Please wait while Setup installs OmniDriver on your computer. Installing Unpacking C: 'Program []Ocean Optics/OmniDriver_tvm/bin/deploytk.dll	
BiRock Installer	Cancel	BiRiock Installer	Cancel

Fig. 2-4 Installing



Fig. 2-5 Finish Installation

2.2.3 Install the Analytical software

The local Version is free of installation, you just copy all the files in the CD to the hard disc of your PC, and then double click the file of "BSNA-205.exe" to run it.

We suggest you to create a shortcut icon in the desktop, then you can quickly run the software by double click the icon in the Desktop.

2.3 Hardware Installation

2.3.1 Power Requirement

The input Voltage of the instrument is 12V DC, and a Power Adapter comes standard with the instrument. Please link Terminal B to instrument and link Terminal A to the Power Socket. 220V or 110V is ok for the Adapter. (P 2-1)







P 2-1 Power Adapter

P 2-2 Rear View

Switch the knob of instrument to the position of "ON", then the instrument is powered on. (P 2-2)

2.3.2 Link PC & Instrument

Note: Please don't link the pc and the instrument before successfully installing the "OmniDriver"

Link the PC and the instrument by the USB Cable, then the PC will find a new hardware, and it is the instrument. (P 2-3)



P 2-3 USB Port of the instrument

If a Installation Lead Frame appears, then please choose "Auto Search" and click Next till the installation finish. After the instrument was successfully recognized, a new item would appears in the list of "Device Management", and it shows "Ocean Optics Devices"-"Ocean Optics USB4000"

2.4 Uninstall

If you want to uninstall the software, you can click "Start" \rightarrow "All Programmes" \rightarrow "Ocean Optics" \rightarrow "OmniDriver" \rightarrow "Uninstall OmniDriver" to finish the uninstallation.

2.5 Run the Software

After successful installation, double click the file of "BSNA-205.exe" to run the software.

2.5.1 Software Introduction

Fig.2-6 is the main Interface of the software. Different Area has different functions.
Area A: Shortcuts
Area B: Setting Area
B1: Sub Menu of different functions.
B2: Global Config
B3: Light Config.
Area C: Working Area
C1: Spectrum and Curve display
C2: Data display
Area D: Standard Curve Area



2.5.2 Shortcut Introduction

Most of the operation can be done by click the Shortcut Keys (Fig.2-7) Please find the functions of the shortcuts in Table 2-1.



Fig.2-7 Shortcut

Table 2-1: Shortcut V.S. Functions

SORT	SHORTCUT	FUNCTION	
	Live Mode	OPEN/CLOSE Real-time sampling display mode	
	Photometer	NORMAL FUNCTION OF PHOTOMETER	
	Propein	PROTEIN TEST	
IESI MODE	DNA/RNA	DNA/RNA TEST	
	Wavelength Scan	WAVELENGTH SCAN	
	Time Scan	KINETICS	
	Dark Spectrum	GET DARK SPECTRUM	
MEASURE	Blank Sample	GET BLANK	
CONTROL	Standard	MEASURE STANDARD SAMPLES	
	Sample	MEASURE SAMPLES	
SET	View	SET DISPLAY RANGE OF THE CURVE	

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	Spectrum Curve	DERIVE CURVE OF THE SPECTRUM
	Spectrum Data	DERIVE DATA OF THE SPECTRUM
DERIVE	Standard Curve	DERIVE CURVE OF THE STANDARD CURVE
	Standard Data	DERIVE DATA OF THE STANDARD CURVE
	Test Results	DERIVE THE TEST DATA
PRINT	Print	PRINT THE REPORT

2.5.3 Test Method

User's can choose different method in different test mode. There are mainly 3 test modes which are Photometer(Fig.2-8), Protein Mode(Fig. 2-9) and DNA/RNA Mode (Fig. 2-10)

