

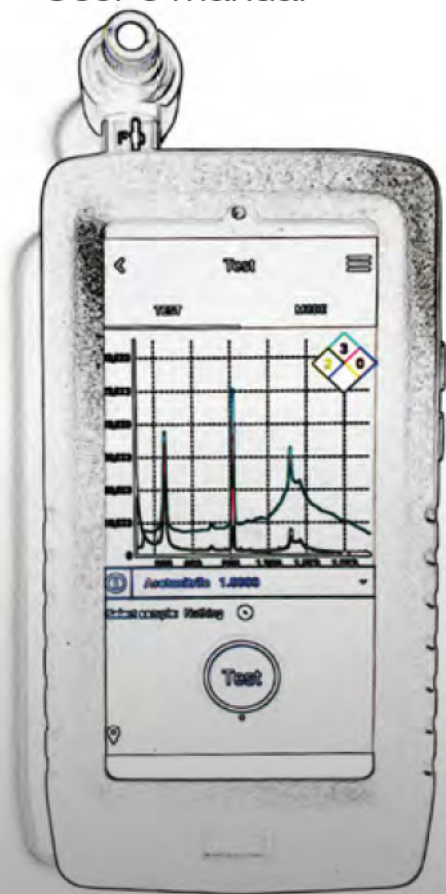


StellarRAM

Handheld Raman Analyzer

User's manual

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powered by **Zolix**

A Universe of Spectroscopy Solutions

(Version 1.1 AUG 2020)

Thank you for using StellarNet products.

In order for you to use our handheld Raman Analyzer properly, please read this instruction manual carefully before operation. If you have any questions or require technical support, please do not hesitate to ContactUs@StellarNet.us.

To avoid accidents and damage, please read our product safety instructions. Before installation, please check the parts. Before use, please read this manual.



**Read Manual
Before Use**

Copyright

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Warning!!!

The system is equipped with a high power laser which can cause serious damage to eyes and skin!

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1.1 Instrument Introduction

The StellarRAM Handheld Raman Analyzer is an analytical instrument for rapid identification of unknown samples such as explosives, drugs, precursor drugs, dangerous chemicals, food safety, and biological samples such as viruses, etc. This instrument is based on Raman spectral analysis, and network data verification technology. Quickly identify unknown samples within seconds without touching the measured substance, and compare with local database to achieve rapid identification. You can also build your own database.

1.2 Explanation of Symbols Used in This Manual & On Unit

The following table details the symbols placed on the module and in this manual, and their meanings:

Symbol	Description
	Identifies important information that should be read and thoroughly understood before operating the equipment.
	Laser Warning Label
	Explanatory label - Documents important information about equipment specifications and features.
	General Information Label - Provides information that may be helpful and documents IEC 60825-1 & FDA Compliance information
	Symbol indicating "Off" position on a switch
	Symbol indicating "On" position on a switch
	Protective Ground Symbol

1.3 Laser Safety



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



Do not point laser or allow laser light to be directed or reflected toward yourself, other people, or reflective objects.



Do not open or modify unit or remove protective covers or housings



Laser light emitted from this instrument may be sufficient to ignite some materials and initiate fire



Never operate laser if unit is defective or if safety covers, locks, and labels are damaged or missing.



This Laser Product is designated as Class 3B during all procedures of operation. It must be returned to factory for service.

Laser Parameters:

Wavelength	785 or 1064nm
Laser Power for Classification	<350mWatt NOHD = 2m
Beam Focus	10mm focus length
Beam spot size	~200 um
TE Mode / Beam profile	Multi-spatial mode
Mode of Operation	CW as for set measurement time

The use of laser safety Goggles is required when operating this product!

Laser Safety Eyewear specifications:

- o Optical density : ND5 or higher at 785nm (or 1064nm)
- o ND1 or lower at 600nm
- o Top and side shield protection
- o CE certified

Warning- INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM CLASS
3B LASER PRODUCT
785 or 1064nm, 350mW CW
EN/IEC 60825-1:2014

Failure to wear appropriate eye protection may result in permanent eye damage Suggested sources and model #s:

- o StellarNet, Inc. Model- **Safety Goggles 785-1064**

Additional helpful information may be found in ANSI Z136.1 "Standard For Safe Use of Lasers".

This document can be obtained at www.rii.com or www.laserinstitute.org

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2. Unpacking Procedures

(1) Visual examination

Before opening your StellarRAM please inspect the external packaging.

Check that the packaging does not have any damage such as dents, wet spots, or holes. If the above-mentioned situation occurs please report immediately to StellarNet, Inc. or your local Sales Representative.

(2) Unpacking procedures

Please do not use sharp objects that may piece or puncture the StellarRAM while opening.

