Operation Manual & Quick Start Guide

ProxiScout™

BÜCHI

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BÜCHI Labortechnik AG
Meierseggstrasse 40
CH-9230 Flawil
E-Mail: supportnir@buchi.com

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1 Main Case Components

A. **ProxiScout™ Scanner:** The main spectra collection device (Figure 1).
B. **Scanner Cover:** A protective cover for the optical window that should be placed on top of the Scanner when it is not being used. The cover attaches to the Scanner easily via magnets. The cover also includes a small white box containing a reference material for calibration measurements. To avoid losing the cover, make sure to use the lanyard to attach the cover to the Scanner.
C. **Scanner Sample Holder:** A holder for samples like soil, feed, powders, etc, Most times the Scanner will be used without the sample holder. It is magnetically attached to the Scanner cover and needs to be detached from it when used (Figure 2). The sample holder can be magnetically attached and aligned on the Scanner top surface to hold the sample during scanning.
D. **Scanner power adapter**: An AC/DC adapter dedicated for use with the Scanner via a USB connection. It also comes with a power plug converter for users located in the USA. Refer to Section 3 for more details about the adapter usage.
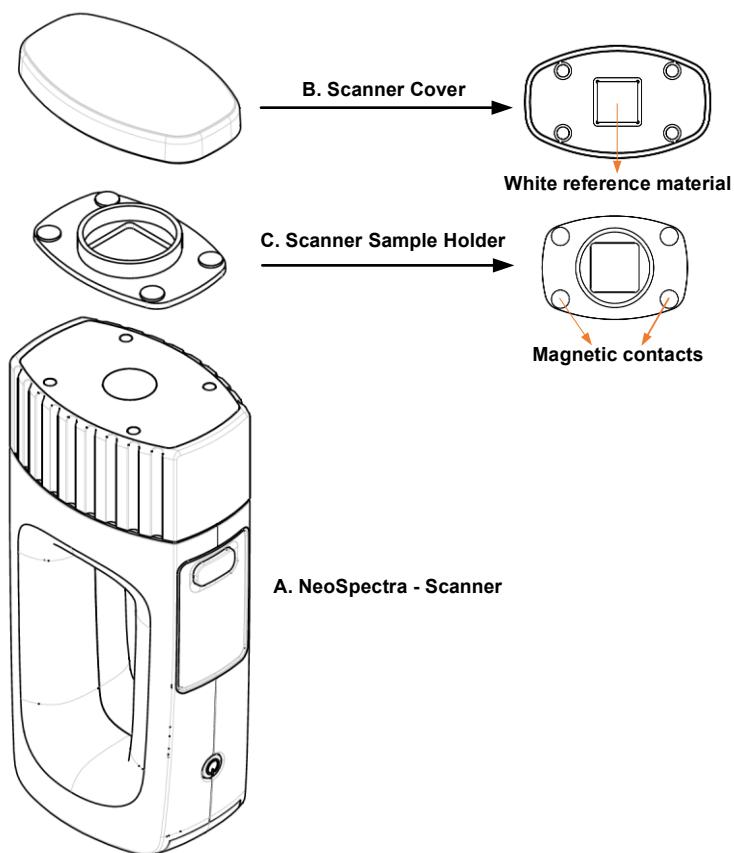
Figure 1: Main Case Components

Scanner Cover

Scanner Sample Holder
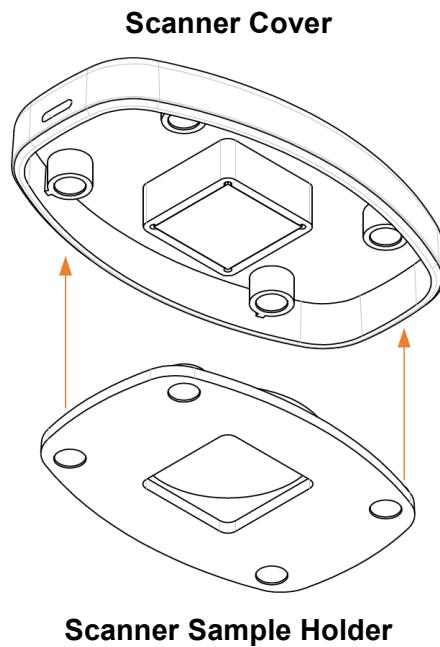
Figure 2: Attaching the sample holder to the Scanner cover

2 Scanner User Interface

2.1 Scan and Power Buttons

The Scanner main functionality is controlled by the Scan and Power buttons (shown in Figure 3) as summarized in the table below.

Power Button Functionality	Scan Button Functionality

1. A short press turns on the Scanner if it's powered off.
2. When Scanner is turned on
    a. A long press turns the Scanner off.
    b. A short press will change the status of the bluetooth connection from "Disconnected" to "Ready to connect".
 	
Refer to Section **Error! Reference source not found.** for more details about the Bluetooth connection.
	1. A short press is used to take a sample measurement.
	2. A long press is used to take a calibration measurement.
	
