Flex Mobile

For the Unitech HT330 Handheld

Operation and Procedures

Document Version 1.4

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1. Introduction

Flex Mobile is a mobile field application for utilities technicians. The application is designed to guide the technician on their meter reading route, record meter readings and gather other information in the field. It is an Android application that operates on the Unitech HT330 handheld computer and fully integrates with the RVS Mosaics Utility Billing System.

2. Unitech HT330 Handheld Computer

The HT330 is a rugged handheld computer running the Android 12 operating system and is designed to operate in field conditions.

The HT330 will be shipped from RVS preconfigured and with the Flex Mobile application pre-installed.

Note: This manual will cover the features and operational details of the HT330 that apply to the Flex Mobile application. However, it is out of the scope of this manual to cover all operational details of the HT330. For additional HT330 operational details, features and specifications please see the Unitech HT330 User Manual which is accessible through the RVS provided application.

2.1. Features (Relevant to Flex Mobile)

Screen Size - 4”, WVGA 800 X 480, Backlight (450nits)
Touch Panel - Multi-touch panel, gloves and wet hands supported
Button/Keypad - Numeric (32 keys); number keys, function and direction keys with backlight
Camera - Rear 13 MP Autofocus with flash, Front 5MP
Indicators - LED, Speaker, Vibration
Barcode scanner - 2D Engine: Tilt Down 25 degree, Supports all major 1D and 2D barcodes
Audio - Speaker: 1W output, 90 dB at 10cm, MIC: 2 MIC design
Speech – Text to Speech and Speech to Text
Battery - 3.85V 5200mAh Li-ION battery (removable), Operating time : over 20 hours (depending on the specific environment)
USB - 2.0 (Type-C)
GPS - GPS/AGPS, GLONASS, BeiDou, Galileo
Sensors - Gyroscope, G-sensor, E-Compass, Light & Proximity Sensor
Dimensions - 185 mm (W) x 70 mm (H) x 23.8 mm (D)

Weight - 295g with battery
Operating temperature - -20°C to 60°C
Drop Specification - 1.5m / 1.8m (with boot case)
Sealing - IP67
Tumble Test - 600 times (1.6 ft./0.5 m)

2.2. Data Storage

Android (and Flex Mobile) data is stored on the device in non-volatile memory (similar to a solid-state hard drive) and does not require power to maintain its data. The device was designed to not lose its data even in the event the battery becomes completely depleted. HOWEVER, it is also not recommended to operate the device when the battery is less than 10%. Doing so may result in data corruption. If the battery falls below 10% charge, it is recommended to put the device in sleep mode and charge the device until the battery is at least 50% charged before continuing to operate the device.

2.3. Keyboard

Below are keyboard functions that are relevant to Flex Mobile.
This is not a complete list of Android keyboard functions. Please see the HT330 user manual for additional keyboard information.

2.3.1. Sleep/Power Key

A quick click of the red key, toggles the HT330 sleep mode.
When in sleep, the screen and keyboard is turn off, however the Android operating system continues to operate as long as the battery is not depleted.
A press and hold of the red key, powers up or down the HT330.

2.3.2. Function Key

The “Function” key toggles the keyboard mode.

The keyboard mode is also shown as an icon in the Android status bar at the top of the screen.
When the “F” symbol is not shown, the keyboard is in normal mode (black symbols on keys).
When the “F” symbol is shown, the keyboard is in function mode (blue symbols on keys).

2.3.3. P1 Key

The “P1” key toggles the onscreen keyboard when the screen cursor is positioned within a field that can be edited.

2.3.4. Numeric Keys

The numeric keys are used to enter numbers or letters depending on the state of the function key.

2.3.5. P3 Key

In the Flex Mobile “Read Meter” page, the “P3” key navigates directly to the “Enter Reading” page. This short cut allows the meter reader to more quicky navigate to the enter reading page.

2.3.6. F1 Key

In the Flex Mobile “Read Meter” page, the “F1” key navigates to the previous meter in the route.

2.3.7. F2 Key

In the Flex Mobile “Read Meter” screen, the “F2” key navigates to the next meter in the route.

2.3.8. F3 Key

In the Flex Mobile “Read Meter” screen, the “F3” key searches for the closest meters to the current GPS location.

2.3.9. F4 Key

In the Flex Mobile “Read Meter” screen, the “F4” key starts GPS navigation to the current meter.

2.3.10. Barcode Scanner Key

The large blue key triggers the barcode scanner which can be used within Flex Mobile “Verify Meter” page to scan a meter bar code label for meter ID verification.

2.4. Power On/Off and Sleep

To power on or off the device, press and hold the red keyboard key for 4 seconds.
If the device is awake, to put the device to sleep, click the red keyboard key once.
If the device is asleep, to wake the device, click the red keyboard key once.

2.5. Android Login Screen

Normally a password is required to log into Android unless that behavior is disabled in the Android settings.
The HT330 will ship from RVS with the login feature enabled and the default password is 1234.
To log into the device, click the red sleep/wake key on the keyboard, swipe up on the screen and then enter the password.

2.6. On Screen Navigation Bar

The main Android on screen navigation bar is shown at the bottom of almost all pages in Android (including Flex Mobile) and provides three main navigation functions.

2.6.1. Back Button

Moves back one page

2.6.2. Main Page Button

Returns to the Android main page (does not exit the current application)

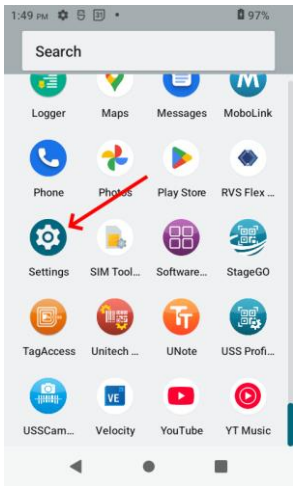
2.6.3. Running Applications Button

Displays a list of applications running on the handheld. The user can then scroll to and click on the desired application.

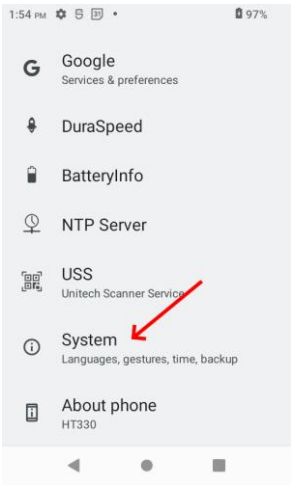
3. Verifying and Adjusting the Android Time Zone and Date and Time

It is important that before using the HT330 with Mosaics that you verify/change the time zone, date and time to your local area.

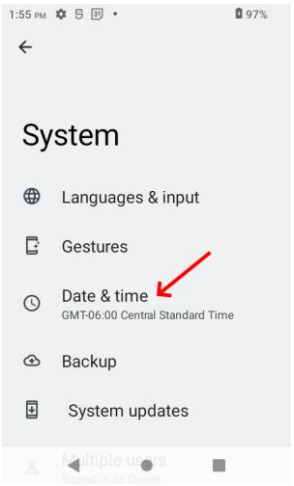
3.1. On the main Android screen, locate and select the “Settings” icon.



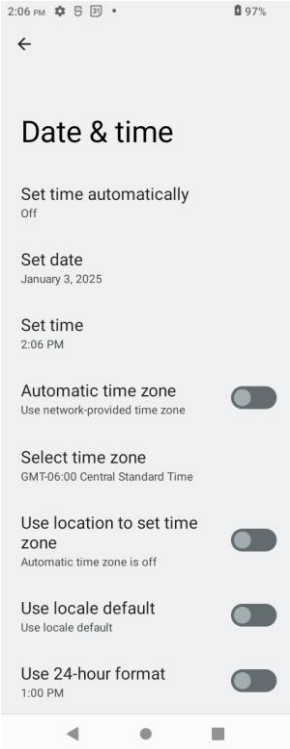
3.2. On the “Settings” screen, scroll down and select “System”.



3.3. Select Date & Time



3.4. Verify/Change “Set time automatically” to Off.
Verify/Change “Set date” to the current date.
Verify/Change “Set time” to the current time.
Verify/Change “Automatic time zone” to Off.
Verify/Change “Select time zone” to your local time zone.
Verify/Change “Use location to set time zone” to Off.
Verify/Change “Use local default” to Off
Verify/Change “Use 24-hour format” to Off.