(3) After unpacking

- Visually inspect the StellarRAM for signs of physical damage.
- Confirm model specification and accessories based on packing slip and your purchase order.
- If there are any physical damages or inconsistencies of model please report immediately to StellarNet, Inc or your local Sales Representative.

3.1 Instrument Parameters

- Spectral range: 200-2000cm⁻¹
- Spectral resolution: 14cm⁻¹@912.297nm
- Excitation wavelength: 785 or 1064 ± 0.5nm, line width ≤0.1nm
- Detector: 2048 pixel detector
- Display: 5.97-inch
- Battery: can work continuously for 4 hours
- Power supply: 5VDC, 2A DC power adapter
- Protection level: IP65
- Dimensions: 180 x 88.5 x 33 mm
- Weight: 480g
- Working environment: 0 C to 40 C ; ≤93% Humidity

3.2 Technical Characteristics

- Fast, non-destructive detection and identification with one-click operation
- Sample can be tested through transparent and translucent containers such as glass, plastic bags, and bottles without direct contact with the sample
- Simple and safe identification with no sample preparation
- Solid, liquid and powder samples can be measured
- Instantaneous analysis, fast detection, objective, and accurate results
- High resolution - each molecule has its own unique Raman spectrum, and it is easy to view characteristic peaks
- Multiple test modes: switch between Fast mode and Precision mode
- PDF test reports can be generated and exported
- Self-check function to ensure the accuracy of the spectrum
- Ability to build user defined database

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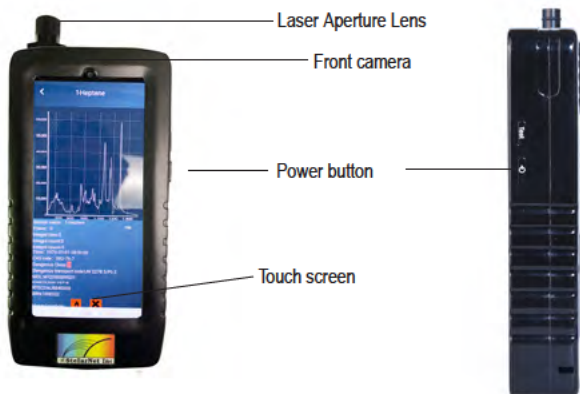
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3.3 Hardware Introduction



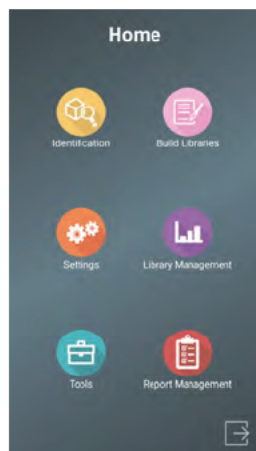
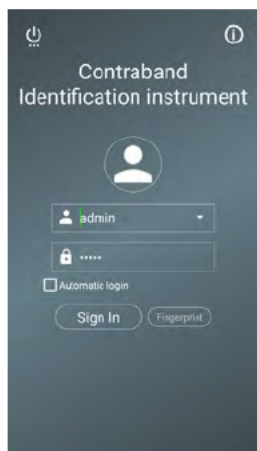
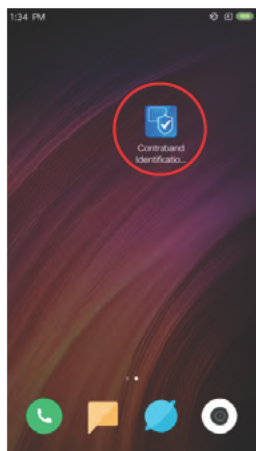
Laser Stop Manual Shutter and Emergency Beam Attenuator



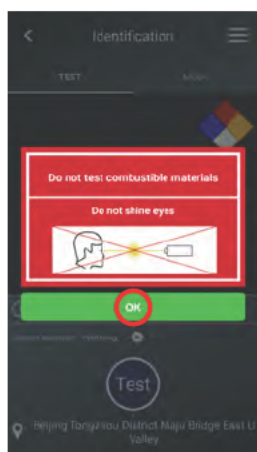
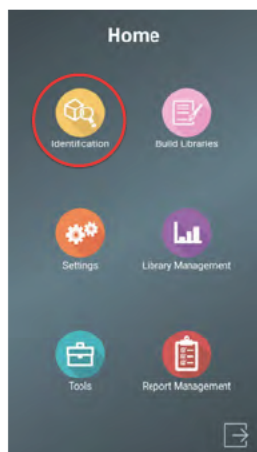
4. Software Introduction

4.1 Test

(1) Click on the “Contraband Identification instrument” app to enter the login interface. For the first login, the account password is admin by default, which is the main administrator account. Currently, fingerprint login is not supported. Click the Sign In button to enter the home page.