	Refer to Section **Error! Reference source not found.** and **Error! Reference source not found.** for more details about the usage of the Scan button.
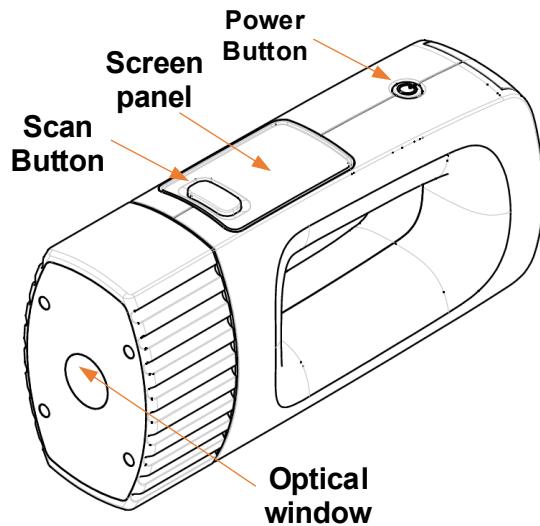
Figure 3: Scanner interfaces

2.2 Scanner USB Port

The Scanner USB Port is used for battery charging. It is shown in Figure 4. To charge the battery, plug the power adapter into the USB Port.
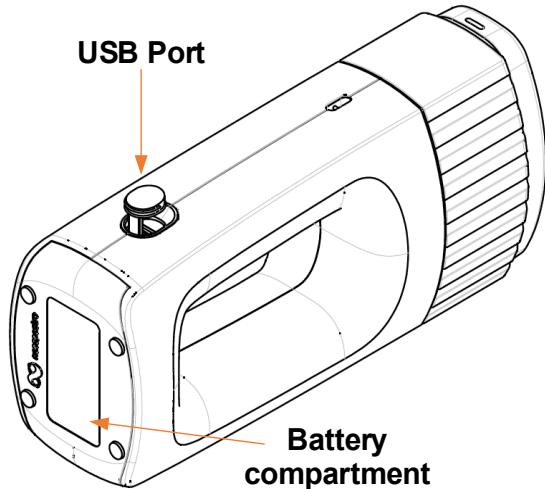
Figure 4 Scanner USB charging port, and battery compartment

2.3 Scanner Screen Panel

The four main areas of the Scanner screen are shown in Figure 5: Stored Scans, Battery Status, BLE (Bluetooth) Status, and Messages.
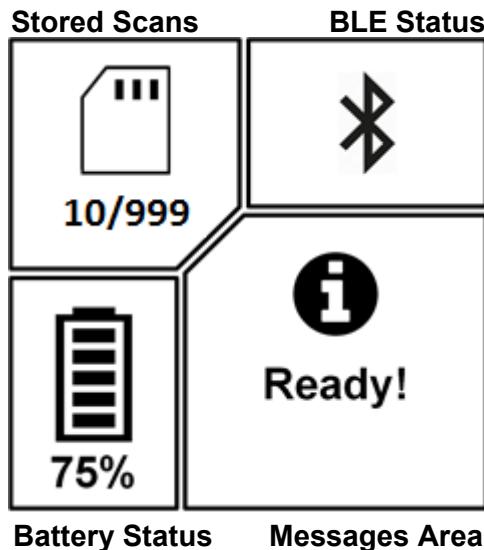
Figure 5: Scanner screen panel overview

2.3.1 Stored Scans

When the scanner is not connected to an app, the spectral data are stored in the Scanner's local memory. The memory can store up to 999 spectra. The number shown on the screen indicates the number of stored spectra in the scanner.

2.3.2 Battery Status

The remaining battery capacity is shown as well as an indication of whether the charger is connected as illustrated in Figures 6a and 6b.
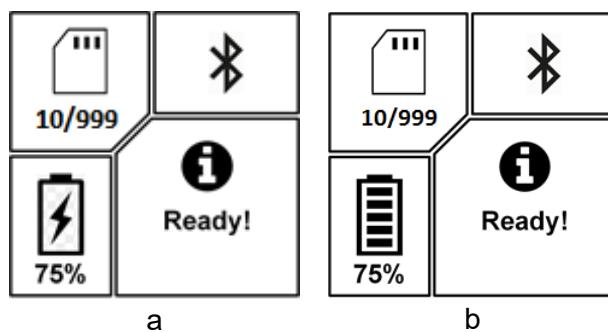
Figures 6: Battery status on the screen

(a) Battery status while Scanner is being charged.

(b) Battery status when Scanner is not being charged.

3 Powering the Scanner

3.1 Charger / Battery Powered Operation

ProxiScout™ Scanner is powered by two replaceable 18650 batteries with 3400 mAh nominal capacity. The batteries are readily installed in the device for out-of-the-box operation. The Scanner also comes with a **15 V/2.4 A** AC/DC adapter capable of powering the Scanner to charge and scan simultaneously, irrespective of the battery status. The specifications of the cable are summarized in Table 1:

Table 1: Specifications of charging cable

Description	Universal AC/DC USB C PD External Wall Mount (Class II) Adapter
Input Voltage	100 VAC ~240 VAC
Frequency Range	50 HZ ~ 60 HZ
Input Current	1.0 A
Output Voltage (PDO)	5V / 9V / 12V / 15V / 20V
Rated Output Current (min)	3A@5V / 3A@9V / 3A@12V / 2.4@15V / 1.8A @20V
Power Output (min)	36W
Form	Wall Mount (Class II)
Plug	NA / EU
Recommended Models	Qualtek : QFWC-45-20-USCR Globtek : GTM96181-36PD-PPS

You can expect than charging speed will be slower if an off-the-shelf standard 5 V USB charger is used. In addition, performing measurements will only be possible if the battery is sufficiently charged.