	Protein	*
Photometer *	Methods	
Current wavelength(nm)	• OD280/260	DNA/RNA 😣
546.0	Lowry Kalokar	Methods
	Subtract OD320	⊙ SSDNA
O Standard Curve	Bardford standard Equation	ODSDNA
Coefficient Method	OLowry	⊖ SSRNA
k 1.0000	OBiuret	ORatio
b 0.0000	OD215/225	
	O OD238	Subtract OD320

Fig.2-8 Photometer Mode

Fig.2-9 Protein Mode

Fig.2-10 DNA/RNA Mode

2.5.4 Global Configuration

The Global Configuration includes the setting of Integration Time(ms), Scans to Average, Boxcar width, Concentration Unit, Display Mode, Optical path length setting, etc.

 Time of Integration: If the energy of the light is higher than the top limit, you should decrease this value. In normal condition, you can use the default value.
 Scans to Average: Please use the default value. 3) Smooth Window: Please use the default value.

4) Concentration Unit: You can choose by click the Combo Box, or you can input in the Left Frame. Normally, ug/ul and mg/ml is widely used in the Protein Test, while ng/ul and ug/ml is widely used in DNA/RNA test.

5) Show Mode: You can choose Absorbance(A), Transmittance(T) or Intensity of light(I), the default value is Absorbance.

6) Optical Path length: Please use the default value.

2.5.5 Light Source Frame

Please choose the default setting in the light source select frame (Fig. 2-12)

2.5.6 Standard Curve Frame

You can choose curve fit method, create standard curve, display curve and data in the Standard Curve Frame(Fig.2-13)

		Standard Curve
Global Config 🏾 🔅		
IntegrationTime(ms)		
80	Light Config 🏾 💲	
Scans to average	 Normal light 	
10 🔀 Boxcar width	Single Strobe light Strobe High(ms)	Curve Fit method
5	20	○ A=k*C+b ○ A=k*C
Unit ug/uL v	Strobe Low(us)	к <u>р</u> b 0 r 0
Show Mode	Strobe duration(ms)	0
Optical path length(mm)	Set	0

Fig.2-11 Global Config Fig.2-12 Light Source Confi Fig.2-13 Standard Curve Frame

2.5.7 Working Area

The working Area can be divided into two parts, Curve Area (Fig.2-14) and Data Area (Fig.2-15). The curve and the test data were displayed in the two areas separately.

You can click the shortcut of to set the display range of the Coordinate. The Xcoordinate is Wavelength, the Y-Coordinate is Absorbance (Or Transmittance, Intensity of light, you can set in the Global Config).



Fig. 2-14 Curve Area

	Wavelength(nm)	Transparence(%)	Absorbency(Abs)	Consistency(mg/mL)
1	546.0	197.18	-0.2949	-0.2949
2 🌶	546.0	104.28	-0.0182	-0.0182
				1. Protection of the second

Fig. 2-15 Date Area

2.5.8 Status Bar

Status Bar (Fig.2-16) is used to display the software version and date, etc.

Ver: 1.0.0.532 2011-11-16 11:29:14

Fig. 2-16 Status Bar



03 Operation

This chapter will show you how to operation the software. Note: You should at least get Dark Spectrum and Blank once before the test.

3.1 Basic Operation

3.1.1 Get Dark Spectrum

Put the Black Block on the Sample Hole(Fiber Optic Base), and then put down the Optical Braket, so that there's no light go into the optical fiber, then click the

message box.



Fig.3-2 Finish Dark Spectrum

3.1.2 Get Blank

Drop the Blank Sample on the base Sample Hole, and put down the Optical Bracket, then click the shortcut of Blank (). Click "Yes" (Fig. 3-3) and "Ok" (Fig. 3-4) in the message box to get Blank. You should clean both the top surface and the bottom surface after this step. Please see (3.1.5) to see how to clean it.



Fig. 3-3 Get Blank



Fig. 3-4 Blank finished

3.1.3 Measure the Standard Samples

1) Drop the standard sample in the Sample Hole(bottom optical surface), and then put down the Optical Bracket.