Click the 'Identification' button on the homepage to enter the Identification interface. For a liquid sample, use the liquid sample holder. Then click the 'Test' button. Do not remove the sample during the test. The screen display will switch from 'Testing' to 'Comparing'. When you view this page for the first time you will see a safety prompt to confirm the laser is not aimed at eyes or on skin. Then click the 'OK' button.



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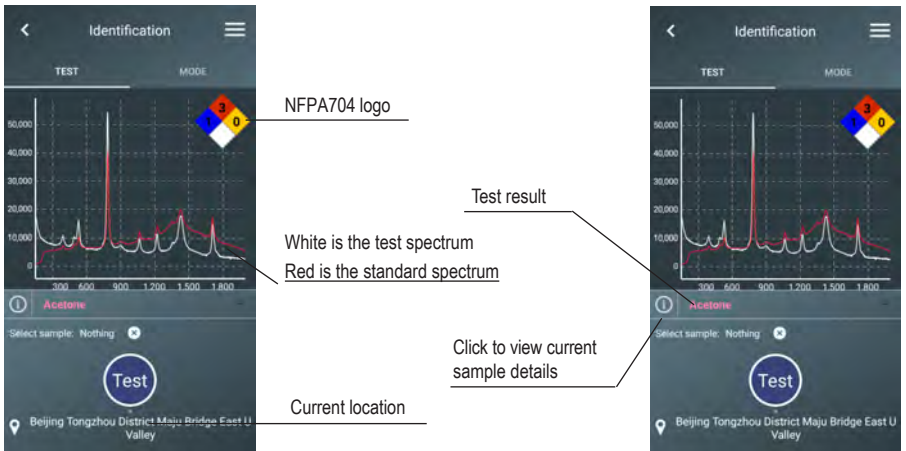
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(2) After the sample test comparison is completed, the display results are as follows:



4.2 Mode

The default test mode of the system is 'Fast' and the default analysis mode is 'Pure'. With 'Fast' test mode the laser power default is 100mW. The user can adjust the modes according to the sample.

(1) Test mode

Fast: user only needs to set the power, and the integral time is automatically adjusted according to the sample signal value;

Precision: user can set the power, integral time, and integral number according to the sample

(2) Analysis mode

Pure: A substance that shows the highest match after comparison

Mixture: Shows the probability of the substance contained in the sample after comparison

(3) Network comparison

After comparing the data, you need to connect to the network and log in.

(4) Remove background:

Automatically removes background data after testing

(5) Safety mode:

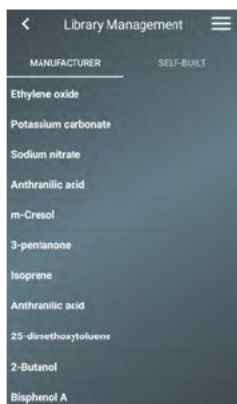
When this mode is selected, an alarm can be issued in advance for the detection of flammable and explosive substances.



4.3 Specifying Comparison

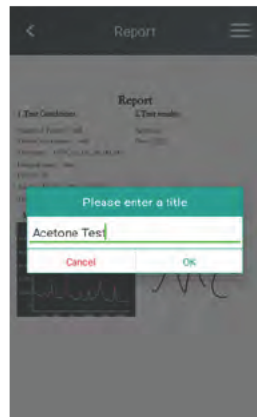
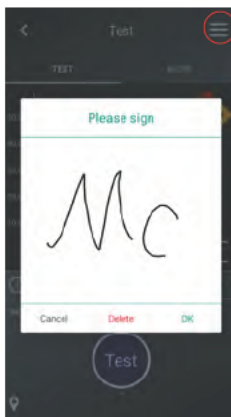
Specified test sample is only compared to a specific sample

- (1) Click the currently selected sample to enter the sample selection interface (red circle frame selection area)
- (2) Click the sample you want to compare on the selection page
- (3) If it is difficult to find the sample you need to select, click the upper right menu bar and search for the selection



4.4 Generate Report

- (1) Single test report: After the test is completed, click 'Report' in the upper right menu bar, and then click 'OK' after signing. To save, click the menu bar in the upper right corner and select Save. You can also add a photo and name the report when you save.