3.2 Battery Replacement

Follow these steps to replace the battery[1]:
- Unscrewing the four screws in the battery cover at the bottom of the Scanner (See Figure 9.)
- Prepare two identical batteries (Type Flat top Panasonics 18650B, preferably fully charged)
- Insert batteries in the compartment, and make sure that the "-" side of the battery are placed at the terminal with a spring.
- Press the two batteries insider the Scanner
- Turn on the scanner.

Notes:
- In case batteries are not charged, the Scanner may not be able to boot. Please connect the charger, and wait until the Scanner is charged.

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[1] Risk of explosion if battery if battery is replaced by an incorrect type. Dispose off used batteries according to battery manufacturer's instructions
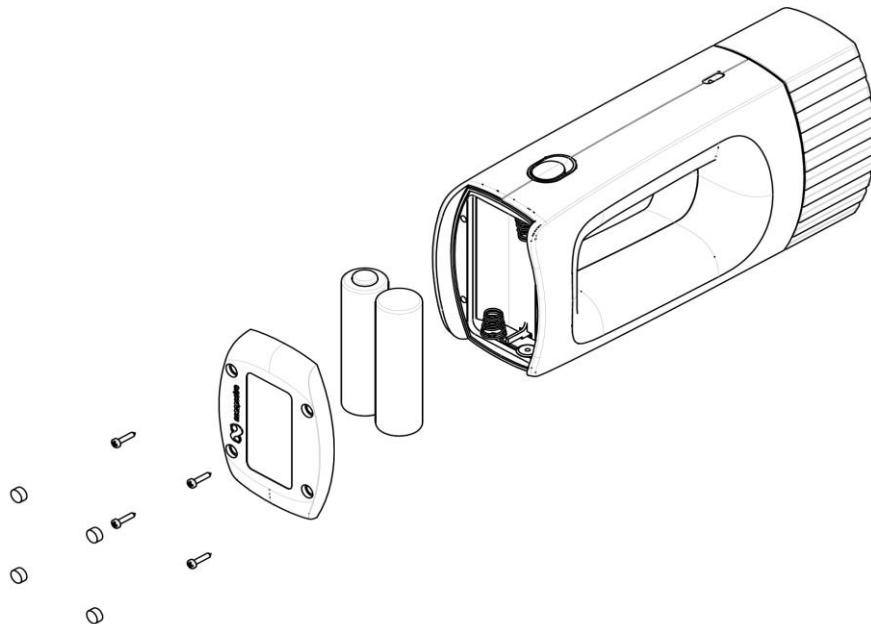
Figure 9: Battery replacement process

4 Sample Interface

The Scanner's design allows for multiple ways to interface with a <u>sample</u>. The Scanner can be used in a point and shoot mode, sample can be placed on top of the Scanner, or Scanner can be placed on the top of the sample. The different sample interfaces are illustrated in Figures 11 and 12. **Important: in all cases, the user must ensure that the sample is in contact with the Scanner window.**

4.1 Point & Shoot

● Hold Scanner in hand.
● Point and scan while ensuring that the Scanner window is pressed against the sample.
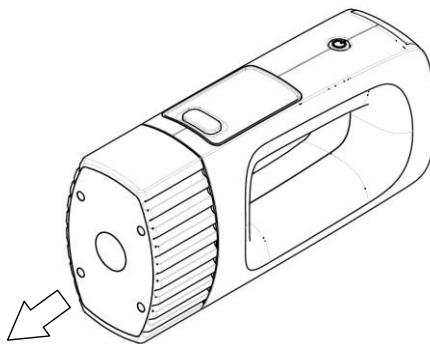
Figure 10: Scanner used with point-and-shoot interface.

4.2 Sample on top of Scanner

- Place scanner on a flat surface, with the optical window facing up
- If sample is a large solid item, place it on top the Scanner and make sure it is centered with the optical window
- If the sample is a powder, grain, or loose product, a sample container will be required. In these cases, please contact supportnir@buchi.com to discuss appropriate container options and sample setup for successful scanning.

4.3 Scanner on top of sample

- Place the sample on a flat surface.
- Set the Scanner on top of the sample and scan.
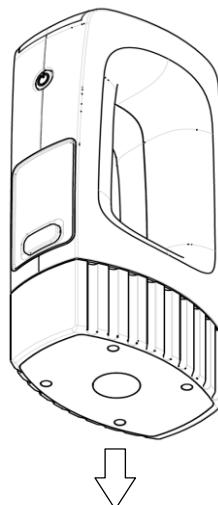
Figure 11: Scanner on top of sample

5 Scanner Power & Connection States

The Scanner has five main states that depend: Power Off, Ready to Connect, Connected, and Disconnected. Description of each stated is detailed below:

1. **Power Off:** A long press on the power button turns off the Scanner. It's recommended to keep the device in this state when not in use to conserve battery.
2. **Ready to Connect:** This is the initial state when the scanner is turned on. When in this state, the Scanner will be discoverable by external mobile devices nearby to make a Bluetooth connection. The Scanner stays in this state for two minutes and then automatically moves to the "Disconnected" state if no connection is established with an external mobile device. To return to "ready to connect" state, press the Power button briefly.
3. **Connected:** This is the main state during the Bluetooth-connected operation mode. In this state, the Scanner is turned on and connected to a mobile device via Bluetooth. It is ready to take scans either using the mobile application or the Scan button on the Scanner.

4. **Disconnected:** When the Scanner is turned on but not connected to any external mobile device for two minutes, it automatically moves to this state to save power. In this state, the scanner will _not_ be discoverable when your mobile devices tries to find nearby Bluetooth connections. To return to "ready to connect" state, press the Power button briefly.

