



Bia Analytical

Operational Manual:
Portable Authenticity Testing

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1. Safety Instructions

1.1 Hazard Conventions

This manual uses the following system for classifying hazards:

WARNING

A **WARNING** note denotes a hazard. It calls attention to an operating procedure, practice, or the like which, if not correctly performed or adhered to, could result in damage, severe personal injury or death. Do not proceed beyond a **WARNING** note until the indicated conditions are fully understood and met.

CAUTION

A **CAUTION** note denotes a hazard. It calls attention to an operating procedure, practice, or the like which, if not correctly performed or adhered to, could result in personal injury, damage to the product or loss of important data. Do not proceed beyond a **CAUTION** note until the indicated conditions are fully understood and met.

NOTICE

A **NOTICE** note indicates important information for using the device.

The following symbols are used to classify hazards in more detail:



Electrical Shock Hazard



Eye Hazard



Fire Hazard

1.2 General Information

NOTICE

To ensure the highest degree of safety and smooth operation, please read this manual thoroughly and observe all warnings and notes before operating the spectrometer. Store this user manual in a place that is easily accessible. The safety features of this device and its accessories may be impaired if operated outside the intended use and conditions for use (see also chapter 2.6). The spectrometer and its accessories may only be operated in accordance with its intended use (see chapter 2 and the disclaimer in chapter 2.6) and within its technical limits (see chapter 3).

1.3 Safe Use



WARNING Fire Hazard, risk of injury and battery damage:

Follow these warning notes regarding usage of a device with a lithium-ion battery to avoid the hazards of personal injury and potentially fire:

- Do not dismantle, open or shred the device batteries.
- Do not expose the device or its battery to heat or fire.
- Do not subject the device or its battery to mechanical shock.
- In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- Do not use any charger other than the specific USB charger stated for use with the equipment.
- The device needs to be charged before use.
- Do not leave the device on prolonged charge when not in use.
- After extended periods of storage, it may be necessary to charge and discharge the device battery several times to obtain maximum performance.
- Use the device battery only in the application for which it was intended.
- Dispose of the device properly

**WARNING Electrical Shock and Fire Hazard:**

Liquids or water that get into the housings can cause damage, fire and electric shock. Never immerse the device and its accessories completely in water or other liquids. If used for dip-in measuring of liquids, only the front part of the device with the measuring window is allowed to have contact with the liquid.



WARNING Fire Hazard:

When measuring flammable liquids via dip-in measurement, ensure that the fire point of the liquid is in a safe region above 70 °C/158 °F. The aluminium head of the spectrometer may reach temperatures of nearly 55 °C/131 °F in continuous mode.

WARNING Electrical Shock and Fire Hazard:

Damage to the device may cause fire or electrical shock. Do not operate the device if it has fallen into water, or if it is damaged in any way. Do not operate the device with a damaged cord. In the event your device becomes damaged please contact Bia Analytical to return it.



Do not attempt to perform any maintenance activities. Protect the spectrometer and its accessories from physical damage or extreme shock.

WARNING Misuse and usage outside of the technical specifications:

Never operate the device outside of its intended use, technical specifications, or the instructions as outlined within this document. If the equipment is used in a manner not specified by Bia Analytical, the protection provided by the equipment may be impaired and the device may become unsafe. Moreover, the sensor inside the device may be damaged if the device is stored at temperatures higher than specified.

CAUTION Risk of dazzle by IR light:

Do not look directly into the measuring window (specimen interface) when performing a measurement to avoid dazzle by the IR radiation.

CAUTION Risk of injury by epilepsy:

The device emits flashes of light that can increase the risk of injuries for people with epilepsy. Make sure there is sufficient room lighting to avoid that risk.

CAUTION Risk of food contamination:

Do not use the device for contact measurement of food that may be sold or eaten after the measurement. Please use only appropriate and regulatory permitted sample holders for contact with food or feeding stuff

CAUTION Risk of slipping, tripping or falling:

Never perform measurements with the spectrometer in one hand and a connected smartphone/tablet in the other hand, if it is necessary to hold on to or support yourself, e.g. on a ladder. Use adequate and commercially available holder for mobile equipment or place the smartphone/tablet into a pocket or bag. Note that measurements can be easily started with the button on the device and measurement status can easily be determined via the status LEDs.

CAUTION Risk of burns:

The device uses a light source and electronic components that produce heat during operation. The aluminium head is designed to give off heat to the environment and can become hot during operation. A cool-down period is applied after each measurement to prevent overheating. Never perform measurements if the device is above the maximum specified operation temperature.

2. Introduction

2.1 Product Overview

Bia Analytical's portable testing service allows users to test the authenticity of a range of herbs and spices anytime, anywhere. It offers real-time, cost-effective quality control, and can be implemented as an early screening test for product integrity pipeline and processes. The portable testing service, backed by the trusted and accredited Bia Analytical lab, provides a robust and reliable indication of authenticity in seconds.

Further information about the available tests can be found through the QR code/link below.

https://linktr.ee/bia_analytical



2.2 Intended Use

The handheld spectrometer (or device) can test the authenticity of a range of individual herb and spice commodities within the supply chain. It is intended to be used having reviewed this manual and any other additional training material, as appropriate.

The device can be used for indoor and outdoor applications e.g. food production facilities, retailer stores and/or laboratories etc. It is user-friendly and tests are completed within seconds. The device should be connected via Bluetooth to a smartphone, tablet or Personal Computer (PC) which is connected to the internet. The sample is placed in the sample holder provided and positioned on top of the sample interface to perform the measurement. The device generates data for each sample tested, which is then transferred to the cloud for analysis. The authenticity results are displayed on connected smartphone/tablet/PC within seconds. The device is intended for determining the authenticity of specific food commodities.