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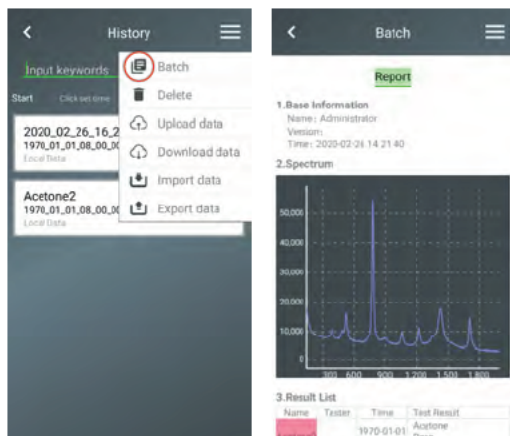
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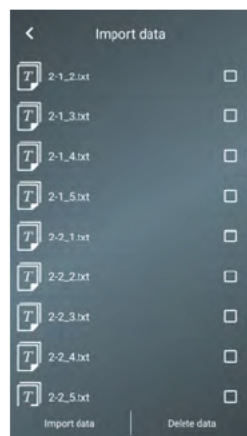
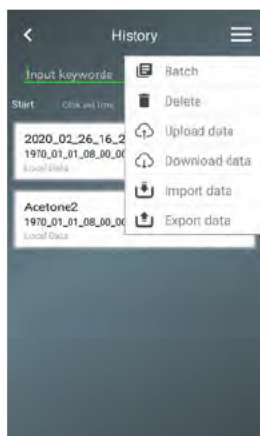
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(2) Batch processing report: After doing a batch test, click 'History' in the upper right menu bar, select 'Batch', and then click the upper right menu bar, select 'batch processing', and save it after signing.



4.5 Data Processing

View the data in "Test => Menu bar => History", select the required data, and click the menu bar in the upper right corner to upload, download, import, and export data.

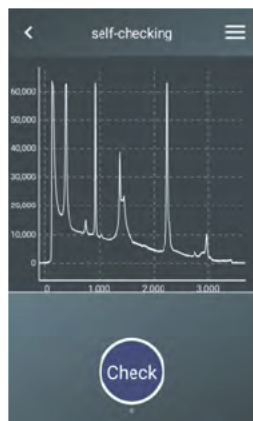


(1) Delete: Select the data to be deleted and click 'Delete' in the menu bar to complete deletion.

- (2) Upload data: Select the data that needs to be uploaded in the history interface, click 'Upload data' in the menu bar. Please note this may take a while to upload depending on amount of data to be uploaded.
- (3) Download data: Click 'Download data' in the menu bar to enter the download data interface. This interface will obtain the server data list. Click the download button on the right to download, click the data to view the data. After the download is complete, the data will appear in the history interface.
- (4) Import data: Click 'Import data' in the menu bar to enter the import data interface. Select the data you would like to import, click 'Import data' in the lower left corner. Then click the return button in the history interface, and you will see the new data. Click the data to jump to the test interface and view the detailed information of the data.
- (5) Export data: Select the data and click 'Export Data' to rename the file.

4.6 Self-Checking

The self-checking function is a function of manually correcting the X-axis wave number. The detected data is compared with the standard file that comes from the factory. You can find the self-checking function from homepage => Identification => menu bar => self-checking. If you are not satisfied with the self-checking result, you can restore the default value through the menu bar in the upper right corner.



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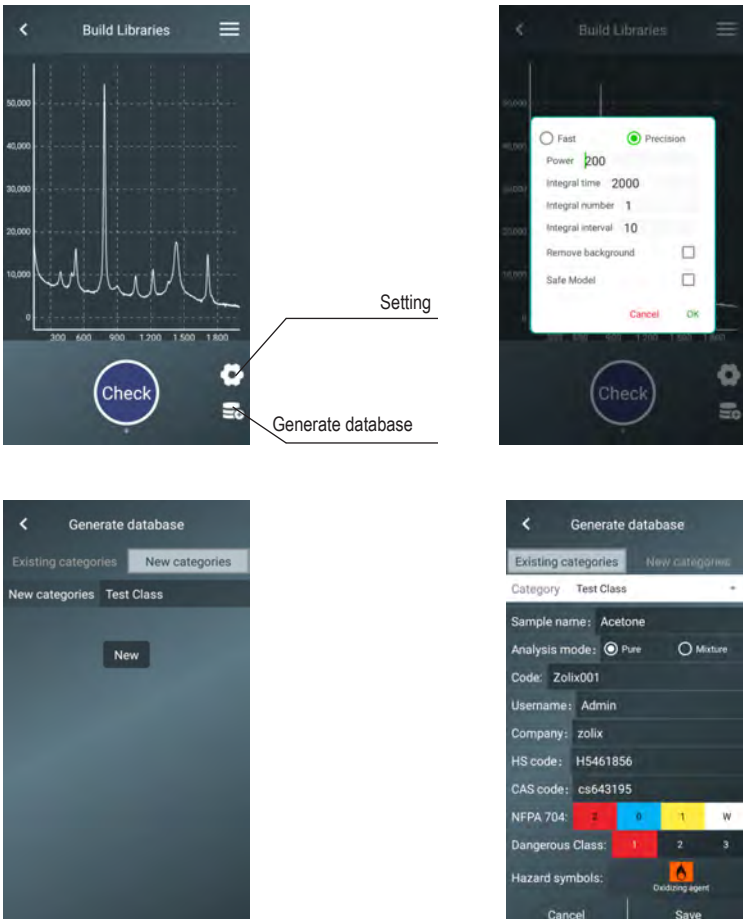
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4.7 Build Libraries