2) Click the shortcut of Standard Sample (), then input this standard sample's concentration value in the message box (Fig. 3-5), The concentration unit can be set in Global Config, then click "OK" to confirm. Then the Absorbance or Transmittance value would appear in the Table (Fig.3-6).

3) Click "OK" (Fig.3-7) to finish the test of the Standard Sample.

4) Clean the surface of the optical Fiber.



3.1.4 Measure Samples

Drop the sample to be measured on the Optical Fiber Bottom Surface(Sample Hole), put down the Optical Bracket, and then click the shortcut of (). Click "Yes" in the message box (Fig. 3-8), then the measure finished. A new data line would be added in the Data Area.(Fig. 2-15) At the same time, the curve would be refreshed.(Fig.2-14), You should clean the optical fiber surface after measurement.



Fig. 3-8 Sample Test

3.1.5 How to clean the Optical Fiber Surface

Note: You should clean the surface timely after every measurement.

Rise up the Optical Bracket, and clean the bottom surface carefully by Dry Tissue (softpaper that easy to absorb water). And then clean the top surface in the same way.



3.1.6 Delete the test result

Move the cursor on the data that you want to delete, click the Right Button of the Mouse, then click the choice of "Delete the chosen data" . If you want to delete all, then click the choice of "Delete All Data" (Fig.3-9)

	Wavelength(nm)	Transparence(%)	Absorbency(Abs)	Consistency(mg/mL)	
1	546.0	197.18	-0.2949	-0.2949	
2	546.0	104.28	-0.0182	-0.0182	
3	546.0	122.43	-0.0879	-0.0879	
					<u>D</u> elete All Data
					D <u>e</u> lete Selected Data

Fig. 3-9 Delete the test result

3.2 Live Mode

Click the shortcut of () to go into the Live Mode. The system will sampling the data on real time. And the Spectrum will display in the Curve Area.

3.3 Photometer Mode

Click the icon of (Photometer) to go into Photometer Mode. You can measure the Absorbance or Transmittance of the samples in a fixed wavelength. The Coefficient Method and Standard Curve Method are available in this mode.

3.3.1 Coefficient Method

If you have known the coefficient of a curve equation, you can input the coefficients directly to measure the sample's concentration.

1) Choose Coefficient Method:

Click the shortcut of (Photometer) to go into Photometer Mode, then choose Coefficient Method in the method choose window(Fig. 3-10)

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Photo	meter	*
Curre	nt wavelength(nm)	
54	6.0	
Ost	andard Curve	
⊙ Co	efficient Method	
k	1.0000	3
ь	0.0000	3

Fig. 3-10 Photometer Mode- Coefficient Method

2) Input the coefficients: Input the value of K and B in the window of (Fig. 3-10)

3) Set the needed wavelength: Input the value of wavelength in the message box of (Fig. 3-10)

- 4) Get Blank: Please Ref. (3.1.2)
- 5) Measure Samples: Pls Ref. (3.1.4)
- 6) Repeat the above step, till all the samples finished.

3.3.2 Standard Curve

You can create Standard curves or measure the samples' concentration by the existant standard curve.

3.3.2.1 Create Standard Curve

- Choose Standard Curve Method : Click the shortcut of Photometer to go into Photometer Mode, then choose ^{O Standard Curve} in the method choose Box. (Fig.3-11)
- 2) Set Wavelength: Input the value of the wavelength in the Fig. 3-11



Photo	meter	*
Curre	nt wavelength(nm)	
54	6.0	
~		
OSt	andard Curve	
000	efficient Method	
O Co	efficient Method]
O Ca	1.0000]