WARNING Consider the following system limitations to avoid hazards or device damage:

The spectrometer is not intended:

- to be built into a fixed installation
- to be used on moving vehicles

- to be used in medical applications
- to be used in military applications
- to be used for safety critical applications
- to be used in potentially explosive areas
- to be used for publicly regulated billing purposes
- to be used as “meter” or “measuring instrument” according to the EU measuring instruments directive or similar regulations
- to be used in traffic, while walking or operating a machine
- to be used outside of its technical specifications
- to be used by consumers or children
- to be used in heavy industries
- to be used in areas with strong electromagnetic fields
- for the entire immersion in liquids or moist measuring material
- for immersing the measuring head in liquids or moist material that could corrode the device materials and/or adhesives
- to be used to measure potentially hazardous or infectious materials
- for direct contact with food. Food that came in contact with the device must be disposed of. Please use only appropriate and regulatory permitted sample holders for contact with food.

2.3 Standard Operation

The spectrometer is a small device for diffuse reflective infrared spectrometry. It is designed to be used with one hand and is roughly the size of a barcode scanner. It is battery-powered and uses Bluetooth as a primary data interface to a smartphone/tablet/PC. It has a USB socket as secondary data interface for measurements and firmware updates.

The spectrometer is operated via the trinamiX NIR Spectroscopy App on a smartphone/tablet/PC, which is available in AppStore/PlayStore. For full functionality, the smartphone/tablet/PC needs to be connected to the internet and the user needs to be logged in and registered with the trinamiX NIR Spectroscopy Solutions service.

For standard operation, the spectrometer is connected via Bluetooth to a smartphone/tablet/PC. The trinamiX NIR Spectroscopy App is running on the smartphone/tablet/PC, which is connected to the internet, e.g. via a mobile network, Wi-Fi or LAN.

The spectrometer then measures the NIR spectrum and the data is transferred to the cloud for further analysis. Once the analysis is finished, the results are presented in the App.

To charge the battery, the device is connected via USB-type-C connector to a PC or by the USB 3.x Type-C charger with Power Delivery.

2.4 Liability

NOTICE

The protection of the device may be impaired in the following cases.

Liability for property damage and personal injury is then transferred to the user:

- The device or its components are not used according to this operating manual.
- The device is used outside of its intended use.
- The user makes changes to the device.
- The device is used with accessories that have not been recommended.
- The device is serviced by people who have not been authorized.

2.5 Warranty

For further information please contact: support@bia-analytical.com

2.6 Disclaimer

NOTICE

DEVICES, SOFTWARE, DOCUMENTATION AND OTHER PARTS OF PRODUCTS OFFERED BY BIA ANALYTICAL LTD. ARE NOT DESIGNED TO BE USED OUTSIDE THE INTENDED USE.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, ALL OTHER TERMS, CONDITIONS AND WARRANTIES, WHETHER EXPRESSED OR IMPLIED ARE EXPRESSLY EXCLUDED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, LIABILITY UNDER ANY CONDITION OR WARRANTY, WHICH CANNOT BE LEGALLY EXCLUDED, IS LIMITED AT trinamiX OPTION TO REPLACEMENT OR RESUPPLY OF GOODS OR SERVICES OR PAYMENT FOR THE SAME.

3. Hardware Specifications

3.1 Spectrometer Description

The device is powered by an internal lithium-ion battery. The battery is charged via the supplied USB charger with 15 VDC; 3 A via the USB type-C connector. The spectrometer has one multi-functional button (Spectrometer button) and three LED indicators to display the device status.



Figure 1: Spectrometer features

Spectrometer – Interface

Spectrometer Button		
	hold for 1 second	turn device on
	hold for 4 seconds	turn device off
	press shortly	start a measurement /calibration

Device Status LEDs (Subject to minor changes without notice)

Connection Indicator

red blinking, 1x/1 s	not connected
green blinking, 1x/1 s	connected via wireless (handheld mode)
green	connected via USB


Measurement Indicator

red blinking, 1x/1 s	calibration required (via app)
red flashing, 2x/1 s	intermittent error (e.g. temperature or humidity out of range, charger too weak (only charging))
red blinking, 4x/1 s duration, 2s	measurement not successful
red blinking, 4x/1 s	device defect
green blinking, 4x/1 s	measurement ongoing
green flashing, 3x/1 s	wait for next measurement
green duration, 2s	measurement successful


Battery Indicator

red blinking, 1x/1 s	battery capacity < 4 % (device in power save mode)
red blinking, 3x/1 s	USB charger not compatible
green flashing, 1x/2 s	charging (USB charger connected)
green blinking, 1x/1 s	battery level < 30 %
green/red blinking, 1x/1 s	battery level < 10 % (no USB charger connected)
green	battery level high
off	device off, no USP charger connected


Special (error) Indications (all three LEDs)

green running light, 1x/1 s	device in firmware update mode. current firmware valid
red running light, 1x/1 s	device in firmware update mode/device error
green/red alternating, 4x/1 s	firmware update in progress
green blinking, 8x/1 s	firmware update successful
red blinking, 8x/1 s	firmware update failed

3.2 Environmental Conditions

Operating temperature	0 °C–40 °C/32 °F–104 °F (non-condensing) for handheld and stationary operation 0 °C–30 °C/32 °F–86 °F (non-condensing) for charging
Storage temperature	-20 °C–60 °C /-4 °F–140 °F (non-condensing)
Air humidity	20 %–80 % (operation) 20 %–90 % (storage)
Height above sea level	≤ 2000 m
Wet location	spectrometer device: Yes USB charger: No. Dry location use only
Enclosure	Type 3 Enclosure (UL50E)
Pollution degree	2
Type of use	indoor and outdoor (operation) indoor (charging)
Ventilation requirements	None. Allow the device housing to emit heat

3.3 Physical Specifications

Dimensions	approx. 152 x 84 x 52 mm
Weight	approx. 0.56 kg
IP class	IP65 (device only; with reference standard attached)

3.4 Spectroscopic Specifications

Spectral range	~ 1400–2500 nm
Spectral wavelength resolution	1 % of wavelength
Speed: time to result	1–3 seconds
Cooldown time (after measurement)	typ. 3 seconds

3.5 Electrical Specifications

Power Input (for charging)	USB with 15 VDC, max. 2.75 A * via USB Type C connector
USB-Connection (for stationary use)	USB 2.0 communication via USB Type C connector

Wireless connection (for handheld use)	wireless low energy via integrated antenna
Fuses	no exchangeable fuse

* Worst case current for simultaneous charging, measuring and communication. Typical charging current is approx. 50 % of the max. current.

