OptiConnect

User Manual

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Revision	Date	Page	Section	Description of Changes
1.0	12/06/2024	-	-	First official release
		-	-	
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Table of Content

1   Introduction

Welcome to the user manual for OptiConnect, the versatile and powerful mobile and desktop application designed to manage and connect our Bluetooth Low Energy (BLE) barcode scanners. OptiConnect is compatible with iOS, MacOS, Android, and Windows, making it the ideal solution for a wide range of devices and platforms.

OptiConnect is created to simplify your experience with our BLE barcode scanners, including the OPN-6000, OPN-2500, OPN-2006, PX-20, and RS-3000. This application streamlines scanner configuration, Bluetooth connectivity, and facilitates efficient barcode data storage and management. With support for CSV product data imports, OptiConnect ensures that you can easily integrate your product information into the scanning process.

In this manual, you will find detailed instructions on how to set up OptiConnect, connect it to various devices, and perform barcode scanning tasks efficiently. We will cover everything from basic operations, such as configuring and connecting your scanners, to advanced features including firmware updates and CSV product data imports. Additionally, we will explain data export options in multiple formats, integration with external applications, connection pooling character IDs for secure and exclusive connections, and integration support for our handheld terminals (H-31, H-33, and H-35).

We encourage you to read this manual carefully and refer to it whenever you have questions or need assistance. If you encounter any difficulties or require further support, our support team is always here to help.

2   Overview

OptiConnect is an innovative mobile and desktop application designed to streamline the management and connectivity of our Bluetooth Low Energy (BLE) barcode scanners. In this Chapter, we will provide you with an overview of OptiConnect, highlighting its key features and capabilities.

2.1 Key Features

OptiConnect is packed with advanced features that makes it an indispensable tool for a variety of applications. Some of its key features include:

- **Cross-platform Compatibility:** OptiConnect, developed using Flutter, functions seamlessly across various platforms, including iOS, MacOS, Android, and Windows. Refer to Chapter 3.1 to find out how to download OptiConnect for specific platforms.

- **Bluetooth Connectivity:** Stable and reliable Bluetooth connections are facilitated between the scanners and mobile devices, allowing for multiple simultaneous connections. Detailed instructions on connecting scanners via Bluetooth Low Energy (BLE) can be found in Chapter 5.1.

- **USB Support (Windows and Mac only, OPN-2500 and OPN-6000 only):** The Windows and Mac version of OptiConnect supports USB connections for the OPN-2500 and OPN-6000, providing flexibility for data transfer and device management. See Chapter 5.2 for more details.

- **Handheld Terminal Integration:** Integration support is provided for our handheld terminals, including models H-31, H-33, and H-35. Configuration details are available in Chapter 12.

- **Simplified Scanner Configuration:** Intuitive controls are available for you to easily configure and manage your scanners. This includes modifying code options, scan options, indicator options, formatting options, as well as volume and LED settings. Refer to Chapter 7 for comprehensive guidance.

- **Data Management, Storage, and Export:** OptiConnect provides robust and efficient barcode data management and storage capabilities. You can import product data in CSV format and automatically associate it with scanned data entries based on a selected barcode column. The application supports data export in various formats, including Text, CSV, Microsoft Excel®, and SQLite. Additionally, you can customize export settings to meet specific needs. Details are provided in Chapter 8.

- **Virtual Keyboard (Android only):** The OptiConnect Virtual Keyboard (IME) allows you to input scanned barcode data directly into any text field on your Android device, providing seamless data entry into various applications, similar to HID mode. Read more about this feature in Chapter 10.

- **Device Firmware Updates (OPN-2500 and OPN-6000 only, Windows excluded):** Device firmware updates are supported using Nordic Device Firmware Update (DFU) for the OPN-2500 and OPN-6000 models. Use Appload for all other models. A notification will appear in OptiConnect whenever a firmware update is available, ensuring scanners are always up-to-date with the latest features and improvements. See Chapter 11 for detailed instructions.

- **Client Application Integration:** With OptiConnect's client application integration, you can efficiently integrate your applications through API calls and Android Intents. This capability allows for real-time data broadcasting and interaction with other applications. Envision creating customized workflows around the barcode data you receive, thereby extending functionality and automation within your operations. Furthermore, you will have the capability to integrate this data with your own databases, enhancing your operational efficiency and capabilities. Detailed instructions can be found in Chapter 9.

- **Data Validation:** Our data validation feature lets you customize scanner responses based on your application's validation results. Combined with our client application integration, this ensures accurate data processing. Your application can validate barcode data and adjust the scanner's feedback, including LED indicators, sound, and vibration responses, giving you flexible and precise control. This helps you improve efficiency and accuracy in your workflows. Refer to Chapter 9.3 for more details.

- **Connection Pooling:** Secure and exclusive connections between devices and scanners are ensured through connection pooling. You can generate or manually set unique IDs, which are encoded into QR codes for easy setup. Scanners with matching IDs connect automatically to OptiConnect, with options to reset or regenerate IDs as needed. More information is available in Chapter 5.1.1.

- **Multi-language support:** OptiConnect supports multiple languages, including English, Dutch, German, Spanish, Italian and French.

3 Getting Started

3.1 Downloading OptiConnect

To get started, download OptiConnect for your platform from the following locations:

- **iOS:** OptiConnect on the App Store.

- **Android**: OptiConnect on Google Play Store.

- **Mac:** OptiConnect on the Mac App Store.

- **Windows**: OptiConnect installer for Windows.

Follow the instructions on the respective platform to install the application.

4   Application Settings

The Application Settings page in OptiConnect provides several configuration options to enhance the user experience and functionality of the application (see Figure 4-2). These settings can be accessed via the main menu by clicking the *Settings* button (see Figure 4-1) and then selecting the *Application Settings* button within the *Settings* menu.

4.1 Keep Running in Background (Android only)

The *Keep Running in Background* setting allows OptiConnect to run as a service even when the application is closed. This ensures that the application remains active and can continue to perform tasks like maintaining Bluetooth connections and processing data in the background. Additionally, it allows the OptiConnect service to auto-start when the device boots up, ensuring continuous operation.
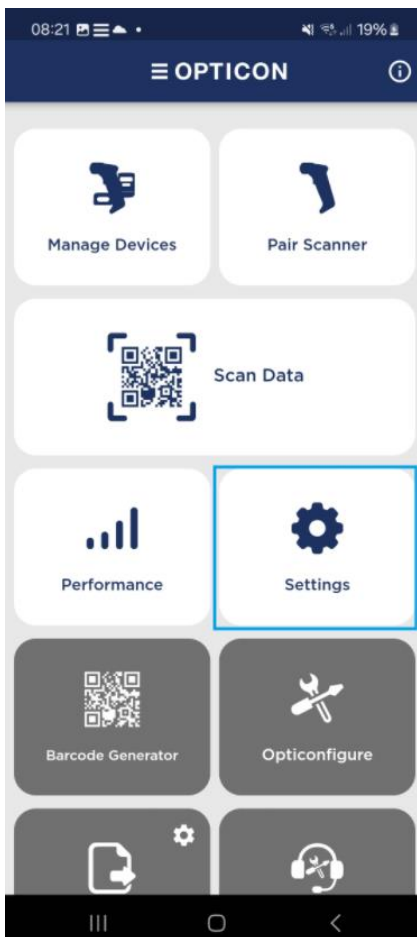

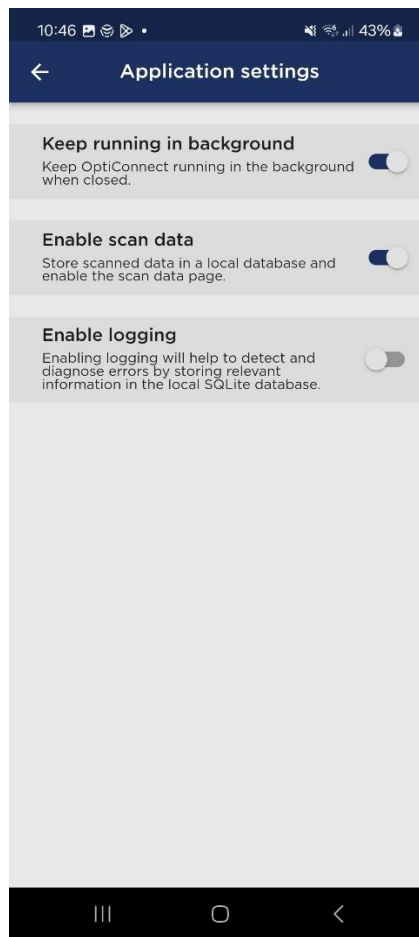Figure 4-1: The *Settings* button in the main menu.
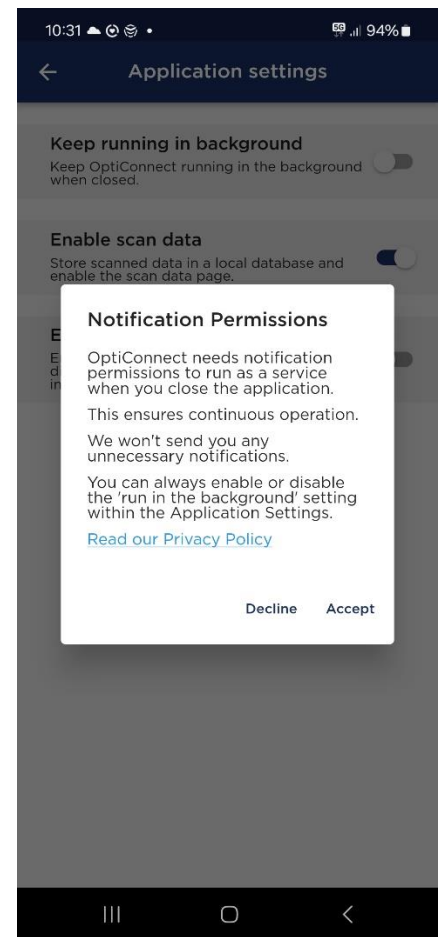
Figure 4-2: The *Application settings* page.

Figure 4-3: The Notification Permissions dialog when enabling *Keep running in background* (Android only).

Notification Permissions: For this functionality to work on Android, OptiConnect requires notification permissions (see Figure 4-3). These permissions enable the application to run as a *foreground service*, which keeps it alive and running in the background on the device. The foreground service displays a persistent notification to ensure the service is not killed by the system.

Steps to Enable Keep Running in Background:

1. Open the OptiConnect settings page and navigate to the Application settings page (see Figure 4-2).
2. Tap on the Enable Keep Running in Background option.
3. When prompted, grant the necessary notification permissions (see Figure 4-3).
4. A dialog will appear requesting a restart of OptiConnect for the changes to take effect. You can choose to restart now by pressing *Restart Now*, or restart later. Note that the restart is required before the *Keep Running in Background* setting will be activated.

4.2 Enable Scan Data

The *Enable Scan Data* setting ensures that scanned data entries are stored in a local SQLite database, and enables the *Scan Data* page (see Figure 8-1). This setting securely saves all scanned data, ensuring it is easily retrievable even if the application is closed or restarted. Enabling this setting allows you to view, manage, and export scanned data efficiently. By default, this setting is enabled.

If you do not require local scanned data storage because you aim to integrate OptiConnect with your own application, you can disable the *Scan Data* feature in OptiConnect.

4.3 Enable Logging

The *Enable Logging* setting helps in detecting and diagnosing errors by storing relevant information in the local SQLite database. When logging is enabled, OptiConnect records detailed logs when errors or warnings occur. This information is stored securely and can be accessed to understand and resolve any issues that may arise during the application's use. When the *Enable Logging* setting is enabled, a *Log Viewer* button appears at the bottom of the *Application Settings* page. Clicking this button navigates you to the *Log Viewer* page, where you can view all recorded logs from the moment logging was enabled. In the *Log Viewer, w*arning logs are displayed in orange text and error logs are displayed in red text.

5 Managing Scanner Connections

This chapter provides comprehensive instructions on how to connect your Opticon BLE barcode scanners to OptiConnect using different methods. You will learn how to connect scanners via Bluetooth Low Energy (BLE) and USB.

5.1 Connecting scanners via Bluetooth Low Energy (BLE)

This section explains how to connect the supported scanners to OptiConnect using Bluetooth Low Energy (BLE).

1. **Open OptiConnect**

   • Launch the OptiConnect application on your device.

2. **Navigate to the** *Pair Scanner* **page**

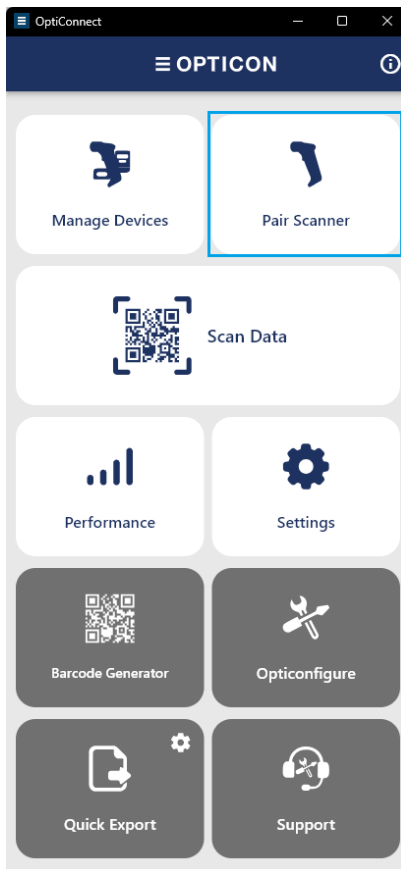   • Go to the main menu and press the *Pair Scanner* button (see Figure 5-1).
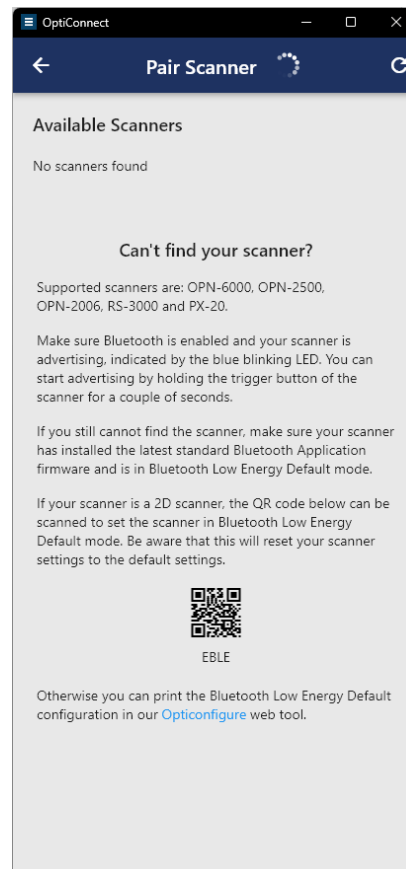

Figure 5-1: The *Pair Scanner* button in the main menu.

Figure 5-2: The *Pair Scanner* page where no devices are discovered or paired yet.

3. **Ensure the scanner is in Bluetooth Low Energy Default mode**

- If the scanner is not in Bluetooth Low Energy Default mode, scan the appropriate configuration code below to set it:
  - For 2D barcode scanners, scan the QR code in Figure 5-3.
  - For 1D barcode scanners, scan the barcode in Figure 5-4.

Be aware that this will reset your scanner settings to the default.

Note: If you have a 1D scanner and are reading this document digitally, please use the link to Opticonfigure to print the 1D Bluetooth Low Energy Default configuration barcode. You can also find the 1D configuration code in the manual of the OPN-2500.

Figure 5-3: The 2D Bluetooth Low Energy Default (EBLE) configuration barcode.

Figure 5-4: The 1D Bluetooth Low Energy Default (EBLE) configuration barcode.

4. **Ensure Bluetooth is enabled, and scanner is in advertising mode**

- Make sure Bluetooth is enabled on your device.
- Ensure your scanner is turned on and set to advertising mode, indicated by the blue blinking LED (see Figure 5-5 and Figure 5-6). You can start advertising by holding the scan button or function key of the scanner for three seconds.

Figure 5-5: An OPN-6000 in advertisement mode.

Figure 5-6: An RS-3000 in advertisement mode.

5. **Discover Scanners**

- OptiConnect automatically scans for available scanners. A list of detected scanners appears under the **Available Scanners** section.

6. **Select and connect a scanner**

- From the list of **Available Scanners**, click on the Connect text next to the scanner's name to establish the connection.

7. **Verify the connection**

- Once connected, the scanner's status will change to Connected and it will be listed under **Paired Scanners**. This allows the scanner to be automatically reconnected to OptiConnect when advertising in the future.
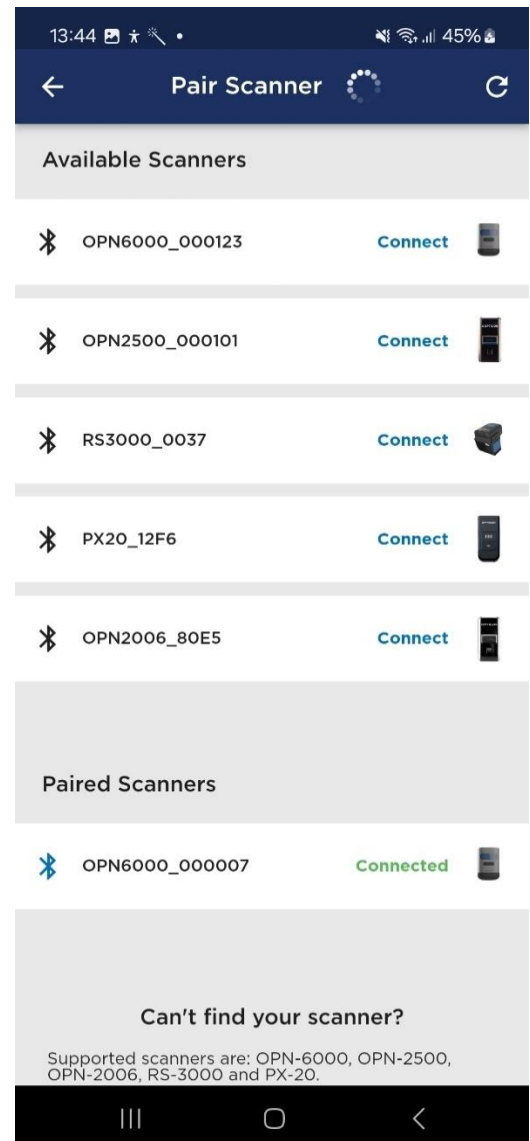

Figure 5-7: The *Pair Scanner* page where scanners are discovered and connected.