Fig. 3-11 Photometer-Std Curve

- 3) Get Blank: Pls. Ref. 3.1.2
- 4) Measure Standard Samples: Pls. Ref. 3.1.3
- 5) Repeat Step 4), till finish testing all the standard samples.
- 6) Choose fitting method: There are totally 4 methods to be chosen, please see Fig.3-12. Choose the corresponding method you want and then the curve and it's equation would display on the screen.
- 7) Save the Curve: Click the icon of Save in the window of Fig. 3-14, then choose the path and input the file name, click "save" to finish the save.(Fig. 3-13)

Curve Fit	method	
⊙C=k	*A+b	
OC=k	*A	
⊖ A=k	*C+b	
O A=k	*C	
k	0	
ь	0	
r	0	

🗹 🔇 🌶 📂 🖽-DISC C 🛅 360Downloads 360Rec 🛅 Config. Msi 🛅 Documents and Settings 🛅 Downloads 📄 found. 000 jcb_gfzq Output PCMEXPERTPROV8 🛅 Program Files RECYCLER System Volume Information TDDOWNLOAD WINDOWS SAVE (S) (N): V (T): photometer standard curve(*. stdphoto) 😽 CANCEL

Fig. 3-12 Curve Fit Method

Fig.3-13 Save Standard Curve

8) After the standard curve built, you can use it to measure the unknown concentration samples. Please Ref. the blow chapter.

3.3.2.2 Measure Samples

- 1) Get Blank.
- 2) Measure samples.
- 3) Repeat the above steps to measure all the samples.

3.3.2.3 Load the Curve

1) Select Standard Curve Method:

Click the shortcut of (Photometer) to go into Photometer Method, then choose Standard Curve in Fig.3-11.

2) Load the curve

Click the icon of in Fig 3-14, find the path where the cure saved (Fig. 3-15), then select the file (*.stdphoto), click "Open" to load.

DISC C

Standard Curve	 Generic Msi Downloads found.000 jcb_gfrq Output PCMEXPERTPROV8 Program Files RECYCLER System Volume Information TDDOWNLOAD WINDOWS
	(1): Photometer standard curve(*. stdphoto) OPEN(C (1): Photometer standard curve(*. stdphoto) CANCE

Fig. 3-14 Std Curve

Fig. 3-15 Open the Curve File

🖌 🔇 🌶 📂 🖽-

After loading the file, the standard curve and the data would display on the screen, then you can use this curve to measure other samples.

3.4 Protein Test

Click the icon of (\square) to go into Protein Test Mode. There are several diferent methods in this mode, you can choose the corresponding one according your samples. The default unit is mg/ml or µg/µL.

3.4.1 OD280/260 Method (UV Absorbance Method)

1) Choose OD280/OD260 Method:

Click the shortcut of (Propen) to go into Protein Mode, then choose O O D 280/260 in Fig.3-16.

Protein	*
Methods	
OD280/260	
Lowry Kalokar	•
Subtract OD 320	
OBardford	
Bardford standard Equation	•
OLowry	
OBiuret	
OD215/225	
O OD238	

Fig. 3-16 Protein- OD280/260

2) Choose Formula

Choose different Formula in the drop down list

	Lowry Kalokar 💉	Warbury Chirstian	💌 or	OD280 Standard Equation 🛛 💙
--	-----------------	-------------------	------	-----------------------------

The corresponding Formala are as follws:

Lowry-Kalokar: C-Protein=1.45*OD280-0.74*OD260; Warburg-Chirstian: C-Protein=1.55*OD280-0.76*OD260; OD280 Standard Formula: C-Protein=10*OD280/6.25

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3) Background Subtraction

If you want to subtract the background of OD320, then choose Subtract OD320 If you don't want to subtract the background of OD320, then there's no need to kick the frame of Subtract OD320

After the background were substacted, then the three fomula become into the following ones correspondingly:

C-Protein=1.45*(OD280-OD320)-0.74*(OD260-OD320); C-Protein=1.55*(OD280-OD320)-0.76*(OD260-OD320); C-Protein=10*(OD280-OD320)/6.25

- 4) Get Blank: Pls. Ref. 3.1.2
- 5) Measure Samples: Pls. Ref 3.1.4
- 6) Repeat the above steps, till all the samples finished.