3.6 Battery

Type	rechargeable lithium-ion battery
Model	Friwo FB3S1P18650-26
Nominal voltage	11.1 V
Nominal capacity	2600 mAh
Charging current	1300 mA
Transport classification	UN class: 9 UN number: 3480, lithium-ion battery energy of battery: < 100 Wh

3.7 RF Module

The device contains the following radio frequency (RF) module

Type	Würth Proteus-I AMB2621/2608011024000
Frequency range	2.44 GHz
Max. output power	Typ. -2 dBm, max. 0 dBm

3.8 Lamp Module

The following type of lamp module is used:

Lamp type	incandescent lamp. 3 V, 440 mA
Model	MGG 1332-00
Modulation	max. 16 Hz

3.9 Material Specifications

Window (specimen interface)	sapphire glass
Spectrometer head	anodized aluminium
Spectrometer body and reference standard	PC GF20, UL94 V-0, UL746C f-1 rated

Foil	cover film: PET
Hazardous material information	The device does not include potentially poisonous injurious or hazardous substances that can be liberated under normal operating conditions.

3.10 Accessories

The device should only be used with the following accessories listed in the table below. The USB charger is not part of the device and is subject to its own legal and regulatory requirements. It is recommended that the power cord of the USB charger is not replaced without reference to Bia Analytical. The USB charger must have double insulation or reinforced insulation. The output of the USB charger must be limited to a maximum voltage of 20 V and a maximum current of 7 A. Please contact: support@bia-analytical.com if replacement accessories are required.

Accessories

Item	Type	Input	Output
Reflection standard	N/A	N/A	N/A
USB-C charger	Manufacturer: Adapter Technology Model: APD045T-A200	100–240 V ~ 50–60 Hz 1.2 A max.	DC. 5 V 3 A/9 V 3 A/ 12 V 3 A/15 V 3 A/ 20 V 2.25 A
Power cord	–	2.5 A~250 V	–
USB cable	Type C to Type C or Type C to Type A with max. length < 3 m and current carrying capacity up to 3 A	–	–
Sample holder	N/A	N/A	N/A
Sample brush	N/A	N/A	N/A

4. Installation and Setup

4.1 App Installation

The trinamiX Spectroscopy App can be downloaded via the respective app stores on Android, iOS and Windows platform. Please activate automatic updates to benefit from ongoing development.

1. Download and install the trinamiX NIR Spectroscopy App on a smartphone/tablet/PC.



2. Turn on the Bluetooth on the smartphone/tablet/PC.
3. Turn the spectrometer on by pressing the “Spectrometer button” until the device status LED lights up green.
4. Start the trinamiX NIR Spectroscopy App on the smartphone/tablet/PC and ensure it is connected to the internet.
5. Follow the instructions in the App to connect the spectrometer with the App. Instructions on how to connect the spectrometer are also found in Section 5.2.



CAUTION Risk of Electric Shock:

For charging via USB, only use certified USB chargers for your country. trinamiX recommends a charger with a power rating between 45 W and 80 W. Note that the charger must support 15 V output voltage.

NOTICE

The USB charger must have double insulation or reinforced insulation. The output of USB charger must be limited to a maximum voltage of 20 V and a maximum current of 7 A.

**CAUTION Risk of fire:**

For USB charging, only use USB Type C cables with enough current carrying capacity ≥ 3 A.

CAUTION Risk of Electromagnetic Interference:

For USB connection, only use shielded USB type C cables with a max. length of ≤ 3 m.

4.2 Initial App Setup

1. **Region:** Select the region in which the device is being operated. Select “Global” for all countries other than Mainland China.
2. **App permissions:** Select “Accept all” to allow access to the following permissions:
 - Internet to connect to the trinamiX Spectroscopy services
 - Location and Wireless Connection to connect to a spectrometer
 - Camera to utilise the QR-reader module.

The app permissions can be reviewed and adjusted under > “System Settings” > “Apps” “trinamiX spectroscopy” > “Permissions.”

3. **Web Registration and App Sign In:** Before signing in to the mobile App, complete the sign-up process on the web portal (<https://nirs.trinamixsensing.com>) using the following steps:
 - Click the “Log In” button at the bottom left to sign up.
 - An overview of authentication providers will open. Choose one of the options to log in with your existing account.
 - If the account registration was successful, please review and accept the terms and conditions.

- After fully completing the registration process, the support team will review and assign the roles, applications and devices to the respective organisation account. In case of delay or any questions kindly contact: support@bia-analytical.com.
- Once activated, after refreshing the page you will be taken to an overview of your applications and are ready to get started.

4. App Sign-In:

- Start the sign-in process on the App by tapping the “Sign in” button.
- Select the identity provider you used during the sign-up process.
- Enter your account credentials and allow the sharing of account information with trinamiX.

Note: The app will remember the user’s account and the user will be asked to sign-in again after 30 days.

5. Operation

5.1 Spectrometer Preparation

1. Charge the battery to full capacity. To charge the battery, connect the device via the USB Type-C connector to a PC or the USB charger. The battery cannot be charged if the device temperature is too high. In this case, allow the device to cool down. The device should be charged at room temperature, not exceeding 30 °C/86 °F.
2. Turn the spectrometer on by pressing the Spectrometer button until the status LED lights up and establish the Bluetooth connection to the smartphone/tablet/PC.
3. Start the trinamiX NIR Spectroscopy App on the smartphone/tablet/PC.
4. Follow the instructions in the app.