5.1.1 Connection Pooling

Connection Pooling is designed to connect scanners to a specific device by scanning a connection pool configuration code, allowing for exclusive and automatic connections. Each device can set up its own connection pool using a 4-character hexadecimal ID, ensuring secure and exclusive connections.

5.1.1.1 A practical use case

Imagine a work environment with a pool of scanners that need to be easily connectable to any device being used by the current employee. With connection pooling, any scanner can be quickly connected to the device of the employee using it, simply by scanning the connection pool QR code. There is no permanent link between a specific scanner and a device, allowing different employees to use the same scanner on different devices as needed. The scanner remains in the *Paired Devices* list and will auto-reconnect as long as the connection pool ID matches that device. If the connection pool ID changes, for example when another employee scans his unique connection pool ID barcode, the scanner will no longer be able to connect to the previous device, ensuring secure and flexible management.

5.1.1.2 How to configure connection pooling

1. **Generating a Connection Pool ID:** Each device is assigned a unique 4-character hex ID, which can be generated automatically or set manually at the *Connection pool settings* page, located within the *Application Settings* menu (see Figure 5-8).

2. **QR Code Generation:** The ID is encoded into a QR code. When scanned by a **2D** scanner, it adds this ID to its advertisement data and starts advertising for an auto-connect to this device. The QR code also becomes available on the *Pair Scanner* page (see Figure 5-9).
   - If the scanner is a **1D** scanner, the 1D connection pool configuration code can be printed through *Opticonfigure* at the Connection pool settings page by pressing the *Opticonfigure* link. See this Opticonfigure link for an example.

3. **Auto-Connect Feature:** OptiConnect will automatically connect to any scanner that advertises itself with a matching connection pool ID. If the ID does not match with OptiConnect, it will not connect to this scanner.

4. **Reset and Regenerate:** You can reset the connection pool ID to the default '0000' or regenerate a new ID at any time using the buttons provided. To reset the scanner, simply scan the default connection pool ID code.

   To integrate the connection pool QR code into your own Android application, please refer to Chapter 9.4.
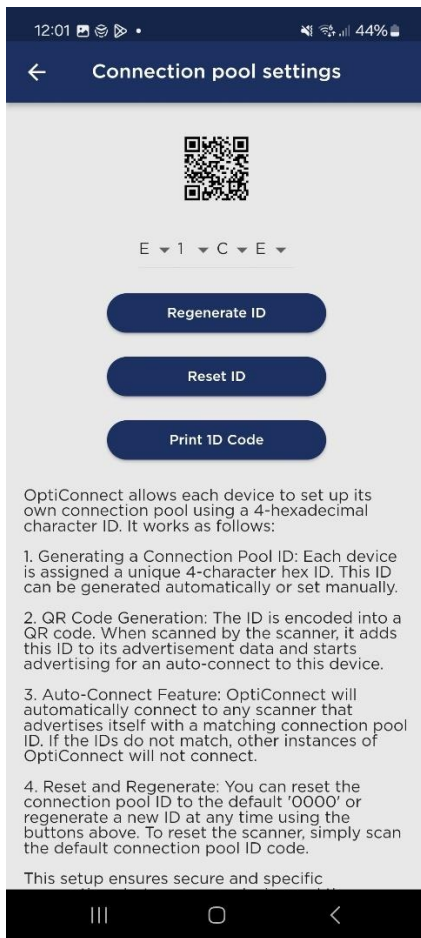
Figure 5-8: The *Connection Pooling* settings page where the ID can be generated and reset to default.
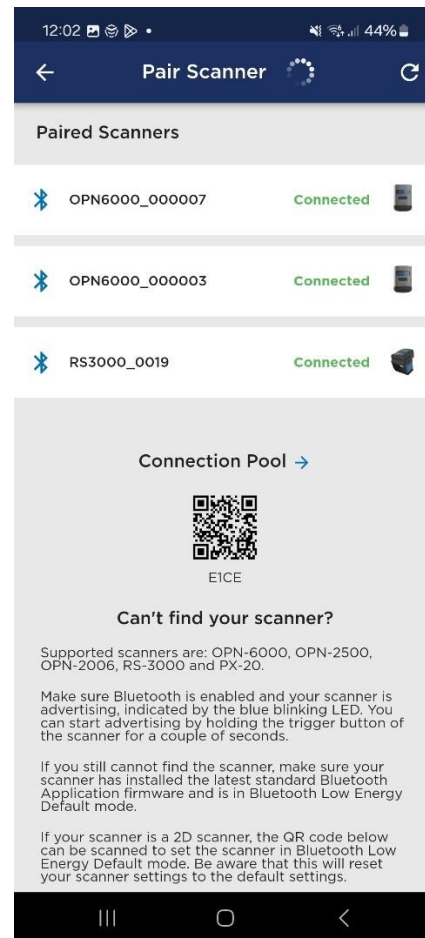

Figure 5-9: The *Pair Scanner* page with the Connection Pool QR code after a connection pooling ID has been generated.

5.1.2 Disconnecting Scanners

To disconnect a scanner, you have several options:

- **Press on the Connected text:** Click on the Connected text next to the scanner you wish to disconnect. A dialog will appear, providing the option to disconnect the scanner (see Figure 5-10). Once disconnected, the scanner will be in advertising mode and unavailable for auto-connection for three minutes to this device, and its status will change to Disconnected.

- **Drag to disconnect and unpair:** Drag the scanner's row under the Paired Scanners section entirely to the left (see Figure 5-11). This will disconnect and unpair the scanner, putting it in advertising mode and making it unavailable for auto-connection for three minutes to this device.

- **Hold the function key:** Hold the function key of the scanner for a few seconds to disconnect it.
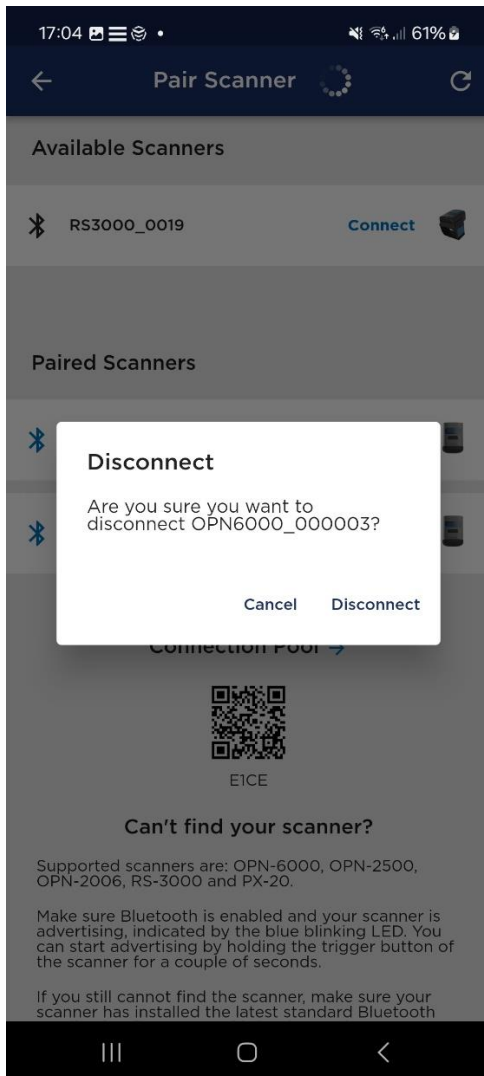
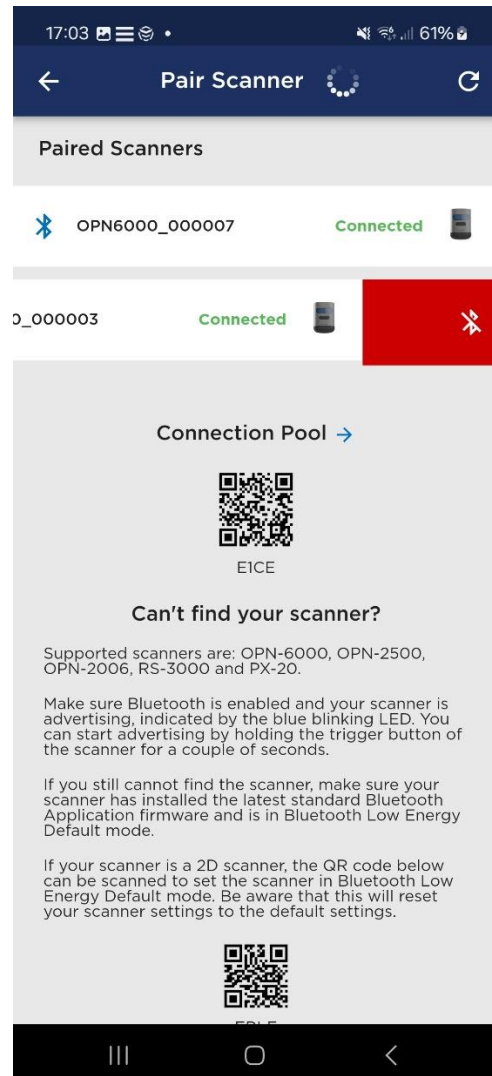Figure 5-10: The *Disconnect* dialog appears after pressing the Connected text of the device.

Figure 5-11: A connected scanner's row being dragged to the left to unpair and disconnect the scanner.

5.2   Connecting scanners via USB (Windows and Mac only)

OptiConnect allows you to connect your scanners via USB when running on Windows or Mac. This feature is currently supported for the OPN-2500 and OPN-6000 scanners. The following steps should be performed to connect a scanner to the device with USB:

1. **Set Scanner to USB CDC (OptiConnect) Mode:** To connect the scanner via USB, you need to set the scanner in USB CDC (OptiConnect) mode. This can be done by scanning the appropriate configuration barcode below:
   - For 2D barcode scanners, scan the QR code in Figure 5-12.
   - For 1D barcode scanners, scan the barcode in Figure 5-13.

   Be aware that this will reset your scanner settings to the default.

   Note: If you have a 1D scanner and are reading this document digitally, please use the link to Opticonfigure to print the 1D USB CDC (OptiConnect) configuration barcode. You can also find the 1D configuration code in the manual of the OPN-2500.

Figure 5-12: The 2D USB CDC (OptiConnect) configuration barcode.

Figure 5-13: The 1D USB CDC (OptiConnect) configuration barcode.

2. **Connect the scanner with a USB cable to the device:** Plug the scanner into a USB port on your device using a USB cable.

3. **Verify the Connection**: Open OptiConnect and navigate to the *Manage Devices* page. Verify that the scanner appears as connected in the device list. If the scanner does not appear on Windows, ensure you have installed the *Opticon USB Drivers* (included in the OptiConnect Windows installer). Otherwise make sure the scanner is in USB CDC (OptiConnect) mode, and not in another USB CDC mode.

By following these steps, you can successfully connect and manage your OPN-2500 and OPN-6000 scanners via USB.

6   Devices Management

This chapter will guide you through the features and functionalities available in the *Devices Management* section of OptiConnect.

The *Devices Management* page provides an overview of all connected devices and those that were previously connected but are currently disconnected. You can interact with each device to access detailed information and perform various actions. To navigate to the *Devices Management* page, go to the main menu and press the *Manage Devices* button (see Figure 6-1).

When a device row is clicked, you are redirected to the *Status* page (see Figure 6-2), which displays detailed information about the device, such as battery percentage, serial number, OS version, and more. You can also rename the scanner on this page by clicking the pencil to the right of the scanner name. Note that some devices may cache the advertisement name, causing the old name to be temporarily discovered on the *Pair Scanner* page.

Key features of *Devices Management* include:

- **Device Overview**: View all currently connected devices and previously connected but now disconnected devices. The status of each device is displayed.

- **Status Page Access**: Clicking on a device row redirects you to the *Status* page, where detailed information about the device is shown, including battery percentage, serial number, OS version, and more. You can also rename the scanner here (see Figure 6-3).

- **Battery Status Monitoring**: Monitor the battery status of each connected device. The OPN-2500 and OPN-6000 also have battery charging animation support.

- **Device Removal**: Disconnected devices can be deleted entirely from the list, including all their corresponding scan data, by pressing the bin icon.

- **Locate Scanner**: On the Status page, the *Locate Scanner* button can be pressed to make the scanner emit periodic beeps, helping you to locate it.

- **Access Scanner Settings**: The properties icon in the upper right corner of the Status page can be pressed to be redirected to the scanner settings page.

- **Firmware Update Notifications**: If a firmware update is available, an *Update Available* button appears on the *Status* page of the device to notify you. For the OPN-2500 and OPN-6000, device firmware updates can be performed inside OptiConnect (see Chapter 11). A marker is added to the device rows of the devices with updates available, as well as to the upper right corner of the *Manage Devices* button.
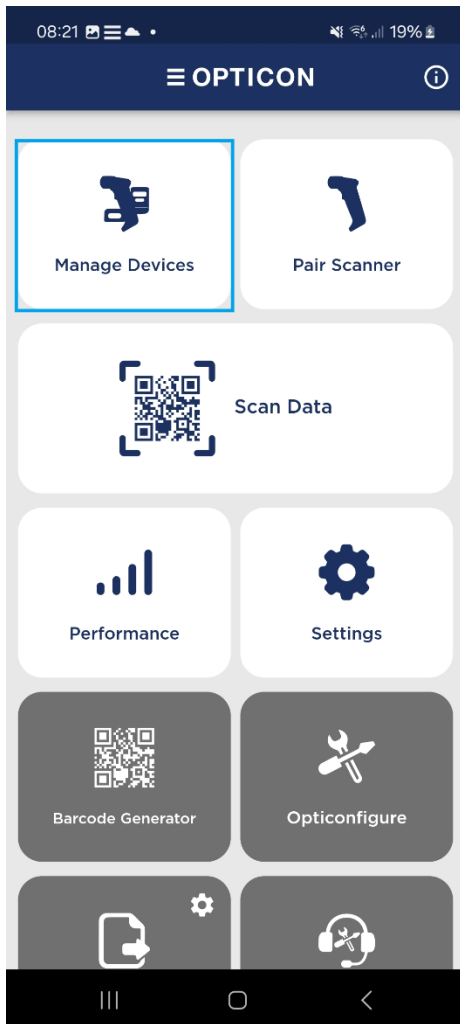
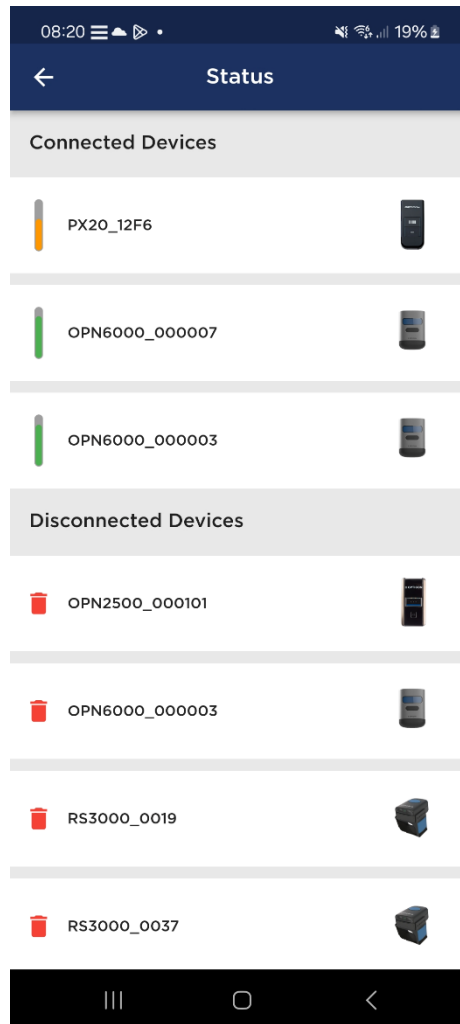Figure 6-1: The *Manage Devices* button in the main page.

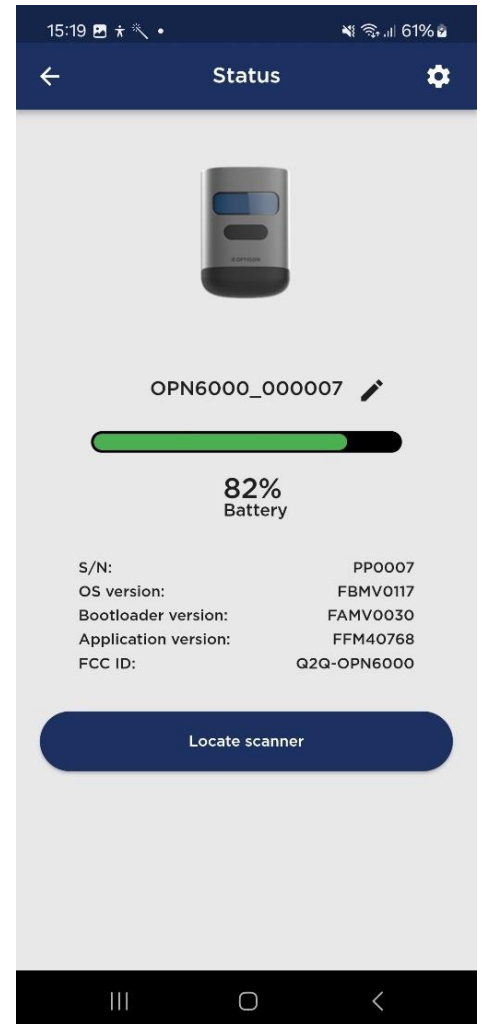Figure 6-2: The *Manage Devices* page containing connected and disconnected devices.