The Power and Scan buttons control the Scanner transitions between these states as described in Section 2.1.

6 Firmware update

6.1.1 Firmware Update

Updating the firmware (FW) of the Scanner can be done through the mobile app. The firmware itself is supplied by ProxiScout™. Here is the procedure than needs to be done in order to perform a FW update:
1. The Scanner should be plugged to the charger in advance and the battery charged to 100%.
2. The Scan application should be open and the mobile device should be connected to the internet.
3. Press the gear button in Home tab and choose from the menu "Scanner Firmware" then choose "Firmware Update".
4. The application will search for updates.
5. Once the firmware update is complete, the Scanner will be turned off automatically and the mobile application will be disconnected.

6.1.2 Restore Default Firmware

Restoring the default firmware of the Scanner can be done through the mobile app. This action brings the Scanner FW back to the one originally was flashed by ProxiScout™ during the production of this unit. To restore FW, follow the instructions in 7.1.1 above but, in Step 3, choose "Restore Default Firmware."

7 Scanner Error Codes

User Scanner error codes range from 1 to 191. The detailed description of these error codes is shown in the table below.

Error code	Description
0	No error
1 ~ 127	Core sensor error
128	Core sensor timeout
129	Last calibration scan settings differ from the current material scan settings
130	No calibration scan found.
148	Error in opening scan file for reading
149	Error in opening scan file for writing
150	Error in reading scan file
151	Error in writing scan file
152	Scan numbers file does not exist
153	Scan file is out of range of the stored scan files
154	Maximum number of scan files is exceeded
155	Failed to open configuration file
156	Mismatch in configuration file length
157	Error in parameter extraction from configuration file
158	Incorrect location is being accessed in internal memory
159	Internal memory is full
168	BT classic controller initialization failed
169	BT classic controller enable failed
170	BT classic initialization failed
171	BT classic enable failed
172	BT classic GAP register failed
173	BT classic SPP register failed
174	BT classic SPP initialization failed
178	BLE packet failed
181	Scan failure due to low battery
186	Error occurred during OTA initialization
187	Error occurred during OTA payload sending
188	Error occurred during OTA finalization
189	Error occurred during OTA restore default FW
191	Scanner is hot! Cooling is required

8 Precautions

- Avoid long periods of exposure for the sample to infrared light coming out of the light source as heating may occur. Heating may affect the sample's surface.
- Avoid direct eye contact with the light emitted from the light source.
- The glass window on your Scanner must remain clean in order to perform accurate measurements. Therefore, your Scanner case includes several accessories to maintain your device. Periodically, the window should be cleaned with the included alcohol wipes and then any streaks should be removed with the included microfiber cloth. Once you've used all of the wipes included with your Scanner, you can replace them with any non-abrasive, high-grade isopropyl alcohol wipe.
- When analyzing samples with your Scanner, particles can stick to the Scanner head and should be removed each time you reposition the Scanner to take the next scan. For easy particle and dust removal, there is a combination brush and squeegee accessory included in your Scanner case.
- To keep your device clean and protected, make sure to cover the head with the Scanner cover any time it is not in use.
- The device is tested to operate in temperature ranges between -5 to 40ºC. Performance at other temperature ranges is not guaranteed.

CAUTION: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: —Reorient or relocate the receiving antenna. —Increase the separation between the equipment and receiver. —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. —Consult the dealer or an experienced radio/TV technician for help

9. Before Getting Started

9.1 Download Your Scan App

Let's Login...

Neospectra Scan App on the App Store

Neospectra Scan App on Google Play

*If you haven't received your credentials yet, please contact us via email:
supportnir@buchi.com
**If you are a developer, you'll need another app. Scan QR code.

9.2 Get Your Models From the LabStore
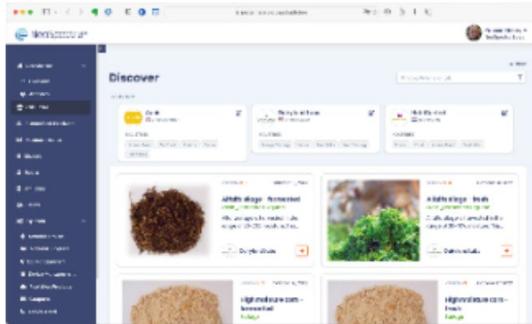
Make sure you are subscribed to at least one of the thousands of calibration models available on NeoSpectra LabStore.

*If you are part of a NeoSpectra Enterprise account, your admin may have already configured your models.

10. ProxiScout™ Scanner

10.1 Parts Overview

1. Light window
2. Scan button
3. Screen
4. Calibration tile
5. Power button
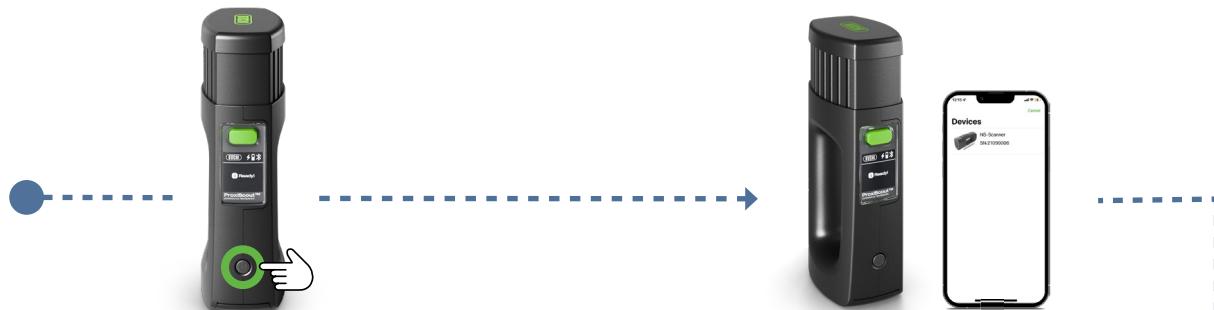6. Bluetooth
7. Cover
8. Lanyard
9. USB-C Port