No further installation of the spectrometer is required. For stationary application, hold the device in one hand or place it on a stable surface and connect it to a smartphone/tablet/PC.

Always ensure that the window (sample interface) is free from dust, dirt, scratches, fingerprints or other contaminants to ensure optimal measurement results.

5.2 Connecting the Spectrometer

Ensure the spectrometer is switched on, the battery is charged and Bluetooth is enabled on the smartphone/tablet/PC. Connect the spectrometer to the App by following the steps below:

1. Select the green “Settings” icon , at the bottom right-hand corner of the Home page.
2. Select, “Spectrometer”
3. Search for “Available Spectrometers” by selecting the refresh arrow on the right.
4. Select the available spectrometer from the list (see bottom of spectrometer for serial number).
5. Select “Connect” to connect the spectrometer with the App.
6. Once connected, the spectrometer will appear in the “Connected spectrometers” page.

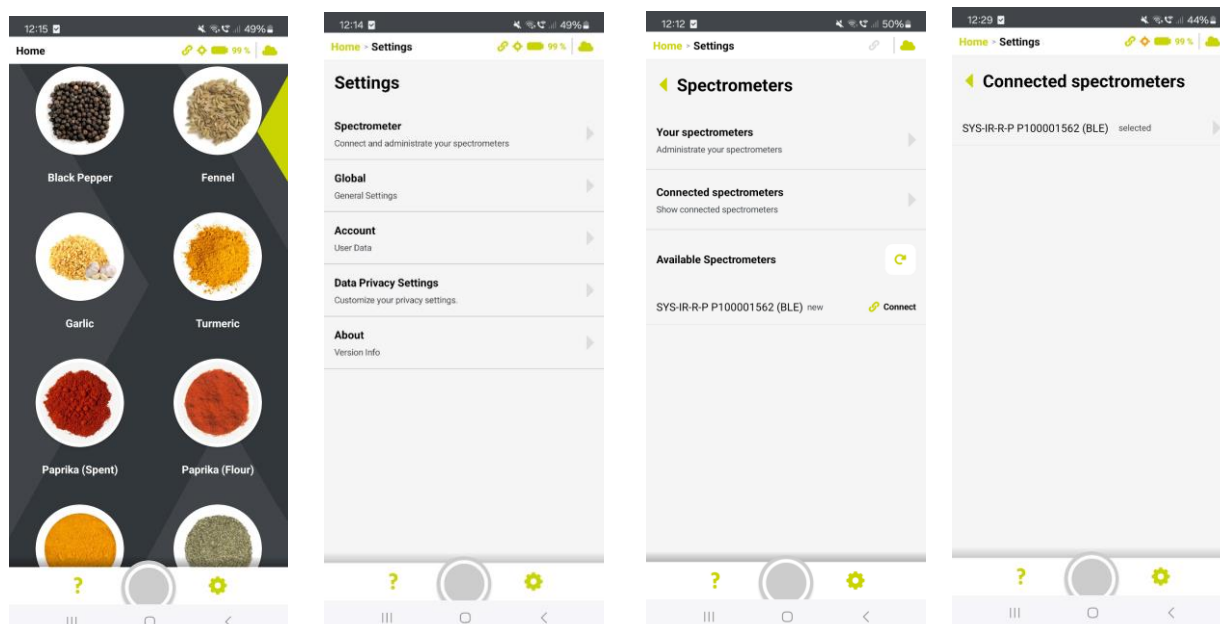


Figure 2: Connecting the spectrometer to the App

Note: The chain symbol contained in the top status bar located at the top of the home screen is a short-cut to the spectrometer settings. It can be used to easily transition to the connection menu.

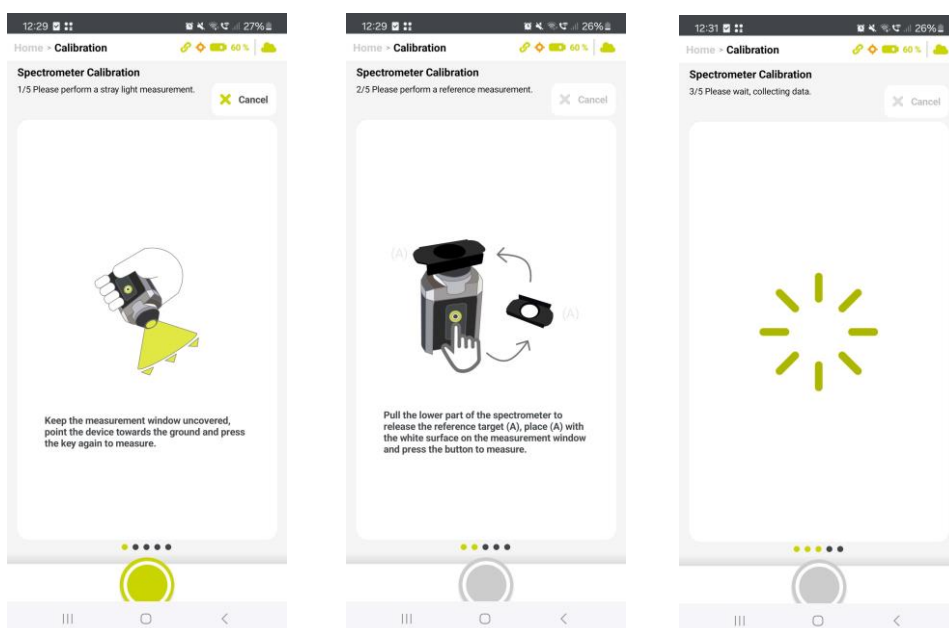
5.3 Spectrometer Calibration

The spectrometer needs to be calibrated before taking measurements. The device should be calibrated under similar environmental conditions as those in which it will be operated to measure samples, in order to ensure accurate measurements. A red light LED status on the device indicates the spectrometer needs to be calibrated. While in use it is recommended that the spectrometer is calibrated every 60 minutes to ensure accurate results.