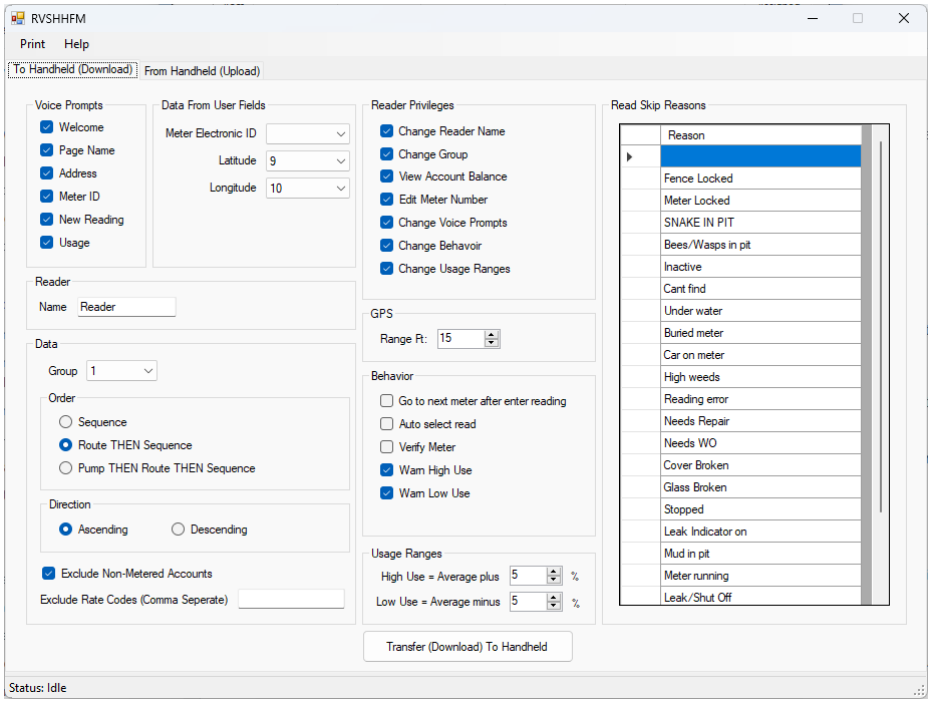


4. RVSHHFM (RVS Hand Held Flex Mobile)

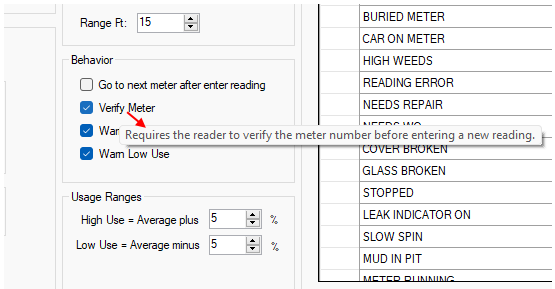
Is a Windows companion program to Flex Mobile that manages the Flex Mobile application on the handheld and transfers data between Mosaics and Flex Mobile. RVSHHFM is automatically started by Mosaics when the user initiates a data download to the handheld or a data upload from the handheld.

4.1. To Handheld (Download) Dialog

The below “To Handheld” dialog will be displayed when the user selects “Download to Handheld” in Mosaics. The settings on this dialog will be used to determine how Flex Mobile will operate on the handheld.
These settings, along with the meter data will be transferred to Flex Mobile on the handheld when the user clicks “Transfer (Download) To Handheld”.

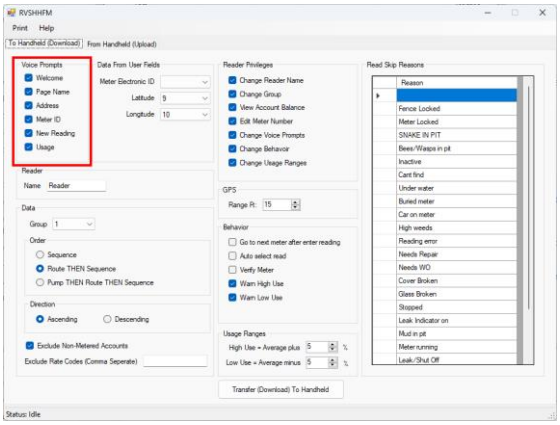


Tip: In the application, hover the mouse over any label to see more information about that setting.



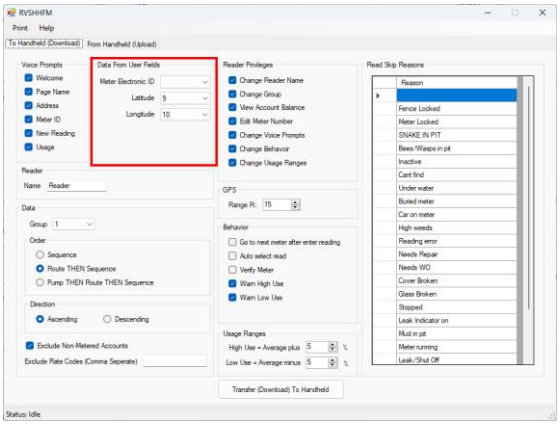
4.1.1. Voice Prompt Section

This section allows the user to specify which voice prompts will be enabled in Flex Mobile.



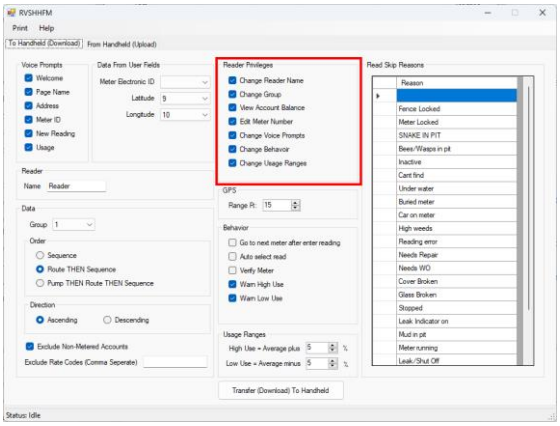
4.1.2. Data From User Fields Section

This section allows the user to specify which Mosaics user defined fields contain (if any) the labeled data.



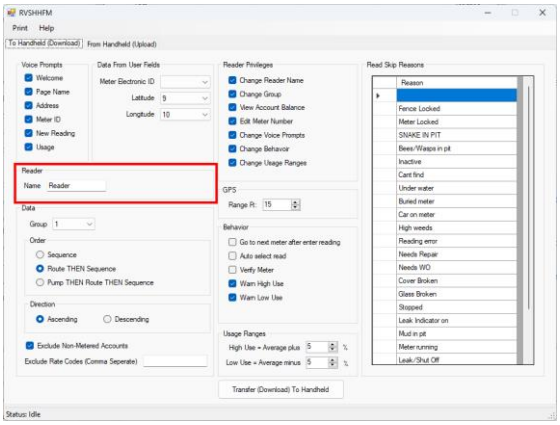
4.1.3. Reader Privileges Section

This section allows the user to specify which settings and other details the meter reader will be allowed to change in Flex Mobile on the handheld.



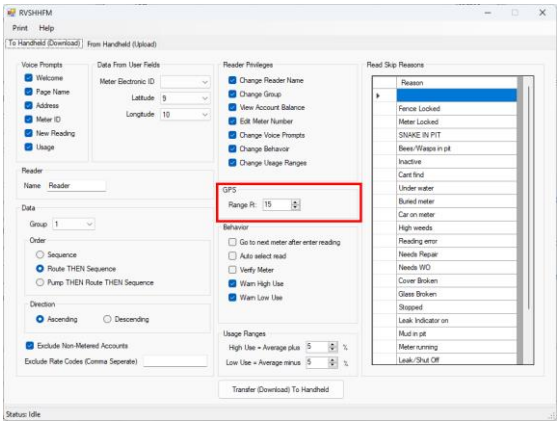
4.1.4. Reader Section

This section allows the user to specify the name of the meter reader that will be used in Flex Mobile.