10.2 What is Included

1. Charging cable
2. Scanner*
3. Microfiber cloth
4. Brush & squeegee
5. Alcohol wipes
6. Lanyard
7. Cover with calibration tile

*Contains rechargeable li-ion batteries.
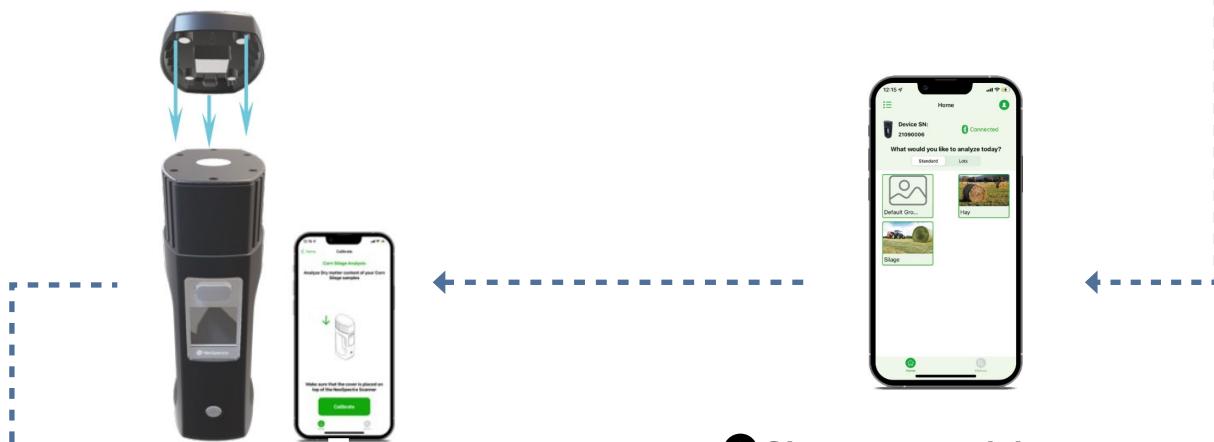
10.3 Get Started With Your First Measurement

1 Turn your scanner on
Press the power button until screen displays.

2 Connect your device
Press "Connect" on your app and select your device. If you can't find your device, double-press the "Power" button on your scanner.

4 Take calibration measurement
Your Scanner needs to have at least one calibration measurement after it is turned on. Place the cover on top of the scanner, and click "Calibrate" on the app.

3 Choose material to analyze
Select which material you would like to analyze from the app. If no material is listed, verify your subscriptions on LabStore.
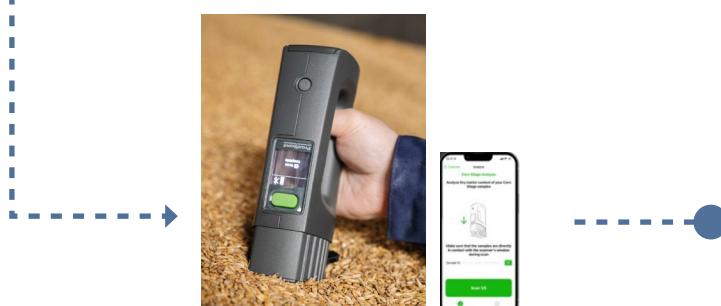
5 Take your first measurement
Make sure that the light window is clean. Place your Scanner in direct contact with your sample, and press the Scan button (via app or Scanner). Results will automatically appear after the scan.

11. ProxiScout™ Rotator

11.1 Parts Overview

1. ON/OFF switch
2. Neospectra Scanner*
3. Sample cup
4. Rotator
5. Stand
6. USB-C port for charging
7. Upper clamp
8. Lower clamp

* Rotator is a sample handling tool that can be ordered separately i.e. NeoSpectra Scanner may not be included in the same package you have received.