Select any application from the home screen then click on the green measurement button at the bottom of the screen.

The app will guide the user through the calibration process. The first step demonstrated on the on the App is slightly different to the calibration process required for the authenticity test, as samples are tested in specific sample holders.

1. The handheld device must be facing the floor and the sample interface must be pressed against the glass at the bottom of the sample holder. Once this in the correct position, select the green button on the app to activate the light source.
2. Place the white side of the reference target on the sample interface and begin step 2 by clicking on the green measurement button.
3. Wait until calibration is finished.



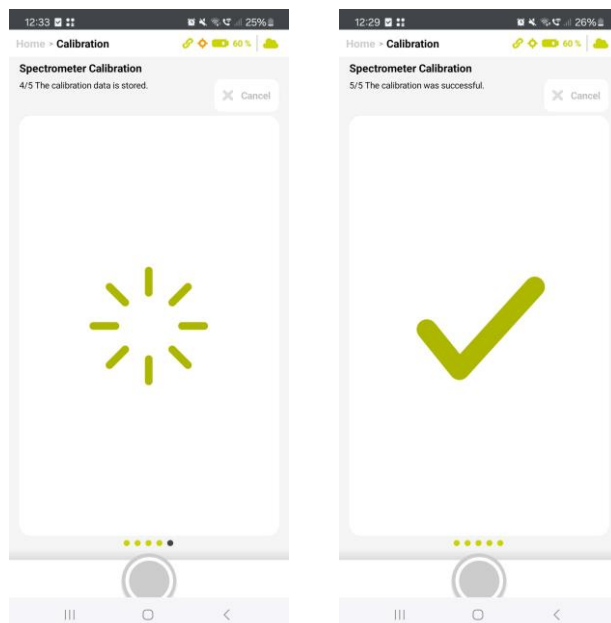


Figure 3: Spectrometer Calibration

Always ensure the sample interface, sample holder and calibration standard is free from dust, dirt, scratches, fingerprints or other contaminants to ensure optimal device calibration.

5.4 Performing an Authenticity Test

After connecting and calibrating the spectrometer, the authenticity test can be performed by the following steps:

1. Select the commodity test required (e.g. Garlic) on the Home page of the app.
2. Select the “Current sample” button  to input the Sample ID and description.
3. Select “Save” when complete.

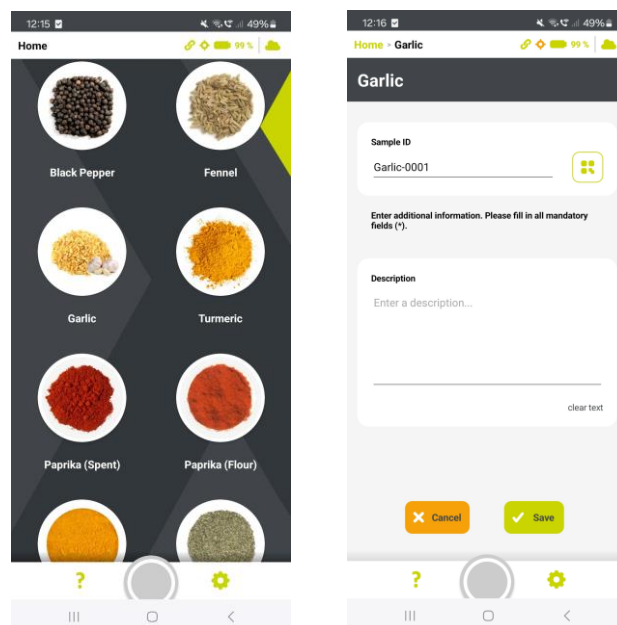


Figure 4: Home and current sample page on App

4. Add the sample to the sample holder, ensuring the sample holder is half full and the glass is completely covered with the sample.
5. Place the sample holder on top of the light source/sample interface.
6. Press the green measurement button  to start the measurement.
7. Rotate sample during the measurement to ensure a wide representation of the sample is being scanned. The measurement button will turn grey when the light source is activated (during measurements) and will return green once the measurement is complete.
8. Repeat step 6 & 7 twice, to ensure a total of 3 measurements have been completed for each sample.
9. The data is transferred to the cloud for further analysis. Once the analysis is finished, the authenticity result will be presented in the App.

Authentic

Result	Recommendation
	No further testing required
Review	Sample to be sent to Bia Analytical for further analysis
Non-compliant	Sample to be sent to Bia Analytical for further analysis

5.5 Using the Accessories

Calibration standard: The calibration standard is part of the spectrometer device. It is clipped to the bottom of the device. Remove it from the bottom by applying an even force at the top and bottom side, as shown in the following steps (Figure 5)

- (1) Remove for device calibration
- (2) Reattach to the device when calibration is complete.



Figure 5: Removing and attaching the calibration standard from the device

USB charger: Use the USB charger in accordance with the instructions of the manufacturer. Please note that the USB charger must have double insulation or reinforced insulation. The output of USB charger must be limited to a maximum voltage of 20 VDC and a maximum current of 7 A. The USB charger must support a minimum voltage of 15 VDC and a minimum current of 3 A. Connect the charger with USB-type-C connector to the USB socket at the bottom of the device. Remove the calibration standard to access the USB socket.

USB cable: Connect a PC or smartphone via a USB-type-C to type-C or type-C to type-A cable, by plugging it into the USB socket at the bottom of the device. Remove the calibration standard to access to the USB socket.