Figure 6-3: The *Status* page of a connected scanner.

7   Scanner Configuration

OptiConnect provides intuitive controls for you to easily configure and manage your scanners. This includes modifying code options, scan options, indicator options, formatting options, as well as volume and LED settings. While Opticonfigure is our advanced web tool designed for extensive scanner configuration, OptiConnect simplifies the process by offering an intuitive interface for configuring commonly used settings directly from your mobile device. Additionally, you can click on the magnifying glass icon at the top right of the settings page to quickly search for specific options.

7.1   Scanner Configuration Categories

This chapter is divided into several sections, each addressing different categories of scanner configuration.

7.1.1   Code Options

The *Code options* settings are divided into two categories: *Enabled codes* and *Code specific* settings.

7.1.1.1   Enabled Codes Settings

The *Enabled codes* settings are used to configure which barcode types (symbologies) the scanner can read. By navigating to the *Enabled codes* page, you can easily toggle the barcode symbologies on or off based on your requirements (see Figure 7-3). The page is divided into the following symbology categories:

- **2D Codes**: Options include Aztec, DataMatrix, MaxiCode, MicroPDF417, Micro QR Code, PDF417, QR Code, and other 2D barcodes.
- **1D Codes**: Options include various types of linear barcodes.
- **GS1 DataBar**: Options include GS1 DataBar, Limited, and Expanded codes.
- **Postal Codes**: Options include postal codes from different regions.

7.1.1.2   Code Specific Settings

The *Code specific settings* allow for configuration of individual barcode symbologies supported by the scanner. These settings enable you to fine-tune the scanner's behavior for each barcode type. The options available in this section include settings such as check digit (CD) checking and transmission, AIM Identifier (AI) transmission, enabling addons, code modes, and more (see Figure 7-4).

7.1.2   Scan Options

The *Scan options* settings provide a range of configurations to optimize the scanning process for various environments and use cases. Here are the settings available in the *Scan options* (see Figure 7-5):

- **Positive and Negative Barcodes**: Allows scanning of barcodes with default colors (positive barcodes) and reversed colors (negative barcodes).

- **Read Mode**: Choose between single read and continuous read.

- **Read Time**: The number of seconds the reader is active after the scan button is pressed.

- **Illumination Mode**: Toggle the floodlight for better visibility in low-light conditions. Disable it to prevent glares, for example when scanning from a device's screen.

- **Enable Aiming**: Enable or disable the aiming LED.

- **Enable Trigger Repeat**: Allows you to press the trigger once to activate the aiming bar LED and release it, then press a second time to capture the barcode. If *Read Time* is set to 0s, it is press to aim and release the scan button to capture the barcode.

- **Enable Delete Key**: Enable or disable the delete key function to allow barcodes to be removed by scanning them with the function key with a quantity of -1 (a remove).

7.1.3 Indicator Options

The *Indicator options* settings allow you to customize the feedback of the scanner through visual (LED), buzzer sound, and haptic (vibration) indicators (see Figure 7-6).

- **Enable Buzzer**: Toggle the buzzer on or off.

- **Buzzer Type**: Select the type of buzzer sound (e.g., high-low buzzer).

- **Buzzer Duration**: Set the duration of the buzzer sound.

- **Enable Charging Indicator**: Enable or disable the visual indicator for the charging status.

- **Enable Vibrator**: Toggle the vibration feedback on or off.

- **Vibration Duration**: Set the duration of the vibration.

- **Vibrate on Scan Button Press**: Enable or disable vibration feedback when the scan button is pressed.

7.1.4 Formatting Options

The *Formatting options* settings allow you to customize the scanned data by adding preambles, prefixes, suffixes, and postambles. This enables you to augment the scanned data to meet specific requirements for different applications.

- **Preamble**: Add a string of characters before the scanned data. A preamble is transmitted before the prefix and can contain up to 8 direct input characters.

- **Prefix**: Add a string of characters before the scanned data, which can be configured for different input entries. The prefix can contain up to 4 direct input characters.

- **Suffix**: Add a string of characters after the scanned data. Similar to the prefix, the suffix can contain up to 4 direct input characters.

- **Postamble**: Add a string of characters at the very end of the scanned data sequence. A postamble is transmitted after the suffix and can contain up to 8 direct input characters.
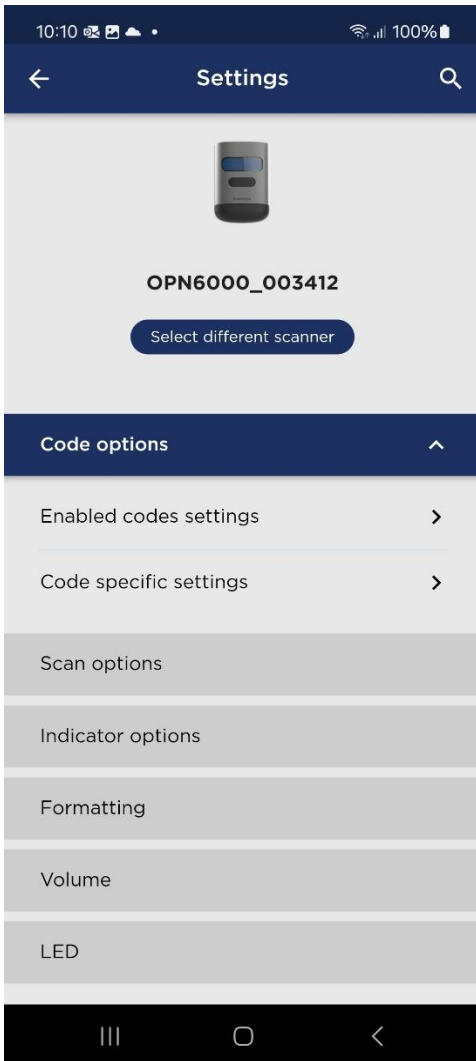
Figure 7-1: The *Settings* page containing the different scanner settings categories for your selected scanner.
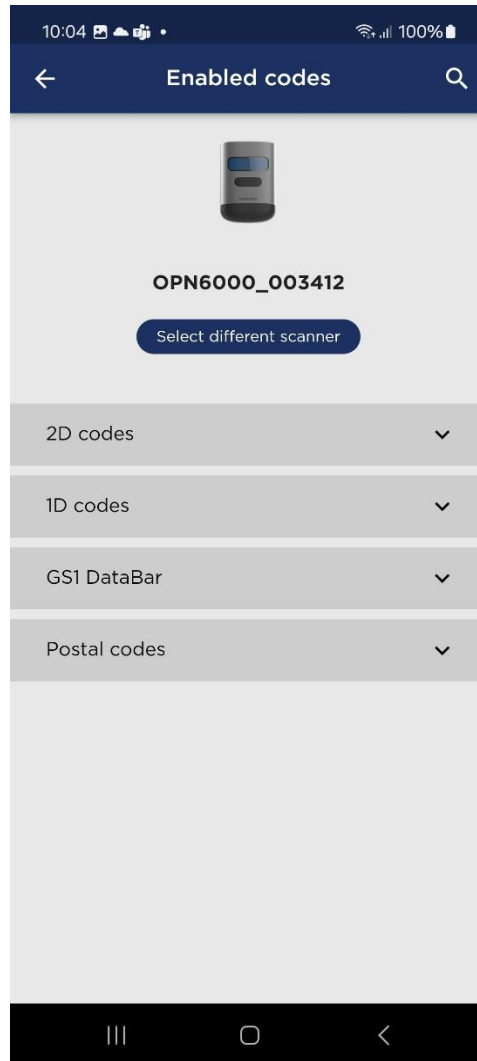
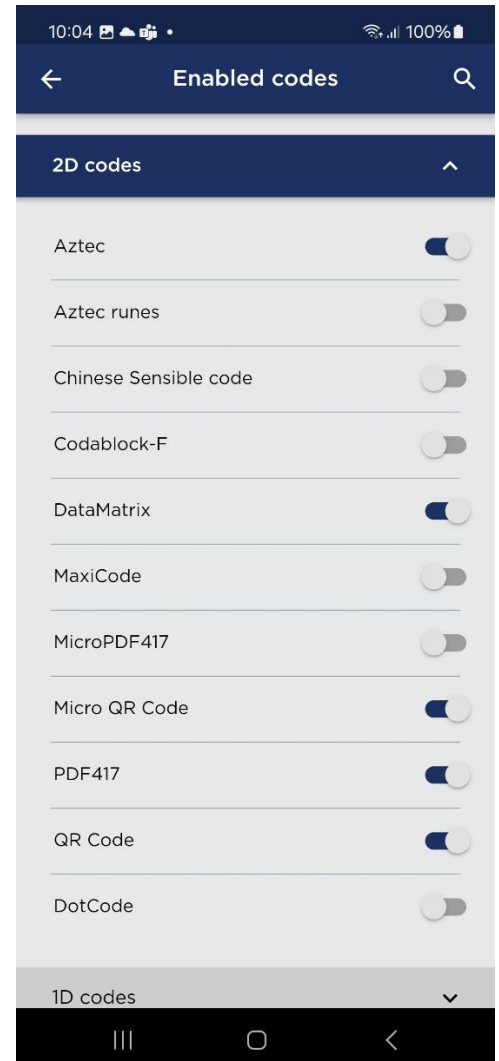Figure 7-2: The *Enabled codes* page where you can configure the barcode types the scanner can read.

Figure 7-3: The *Enabled codes* page showing available options for 2D codes.

7.1.5   Volume Settings

The *Volume settings* page provides a circular volume slider to adjust the buzzer's volume level.

7.1.6   LED Settings

The LED settings page contains a slider to adjust the good read LED color, available only for the OPN-2500 and OPN-6000 models. The custom LED color can be used to identify your scanner among other scanners by using the *Locate Scanner* feature (see Figure 6-3). Additionally, by pressing both the scan button and the function key, the LED color will be visible, making it easier to identify your scanner.
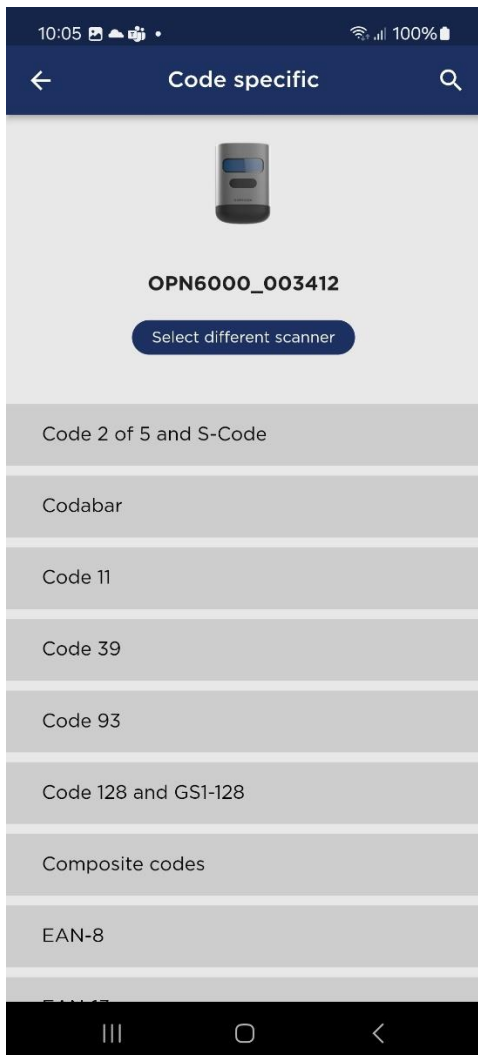
Figure 7-4: The *Code specific* page where you can configure code specific settings, such as check digit.
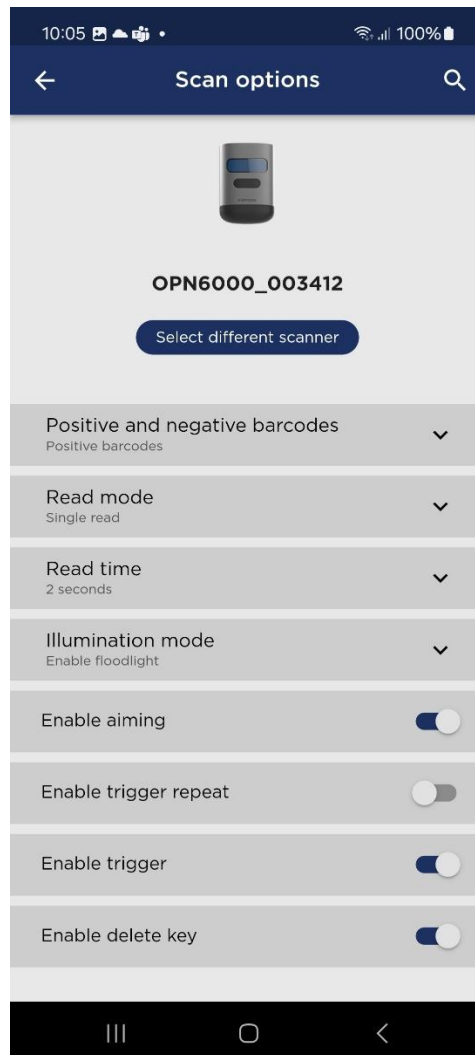
Figure 7-5: The *Scan options* page where you can configure scan-related settings such as read mode and illumination.
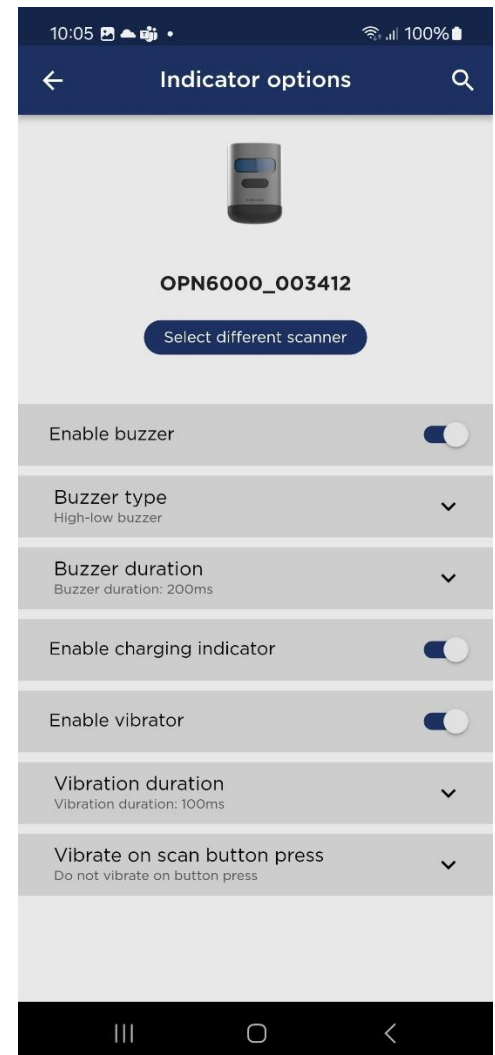
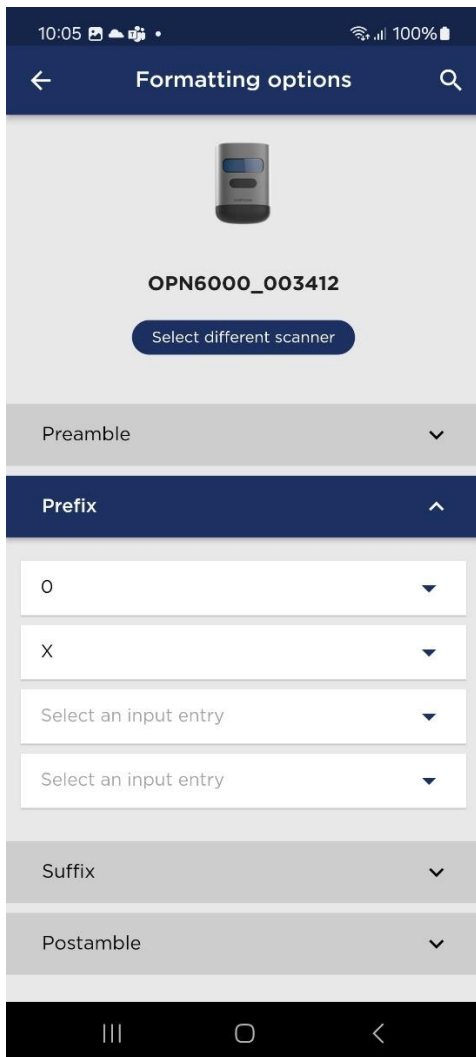Figure 7-6: The *Indicator options* page for configuring buzzer, vibration, and charging indicators.