How to enter: homepage => Build library

In addition to the database provided by the manufacturer, the user can also create their own database. Enter the Build Libraries interface, set the parameters in the settings interface, and click the Check button to perform data collection. Then click the 'Generate Database' button to generate your own database. You can also read the data from the saved data to generate a database (build libraries=> menu bar => view). When generating the database, please note that you must select a category. If there is no category, you will need to create a new category. The sample name cannot be the same as an existing sample. If a sample name is repeated, it will ask you to change the name.



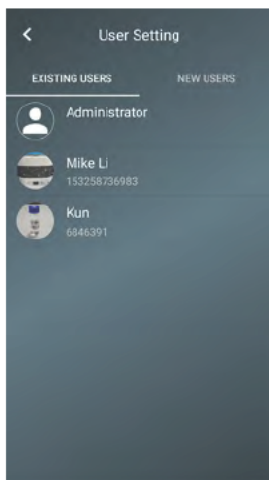
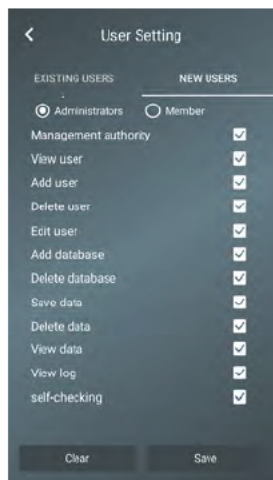
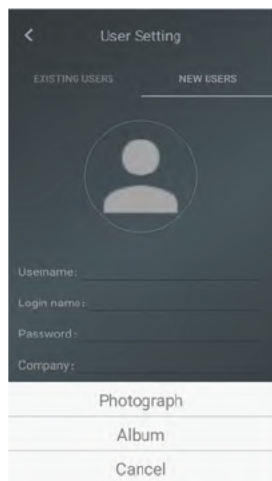
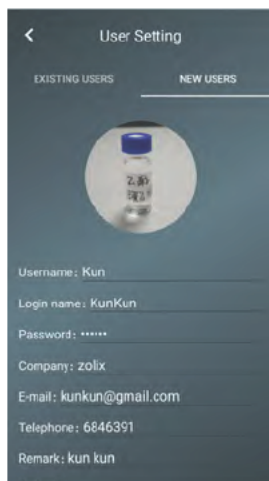
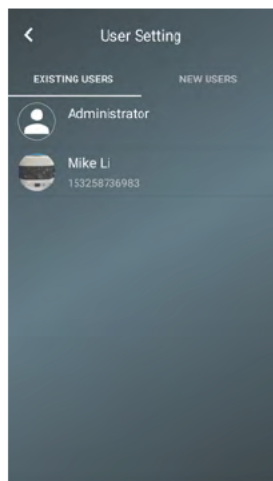
4.8 User Setting

How to enter: homepage => Settings => user setting

The instrument enters the software interface as the main administrator by default. Users can also add other administrators and users. 'Administrators' can have rights to manage other users, and 'members' can only perform data management. Permissions are set by the main administrator.

Users can also set a user picture. You can take pictures from the interface or choose from the album.

Each login name needs to be unique.



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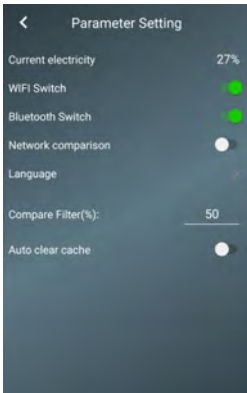
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4.9 Parameter Settings

How to enter: homepage => Settings => Parameter setting



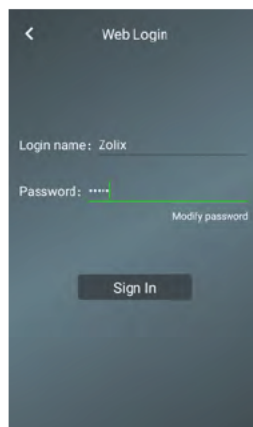
- Current power: display the current power
- WIFI switch: turn on and off WiFi - green indicates on
- Bluetooth switch: turn on and off Bluetooth - green indicates on
- Network comparison: turn on and off network comparison which sends the data to the server for comparison, and returns the comparison result. Green indicates on.
- Language: Choose between Simplified Chinese and English
- Compare Filter (%): Filter the results. Results below the set value are not displayed.
- Auto clear cache: set to automatically clear the cache data, including temporary data and photos

4.10 Factory Settings

The wavelength can be changed in the factory settings. This cannot be restored if change. If necessary, please contact StellarNet for assistance.