Sample holder: Only the sample holder provided by Bia Analytical can be used for the authenticity tests. The optical glass on the outside of the sample holder should be free from dust, dirt, scratches, fingerprints or other contaminants, to ensure optimal measurement results. Samples must be placed inside the sample holder, ensuring the sample holder is half full and the glass is completely covered with the sample. The

sample holder can be cleaned with soap and warm water or an alcohol wipe. If using soap, rinse thoroughly to ensure no soap residue remains. The sample holder must be completely dry before use.

Sample brush: The sample brush can be used to discard excess material from the sample holder when the test is complete. Brushes should be cleaned with warm water and soap when required. Ensure the brush is completely dry before use.

5.6 Troubleshooting

Startup: In circumstances where the device starts up with a device error (signalled by LED indication), the user should restart the device. If the error remains after restarting, the user should attempt to fully charge the battery by connecting the device to an USB charger. A full charge will be demonstrated by LED indication. If the battery is fully charged and the error notification remains, upload the latest firmware as guided by the trinamiX NIR Spectroscopy App. If the error is still indicated after successful firmware update, contact: support@bia-analytical.com for further support.

Charging: Should the battery not fully charge, check the connected USB charger to ensure that the charger provides the specified minimum voltage and power. If the USB charger specifications are correct, verify the USB cable. The cable must also be specified for the maximum charging current and must be free from kinks and damage. If the USB cable meets the specifications, verify the environmental temperature. Please note that charging will be interrupted by a safety mechanism if a maximum battery temperature of 45 °C/113 °F is exceeded. If temperature is also correct, verify with a second set of USB charger and USB cable that these are not damaged. If the error is still indicated, contact support@bia-analytical.com for further support.

Operation: If proper operation is not possible, the user should check the battery level. If the battery is low, the device will resort to a power save mode, where measuring is not possible. The battery will need to be recharged. If a connection to the device cannot be established, please check that the Bluetooth connection is enabled on your smartphone and check for any kind of electromagnetic interference or barrier, which reduces the Bluetooth signal quality. Try to connect the spectrometer to a different smartphone to verify if the Bluetooth connection can be established. If needed, reduce the distance from spectrometer to smartphone/tablet/PC. If a connection can be established, but measuring is still not possible (with full battery), restart the device,

reconnect to the smartphone/tablet/PC and reperform the calibration. Verify any kind of error message or hint by the devices status LEDs and also by the trinamiX NIR Spectroscopy App. Follow the instructions on the app. If the recalibration was successful, verify the environmental temperature and humidity. The device enters the power save mode also in case of inadequate environmental conditions. If the temperature and humidity conditions within limits, check the ambient light to ensure that there are not any strong light sources, or other sources of optical interference which disturbs the measurement. If the measurement is still not possible, please contact support@bia-analytical.com for further support.

5.7 Web Portal

The trinamiX NIR Spectroscopy web portal (trinamixsensing.com) can be used to view, manage and process test results. It can be used to create reports and export data. It is available through any browser without the need to install additional software.

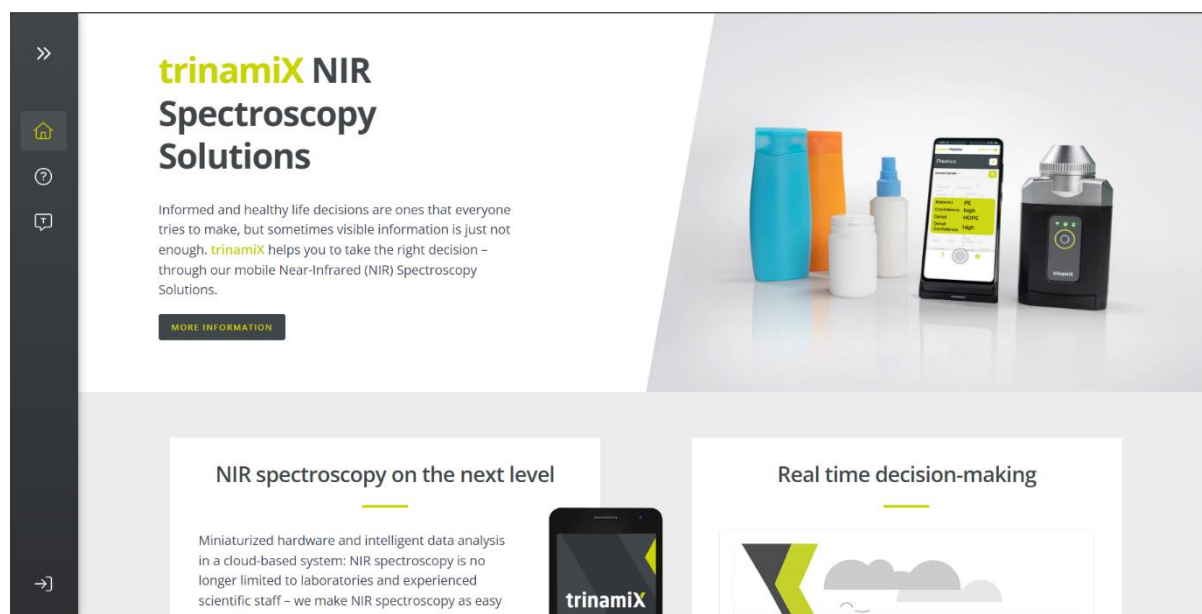


Figure 6: Home page of trinamiX NIR Spectroscopy web portal

Application overview: The application overview will show all applications that are assigned to the user's account.