Figure 7-7: The *Formatting options* page where you can add preambles, prefixes, suffixes, and postambles to scanned data.
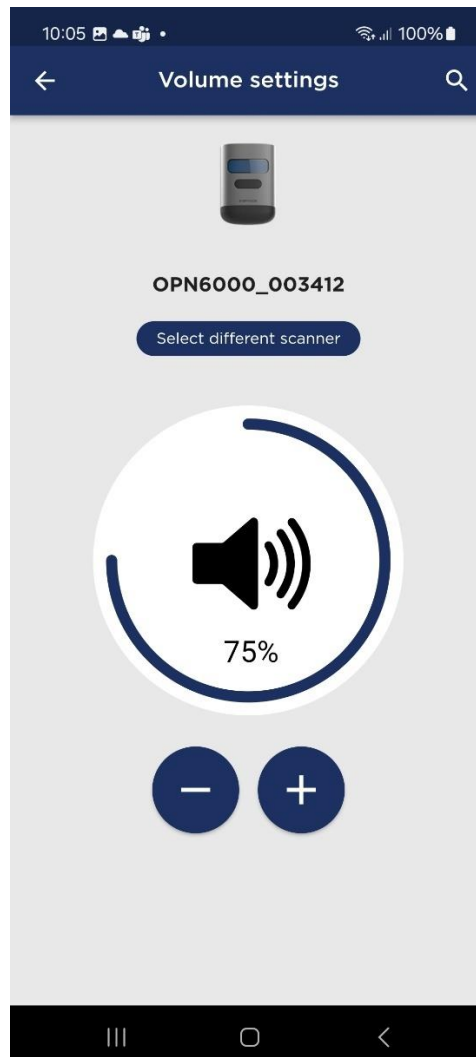

Figure 7-8: The *Volume settings* page for adjusting the scanner's buzzer volume.
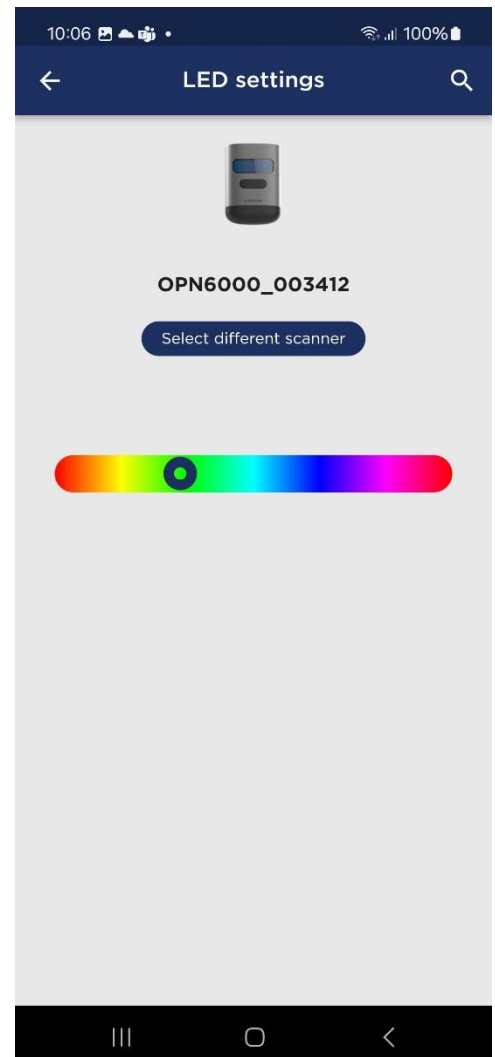

Figure 7-9: The *LED settings* page for selecting the color of the LED indicator on the scanner (OPN-6000 and OPN-2500 only).

8 Data Management, Import and Export

Effective data management is crucial for leveraging the full potential of your barcode scanning operations. This chapter will guide you through the processes involved in managing scanned data, importing product data in CSV format, and exporting data in various file formats.

8.1 Data Management

OptiConnect offers comprehensive data management capabilities, ensuring that scanned data entries are automatically added to the scanned codes list and efficiently processed. When you scan a barcode, it is instantly added to the list, stored in a local SQLite database, and processed for optional features like the virtual keyboard or customer app integration.

The key features of OptiConnect's data management include:

- **Real-Time Data Addition**: Scanned data entries are added to the scanned codes list in real-time.

- **Persistent Storage**: All scanned data is persistently stored in a local SQLite database, ensuring data is securely saved and easily retrievable.

- **Manual Actions**: You can add, edit, and delete barcodes and alter quantities directly from the *Scan Data* page.

- **Item Info Insight**: Detailed item information for each scanned entry is available, providing comprehensive data. This includes data imported from the product CSV table and optional fetching of EAN and UPC code information from an Open Database (*OpenFoodFacts* API). You can also add geolocation data to each scanned entry, enabling location tracking and analysis.

- **Scanned Codes List Management**: The scanned codes list can be collapsed or expanded for better visibility and organization.

- **Individual Scan Data Environments**: Each scanner maintains its own scan data environment, which is accessible even when the scanner is offline. During export, the scanned data can be combined into a single export.

- **Inidividual Entries or Summed Quantities**: You can choose to display scanned data either as individual entries or to sum entries with the same barcode into a single entry, allowing flexibility in how data is managed and viewed. You can switch between the two modes at any time.

8.1.1   Scan Data Page, Actions and Settings

The *Scan Data* page provides a comprehensive interface for managing and viewing your scanned barcode data. Each element on this page serves a specific function to enhance data management capabilities. The *Scan Data* page can be accessed by clicking on the *Scan Data* button in the main menu of OptiConnect.

8.1.1.1   Overview of Elements on the Scan Data Page (see Figure 8-2)

Device Selector (1): Allows you to switch between connected or previously connected scanners. You can select an online or offline scanner to view its specific scan data environment.

Scanned Code Input (2): Displays the currently scanned barcode. You can manually enter or edit the barcode in this field.

Quantity Input (3): Shows the quantity of the scanned item. You can manually edit the quantity in this field.

Quantity Adjustment Buttons (4): These buttons allow you to increase or decrease the quantity of the scanned item. The plus icon increases the quantity, while the minus icon decreases it.

Delete Button (5): This button allows you to delete the current barcode entry.

Navigation Arrows (6): These arrows can be used to navigate through the scanned codes list, allowing you to move quickly between different scanned entries.

Add Code Manually Button (7): Opens a dialog to manually add a new barcode entry.

Scanned Codes List (8): Displays a list of all scanned barcodes with their corresponding quantities. This list can be collapsed or expanded for better visibility and organization by pressing the arrow icon below it (see Figure 8-4). The arrow icon will only appear if the list grows to a certain size; otherwise, expanding is not possible.

An entry in the scanned code list can be clicked to make it active, changing its background to blue. If the active entry is clicked again, a detailed 'Scan Info' dialog will open, containing the barcode, item info, total quantity (sum of all entries with this barcode), symbology, date and time of scan, and location (if enabled) (see Figure 8-9). Additionally, you can drag an entry in the scanned codes list to the left to erase the entry.

Scan Data Settings Button (9): Opens the *Scan Data* settings page (see Figure 8-3), where you can configure how the scan data is displayed and managed.

Bottom Button Section: There is a button section at the bottom of the Scan Data page with four buttons (see Figure 8-4):
- **Scanner Settings**: Leads to the *Scanner Settings* page of the currently selected scanner.
- **Delete Scan Data:** Provides an option to delete all the scanned data entries from the selected scanner.
- **Import CSV Product Table:** See Chapter 8.2.
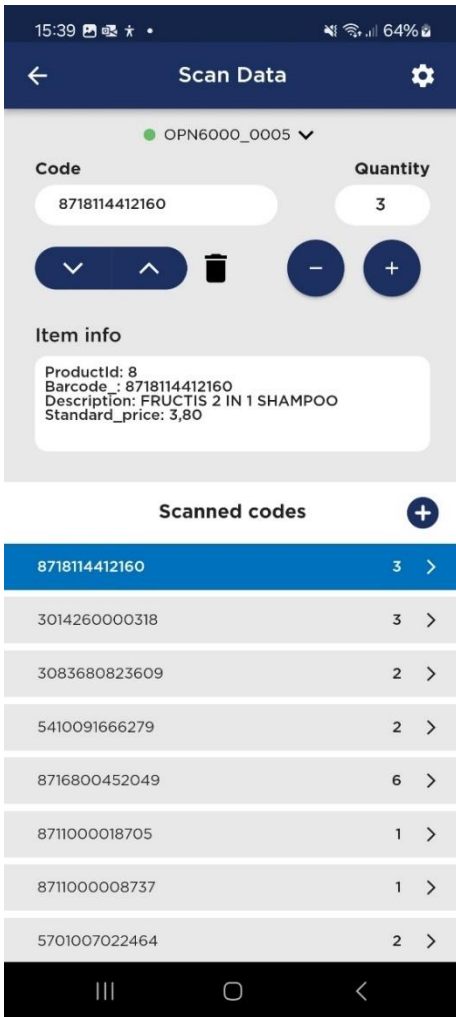- **Quick Export:** See Chapter 8.3.

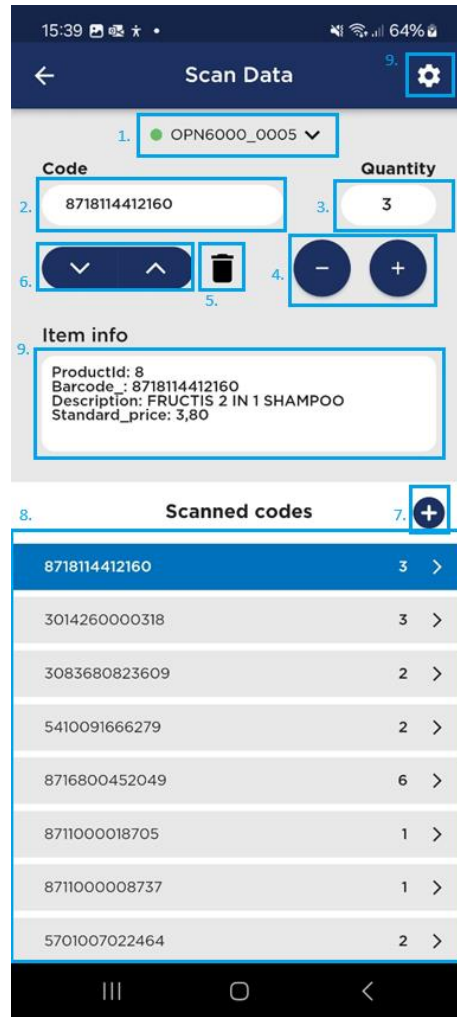Figure 8-1: The *Scan Data* page with a list of scanned codes.
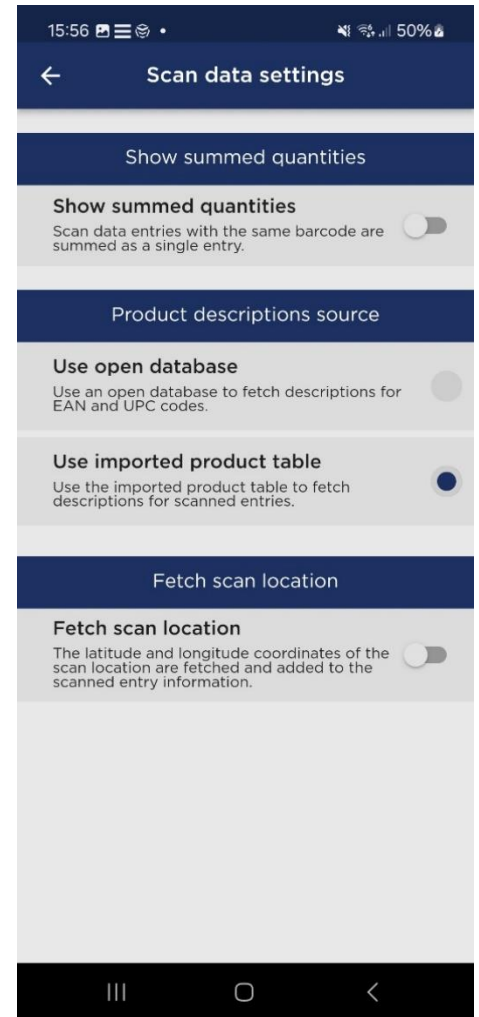
Figure 8-2: The elements on the *Scan Data* page.

Figure 8-3: The *Scan Data* settings page.

8.1.1.2 Scan Data Settings

The Scan Data Settings page allows you to configure how scan data is displayed and managed. The available settings are:

Show Summed Quantities: This setting allows you to display scan data entries with the same barcode as a single entry, summing their quantities. By default, every scan results in an individual scan entry in the scanned codes list.

Product Descriptions Source: After having imported a CSV product table, defaults to *Use imported product table* as source for the descriptions. Initially, it defaults to *Use open database* as the source to fetch descriptions for EAN and UPC codes.

Fetch Scan Location: When enabled, this setting fetches and adds the latitude and longitude coordinates of the scan location to the scanned entry information.

8.2 Importing Product Data

OptiConnect allows you to import product data in CSV format, which is automatically associated with scanned data entries based on a selected barcode column. This integration ensures that detailed product information is available for each scanned entry and can also be included in exported data. The following steps will guide you through the process of importing data:

8.2.1 Importing a CSV Product Table

1. **Initiate the Import Process**
   - At the bottom of the Scan Data page, press the *Import CSV product table* button to begin the import procedure (see Figure 8-4).

2. **Select the CSV file**
   - In the File Explorer that opens on the device, navigate to, and select the CSV file you wish to import (see Figure 8-5). In this case I have selected the *products.csv* file.
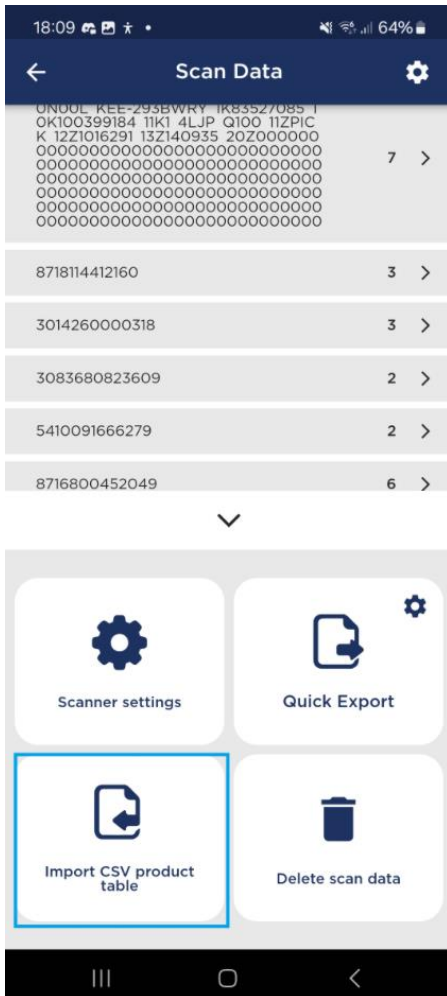
Figure 8-4: The *Import CSV product table* button in the Scan Data page.
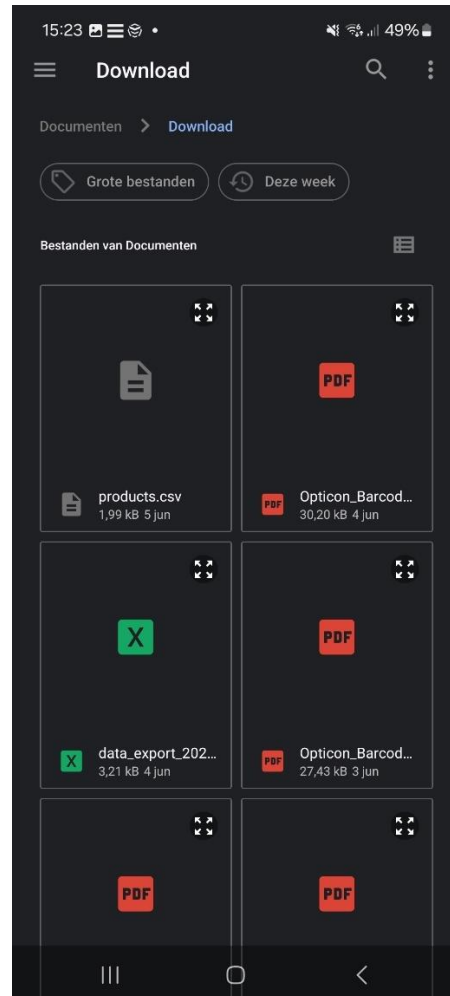
Figure 8-5: The File Explorer on the device to select the *CSV* file.

3. **Select the barcode column**

- Once the CSV file is selected, you will be prompted to select the barcode column. Select the appropriate barcode column from the list and press **Confirm** to continue (see Figure 8-6).

4. **Select Metadata Column(s)**

- After selecting the barcode column, you can choose additional columns from the CSV file to include as metadata. This metadata will be associated with the scanned entry along with the barcode, providing extra information such as product description, group, standard price, etc. Select the desired columns and press **Confirm** to complete the process (see Figure 8-7).
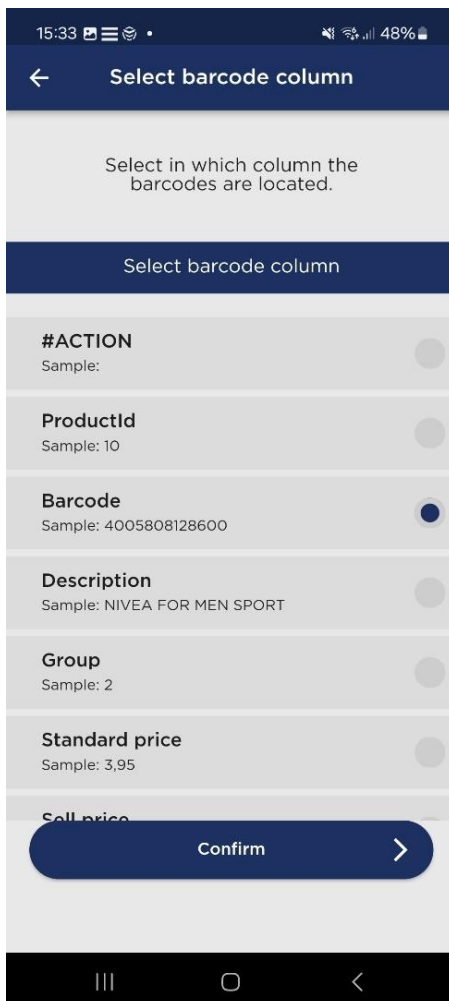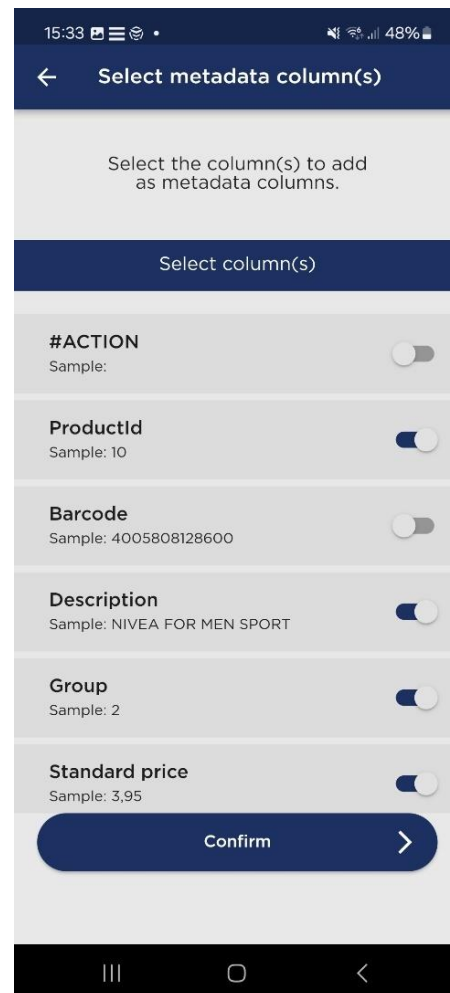
Figure 8-6: The *Select barcode column* page.