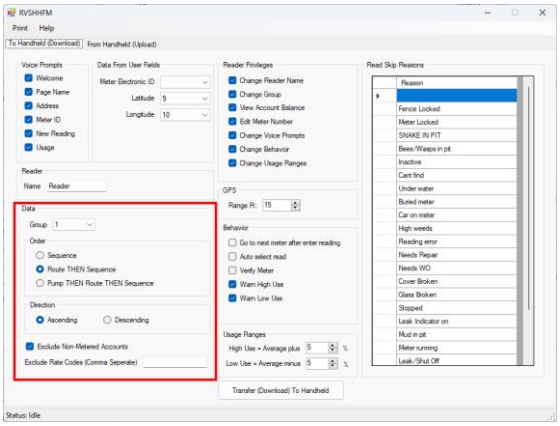
4.1.5. GPS Section

The “GPS” setting section allows the user to specify the GPS accuracy range (in Feet) that Flex Mobile will then use to determine distance to the meter.



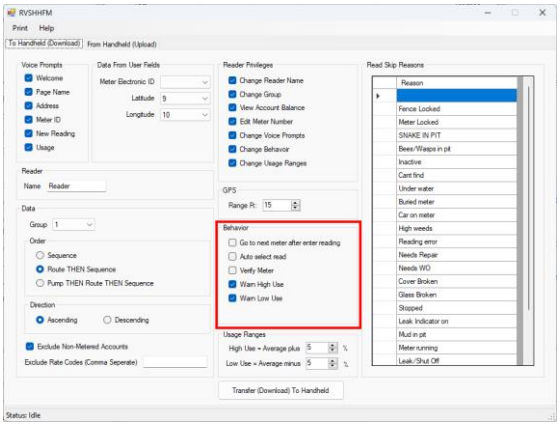
4.1.6. Data Section

This section allows the user to specify which meters Flex Mobile will include in the route and how the route will be organized.

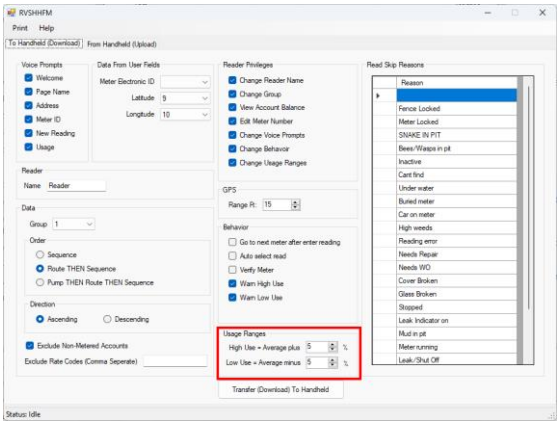


4.1.7. Behavior Section

The “Behavior” setting section allows the user to specify certain operational features during the route and when a meter is read.

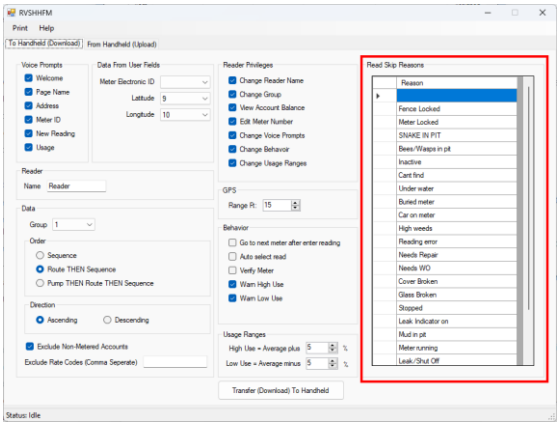


4.1.8. The “Usage Ranges” setting section allows the user to specify how the high and low usage thresholds are calculated during the route.



4.1.9. Read Skip Reasons Section/Observations

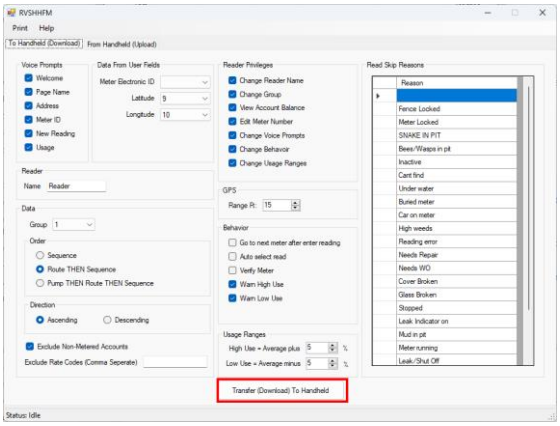
This section allows the user to manage the list of available skip reasons/observations that may be selected by the meter reader when skipping a reading or selecting an observation.



4.1.10. Transfer (Download) To Handheld Button

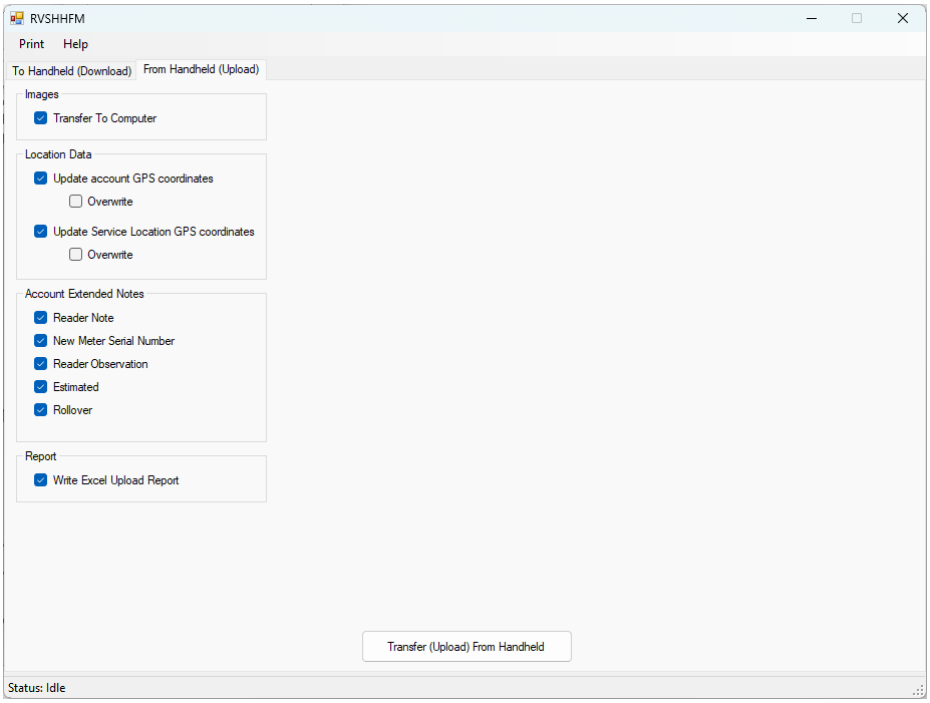
Transfers the account data and displayed settings to Flex Mobile on the handheld.

If Flex Mobile is not installed, or is an older version on the handheld, the latest version of Flex Mobile will also be transferred to the handheld. The user will then be asked if they would like to have it installed when they perform the “Import From Computer” function on the handheld.



4.2. From Handheld (Upload) Dialog

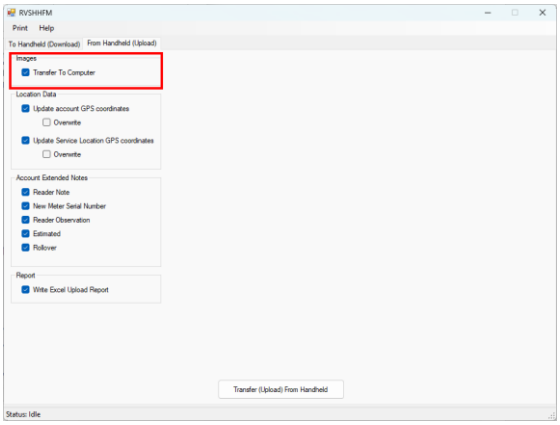
The below “From Handheld” dialog will be displayed when the user selects “Upload from handheld” in Mosaics. The dialog is shown so that the user may verify/adjust settings that will be used to determine how the data will be imported into Mosaics when the user clicks “Transfer (Upload) From Handheld”.



4.2.1. Images Section

This section allows the user to specify if images taken on the handheld will be transferred to Service Locations in Mosaics.

This feature will only be enabled when the optional Mosaics Service Locations module is installed.



4.2.2. Location Data Section

This section allows the user to specify if the GPS coordinates captured during a meter read will be copied to the account and/or service location when the data is transferred from the handheld.