4.11 Web Login

The network comparison function, upload / download data function, and online update function can only be activated after logging in to the network. The login name and password are provided by the factory, please contact the factory if assistance is required.



4.12 Library Management

How to enter: Homepage => Library Management

There are three options when viewing the databases, all (includes manufacturer and self-built), manufacturer and self-built. Click on any sample to see its details.

Click to expand collapsed samples

Select Show All, Manufacturer, Self-built

Checked sample will participate in comparison, unchecked samples will not participate in comparison

Click to return to the top

Category	All	Name	Time	Compare
Narcotics	▼			<input checked="" type="checkbox"/>
		Ethylene oxide	1970-01-01 08:00	<input checked="" type="checkbox"/>
		Potassium carbonate	1970-01-01 08:00	<input checked="" type="checkbox"/>
		Sodium nitrate	1970-01-01 08:00	<input checked="" type="checkbox"/>
		Anthranilic acid	1970-01-01 08:00	<input checked="" type="checkbox"/>
		m-Cresol	1970-01-01 08:00	<input checked="" type="checkbox"/>
		3-pentanone	1970-01-01 08:00	<input checked="" type="checkbox"/>
		Isoprene	1970-01-01 08:00	<input checked="" type="checkbox"/>
		Anthranilic acid	1970-01-01 08:00	<input checked="" type="checkbox"/>
		25-dimethoxytoluene	1970-01-01 08:00	<input checked="" type="checkbox"/>
		2-Butanol	1970-01-01 08:00	<input type="checkbox"/>

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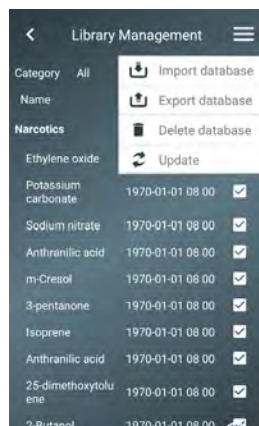
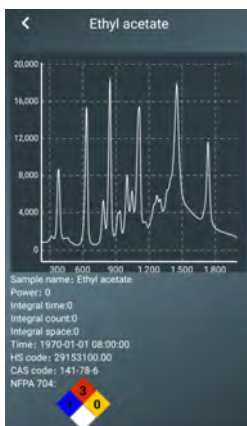
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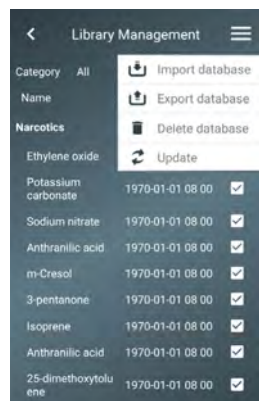
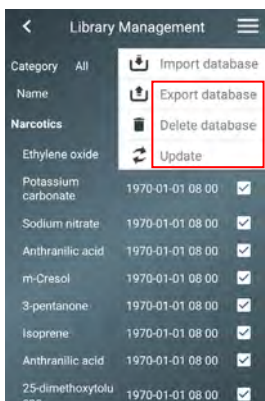
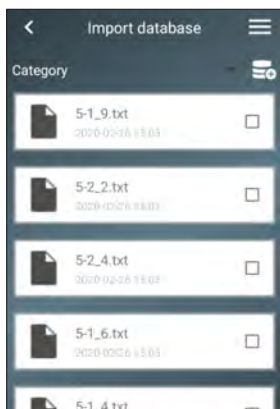
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(1) Import database: Click to enter the import database interface, and automatically call the database in the "StellarNet.us\fe\selfSmample" directory. After selecting it, you can import it into the APP to participate in comparison and display;

(2) Export database: Click to enter the export database interface, select the data to be exported, and the data is encrypted and exported to the "StellarNet.us\fe\selfSmample" directory in a standard format. Only the self-built database can be exported;



(3) Delete database: Click to enter the delete database interface, you can only delete the self-built database;

(4) Update online: Open the Library Management interface, open Update in the upper right corner and wait for completion.