Figure 8-7: The *Select metadata column(s)* page.

5. **Start Data Import Process**

- Once the metadata columns are confirmed, the import process begins. OptiConnect will start processing the CSV data, as shown in Figure 8-8. This step involves reading the data from the CSV file and storing it in the local SQLite table with the structure based on the selected columns from the previous steps. This prepares the data for integration with the scanned entries.

6. **Data Integration**

- After the CSV data has been processed, each scanned item will have the corresponding metadata from the CSV file added to its information. This ensures that all relevant details, such as product description, group, and standard price, are associated with each scanned barcode, as demonstrated in Figure 8-9.
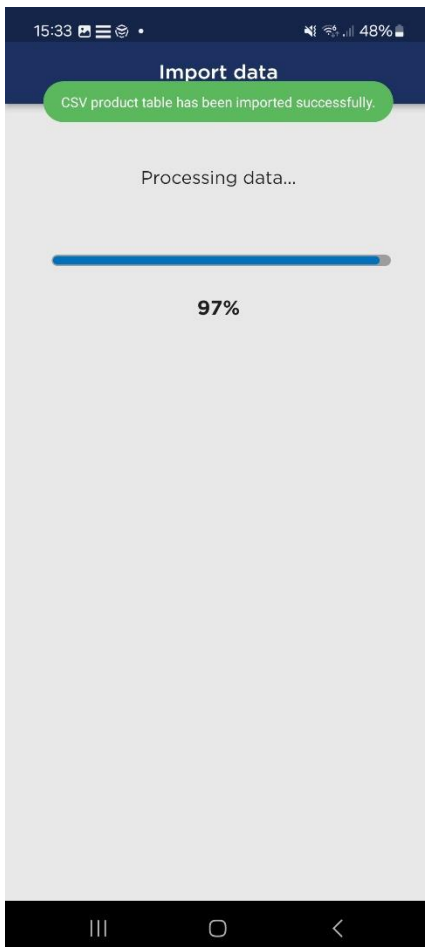

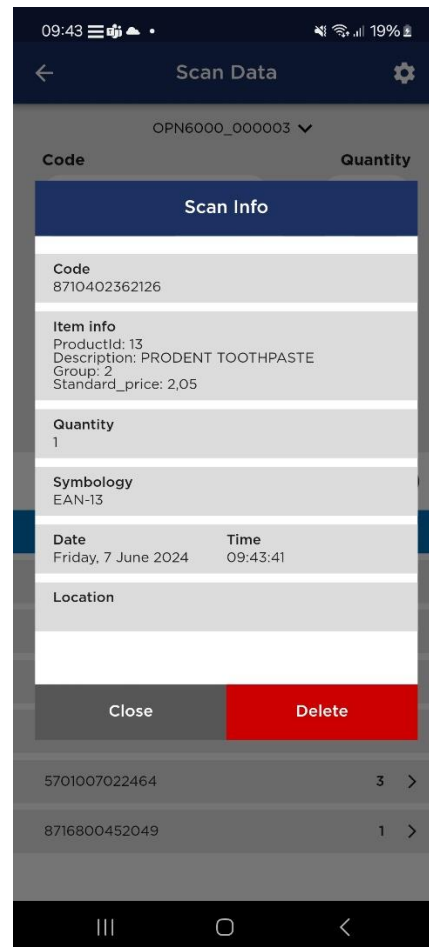Figure 8-8: The CSV data being processed and successfully imported.

Figure 8-9: The imported CSV metadata, including product description, group, and standard price, associated with the scanned item (barcode: 8710402362126).

8.3 Export Scan Data

OptiConnect provides a versatile and customizable export feature for your scanned barcode data. This feature allows you to tailor the export process to meet specific needs, ensuring that the data is presented in a format that is most useful for your analysis and integration with other systems.

You can customize export settings by selecting which scanners' data to include, choosing the export format (Text, CSV, Microsoft Excel®, or SQLite), and configuring various data presentation options. This includes setting whether summed quantities should be used, including a header row with column names, and selecting which columns to export. The available columns include symbology, barcode, quantity, geolocation, time of scan, date of scan, export time, export date, scanner ID, scanner name, scanner serial number, and any imported metadata columns. You can also set the order of the columns, choose time formatting options, and add a custom file name with an optional timestamp.

8.3.1 Export Settings Configuration

1. **Initiate the Export Configuration**

   - To begin, click on the configuration wheel indicated by (2) in Figure 8-10. This will open the export settings menu where you can customize your export preferences.

2. **Select Scanners**

   - In the first configuration step, choose which scanners' data you want to include in the export. This is done on the *Select Scanners* page (see Figure 8-11). Toggle the switch next to each scanner to select or deselect it. Once you have made your selections, click *Next* to proceed. **Note**: When exporting from the *Scan Data* page, the currently selected scanner will always be included in the export.

3. **Select Export Format**

   - In this step, you will choose the format for exporting your data on the *Export Format* page (see Figure 8-12). The available formats are:

     Text: Exports the data as a plain text file. This format is useful for simple text-based data analysis and review.

     CSV: Exports the data as a CSV (comma-separated values) file. This format is ideal for spreadsheet applications like Microsoft Excel® and Google Sheets, allowing for easy data manipulation and analysis.

     Microsoft Excel®: Exports the data directly as a Microsoft Excel® file (.xlsx). This format provides advanced data organization and analysis capabilities using Excel's built-in features.

     SQLite: Exports the data as an SQLite database file. This format is suitable for users who need to perform complex queries and analysis using database management tools like *DB Browser for SQLite* or *DBeaver*.
     Note: When the SQLite format is chosen, the entire SQLite database of OptiConnect is exported as is. This means that the custom export settings you configured, such as column selection and data formatting, do not apply.
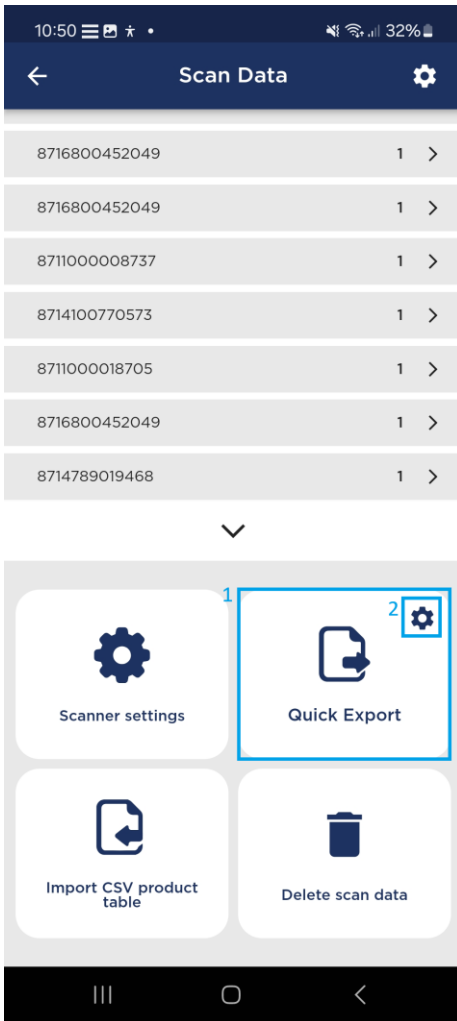
Figure 8-10: The *Quick Export* button (1) at the bottom of the Scan Data page, allowing you to start the export process. The configuration wheel (2) opens the export settings menu.
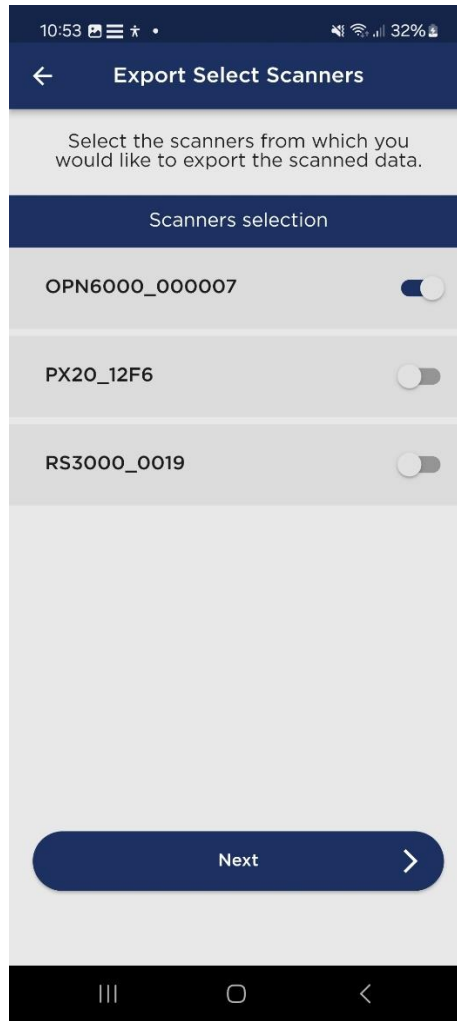
Figure 8-11: The *Select Scanners* page, the first configuration step in the export settings, where you choose which scanners' data to export.
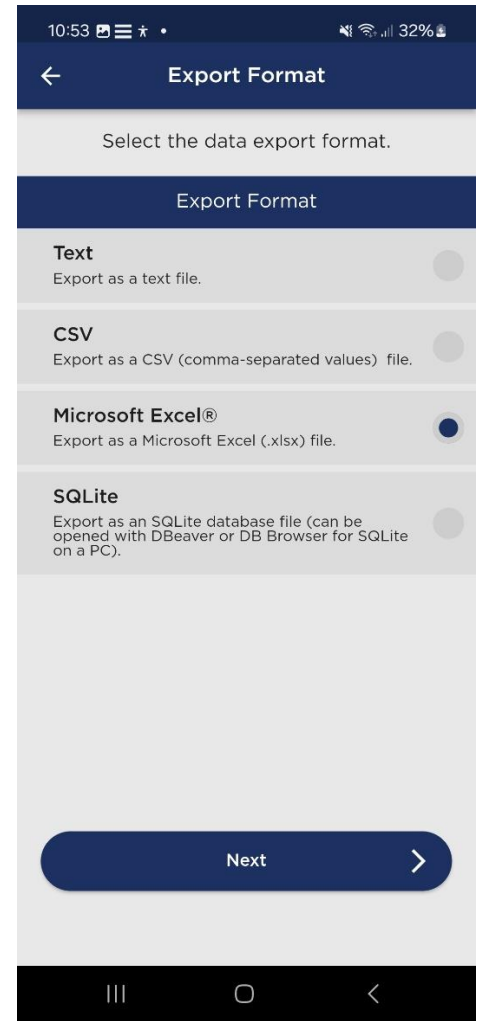
Figure 8-12: The *Export Format* page where you can select the desired format for exporting data.

4. **Configure Export Data Settings**

- In this step, you can customize various settings for the export data on the Export Data page (see Figure 8-13 and Figure 8-14). The following configurations are possible:

    Show Summed Quantities: refer to Chapter 8.1.1.2 to read more about it.

    Export Header Row: Enable this option to include a row with column names at the top of the export file.

    Export Columns Selection: Select which columns to include in the export file. The available columns include symbology, barcode, quantity, geolocation, time of scan, date of scan, export time, export date, scanner ID, scanner name, scanner serial number, and any imported metadata columns.
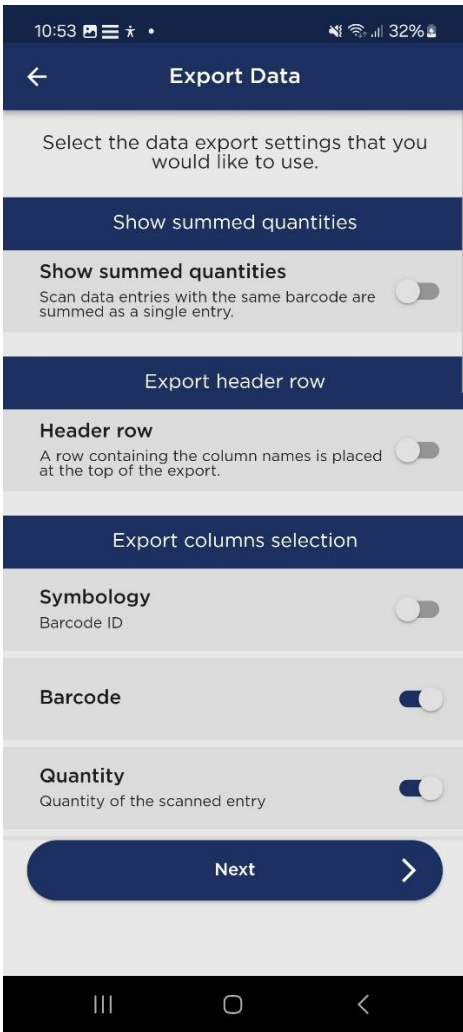
Figure 8-13: The *Export Data* page where you can configure various export data settings.
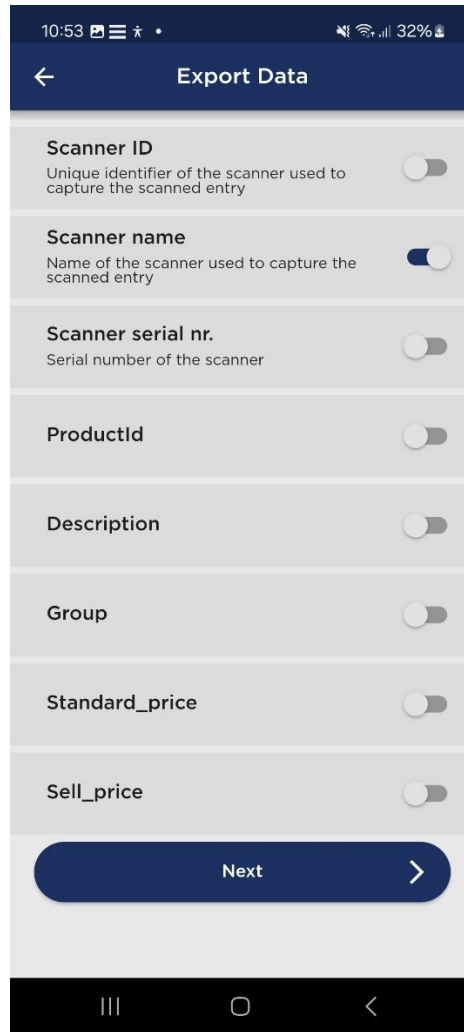
Figure 8-14: *Export Data* settings page scrolled to the bottom to display the available columns, including imported metadata columns.
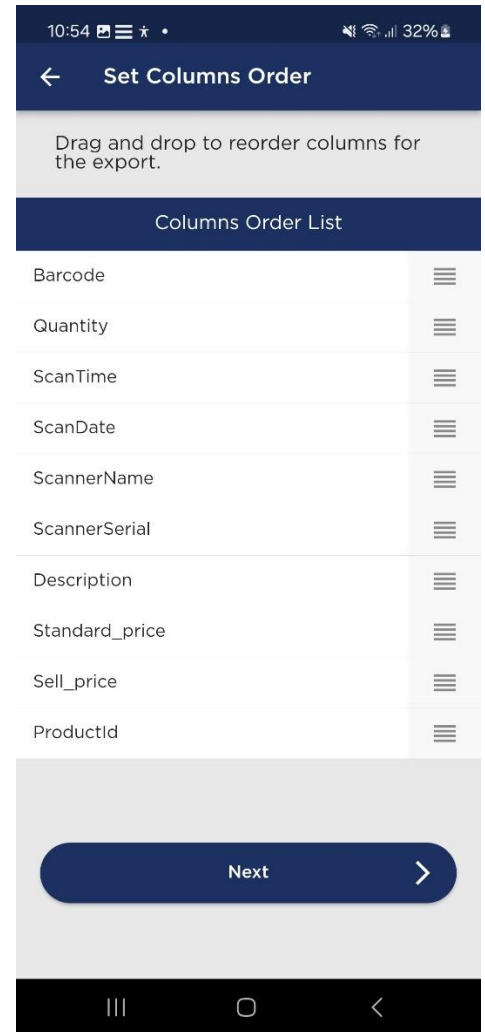
Figure 8-15: The *Set Columns Order* page where you can drag and drop to reorder the columns for the export.

5. **Set Columns Order**

- After selecting the columns, you can arrange them in your preferred order on the Set Columns Order page (see Figure 8-15). Drag and drop the columns to reorder them as desired. This customization allows you to organize the exported data according to your specific needs. Once you have configured the order of the columns, click "Next" to proceed.