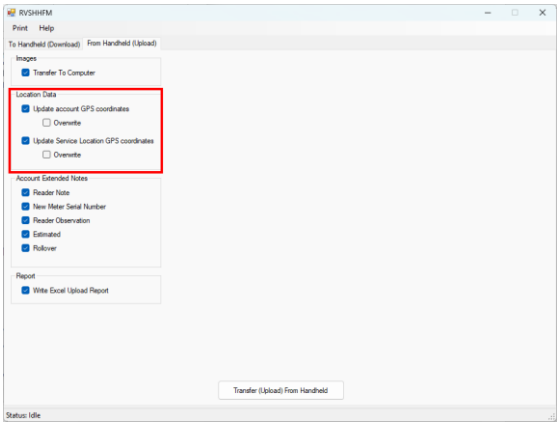
The latitude and longitude user defined field fields must be setup on the “To Handheld (Download)” dialog for “Update account GPS coordinates” to be enabled.

WARNING: Enabling “Update account GPS coordinates - Overwrite” will OVERWITE any existing GPS coordinates in the account when transferring the readings from the handheld.

WARNING: Enabling “Update Service Location GPS coordinates - Overwrite” will OVERWITE any existing GPS coordinates in the service location when transferring the readings from the handheld.

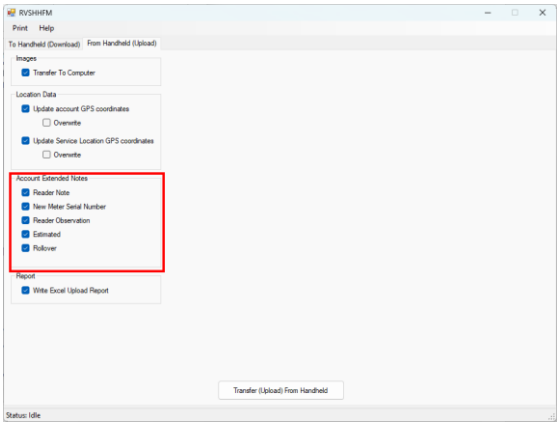
The “Update service location GPS coordinates” will only be enabled when the optional Mosaics Service

Locations module is installed.



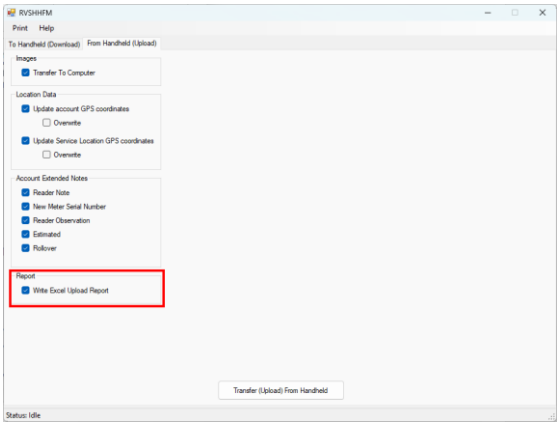
4.2.3. Account Extended Notes Section

This section allows the user to specify if the account extended notes should be appended with the listed option data when that data is changed during the route and then uploaded from the handheld.



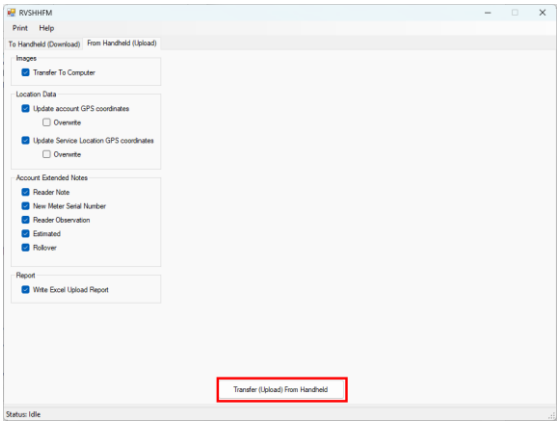
4.2.4. Report Section

This section allows the user to specify report settings.

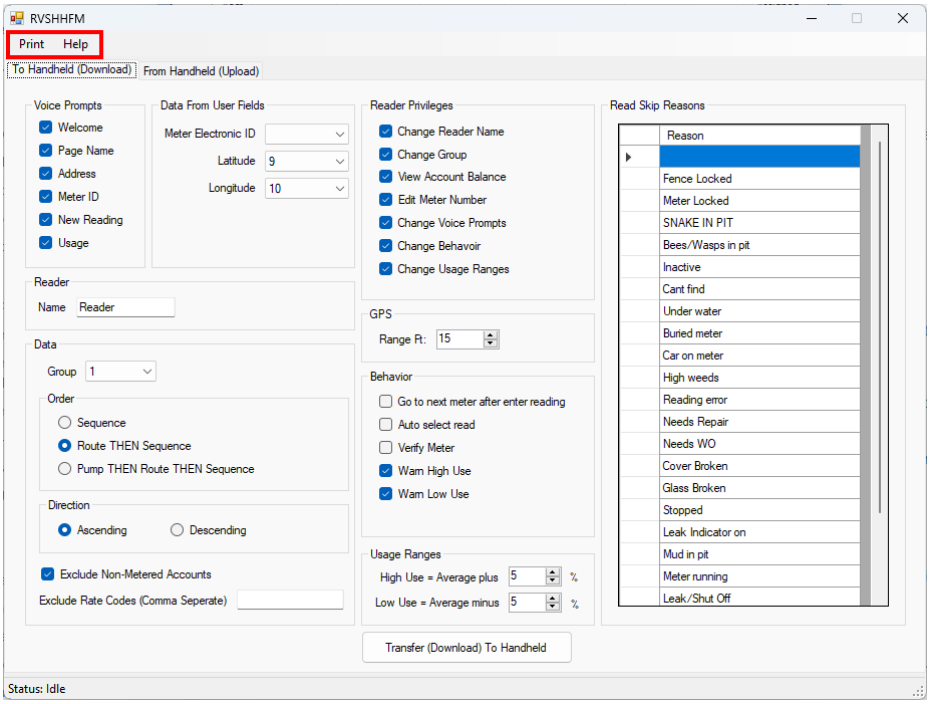


4.2.5. Transfer (Upload) From Handheld Button

Transfers the readings data from Flex Mobile on the handheld into Mosaics.



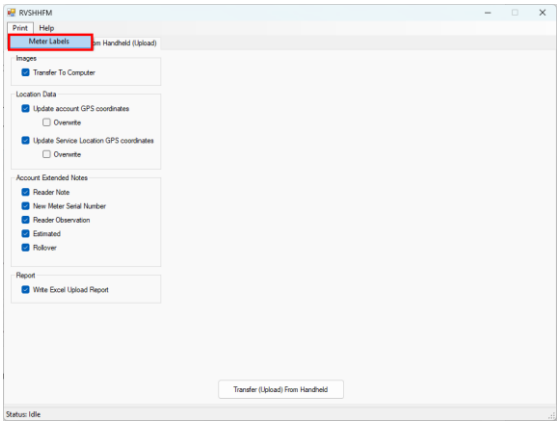
4.3. Menu Bar



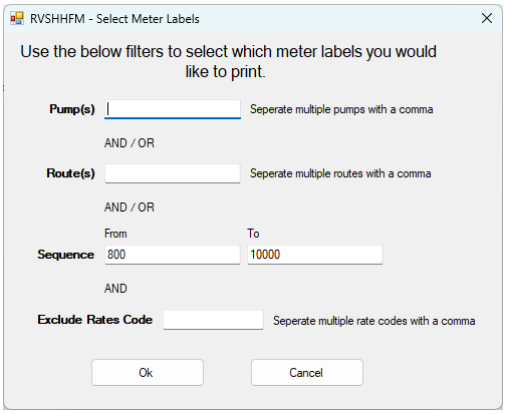
4.3.1. Print-Meter Labels

Prints meter barcode labels that then can be attached to meters in the field and used by Flex Mobile to verify meters before a meter is read.

Designed for: Avery 5520 Laser Waterproof Address Labels
Page Size is 8.5 X 10 inch. Label size is 1 X 2 5/8 inch. 30 labels per page.