4.13 Tools

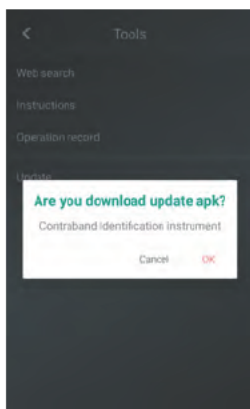
How to enter: Home => Tools

(1) Web search: Internet search

(2) Instructions: refer to the printed manual

(3) Operation record: Record a history of operations such as user login, logout, test, save data, delete data, create user, etc.

(4) Update: Click Update in Tools interface to check if the current version is the latest version. If it is not the latest version, download the latest APP and install it. After clicking OK, the download will be performed in the background, and the installation prompt will pop up after the download is completed.



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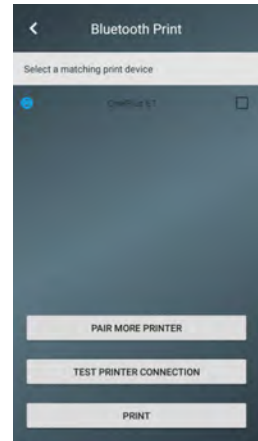
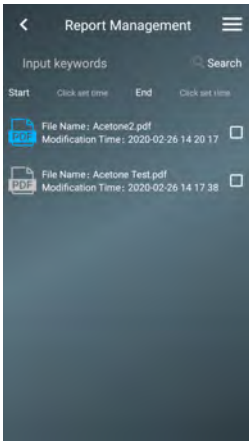
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4.14 Report Management

How to enter: Home => Report Management

Enter the report management interface to view saved reports. When viewing a report, click the menu in the upper right corner to print the report. The red PDF symbol indicates a batch report, and the blue PDF symbol indicates it is a single sample report. The gray symbol is the sample data saved without the report, which cannot be printed.

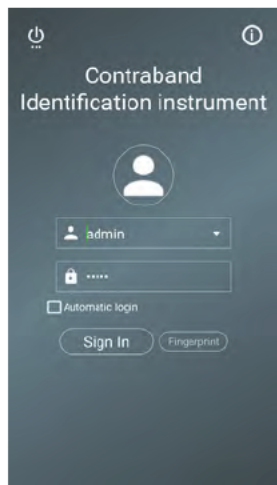
Print: Enter the print page to view the Bluetooth device that the StellarRAM is paired with. The green printer is the default printer. If the printing fails, select the printer and click "Test Printer Connection" to see if the printer and the StellarRAM are successfully connected.



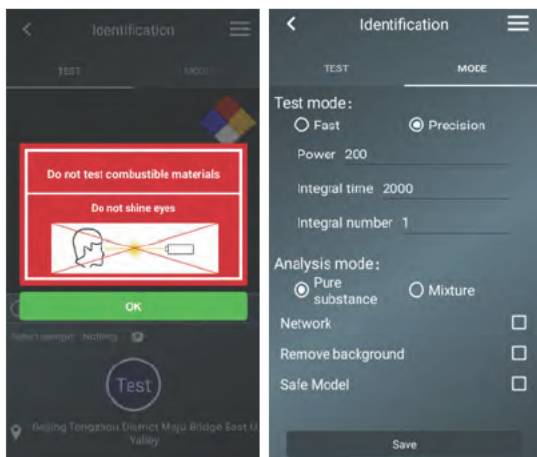
5. Measuring a Test Sample

Step 1: Press the power button to turn on the instrument and start the software.

Step 2: Enter the account password to log in to the APP. For the first login, the account is admin and the password is admin.



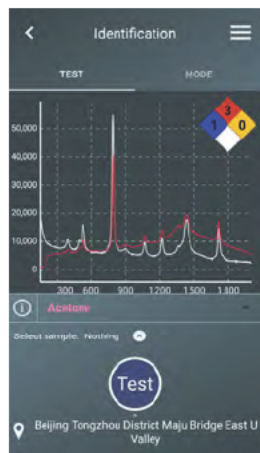
Step 3: Place the sample in the corresponding sample compartment and click Test. The instrument is set to the fast test mode by default. To change the test mode and settings click 'Mode'. See section 3.2 for more information on different test modes and settings.



Step 4: Press the test button to collect sample data. While testing, do not move the sample until the result is displayed.

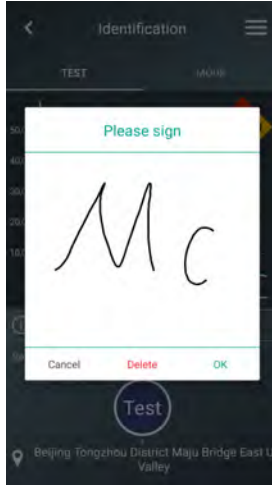


See Laser ON Indication on the device screen.