6. **Select Separator (CSV and TXT export only):**

- Choose the separator character for CSV and TXT exports on the Select Separator page (see Figure 8-16). The options include comma (,), semicolon (;), pipe (|) and tab (\t).
  The default separator is the comma. This selection ensures your exported data is correctly parsed and compatible with your analysis tools.
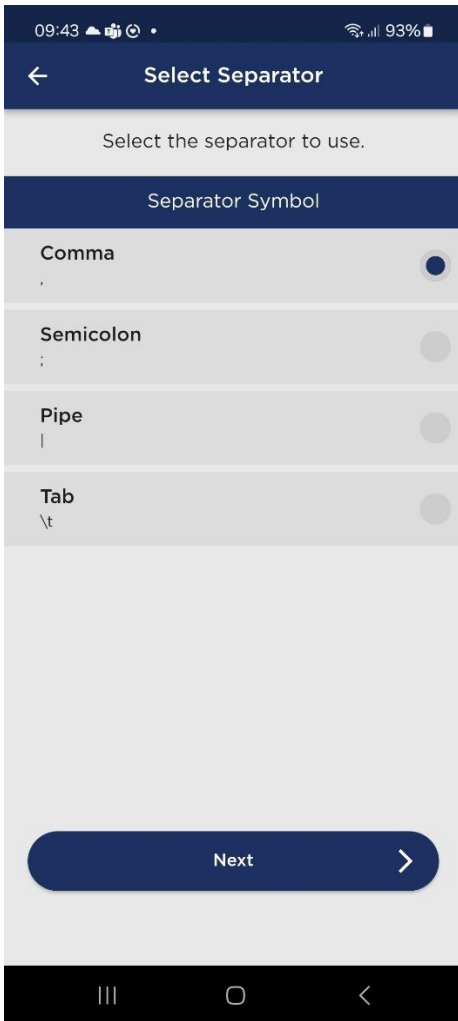
Figure 8-16: The *Select Separator* page where you can select the separator to be used by the CSV and TXT export formats. The default is the comma separator.

Figure 8-17: The *Export Formatting* page allows you to select your preferred date and time formats for the exported data.
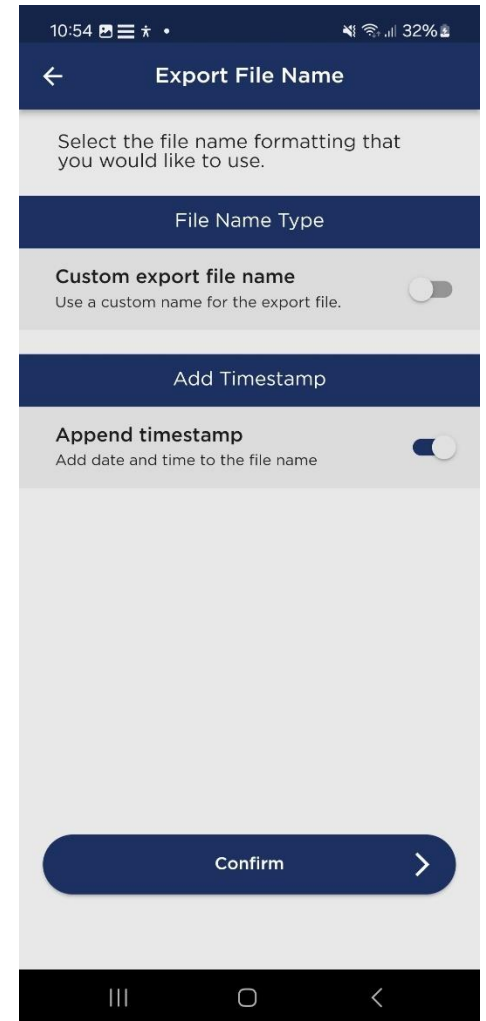
Figure 8-18: The *Export File Name* page where you can set a custom name for the export file and choose to append a timestamp to the export file name.

7. **Configure Time and Date Formatting:**

- In this step, you can select your preferred time and date formats (see Figure 8-17). These settings apply to the *time of scan*, *date of scan*, *export time* and *export date* column values in the export. You can choose between different time formats (12-Hour AM/PM or 24-Hour) and date formats (USA: MM/DD/YY, EU: DD/MM/YY, or Long: YYYY-MM-DD).

8. **Configuring the Export File Name:**

- On the Export File Name page (see Figure 8-18), you can set a custom name for the export file and choose to append a timestamp to the file name. This option allows you to add the date and time to the file name, making it easier to track and manage exported files.

9. **Finalize and Perform Export:**

    - Once all the export settings have been configured, OptiConnect remembers these settings and applies them for any export performed. However, you can always change the export settings again if needed.

8.3.2 Creating the Export File

To create the export, simply click on the *Quick Export* button (1) in Figure 8-10, or click on the *Quick Export* button in the main menu. This will initiate the export process with your configured settings. After the export is completed, you are automatically redirected to the export settings file location, making it easy to access and review the exported data (see Figure 8-19). For Android, the export will be stored in the *Downloads* folder, and for Mac, iOS, and Windows, it will be stored in the *Documents* folder.

8.3.3 Export Examples

To illustrate the different export formats and their practical uses, here are examples of each supported format:

CSV Export: The CSV format is ideal for use with spreadsheet applications like Microsoft Excel® and Google Sheets, allowing for straightforward data manipulation and analysis. CSV files are plain text files with data separated by a customizable delimiter, with the default being commas. (See Figure 8-20 for an example.)

Figure 8-19: The export file is successfully created and located at the top of the Downloads folder (Android).

Text Export: Similar to CSV, the Text export format separates data with a chosen delimiter, making it compatible with various text editors and spreadsheet applications. The only difference is the file extension (.txt instead of .csv). This format is useful for straightforward data manipulation and review.

Microsoft Excel® Export: This export format provides advanced data organization and analysis capabilities using Excel's built-in features. You can sort, filter, and manipulate the scanned data easily within Excel. (See Figure 8-21 for an example).

SQLite Export: This format exports the entire SQLite database as is, allowing for complex queries and data analysis using tools like DB Browser for SQLite or DBeaver. Custom export settings such as column selection and data formatting do not apply when exporting as SQLite. (See Figure 8-22 for an example).
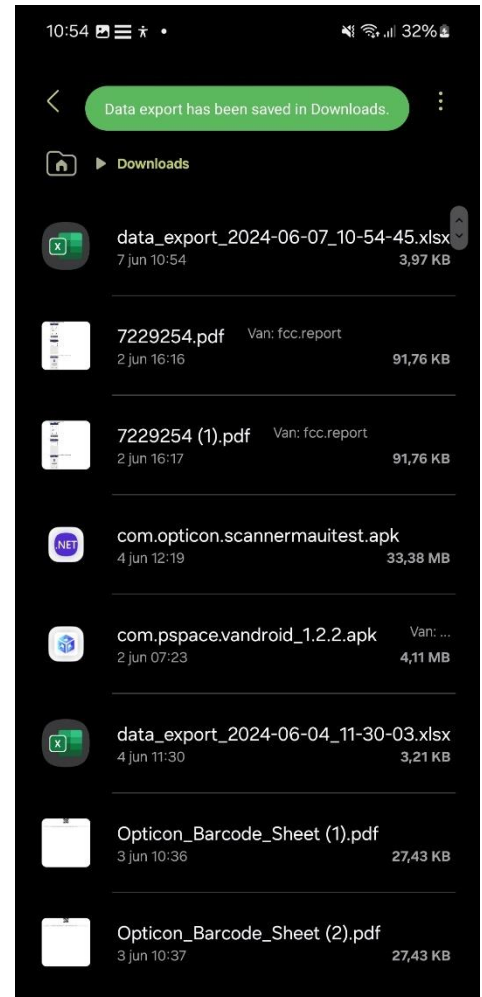
```
  1  Barcode,Quantity,ScanTime,ScanDate,ScannerName,Description,ScannerSerial,ProductId,Standard_price,Sell_price,Content,Unit
  2  8710402362126,1,09:21:17,10/06/24,OPN6000_000123,PRODENT TOOTHPASTE,000123,13,"2,05","2,05",75,ML
  3  4005808128600,1,09:21:17,10/06/24,OPN6000_000123,NIVEA FOR MEN SPORT,000123,10,"3,95","2,95",250,ML
  4  5410091666279,1,09:21:18,10/06/24,OPN6000_000123,SWARZKOPF JUNIOR STYLING,000123,11,"4,50","3,99",250,ML
  5  3083680047760,2,09:21:18,10/06/24,OPN6000_000123,BOND APPEL COMPOTE,000123,4,"0,79","0,79",150,GR
  6  3083680823609,1,09:21:19,10/06/24,OPN6000_000123,BOND BUNTER MIX,000123,3,"1,29","0,89",400,GR
  7  3083680012256,1,09:21:19,10/06/24,OPN6000_000123,BONDUELLE CARROTS,000123,1,"0,95","0,89",180,GR
  8  8718114412160,2,09:21:20,10/06/24,OPN6000_000123,FRUCTIS 2 IN 1 SHAMPOO,000123,8,"3,80","3,80",300,ML
  9  3014260000318,1,09:21:20,10/06/24,OPN6000_000123,GILLETTE SHAVING FOAM,000123,12,"6,99","6,99",200,ML
 10  8714789019468,1,09:21:20,10/06/24,OPN6000_000123,COLGATE SENSATION WHITE,000123,15,"2,29","2,29",75,ML
 11  8716800452049,3,09:21:21,10/06/24,OPN6000_000123,ELMEX TOOTHPASTE,000123,16,"1,65","1,19",75,ML
 12  5701007022464,3,09:21:21,10/06/24,OPN6000_000123,AQUAFRESH TOOTHPASTE,000123,14,"1,80","1,80",75,ML
```

Figure 8-20: A CSV Export example.

Figure 8-21: A Microsoft Excel® Export example.

Figure 8-22: The *scanned_products* table data from the SQLite export opened in DBeaver on a Windows PC. When the SQLite format is chosen, the entire SQLite database of OptiConnect is exported as is.

9 Customer Application Integration

OptiConnect's client application integration empowers you to integrate your applications through API calls and Android Intents (Android only), enabling real-time data broadcasting and interaction with other applications. This capability allows for the creation of customized workflows around the barcode data you receive, extending functionality and automation within your operations.

9.1 Android Intents (Client-Client integration, Android only)

OptiConnect can broadcast captured data to your applications on your Android device using Android Intents. This feature does not target specific applications, allowing any application set up to receive this type of broadcast to process the data in real-time:

1. **Enable Intent Broadcast**: Toggle *Enable intents broadcast* to start or stop broadcasting barcode data.

2. **Broadcast Transmission:** OptiConnect sends the broadcasts using the *sendBroadcast()* method.

3. **Real-Time Data Processing**: This allows your applications on the device to observe and process barcode data from OptiConnect in real-time.

In addition to enabling broadcasts, you can customize the intent values to fit your specific needs. Here are the intent settings you can configure:

Intent Action: The action string for the intent. Default **com.opticon.decode.wedge.action** .

Intent Category: The category string for the intent. Default **com.opticon.decode.wedge.category**.

Intent Barcode Type: The string key to retrieve the barcode type (symbology). Default **com.opticon.decode.intentwedge.barcode_type**.

Intent Barcode Quantity: The string key to retrieve the quantity of barcodes. Default **com.opticon.decode.intentwedge.barcode_quantity**.

Intent Barcode Data: The string key to retrieve the actual barcode data. Default **com.opticon.decode.intentwedge.barcode_data**.
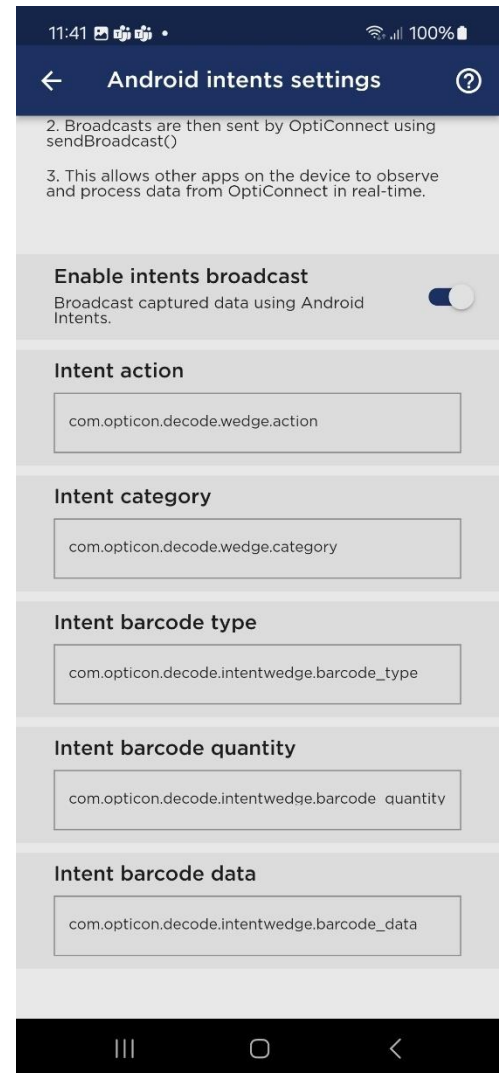

Figure 9-1: The *Android Intents settings* page in OptiConnect, showing the configuration options for broadcasting barcode data to applications on the Android device.

9.1.1   Kotlin example for setting up an OptiConnect broadcast receiver

The code below demonstrates how to set up a receiver in an Android client application using Kotlin. This receiver listens for broadcasts from OptiConnect to receive barcode data:

```kotlin
private fun setupBarcodeReceiver() {
  barcodeReceiver = object : BroadcastReceiver() {
    override fun onReceive(context: Context?, intent: Intent?) {
      val barcodeData = intent?.getStringExtra("com.opticon.decode.intentwedge.barcode_data")
      val symbology = intent?.getStringExtra("com.opticon.decode.intentwedge.barcode_type")
      if (barcodeData != null) {
        Log.d("ForegroundService", "Received barcode data: $barcodeData, Symbology:
$symbology")
      }
    }
  }
  registerReceiver(barcodeReceiver, IntentFilter("com.opticon.decode.wedge.action"))
}
```

9.2   API forwarding (Client-Server integration)

OptiConnect allows you to forward captured barcode data to an external API endpoint to integrate it with your server side (see Figure 9-2):

1. **Enable Forward data to an API***: Toggle *Forward data to an API* to send captured data to an external API endpoint.

2. **Enable Send additional data to the API (optional)**: Optionally enable *Send additional data to the API* to include metadata fetched from the imported product table on the scan data page in the API call.

3. **Configure API Endpoint URL**: Enter the API endpoint URL where the data should be sent. For example: *https://example.com/api/barcodes/receive.*

4. **Add Custom Headers (optional)**: The *Custom headers* section can be used to include headers in the HTTPS request to the endpoint. This is useful for adding authentication headers such as an API key. For instance, the key *x-api-key* and value *example-api-key-value*.

9.2.1   C# example for setting up an API endpoint on the server to receive barcode data

The code below demonstrates how to set up a receiving endpoint in a C# ASP.NET application to receive and process the forwarded data:

```csharp
[HttpPost]
public async Task<IActionResult> Receive([FromBody]
Dictionary<string, string> jsonData)
{
    try
    {
        string barcode = jsonData["Data"];
        string quantity = jsonData["Quantity"];
        string deviceId = jsonData["DeviceId"];
        string symbology = jsonData["Symbology"];
        string timeOfScan = jsonData["TimeOfScan"];

        // Process the received barcode and
        additional data
        // Example: Save the data to a database,
    log it, etc.

        return Ok();
    }
    catch (Exception ex)
    {
        return BadRequest("Error processing data: "
+ ex.Message);
    }
}
```
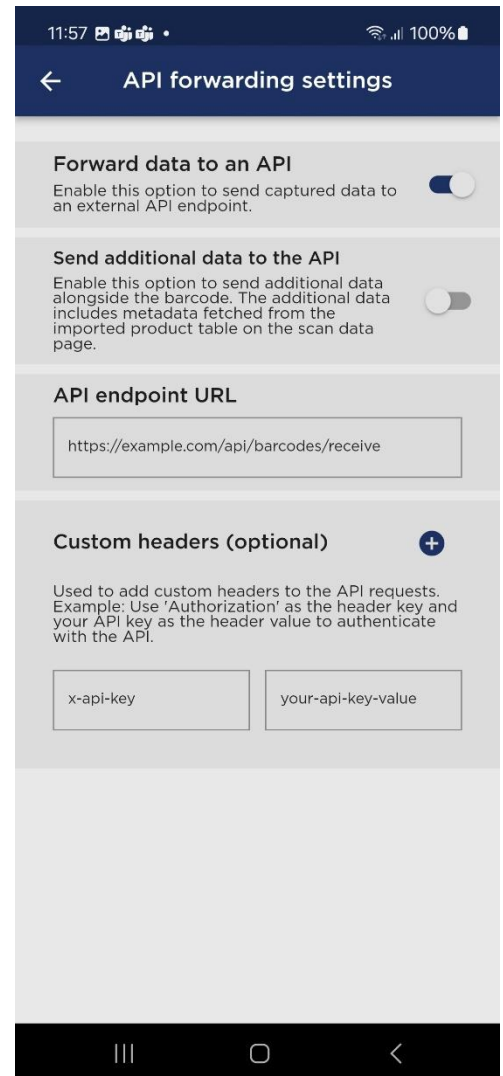
Figure 9-2: The *API forwarding settings* page in OptiConnect, showing how to configure the API endpoint URL and custom headers.

9.3   Data Validation

OptiConnect's data validation feature allows you to customize the response of the scanner based on the validation result of the received barcode data. This setup provides flexibility in handling different validation outcomes, ensuring accurate data processing. Combined with our client application integration, you can validate barcode data and adjust the scanner's feedback, including LED indicators, sound, and vibration responses, enhancing workflow efficiency and accuracy.

9.3.1   Configuring Data Validation Settings

In the *Data Validation Settings* page, you can configure how OptiConnect responds to the validation results (see Figure 9-3). The available modes are:

Disabled: No data validation is performed.

Default Barcode Validation: Standard validation is performed on the received barcode data. The scanner expects to receive a good read (ACK), bad read (DC2), no response (DC1), or resend (NAK) within 1 second. If no feedback is received, the transmission terminates with an error buzzer. OptiConnect automatically sends these commands to the scanner based on the response type received by OptiConnect from the client application. The response format will be given in Chapter 9.3.2.

Barcode Validation (No response = good read): Similar to default barcode validation, but if no feedback is received within 100 ms, the barcode is considered a good read.

Figure 9-3: The *Data validation settings* page where you can configure the data validation mode.

Note: *memorizing when not connected* is disabled when using data validation.