11.2 What is Included

For easier packing, and transport, the different parts of the rotator are originally assembled in two main compact parts.
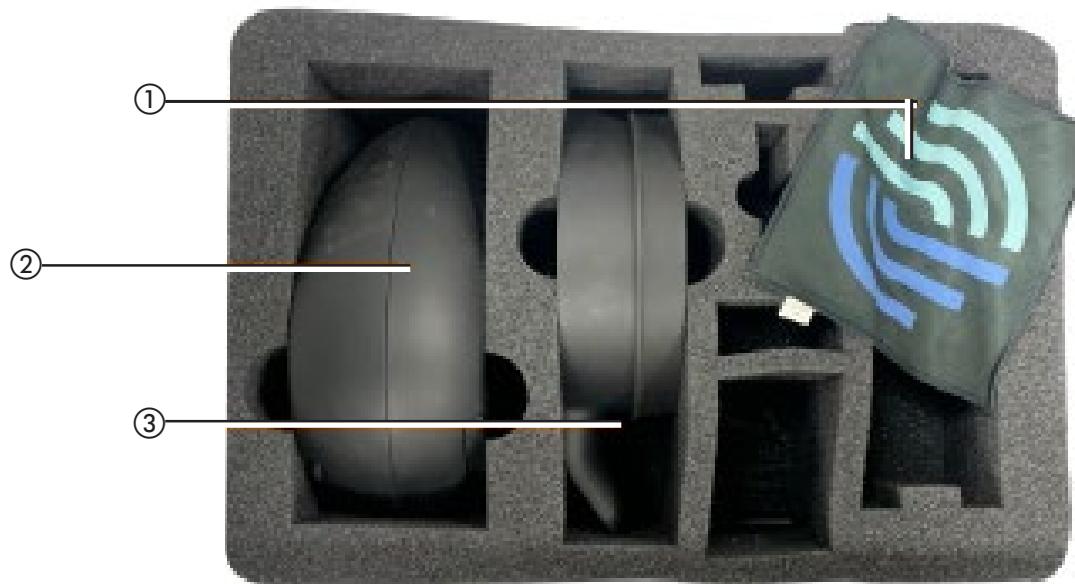
1. Microfiber cloth
2. Compact part # 1
3. Compact part # 2

Compact Part #1

Base   Rotator

Compact Part #2

Background Tile   Sample Cup   Sample Press Protection Cover

11.3 How to Assemble

❶ Fix Rotator on top of the Scanner

Open upper clamp.

Slide rotation on top
of scanner.

Close upper clamp.
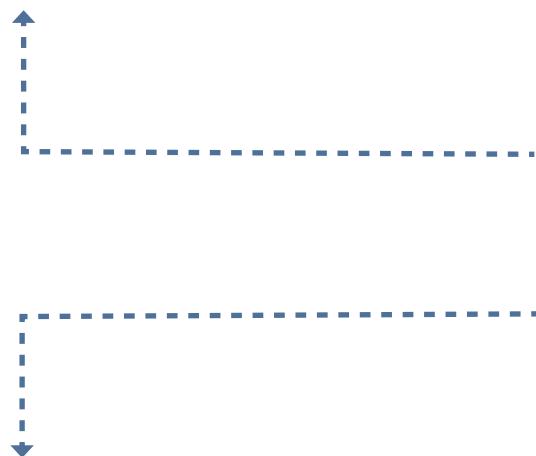
Separate rotator assembly

START

❷ Fix Scanner inside Base 'Optional'

Open lower clamp.

Slide scanner inside holder.

Close lower clamp.

11.4 Prepare Sample Cup

1 Detach protective cover.

2 Rotate simple press to remove it outside the cup.

3 Make sure that the glass of the cup is always clean before each measurement.

4 Place sample cup on top of rotator.

11.5 Get Started With Your First Measurement

❶ Turn your scanner on
Long press the power button and wait for the screen display.

❷ Connect your device
Press "Connect" on your app and select your device. If you can't find your device, double press the power button.

❸ Choose material to analyze
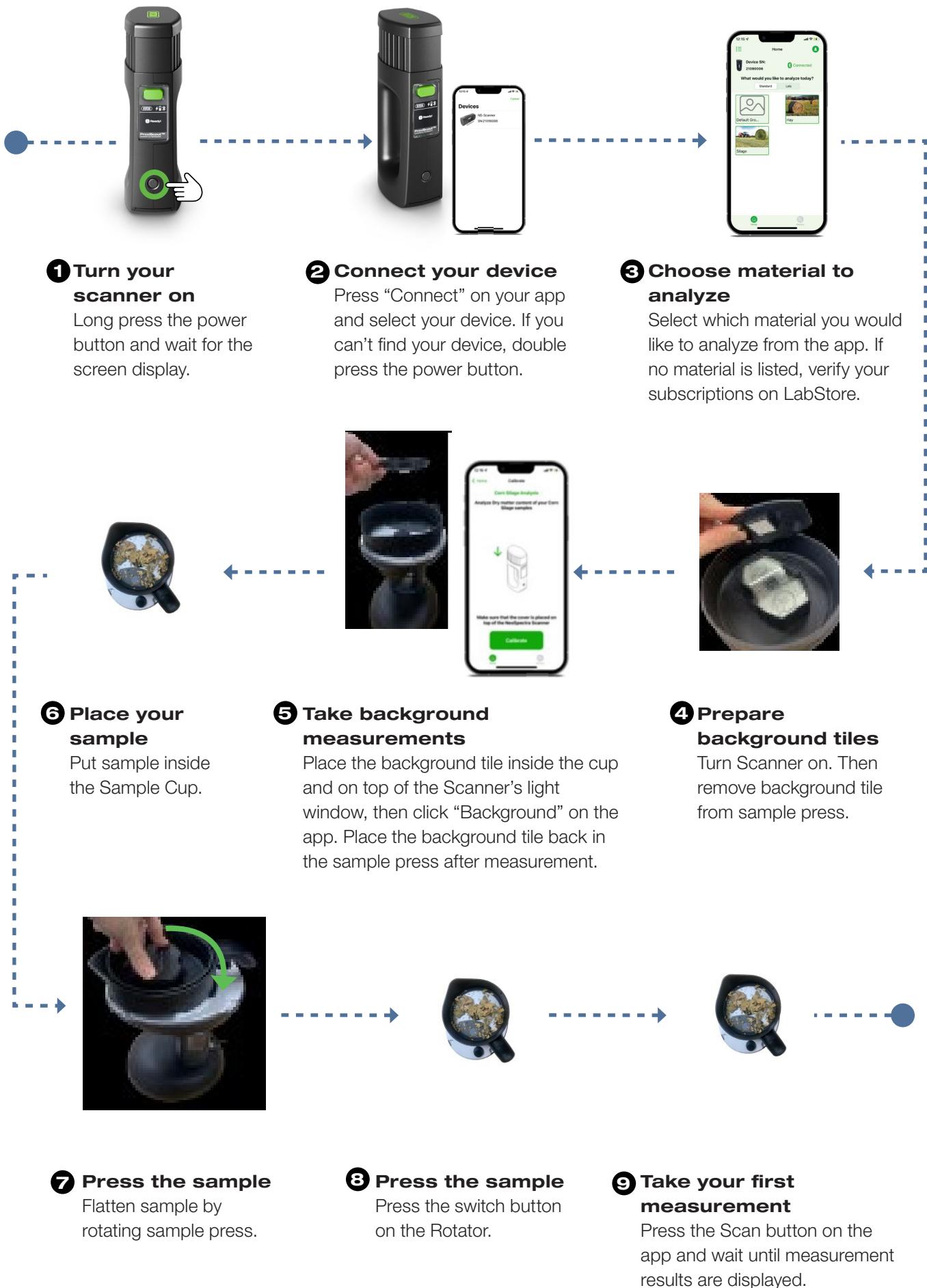Select which material you would like to analyze from the app. If no material is listed, verify your subscriptions on LabStore.