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Step 5: Save the comparison result, click the menu bar => report => enter signature => generate report, click menu bar in the upper right corner => save.



6. Maintenance and Cleaning

Recharging the internal battery:

1. Plug the 5VDC connector into any USB charging outlet or use the provided power supply.



Warning: Do not open case or break locktight seal on laser aperture. This instrument is NOT self serviceable and must be sent back to the factory. Do not attempt to open, fix, or troubleshoot instrument by yourself. Please contract a trained service technician immediately.

Cleaning:

Clean module with soft cloth dampened with water as needed. Abrasives, chemical solvents and cleaning agents should not be used to clean laser module.

The StellarRAM Handheld Raman Analyzer does not have any user serviceable component parts inside and does not require any periodic maintenance other than occasional battery recharge.

Warning!!!

This system is equipped with a Class 3B laser
Serious damage to eyes!

Do no look directly into the laser under any circumstances!

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7. Performance Features & Labeling

Laser Safety and Compliance Labels:

1. Laser Hazard Warning Symbol and Aperture label:

Identifies location of output laser beam and is located on the front panel of the Handheld Raman instrument directly above the aperture.



2. Class 3B Explanatory Label: The label detailing:

- Laser exposure warnings
- Laser wavelength and maximum output power levels
- Laser classification is located on the right side panel of the module.



3. Manufacturer's ID label : The label detailing:

- Manufacturer's address & the date of manufacture of item is located on the left side panel of the Handheld Raman instrument.



4. Certification statement label: The label detailing:

- Compliance with FDA performance standards is located on the middle of the rear panel.

Complies with FDA performance standards for laser products except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

5. Label indicating model # and serial # of the unit is located on the back of the handheld Raman instrument.

Name : Handheld Raman Analyzer

Model: StellarRAM

Manufacturer: StellarNet, Inc.

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S/N # XXXXXXXX

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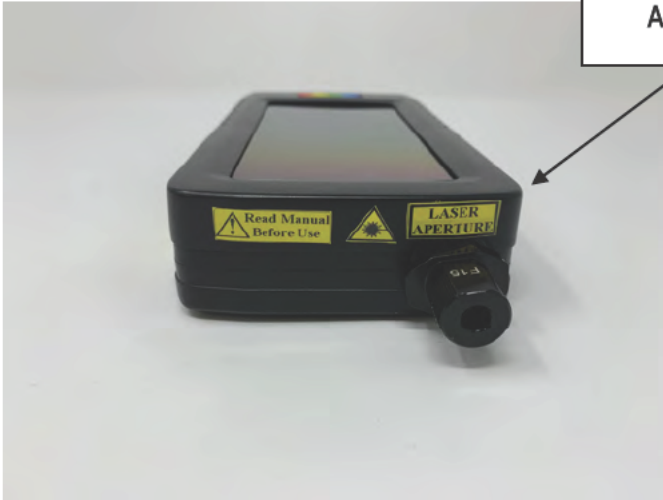
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Laser Hazard
Warning Symbol and
Aperture Label



Class 3B Explanatory Label



**Manufacturer's ID
Label**



**Certification statement
Label**

Model and Serial #



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8. Product Quality Assurance

StellarNet, Inc. and Zolix Instruments Co., Ltd. (hereinafter referred to as the companies) guarantees that the product will be free from defects in materials and manufacturing during the warranty period. If the product does have material or manufacturing defects during the warranty period, the companies will be responsible for repairing or replacing the same type of product.

If it is caused by human error or improper use or unauthorized startup and repair, and due to natural disasters and other irresistible factors (such as fire or flood, war, etc.), it is not covered by our warranty.

	Bioradiation	EN 50081-1 : 1992
Application Standard	Biological immunity	EN 50082-1 : 1992
	Electrical Safety	EN 61010-1 : 1993



StellarNet, Inc. guarantees that the product meets the above terms.

Warranty

(1) View warranty card or purchase certificate

To ensure the rights and interests of customers, please ask the dealer to fill in the product model, product serial number and date of purchase on the warranty card, and affix the official seal when purchasing. Consumers should keep the product warranty card or relevant purchase certificate (such as invoice or receipt). If the product needs repair service during the warranty period, please submit a warranty card or proof of purchase.

(2) Direct discrimination

If a warranty card or proof of purchase cannot be provided, the serial number of the product label is used as the warranty start month. Note: If the manufacturing month is January 2002, the warranty will expire at the end of January 2003.

(3) Object of warranty service

Warranty service is limited to consumers who purchase our products through legal sales channels.

(4) Product warranty period

StellarRAM has a one-year warranty on parts and service

The company reserves the right to modify the above measures.

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