9.3.2   Response Types and Examples

OptiConnect's Data Validation feature allows your client application to send various types of responses back to the scanner based on the validation result, using the JSON format. The responses are deserialized by OptiConnect into specific response objects from the supplied JSON data, providing flexible control over the scanner's feedback. The following response types are available:

1. **Default Response (Required)**

   The *Default Response* must always be included in the response JSON and acts as a container for other response types. It indicates the overall result of the validation operation (the *responsetype* field) and can embed additional response types within it in the *responses* field.
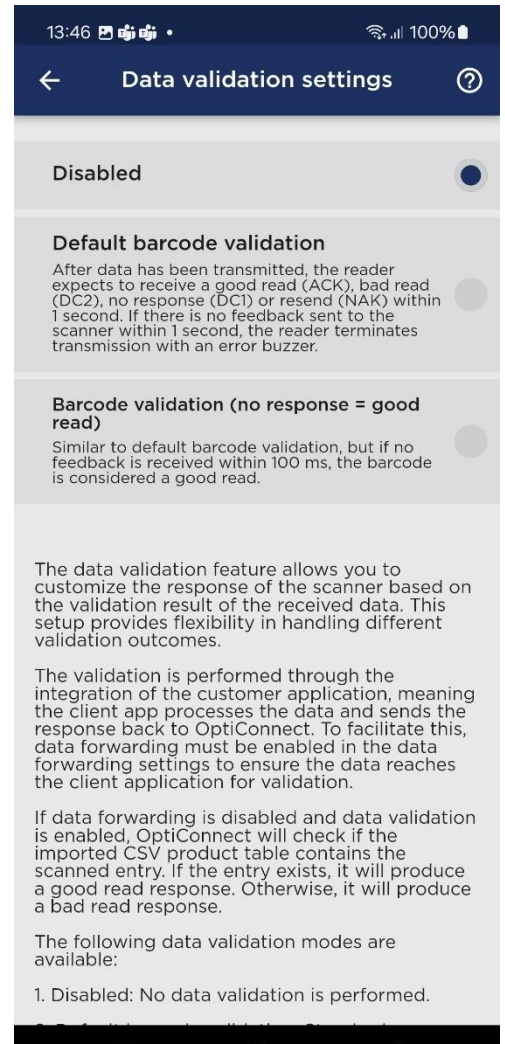
- **Fields**:

    - *responsetype (string): Indicates the result of the operation. Possible values: goodread, badread, noresponse, resend.*

    - *responses (array): An array containing the responses described in the following sections, if any.*

- **Example**:

```
{
    "responsetype": "noresponse",
    "responses": responses
}
```

2. **Simple Sound Response**

   The *Simple Sound Response* is used to customize the sound feedback of the scanner. This feature allows for different sound configurations based on the validation result.

   - **Type**: *simplesound*

   - **Fields:**

       - *volume (int, 1-100%)*
       - *tones (List<int>, in Hz)*
       - *time (int, in steps of 20 ms)*
       - *soundtype (string, single hex char in range [0, D]):*
           - *0: TSTANDARD, SHIGH, SMEDIUM*
           - *1: TSTANDARD, SMEDIUM, SHIGH*
           - *2: TSTANDARD, SERROR, SPAUSE, SERROR, SPAUSE, SERROR, SPAUSE, SERROR, SPAUSE*
           - *3: TVLONG, SERROR*
           - *4: TLONG, SHIGH*
           - *5: TLONG, SMEDIUM*
           - *6: TLONG, SLOW*
           - *7: TLONG, SVLOW*
           - *8: TVLONG, SHIGH*
           - *9: TSHORT, SHIGH, SMEDIUM*
           - *A: TSHORT, SMEDIUM, SHIGH*
           - *B: TSTANDARD, SMEDIUM, SHIGH, SMEDIUM, SHIGH*
           - *C: TSTANDARD, SHIGH, SMEDIUM, SHIGH, SMEDIUM, SHIGH, SMEDIUM, SHIGH*
           - *D: TSTANDARD, SLOW, SMEDIUM, SHIGH, SLOW, SMEDIUM, SHIGH, SLOW, SMEDIUM, SHIGH*

   - **Supported scanners:** OPN-6000 and OPN-2500 (full support). RS-3000, PX-20 and OPN-2006 (only *soundtype*).

- **Examples:**

OPN-6000 and OPN-2500:

```
{
    "type": "simplesound",
    "volume": 80,
    "tones": [500, 1000, 1500],
    "time": 40
}
```

RS-3000, PX-20 and OPN-2006:

```
{
    "type": "simplesound",
    "soundtype": "C"
}
```

3. **Simple LED Response**

The *Simple LED Response* is used to customize the LED feedback of the scanner. This feature allows for different LED configurations based on the validation result.

- **Type:** *simpleled*

- **Fields:**

  - *color (Color, RGB Hex formatted string): Specifies the color of the LED.*
  - *brightness (int, 1-100%): Sets the brightness level of the LED.*
  - *dutycycle (int, 0-100%): Determines the duty cycle of the LED, indicating how long the LED stays on versus off.*
  - *flashperiod (int, in steps of 20 ms): Sets the flash period of the LED.*
  - *time (int, in steps of 20 ms): Specifies the duration for which the LED response will be active.*

- **Supported scanners:** OPN-6000 and OPN-2500 (full support), RS-3000, PX-20 and OPN-2006 (only color field).

- **Examples:**

OPN-6000 and OPN-2500:

```
{
    "type": "simpleled",
    "color": "#FF00FF",
    "brightness": 100,
    "dutycycle": 50,
    "flashperiod": 40,
    "time": 220
}
```

RS-3000, PX-20 and OPN-2006:

```
{
    "type": "simpleled",
    "color": "#FF00FF"
}
```

4. **Vibrate Response**

The *Vibrate Response* is used to customize the vibration feedback of the scanner. This feature allows for different vibration configurations based on the validation result.

- **Type**: *vibrate*

- **Fields**:

  - *mode (int, 0=constant ON, 1=intermittent (50/50)): Specifies the vibration mode.*
  - *time (int, in steps of 20 ms): Specifies the duration for which the vibration response will be active.*

- **Supported scanners:** OPN-6000 only.

Example:

```json
{
    "type": "vibrate",
    "mode": 1,
    "time": 100
}
```

5. **RTTTL Sound Response**

The RTTTL (Ring Tone Text Transfer Language) Sound Response is used to customize the sound feedback of the scanner by playing a specific melody. This feature allows for highly customizable sound configurations based on the validation result, providing an audible indication that can be uniquely defined for different scenarios.

- **Type:** *rtttlsound*

- **Fields:**

  - *volume (int, 1-100%) : Specifies the volume level of the sound.*
  - *rtttl (String) : The RTTTL string that defines the melody to be played. RTTTL is a text-based format for defining melodies, widely used for mobile phone ringtones.*

- **Supported scanners:** OPN-6000 and OPN-2500.

- **Example**:

```json
{
    "type": "rtttlsound",
    "volume": 100,
    "rtttl": "RtttlExmpl:d=4,o=5,b=180:8d6,8g,8d6,8g,8g,8d6,8g,8d#6"
}
```

For more information on the RTTTL format, you can refer to the [RTTTL Wikipedia page](#).

9.3.3 Client-Client Integration (Android Intents)

The feedback from your client application can be broadcasted to the **com.opticon.opticonnect.feedback** intent. Here is an example of how to implement this in Kotlin:

9.3.3.1 Client-Client Kotlin Example

```kotlin
fun sendFeedback() {
  val responses = JSONArray().apply {
     put(
        JSONObject().apply {
            put("type", "rtttlsound")
            put("volume", 100)
            put("rtttl",
"rtttlExmpl:d=4,o=5,b=180:8d6,8g,8g,8d6,8g,8g,8d6,8g,8d#6,8g")
        }
     )
     put(
        JSONObject().apply {
            put("type", "simpleled")
            put("color", "#FF00FF")
            put("brightness", 100)
            put("dutyCycle", 50)
            put("flashPeriod", 40)
            put("time", 220)
        }
     )
  }

  sendFeedbackIntent("noresponse", responses)
}

fun sendFeedbackIntent(responseType: String, responses: JSONArray) {
    val intentAction = "com.opticon.opticonnect.feedback"
    val feedbackJson = JSONObject().apply {
        put("responsetype", responseType)
        put("responses", responses)
    }
    val intent = Intent(intentAction).apply {
        putExtra("feedback", feedbackJson.toString())
    }
    sendBroadcast(intent)
}
```

9.3.4 Example Client-Server Interaction (API)

When integrating with OptiConnect via API calls, the feedback from your client application should be sent in response to the API call that sends the barcode data to your server (see Chapter 9.2.1). This ensures that the scanner receives immediate feedback based on the validation results of the received barcode data. Here is an example of how to handle the API call and send the appropriate feedback response:

9.3.4.1 Client-Server C# ASP.NET Example

```csharp
[HttpPost]
public async Task<IActionResult> Receive([FromBody] Dictionary<string,
string> jsonData)
{
    try
    {
        // Extract barcode and additional data from the request
        string barcode = jsonData["Data"];
        string quantity = jsonData["Quantity"];
        string deviceId = jsonData["DeviceId"];
        string symbology = jsonData["Symbology"];
        string timeOfScan = jsonData["TimeOfScan"];

        // Create response feedback
        var responses = new List<object>
        {
            new { type = "rtttlsound", volume = 100, rtttl =
"RtttlExmpl:d=4,o=5,b=180:8d6,8g,8g,8d6,8g,8g,8d6,8g,8d#6,8g" },
            new { type = "simpleled", color = "#FF00FF", brightness = 100,
dutyCycle = 50, flashPeriod = 40, time = 220 }
        };

        var response = new
        {
            responsetype = "noresponse",
            responses = responses
        };

        return Ok(response);
    }
    catch (Exception ex)
    {
        return BadRequest("Error processing data: " + ex.Message);
    }
}
```

9.4 Connection Pool Integration (Android Intents)

In Chapter 5.1.1, the concept of connection pools and their significance was explained. This section will focus on the Android Intents that enable you to integrate the connection pool QR code into your own Android application. By using these intents, you can listen for changes in the connection pool QR data and request the current connection pool ID.

9.4.1 Android Intents Integration

1. **Listening for QR Data Changes:**

   Use the **com.opticon.opticonnect.listen_conn_id** intent to listen for changes in the connection pool QR data. When the QR data changes, it broadcasts the new data, which can be received by your application's BroadcastReceiver.

2. **Requesting QR Data:**

   Use the **com.opticon.opticonnect.request_conn_id** intent to request the current connection pool QR data. Broadcasting this intent triggers OptiConnect to send the current QR data back to your application's BroadcastReceiver through the **com.opticon.opticonnect.listen_conn_id** intent.

9.4.2 Kotlin Example

```kotlin
private fun setupQRDataReceiver() {
    qrDataReceiver = object : BroadcastReceiver() {
        override fun onReceive(context: Context?, intent: Intent?) {
            val qrData = intent?.getStringExtra("connection_pool_qr_data")
            if (qrData != null) {
                methodChannel.invokeMethod("receiveQRData", qrData)
            }
        }
    }
    registerReceiver(qrDataReceiver,
IntentFilter("com.opticon.opticonnect.listen_conn_id"))
}

private fun requestQRData() {
    val intentAction = "com.opticon.opticonnect.request_conn_id"
    val intent = Intent(intentAction)
    sendBroadcast(intent)
}
```

10 Virtual Keyboard (Android only)

The OptiConnect Virtual Keyboard allows you to input scanned barcode data into any text field on your Android device. This is similar to our HID mode for scanners, but it is done programmatically via IME by converting the scanned data to keyboard input on the Android device. This method is faster and more reliable than using HID mode because issues with partially transmitted barcodes and sticking keys are not possible.

10.1 Setting up the OptiConnect Virtual Keyboard

1. **Enable the Virtual Keyboard:**
   - Open the OptiConnect settings page and navigate to the *Keyboard settings* page (see Figure 10-1).
   - Tap on the *Enable Virtual Keyboard* button to activate the OptiConnect Virtual Keyboard (see Figure 10-2).
2. **Switch Keyboard:**
   - Press the *Switch Keyboard* button and select OptiConnect to switch to the OptiConnect keyboard (see Figure 10-3).
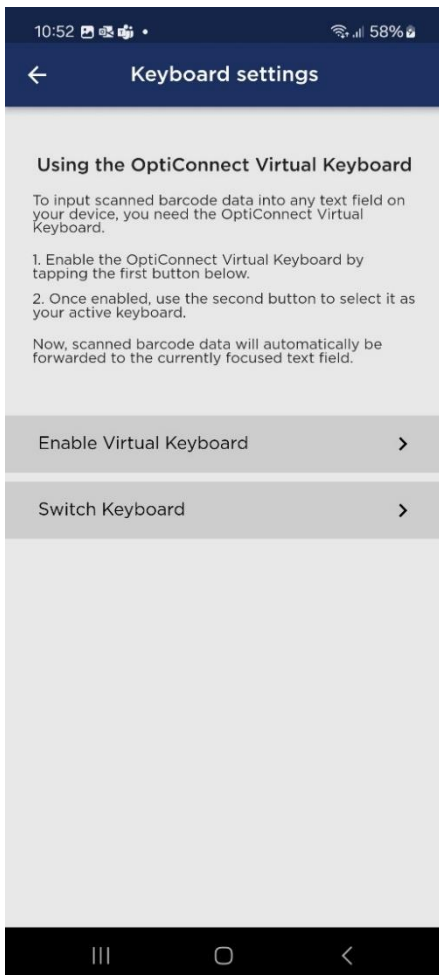
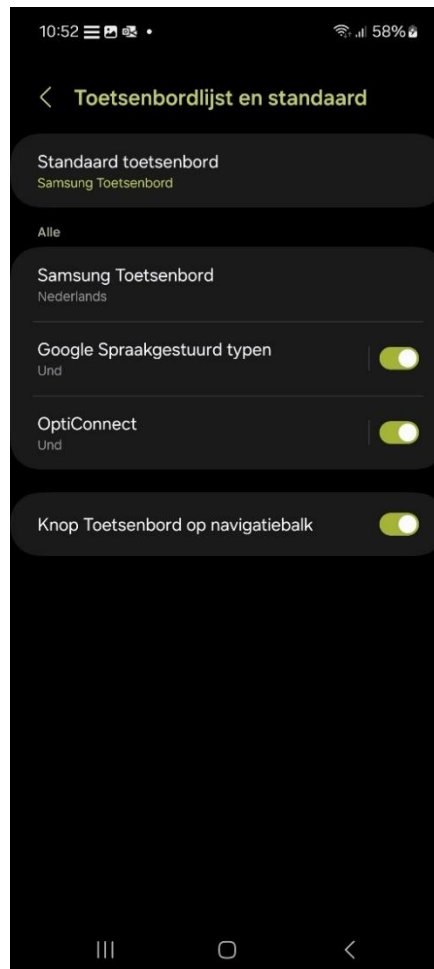Figure 10-1: The *Keyboard settings* page to setup the OptiConnect Virtual Keyboard.

Figure 10-2: The Android *Keyboard list and default* page where the OptiConnect keyboard should be enabled.
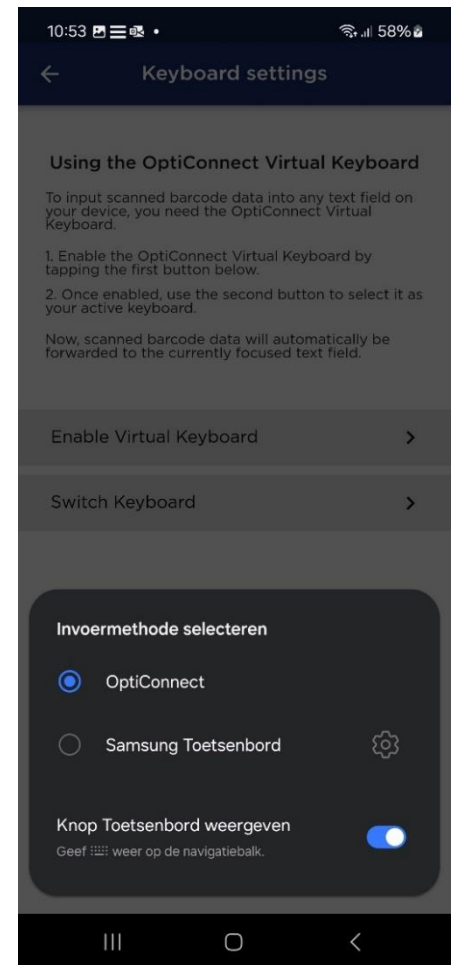
Figure 10-3: The Android *Choose input method* popup where you can switch between keyboards to use.

11 Scanner Firmware Updates

OptiConnect provides an easy way to update the firmware of the OPN-2500 and OPN-6000 directly from your device. This feature is available on iOS, Mac, and Android platforms but is not supported on Windows. It is important to ensure that OptiConnect remains open during the update process, and that the scanner remains connected. The scanner battery level should be at least 20% before starting the update. For older scanners, such as the PX-20, RS-3000, and OPN-2006, firmware updates should be performed using Appload, although you will still receive update notifications within OptiConnect.

11.1 Firmware Update Process

1. **Notification for Update:**
    - When a firmware update is available, you will be notified by a red circle icon on the *Manage Devices* button in the main menu, as shown in the image below:

2. **Navigate to Manage Devices:**
    - Navigate to the *Manage Devices* section.

3. **Select the Device:**
    - In the *Connected Devices* list, click on the device you wish to update. Devices with an available update will be marked with a red notification icon, as shown in Figure 11-1.

4. **Start the Update:**
    - On the device status page, you will see an *Update available* button if a firmware update is available for your scanner. Click on this button to navigate to the *Firmware update* page (see Figure 11-2).

5. **Update Progress:**
    - The *Firmware update* page will guide you through the update. Press the *Start update* button when ready (see Figure 11-3).
    - If there is a new bootloader available, it will be updated first, followed by the scanner application update.
    - Once the update begins, ensure OptiConnect remains open and the scanner remains connected. The progress will be shown on the screen.