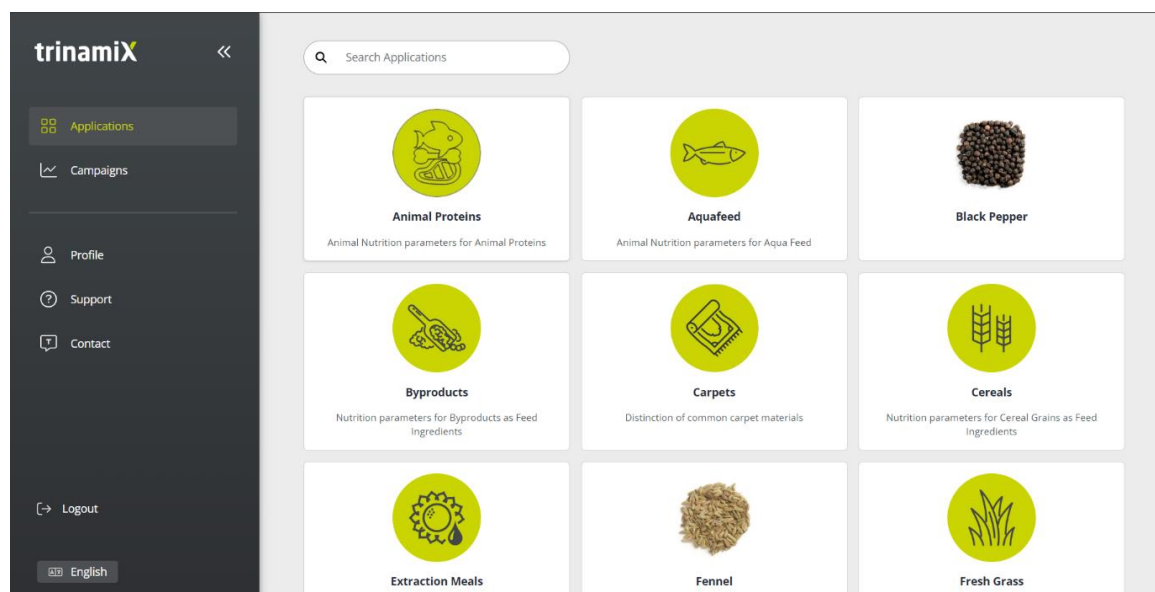


Figure 7: Application overview web page demonstrating available authenticity tests

Application detail page: After clicking on a specific application, the user will be able to find all results on the application detail pages. On the top right-hand corner, the user will find a toggle to include all organisation data. Each application widget will include the following icons (from left to right): The total number of measurements therein, referred samples and the number of used devices.

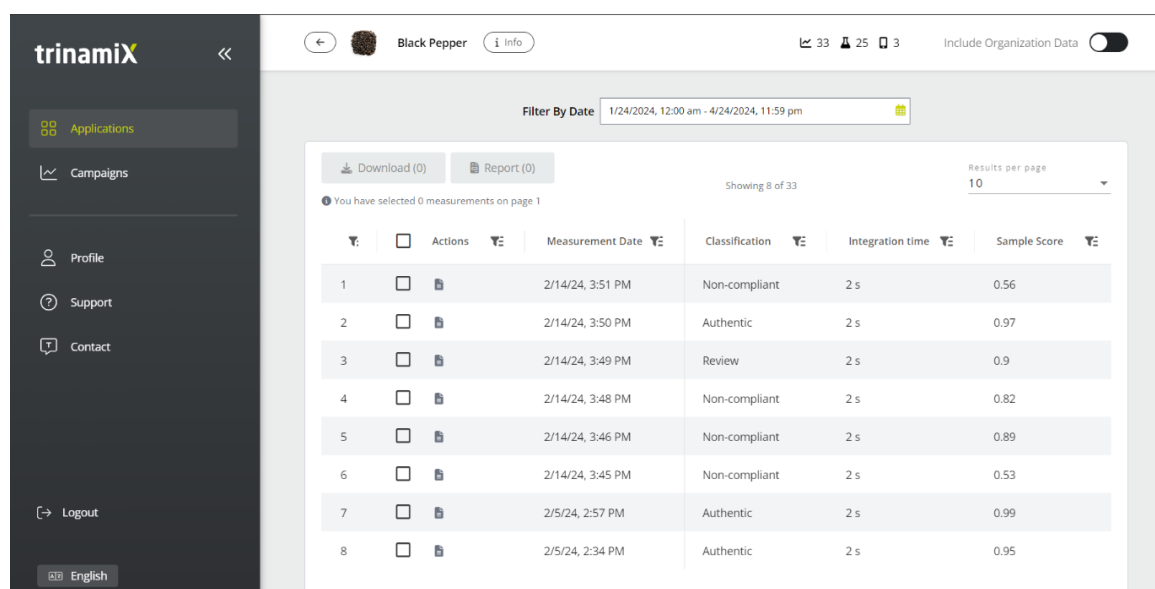


Figure 8: Application detail page demonstrating results

All of the user's results will be located here. Measurements will be included in a table that can be searched and filtered according to the user's needs. Printable reports for

individual measurements can be generated by clicking on the icon at the left of the table.

The full table can be downloaded by clicking “Download”. Please note that all filters in the browser view also apply to the download. The filters can be adjusted depending on the needs of the user prior to commencing any downloads.

6. Maintenance and Disposal

6.1 Cleaning

The spectrometer can be cleaned with a damp cloth and a mild solvent (e.g. Isopropanol). Machine cleaning, e.g. in a dishwasher, is not permitted.

NOTICE

Clean the measuring window (sample interface) after the series of measurements has been finished, to avoid any kind of buildup or residue, which may influence the next series of measurements. Always take care that the window is free from dust, dirt, scratches, fingerprints or other contaminants after cleaning, to ensure optimal measurement results.

6.2 Further Maintenance and Repair

If the device does not work as intended, or if the trinamiX NIR Spectroscopy App advises the light bulbs must be replaced, please contact support@bia-analytical.com for further support.

6.3 Disposal



Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment. Hence, this EEE-product shall not be discarded together with household/unsorted waste but must be collected separately. Please contact your local municipality for information on authorised collection points in your area. Equipment marked with the crossed-out wheeled bin is electrical and electronic equipment according to European regulations. The crossed-out

wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated waste but must be collected separately. Dispose of the device and the battery in accordance with national and local regulations. Batteries may only be disposed of at the collection points if they are discharged. Where batteries are not fully discharged, there is a risk of a short circuit. It is possible to prevent short circuits by insulating the contacts with adhesive strips.