3.4.2 Bardford Method (CBB)

3.4.2.1 Bardford Standard Equation

1) Choose Bardford Method:

Click the shortcut of () to go into Protein Mode, then choose Bardford in the method choose Window (Fig. 3-17)

rotein	
Methods	
OD280/260	
OD280 Standard Equation	*
Subtract OD320	
Bardford standard Equation	~
OLowry	
OBiuret	
O OD215/225	
O OD238	

Fig. 3-17 Protein-Bardford

2) Choose Formula

Choose the Formula of Bardford standard Equation

The formula is :

C-Protein=1.629843*OD595-0.001008, r=0.9994

- 3) Get Blank: Please Ref. 3.1.2
- 4) Measure Samples: Pls. Ref. 3.1.4
- 5) Repeat the above step and finish all the samples.

3.4.2.2 Bardford Standard Curve

1) Choose Bardford Method:

```
Click the shortcut of to go into Protein Mode , then choose into Protein Mode , then choose Obardford in the method choose Window (Fig. 3-17)
```

- 2) Choose Standard Curve: Bardford standard curve
- Load the Standard Curve (Ref. 3.2.2.1) or create new standard curve (Ref. 3.2.2.2, the defaulted wavelength is 595nm, so there's no need to set wavelength again)
- 4) Get Blank: Pls. Ref. 3.1.2
- 5) Measure Samples: Pls. Ref. 3.1.4
- 6) Repeat the above step, till all the samples finished.

3.4.3 Lowry Method (Folin Method)

1) Choose Lowry Method:

Click the shortcut of () to go into Protein Mode, then choose Lowry in Fig.3-18.

Protein		*
Methods		
OD280/260		
OD 280 Standard Equation	*	
Subtract OD 320		
OBardford		
Bardford standard curve	~	
Lowry		
OBiuret		
O OD215/225		
O 0D238		

Fig. 3-18 Protein-Lowry

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2) Load Standard Curve (Ref. 3.2.2.1) or Create new Standard Curve (Ref.3.2.2.2, the defaulted wavelength is 650nm, so there's no need to set wavelength again)

- 3) Get Blank: Pls. Ref. 3.1.2
- 4) Measure Samples: Pls. Ref. 3.1.4
- 5) Repeat the above step, till all the samples finished.

3.4.3 Biuret Method

1) Choose Biuret Method:

Click the shortcut of to go into Protein Mode, then choose Biwet in the Protein method choose window (Fig. 3-19)

ethods	
OD280/260	
OD280 Standard Equation	~
Subtract OD320	
Bardford	
Bardford standard curve	~
OLowry	
Biuret	
OD215/225	
OD238	

Fig 3-19 Protein-Biuret

2) Load standard curve (Ref. 3.2.2.1) or create new standard curve (Ref. 3.2.2.2, the defaulted wavelength is 540nm, so there's no need to choose wavelength again).

- 3) Get Blank: Pls. Ref. 3.1.2.
- 4) Measure Samples: Pls. Ref. 3.1.4.
- 5) Repeat the above step, till all the samples finished.

3.4.5 OD215-OD225 D-Value Method

1) Choose OD215-OD225 D-Value Method:

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Methods	
OD280/260	
OD280 Standard Equation	~
Subtract OD320	
O Bardford	
Bardford standard curve	~
OLowry	
O Biuret	
OD215/225	
O OD238	

Fig. 3-20 Protein -OD215-OD225

2) Load Standard Curve (Ref. 3.2.2.1) or create new Standard

Curve (Ref.3.2.2.2, the defaulted wavelength are 215nm and 225nm, there's no need to choose the wavelength again)

3) Get Blank: Pls. Ref. 3.1.2

- 4) Measure Samples: Pls. Ref. 3.1.4
- 5) Repeat the above step, till all the samples finished.