6. **Completion**:
    - After the update is complete, the status will be displayed as **Update completed** and the scanner should reconnect to OptiConnect.
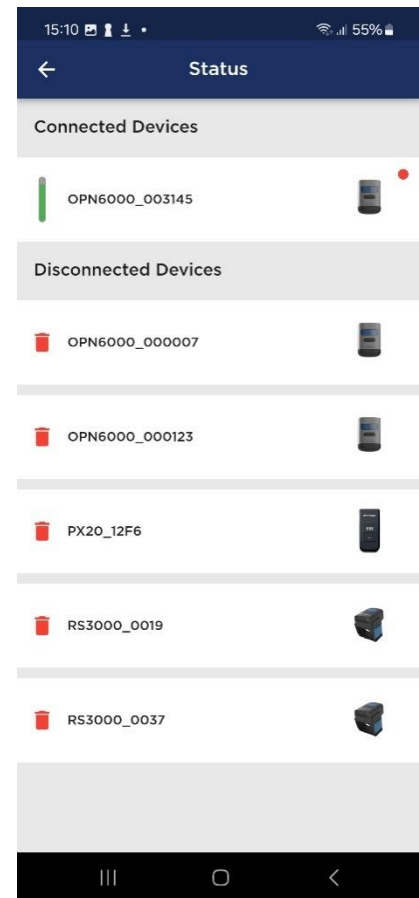

Figure 11-1: The *Manage Devices* page where the OPN6000_003145 has an available update, indicated by the red notification icon.
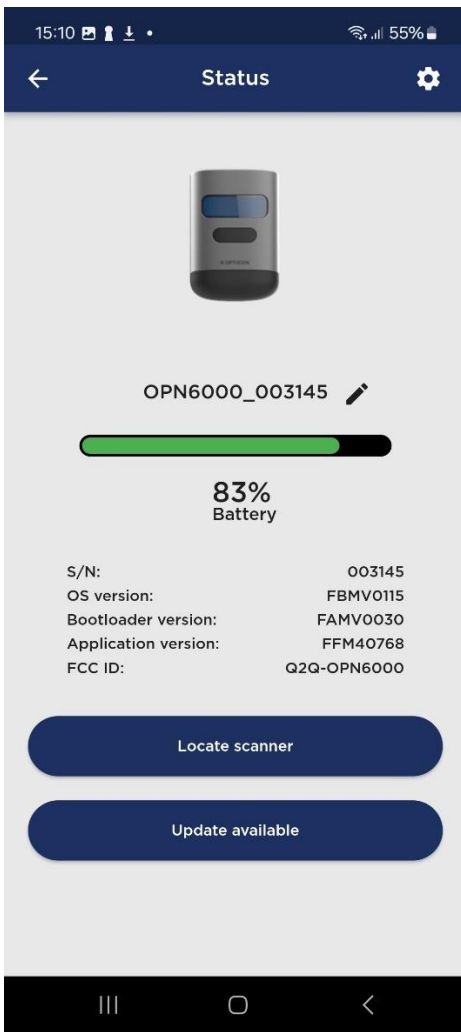
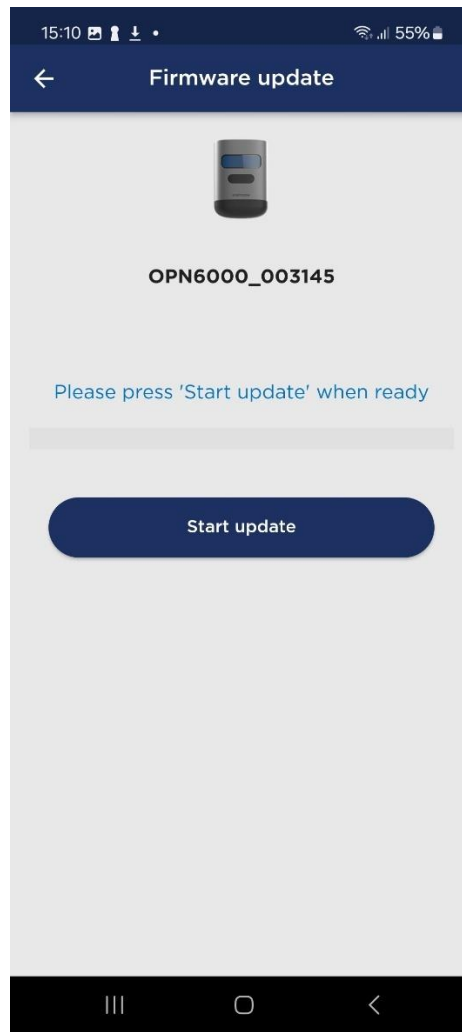Figure 11-2: The *Status* page where the *Update available* button is available.

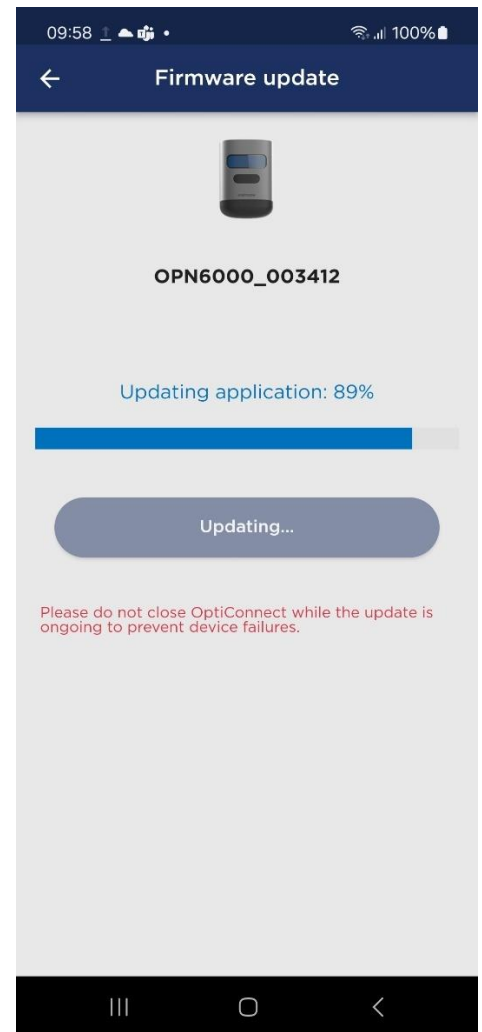Figure 11-3: The *Firmware update* page. To begin the update, press the *Start update* button.

Figure 11-4: The *Firmware update* page displaying the progress of an ongoing scanner application update.

12 Handheld Terminal Integration

OptiConnect enables integration with our handheld terminals, allowing you to capture scanned data using Android Intents. This integration ensures that scanned data from handheld terminals, such as the H-31, H-33, and H-35, can be received and processed within OptiConnect. Follow the steps below to configure your handheld terminal for use with OptiConnect.

12.1 H-31 and H-33 Integration

To integrate the H-31 or H-33 handheld terminal with OptiConnect, follow these steps:

1. On your H-31 or H-33 handheld terminal, open the settings menu, scroll down, and select **Barcode Reader** as shown in Figure 12-1.

2. On the **Barcode Reader** settings page, ensure the reader is turned on as in Figure 12-2.
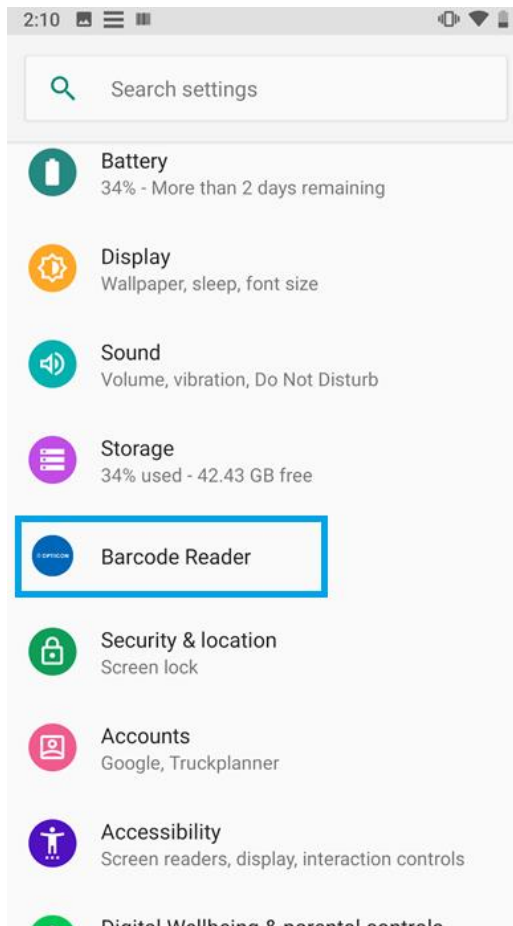

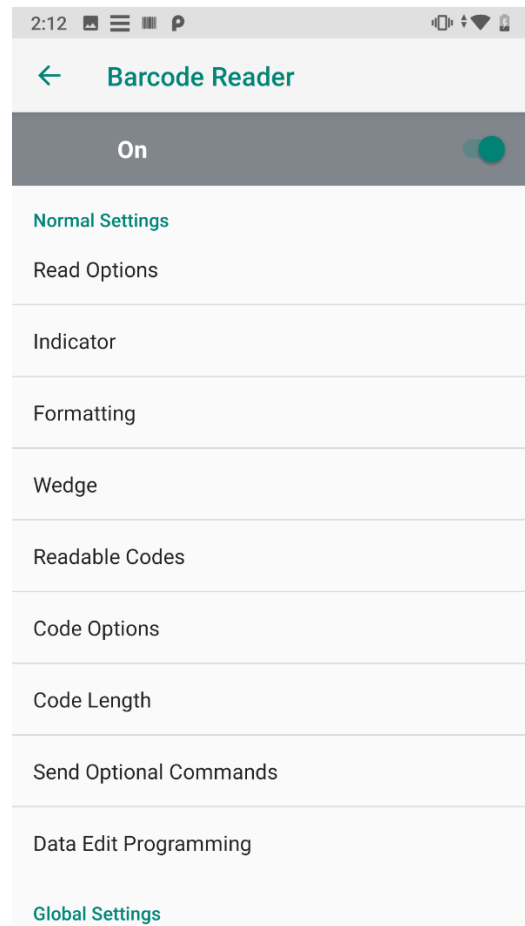Figure 12-1: At the Android settings of the H-31 and H-33, navigate to the *Barcode Reader* settings page.

Figure 12-2: The *Barcode Reader* settings page where we must configure the terminal settings for OptiConnect integration.

3. Go to **Read Options** and disable **key event**.

4. Navigate to the **Wedge** settings and enable **Intent wedge**.
   Set **Intent delivery mode** to **Broadcast intent**.
   Set **Intent package name** to "**com.opticon.opticonnect**".

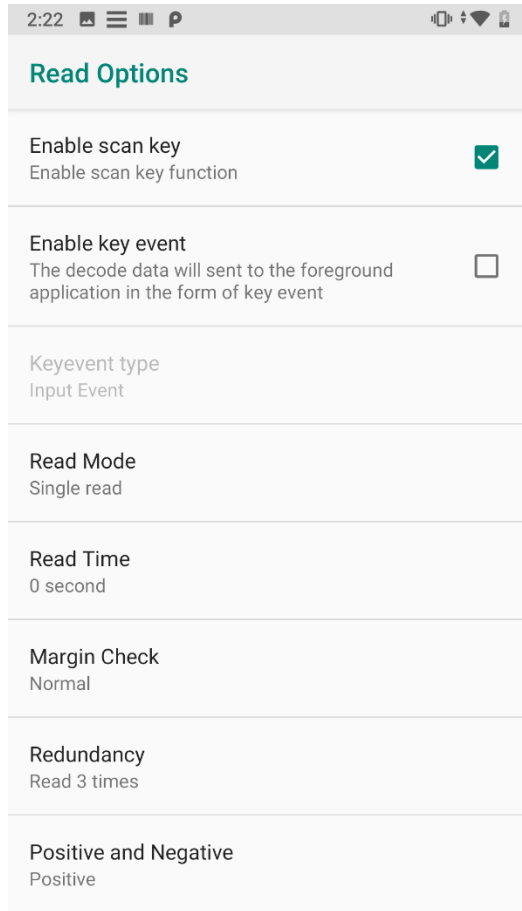   Please verify your settings with the configuration in Figure 12-4.

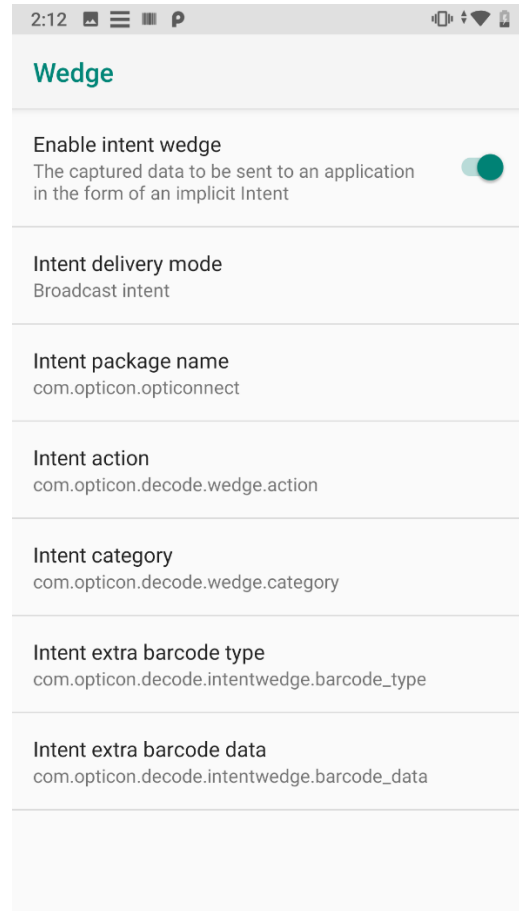Figure 12-3: At the *Read Options* page, we disable the *Key event* option.

Figure 12-4: The *Wedge* page where we enable *intent wedge,* set *Intent delivery mode* to *Broadcast intent* and the *Intent package name* to *com.opticon.opticonnect*.

12.2 H-35 Integration

To integrate the H-35 handheld terminal with OptiConnect, follow these steps:

1. Navigate to the *ScannerService* settings on your H-35 handheld terminal (see Figure 12-5).

2. Ensure that the *Key Event* is disabled. This setting can be found in the *ScannerService* settings, as shown in Figure 12-5.

3. In the *ScannerService* settings, enable the *Wedge* option as shown in Figure 12-6. This allows the scanned data to be forwarded to OptiConnect as keyboard input.

4. Make sure all other wedge settings are set to their default values as in Figure 12-6.
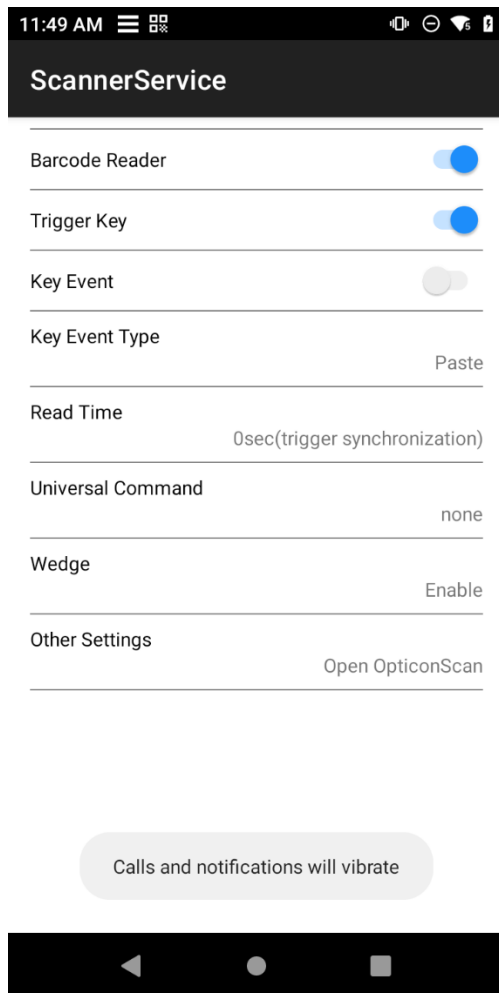

Figure 12-5: The *ScannerService* application settings on the H-35 where the *Key Event* is disabled.
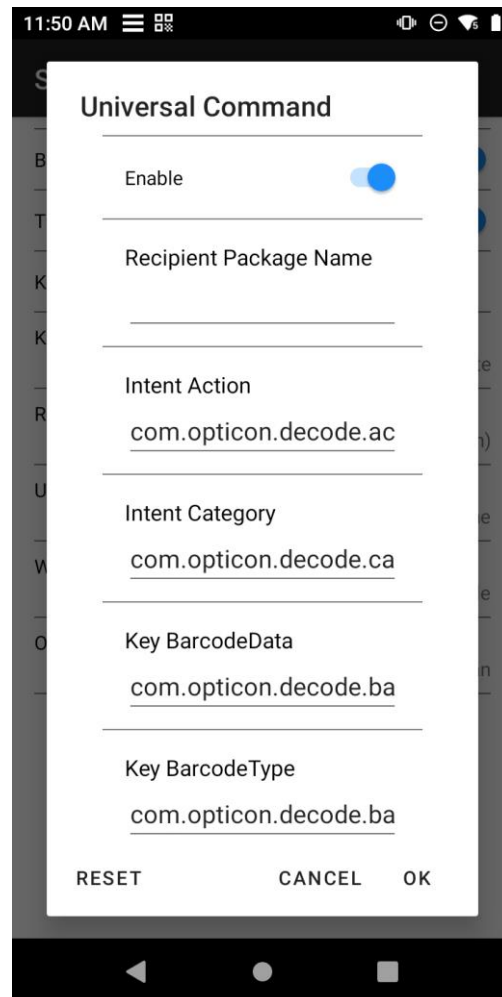

Figure 12-6: The *Wedge* settings where the Wedge is enabled and the other settings are set to the default.