❻ Place your sample
Put sample inside the Sample Cup.

❺ Take background measurements
Place the background tile inside the cup and on top of the Scanner's light window, then click "Background" on the app. Place the background tile back in the sample press after measurement.

❹ Prepare background tiles
Turn Scanner on. Then remove background tile from sample press.

❼ Press the sample
Flatten sample by rotating sample press.

❽ Press the sample
Press the switch button on the Rotator.

❾ Take your first measurement
Press the Scan button on the app and wait until measurement results are displayed.

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12. ProxiScout™ Powder Dish

ProxiScout™ Quick Start Guide — Powder Dish

12.1 Parts Overview

1. Powder dish
2. Scanner

12.2 What is Included

1. Dishes, tiles & weights
2. Holder
3. Scanner

The Powder Analyzer kit comes with 4 special parts:

1. Powder dish holder
2. Calibration tile
3. Sample weight
4. Three powder dishes

12.3 How to Assemble

Attach the Powder Dish holder on the top of the Scanner, making sure it is completely inserted on to the sample stage of the Scanner.
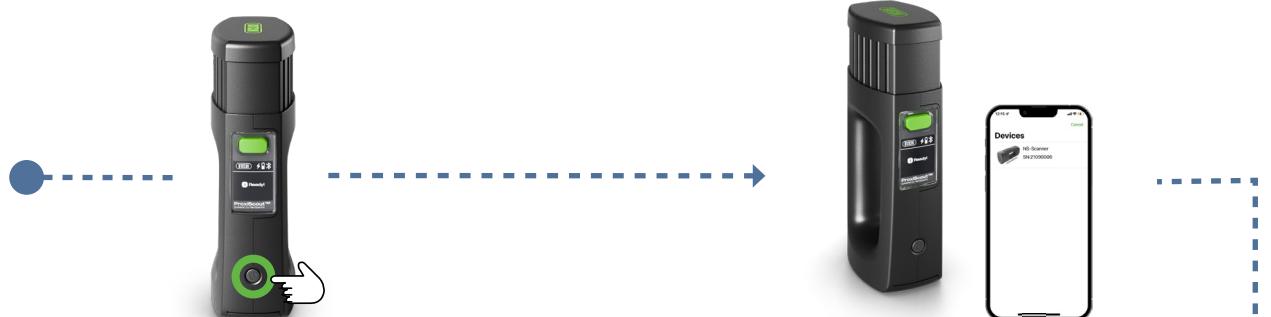
1

Attach the holder.

2

Insert the sample dish.

12.4 Get Started With Your First Measurement

1 Turn your scanner on
Press the power button until screen displays.

2 Connect your device
Press "Connect" on your app and select your device. If you can't find your device, double-press the "Power" button on your scanner.

4 Prepare calibration
Your Scanner requires a current calibration. Remove the cap from the Calibration Tile as shown below after the instrument is turned on.

3 Choose material to analyze
Select which material you would like to analyze from the app. If no material is listed, verify your subscriptions on LabStore.

5 Calibrate device
Place the Calibration Tile in the clean Powder Dish and press "Calibrate" on the app. Replace the cap on the Tile when done.

6 Take your first measurement
Place your sample in the Powder Dish, and then both into the Holder on the Scanner. Place the Sample Weight on top. Press the "Scan" button (via app or Scanner) and the measurement results are displayed.