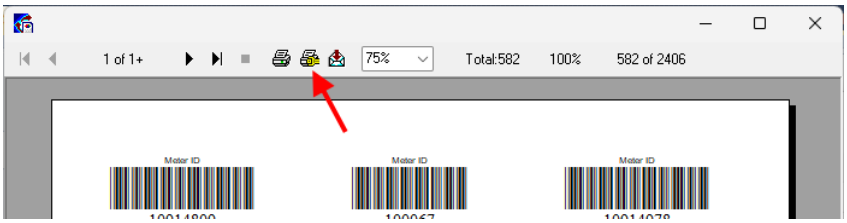


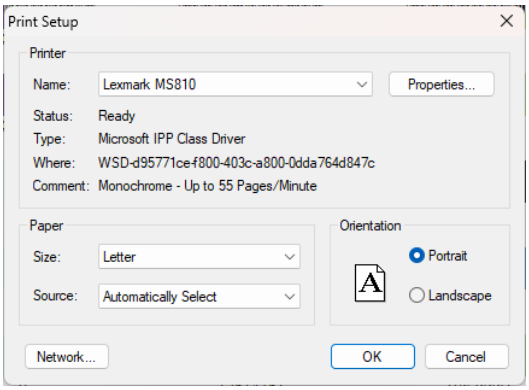
Fill in the below filters to select the appropriate meters labels to print.



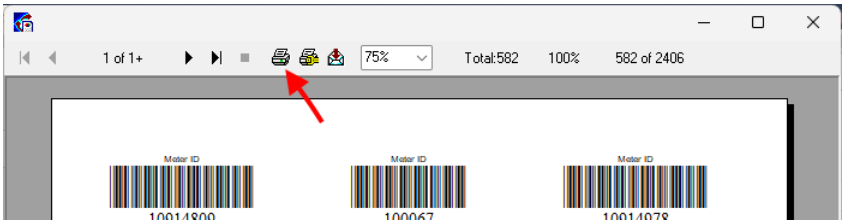
A print preview will then be shown with a meter ID barcode for each selected meter.

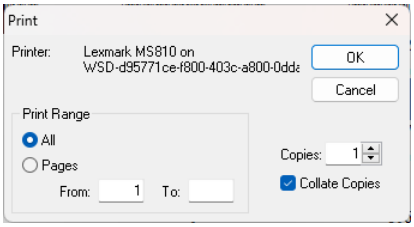
Use the “Select Printer” icon to select the desired printer.





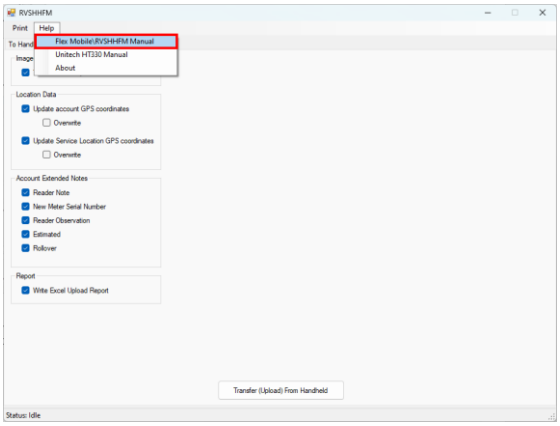
Use the “Print” icon to send the print job to the selected printer.





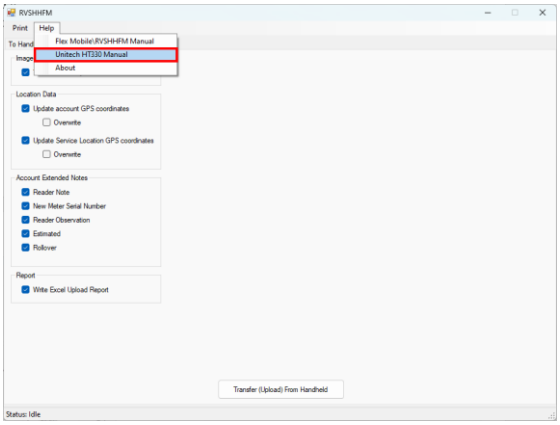
4.3.2. Help-Flex Mobile\RVSHHFM Manual

Provides access to this manual.



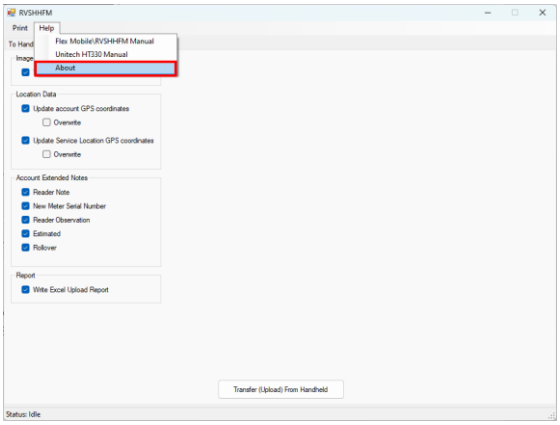
4.3.3. Help-Unitech HT330 Manual

Provides access to the Unitech HT330 manual.



4.3.4. Help-About

Provides access to the RVSHHFM version information.



5. Flex Mobile Application

Runs on the HT330 handheld as an Android application.

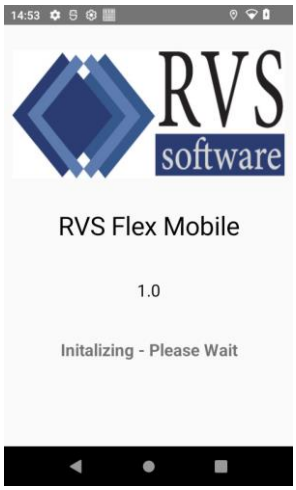
Click on the RVS Flex icon on the HT330 home screen to launch it.

5.1. Splash Page

The Flex Mobile interface is organized in a series of pages.

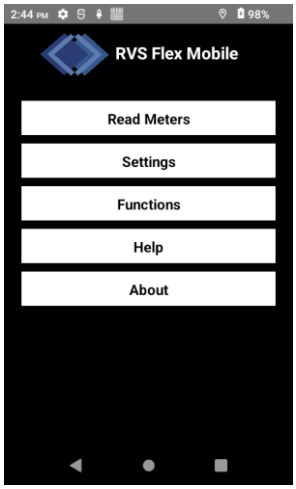
When first launched, the below splash page showing the product name and version will be shown.

When the application finishes initializing, this page will close and the Main Page will be shown.



5.2. Main Menu Page

This page provides a menu that allows the user access to the main pages of the application.

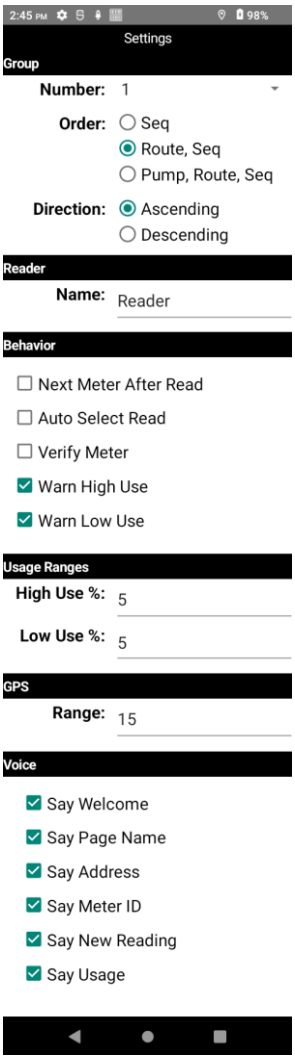


5.3. Settings Page

The settings page allows the user to view or modify application settings.

The RVSHHFM “Reader Privileges” settings will determine which of these settings can and cannot be modified on this page.

Note: The entire page is shown below. On the handheld, the user will need to swipe up or down to access the entire page.



The page is arranged into the following categories:

Group

Number – The group number of meters to read during the route.

Order – How the meters in the selected group will be sorted.

Direction – The direction the meters in the selected group will be displayed.

Reader

Name – The name of the meter reader that will be recorded during a meter read.

Behavior

Next Meter After Read – When checked, the application will automatically move to the next meter in the route after the current meter is read.

Auto Select Read – When checked, if read status is unread, the read status will automatically be set to read when entering the reading page.

Verify Meter – If checked, requires the reader to enter or scan the meter ID before entering the new reading.

Warn High Use – Warns the meter reader if the new reading results in a usage higher than the highest use in the past 12 months.

Warn Low Use – Warns the meter readers if the new reading results in a usage lower than the lowest use in the past 12 months.

GPS

Range – The GPS position search range in feet that will be used during a location search.