As required by WEEE (Waste Electrical and Electronic Equipment) Directive of the European Union (EU) and corresponding national laws, trinamiX offers end users the possibility to return “end of life” units under the WEEE without charging a disposal fee.

This offer is valid for trinamiX electrical and electronic equipment:

- sold to a company or institution within the EU
- still complete, not disassembled and not contaminated

If you wish to return a trinamiX unit for waste recovery, please contact support@bia-analytical.com for further support.

7. Packaging, Storage and Transport

7.1 Important Notes

Please observe the following notes when you want to store or ship the product:

NOTICE

For storing the device for a long time: store all components in a dry, clean, and dust-free, low-humidity environment that is as dry as possible. Charge the battery to 50 % of the maximum capacity.



WARNING Fire Hazard and Risk of Injury:

The device must be switched off during transport or shipping. Use the original shipping box to store, transport or ship the unit. Protect the transport box from impact by placing it in a carton.



WARNING Fire Hazard and Risk of Injury:

The device contains a lithium-ion battery. Such batteries are dangerous goods for transport. Comply with all local and international transport regulations when shipping or transporting the unit or batteries. These regulations include e.g. Section II of PI966, ADR/RID, IATA, DOT, IMDG.

7.2 Battery Transport Classification

- FRIWO Battery type: FB3S1P18650-26
- UN Class 9
- UN number UN3480, Lithium Ion Battery
- UN number UN3481, Lithium batteries packed with equipment
- Energy of battery <100 Wh
- The respective caution label should be placed on bulk packaging and overpackage when transporting the battery without the equipment (UN3480) or with equipment (UN3481).

8. Regulatory

trinamiX provides the following:

8.1 EU Declaration of Conformity

The device is operated within the following frequency band: 2.4 GHz. Maximum power output by design is limited to 0 dBm. trinamiX GmbH declares that the radio equipment type trinamiX NIR Spectrometer is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: trinamixsensing.com

8.2 FCC Compliance Statement

Compliance Information acc. to 47 CFR § 2.1077:

Contains FCC ID: R7TAMB2621

§ 15.19 Statement:

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

CAUTION § 15.21 Statement:

Changes or modifications for this equipment not expressly approved by trinamiX GmbH may void the FCC authorization to operate this equipment.

§ 15.105 Statement:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

8.3 ISED Compliance Statement

Notice acc. to ICES-Gen chapter 5.3.3/RSS-GEN chapter 8.4

Certification Number of contained radio module: 5136A-AMB2621

Product Marketing Name of contained radio module: AMB2621

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à la(aux) norme(s) RSS sans licence d'Industry Canada. Son utilisation est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas causer d'interférences et
2. il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.

8.4 ARIB Compliance Statement

Compliance information for Japanese Radio Law

This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law.



 202-LSG026

8.5 China

CMIIT ID of the device: 2021DJ15838

8.6 Australia and New Zealand

Regulatory Compliance Mark:



9. FAQ Section

1. How can the frequency of required calibrations be changed on the App?

The frequency of calibration during device use can be adjusted in the App. Select, “Settings” followed by, “Global,” and in the, “Calibration” section, use the dropdown tab to increase or decrease the frequency of the calibrations. The default settings in the App and the recommended calibration frequency is once per hour. Decreasing the frequency may impact the accuracy of results. If the spectrometer disconnects during testing, a calibration is required before continuing with testing.

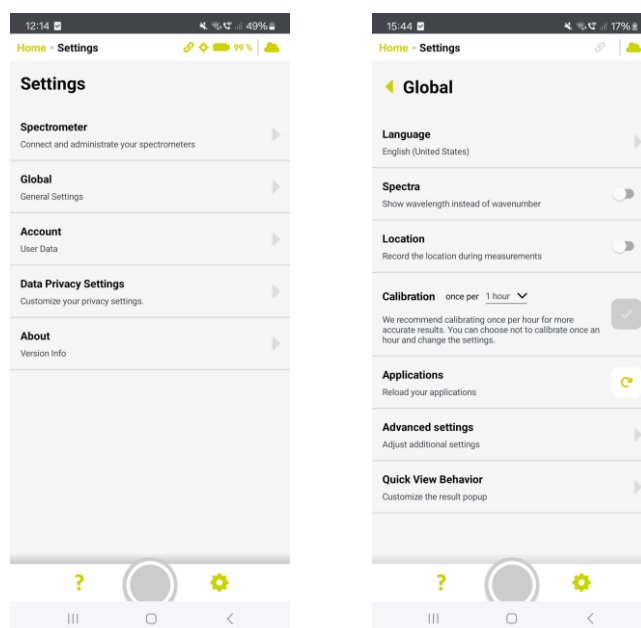


Figure 9: Changing the frequency of calibrations

2. What should the user do if the measurement button is activated before the sample is positioned on the light source?

It is crucial that the sample is placed on the light source/sample interface before pressing the measurement button. If the measurement button is pressed before the sample is on top of the light source/sample interface, this will negatively impact the result. Should this happen, continue with the remaining measurement(s) for that sample. When the test is complete, delete the sample result and repeat from the beginning, following the correct procedure to ensure an accurate result is obtained.

3. How can a result be deleted from the App?

Test results can be deleted from the App. Press down on the specific result and swipe right. A “bin” icon will appear at the right-hand side of the result. Select the ‘bin’ icon to permanently delete the result.

4. What is the sample score and does this need to be reported?

After the sample data is analysed in the cloud, a numerical score is generated for the sample, which determines if the sample is categorised as, “Authentic,” “Review” or “Non-Compliant.” The score ranges for each category are specific to each test and are determined by statistical analysis during method development. It is not essential to include the sample score when reporting results.