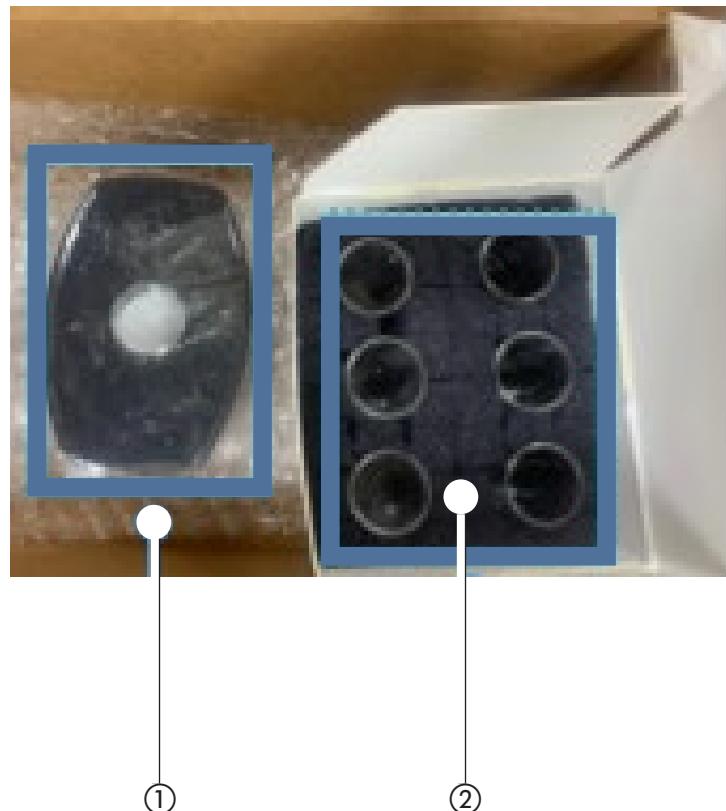# 13. ProxiScout™ Liquid

13.1 Parts Overview

1. Reflector
2. Vial
3. Vial holder

4. Transreflectance kit
5. ProxiScout™ scanner*

* ProxiScout™ transflection kit is a sample interface that can be ordered separately i.e., ProxiScout™ Scanner may not be included in the same package you have received.

13.2 What is Included

The Trans-Reflectance Kit is composed of 3 parts.

1. Vials
2. Vial holder

* There are 3 different options for reflector depending of pathlength. Your kit would include at least one.
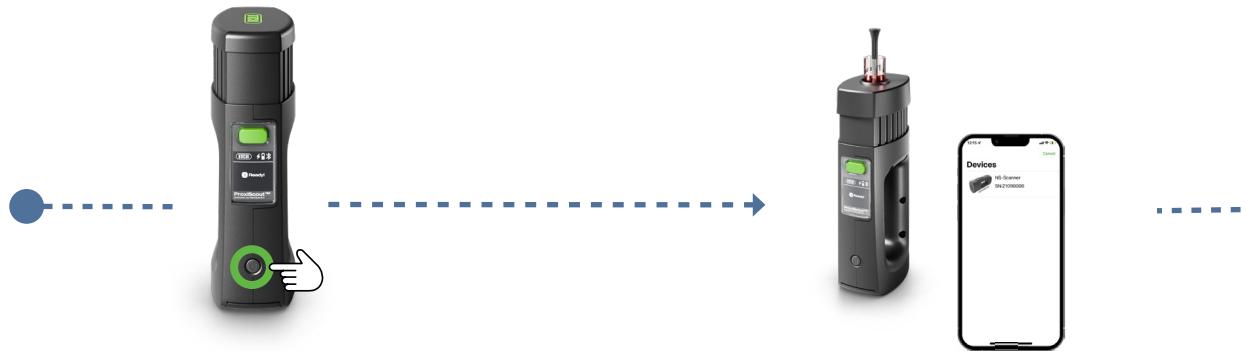
13.3 How to Assemble

1

Slide the vial holder on top of Scanner.

2

Place the empty vial in the holder's groove.

13.4 Get Started With Your First Measurement

1 Turn on your scanner
Long press the power button and wait for the screen display.

2 Connect your device
Press "Connect" on your app and select your device. If you can't find your device, double press the power button.

4 Calibrate your device
Make sure the reflector is clean, and place it in the empty vial, and click "Calibrate" on the app.

3 Choose material to analyze
Select which material you would like to analyze from the app. If no material is listed, verify your subscriptions on LabStore.
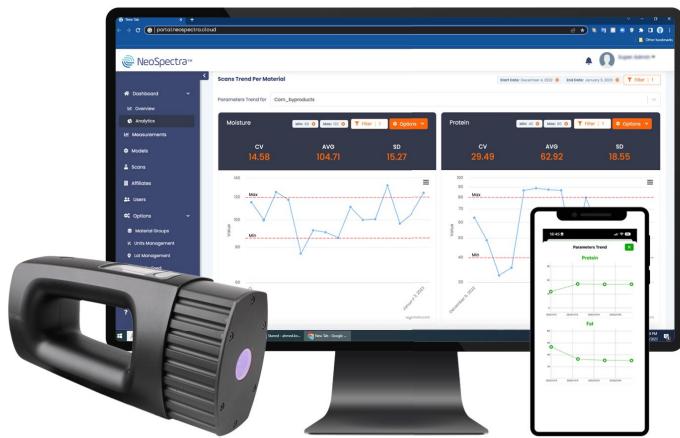

5 Prepare your sample
Remove the reflector and make sure that the vial is clean. Remove the vial and fill it with the liquid sample. Then put it back in the holder's groove.

6 Take your first measurement
Place the reflector in the filled vial then press the Scan button (via app or Scanner). Wait until measurement results are displayed.

14. Where Can I Find My Results?

All your measurement results are saved on your mobile device and your NeoSpectra Cloud Portal.

We are represented by more than 100 distribution partners worldwide.
Find your local representative at:

www.buchi.com   Quality in your hands