Voice

Say Welcome – When checked the application will say the welcome message when starting.
Say Page Name – When checked, the application will say the page name when enter that page.
Say Address – When checked, the application will say the meter service address during the route.
Say Meter ID – When checked, the application will say the meter ID during the route.
Say New Reading – When checked, the application will say the new reading when entering a reading.
Say Usage – When checked, the application will say the usage after entering a reading.

5.4. Functions Page

The functions page provides the user access to below functions of the application.

Import (From Computer) – Imports meter data that was sent to the handheld from Mosaics through RVSHHFM. If the Flex Mobile application needs to be updated, the user will also be asked if they would like to have it installed. The users should answer yes and allow the new version to be installed and then restart Flex mobile.

Export (To Computer) – Exports meter reading data from Flex Mobile on the handheld to Mosaics through RVSHHFM.

5.5. Help Page

The Help page displays information about the function of special keyboard keys.

5.6. About Page

The About page provides the user details about the application and data that has been loaded into the application.

The page is arranged into the following categories:

Device

ID: The handheld device ID

USB Serial: The handheld USB serial ID

Application

Name: The name of the application

Version: The version of the application

Data

Company: The water system name

Date Create: The date and time the meter data that is currently on the handheld was created

Unread: The total number of meters records currently unread on the handheld

Read: The total number of meter records currently read on the handheld

Skipped: The total number of meter records currently skipped on the handheld

Estimated: The total number of meter records currently skipped on the handheld

5.7. Read Meters Page

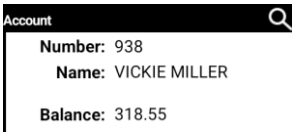
Displays account and meter information during the route and provides functions for the user to enter readings and capture other information.

Note: The entire page is shown below. On the handheld, the user will need to swipe up or down to access the entire page.

The page is arranged into the following categories:

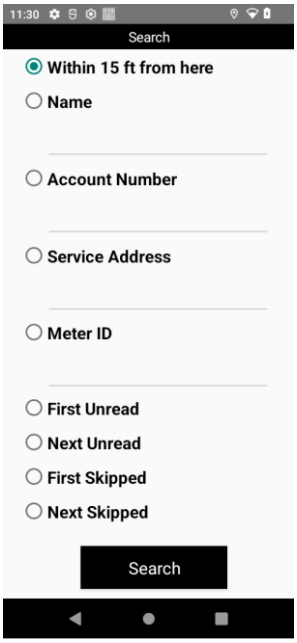
5.7.1. Account Section

This section displays information about the account and provides a method to search accounts.



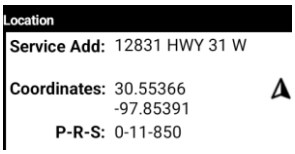
Note: The account balance will only be shown if that option is turn on in RVSHHFM.
The user may click the below icon to open the "Search" page.

The “Search” page allows the user to search for a specific account by multiple options as shown below.

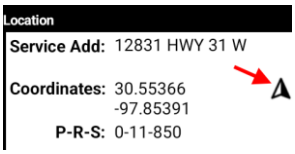


5.7.2. Location Section

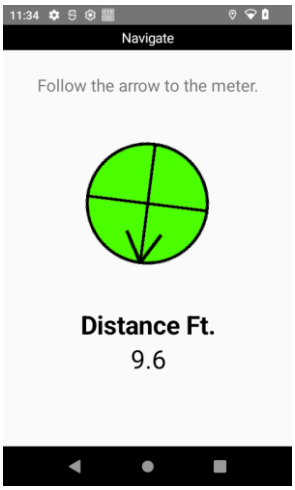
This section displays information about the location and provides a method to guide the user to the meter.



The user may click the below icon to open the “Navigation” page.

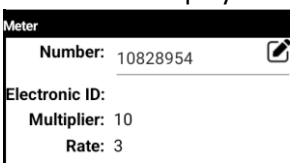


The “Navigation” page uses the GPS receiver built into the HT330 to guide the user to the meter if the meter record includes GPS coordinates.

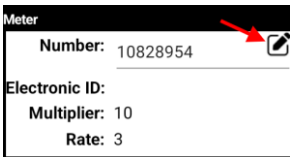


5.7.3. Meter Section

This section displays information about the meter and provides a method to change the meter ID.

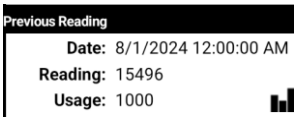


The below icon indicates the meter number may be edited by the user.
This icon will only be shown if “Edit Meter” privilege was granted to the user in the RVSHHFM settings.

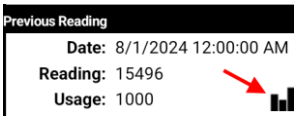


5.7.4. Previous Reading Section

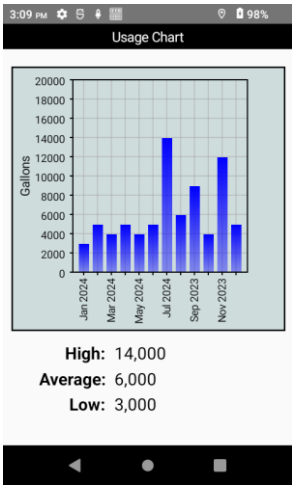
This section displays information about the previous reading and provides a method to chart previous readings.



The user may click the below icon to open the “Usage Chart” page.

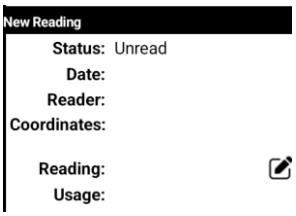


The “Usage Chart” page graphs the previous 12 months of usage and shows the highest, average and lowest usage.
The user may also click on a specific month bar to see the graph data for that month.

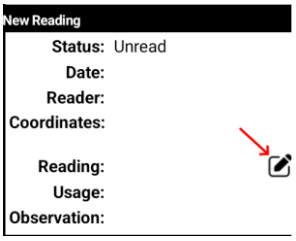


5.7.5. New Reading Section

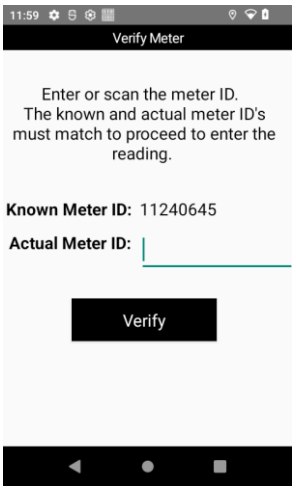
This section displays information about and provides a method to enter a new reading.



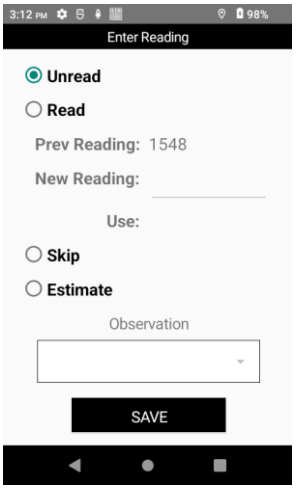
The user may click the below icon to start the process of entering the meter reading.
Alternatively, the user may click the keyboard “P1” button to enter the meter reading.



If the “Verify Meter” option is enabled, the below “Verify Meter” page will be shown. The user must then either enter the correct meter number or scan the correct meter bar code to move to the “Enter Reading” page.
If the “Verify Meter” option is not enabled, the below “Verify Meter” page will not be shown.



The “Enter Reading” page is then shown.



The user then may select one of the four appropriate read status:

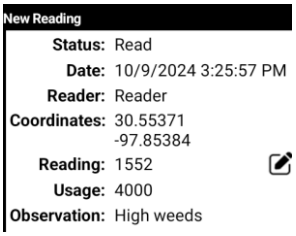
Unread – The meter read status will be marked as unread.

Read – The meter read status will be marked as read. The user will be required to enter the new reading and then the new usage will be calculated and displayed. The user may optionally also select an observation from the pulldown list.

Skip – The meter read status will be marked as skipped. The user will be required to select an observation from the pulldown list as the skip reason.

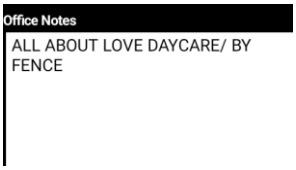
Estimate – The meter read status will be marked as estimate. The usage will be estimated when the data is transferred (Uploaded) into Mosaics.

When the user clicks “Save” the new reading is recorded, the application returns to the “Read Meters” page and the new reading section will display the new reading information.