3.4.6 Peptide linkage OD238 Method

1) Choose OD238 Method:

Click the shortcut of respin to go into Protein Mode, then choose <math>OD238 in the method choose Window (Fig.3-21)

Protein	*
Methods	
OD280/260	
OD280 Standard Equation	~
Subtract OD320	
O Bardford	
Bardford standard curve	~
OLowry	
OBiuret	
OD215/225	
() OD238	

Fig. 3-21 Protein-OD238

2) Load Standard Curve (Ref. 3.2.2.1) or create new Standard Curve (Ref.3.2.2.2, the defaulted wavelength is 238nm, there's no need to choose the wavelength again)
3) Get Blank: Pls. Ref. 3.1.2
4) Measure Samples: Pls. Ref. 3.1.4
5) Repeat the above step, till all the samples finished.

3.5 DNA/RNA Test

Click the shortcut of DNA/RNA icon of MA/RNA to go into DNA/RNA Mode. It provides three methods which are SSDNA、 DSDNA、 SSRNA. If no state, the default unit is mg/mL or µg/µL.

3.5.1 SSDNA Test

- 1) Click the shortcut of DNA/RNA icon **DNA/RNA** to go into DNA/RNA Mode.
- Choose SSDNA in Fig 3-22. The defaulted formula of SSDNA is: C-SSDNA=33*OD260

Fig. 3-22 DNA/RNA-SSDNA

3) Choose substract background or not.

If you want to substract the background, then choose in Fig.3-22. then the formula becomes into

C-SSDNA=33* (OD260-OD320)

If not, then leave it aside

- 4) Get Blank: Pls. Ref. 3.1.2
- 5) Measure Samples: Pls. Ref. 3.1.4
- 6) Repeat the above step, till all the samples finished.



3.5.2 DSDNA Test

- 1) Click the shortcut of DNA/RNA icon to go into DNA/RNA Mode.
- 2) Choose ODDIMA in the Fig.3-23, the default formula of DSDNA is:
 - a) DSDNA=50*0D260

DNA/RNA	3
Methods	
SSDNA	
◯ SSRNA	
Ratio	

Fig. 3-23 DNA/RNA-DSDNA

- Choose substract background or not.
 If you want to substract the background, then choose in Fig.3-23. then the formula becomes into C-DSDNA=50* (OD260-OD320)
 If not, then leave it aside
- 4) Get Blank: Pls. Ref. 3.1.2
- 5) Measure Samples: Pls. Ref. 3.1.4
- 6) Repeat the above step, till all the samples finished.

3.5.3 SSRNA TEST



- 1) DNA/RNA icon MA/RNA to go into DNA/RNA Mode.
- Choose SSENA in the Fig.3-24, the default formula of DSRNA is: C-SSRNA=41.6*OD260

Fig. 3-24 DNA/RNA-SSRNA

3) Choose substract background or not.

If you want to substract the background, then choose in Fig.3-24. then the formula becomes into

a) SSRNA=41.6 * (OD260-OD320)

- If not, then leave it aside
- 4) Get Blank: Pls. Ref. 3.1.2
- 5) Measure Samples: Pls. Ref. 3.1.4
- 6) Repeat the above step, till all the samples finished.

3.5.4 Ratio

- 1) Click the shortcut of DNA/RNA icon to go into DNA/RNA Mode.
- 2) Choose ORatio in Fig.3-25.



Fig.3-25 DNA/RNA- Ratio

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3) Get Blank: Pls. Ref. 3.1.2

- 4) Measure Samples: Pls. Ref. 3.1.4
 5) Repeat the above step, till all the samples finished.
 6) The test result will be displayed in the Ratio Table (Fig.3-26)

OD280(abs)	OD260(abs)	OD230(abs)	OD260/OD280	OD260/OD230	Ratio_280_260	DNA RNA Tip	Protein Tip
•							

Fig.3-26 Ration Table



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