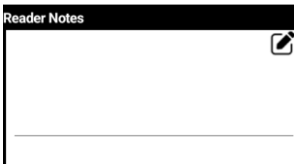
5.7.6. Office Notes Section

This section displays office notes that have been saved to the account.

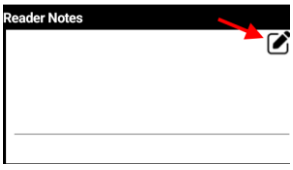


5.7.7.Reader Notes Section

This section displays and provides a method to edit a reader note.

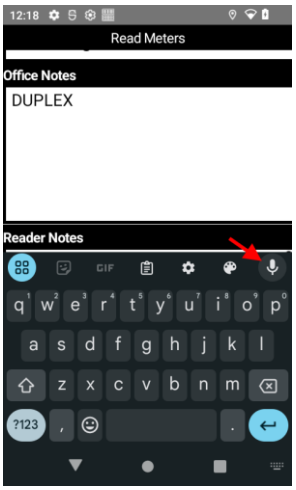


The user may enter a reader note by clicking the below icon.



If the onscreen keyboard does not automatically appear, the user can use the keyboard “P1” key open it. The user then can use the onscreen keyboard to enter the message, or alternatively the user may click the microphone icon on the onscreen keyboard and then speak the message. The spoken message will then be

converted into text in the reader notes field.



5.7.8. Images Section

This section displays the number of images that have been saved for this account and provides a method to view or capture images.

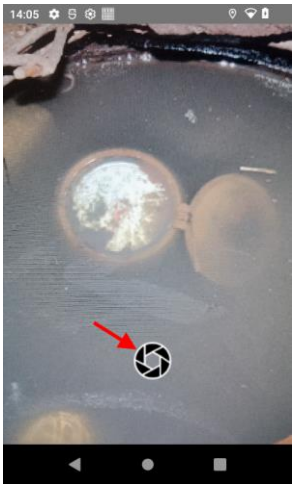
This feature will only be enabled if the Mosaics Service Locations module is installed.

Count is the number of images saved for this meter record.

When clicked, the below icon opens the “Images” page.

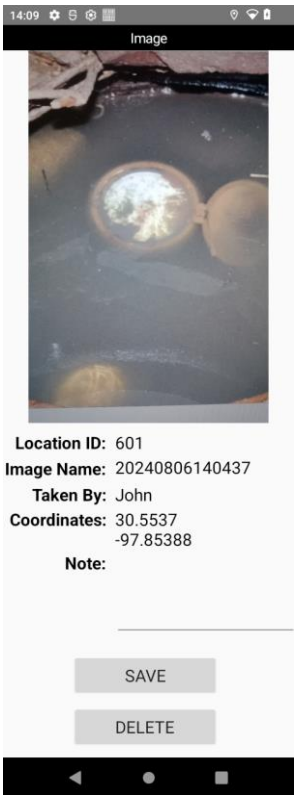
Clicking the below camera icon will open the “Camera” page.

The user may then capture an image with the front camera using the capture button.



The captured image will then be shown in on the “Image” page.
The current username and GPS coordinates are also captured.
Optionally, the user may also enter a note that will be saved with the image.
The image and associated data will be saved to the account record when the user clicks “SAVE”.

Note: Backing out of the “Image” page without first clicking “SAVE” will NOT save the image.



The “Images” page also shows a list of images that have been saved for this meter record.

Clicking an image name will open that image in the below “Image” page.

The user may view, modify the notes, save or delete the image.

6. General Procedures

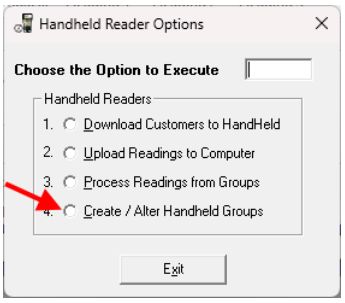
6.1. Preparing the handheld to read meters

The following procedure transfers the route data from Mosaics to Flex Mobile on the handheld and begins the route.

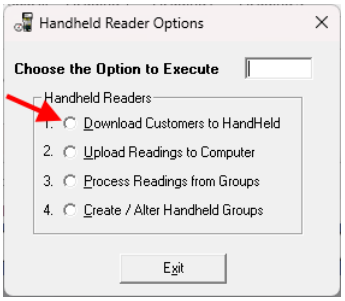
Please ensure you have first verified/changed the Android time zone, date and time as described earlier in this document.

6.1.1. Click the “Handheld Interface” icon in Mosaics.

6.1.2. If not previously performed, create or edit your handheld group(s).



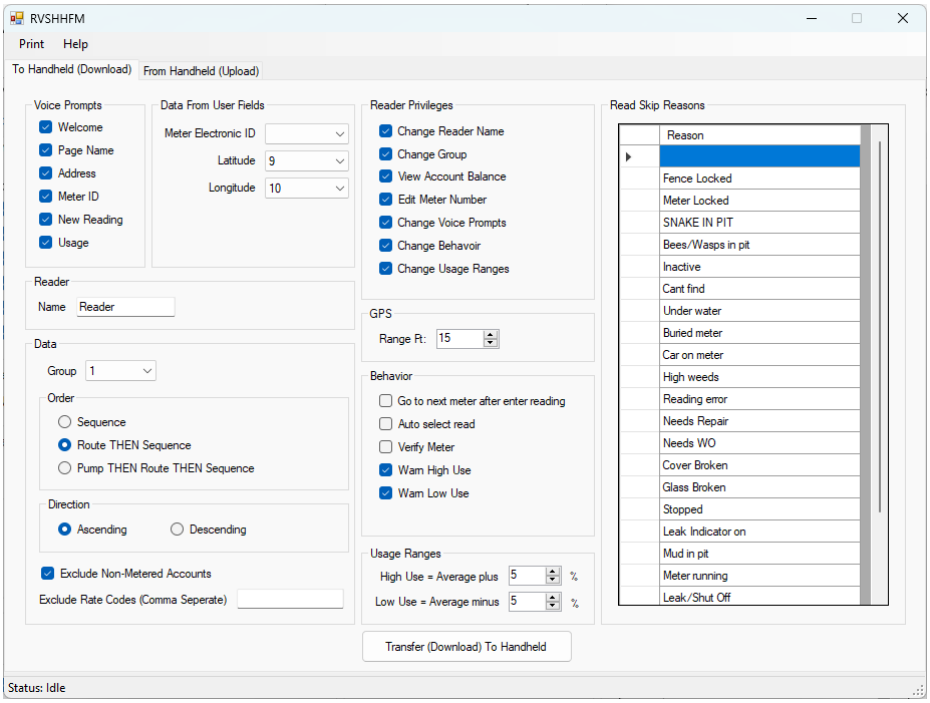
6.1.3. Click “Download Customers to Handheld”.



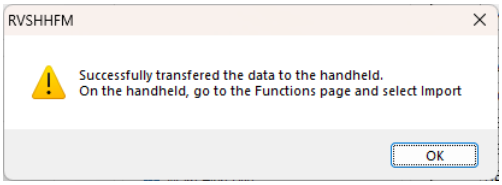
6.1.4.Review or adjust the RVSHHFM settings.

Pay special attention to the selected data “Group”.

Connect the handheld to the USB port of the computer running Mosaics and then click “Transfer (Download) To Handheld”.

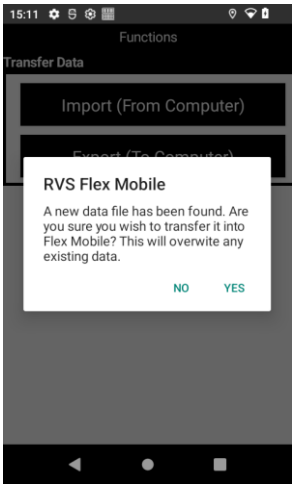


If successful, the following message will be shown.

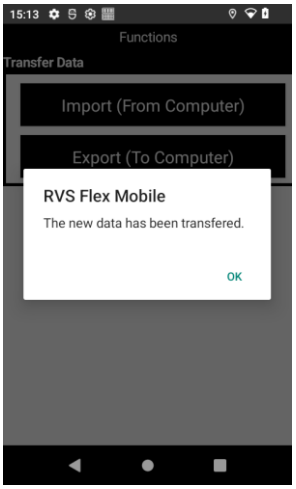


6.1.5. On the handheld, go to the Flex Mobile “Functions” page and click “Import (From Computer)”.

6.1.6. Select “Yes” to the following question.

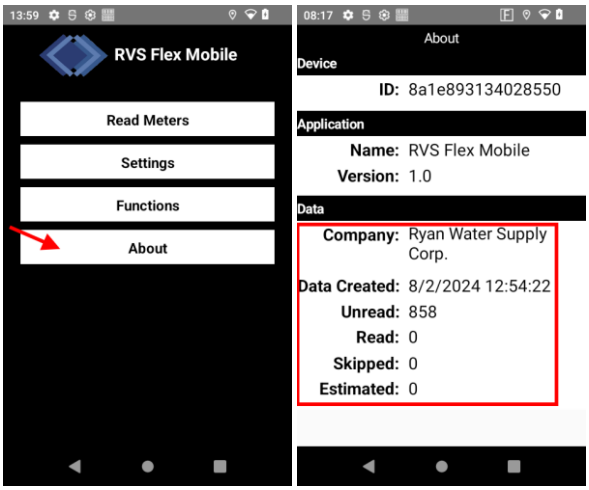


If successful, the following will be displayed:

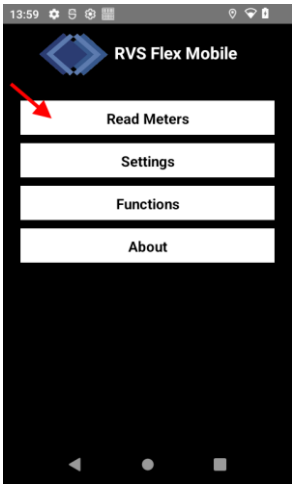


Click “OK”.

The data has now been loaded into Flex Mobile and it is ready to read meters, however its always recommended to first verify the data through the “About” page before proceeding to enter readings.



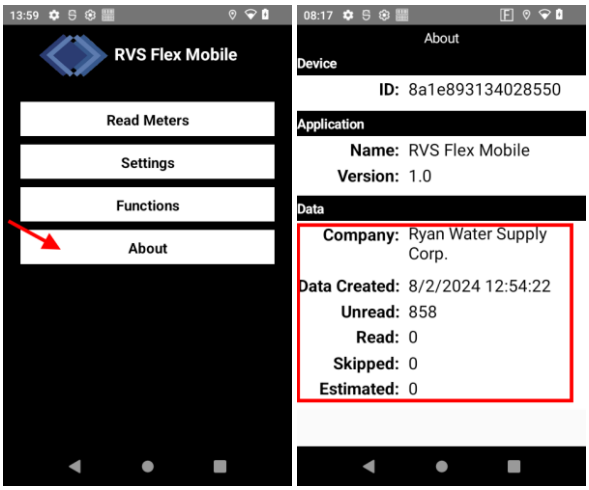
The selected route can then be started by going to the “Read Meters” page.



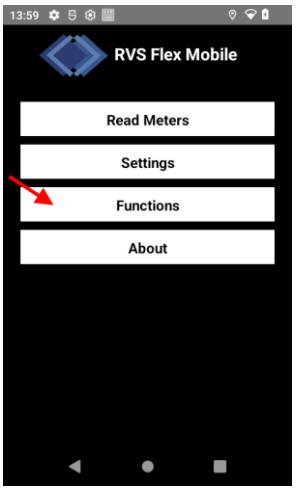
6.2. Transferring meter readings from the handheld into Mosaics

The following procedure transfers the meter readings (and associated data) from the handheld to Mosaics.

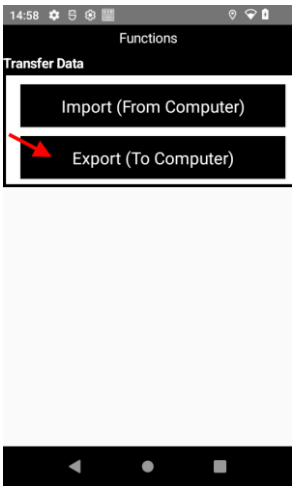
6.2.1. In Flex mobile on the handheld, first verify the data you are about to transfer is what is intended by going to the “About” page.



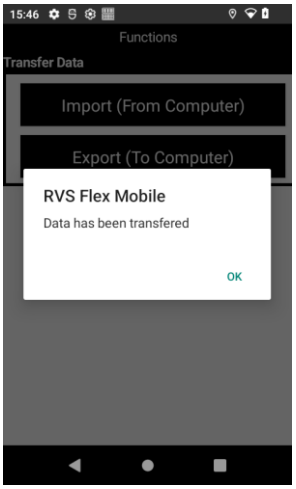
6.2.2. Go to the “Functions” page.



6.2.3. Select “Export” (To Computer)



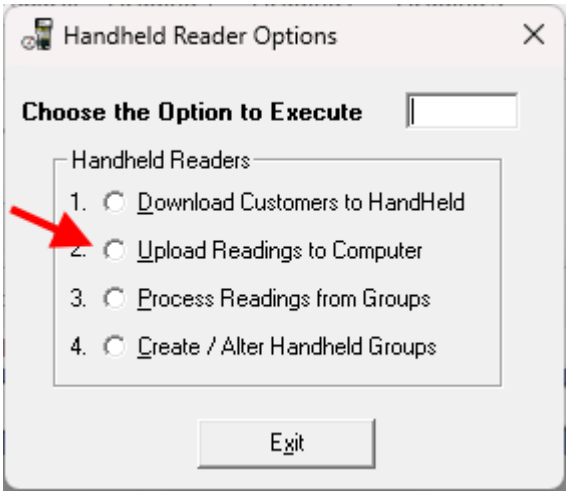
If successful, the following message will be displayed:



Click “OK”.

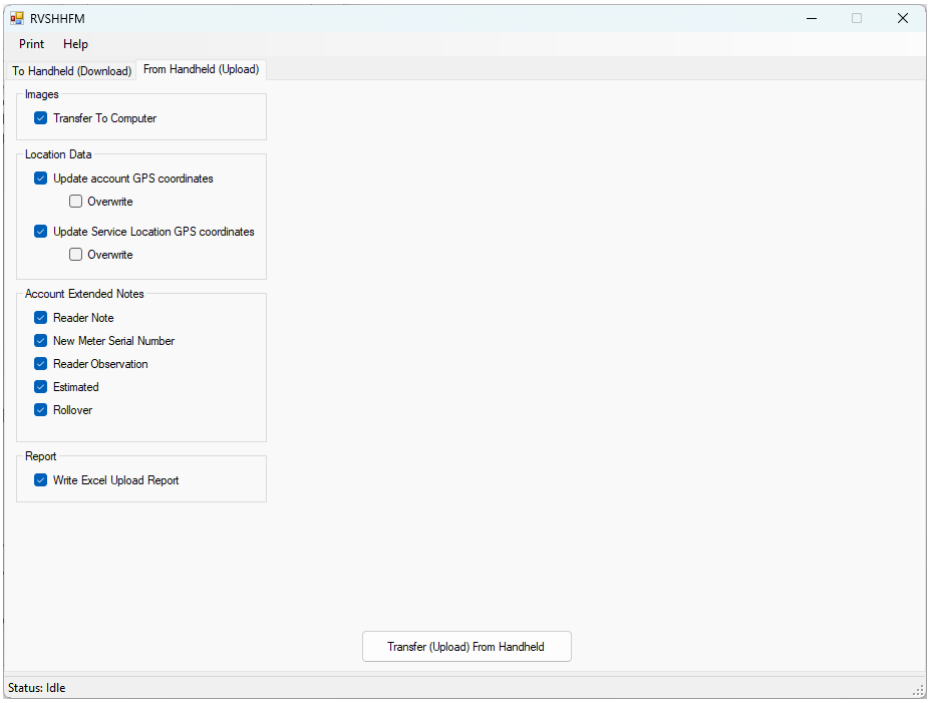
6.2.4. Click the “Handheld Interface” icon in Mosaics.

6.2.5. Click “Upload Readings to Computer”

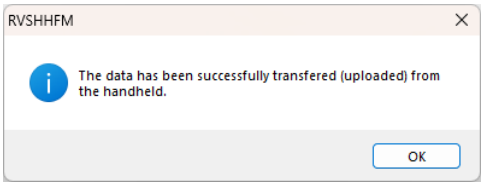


6.2.6. Review or adjust the RVSHHFM settings.

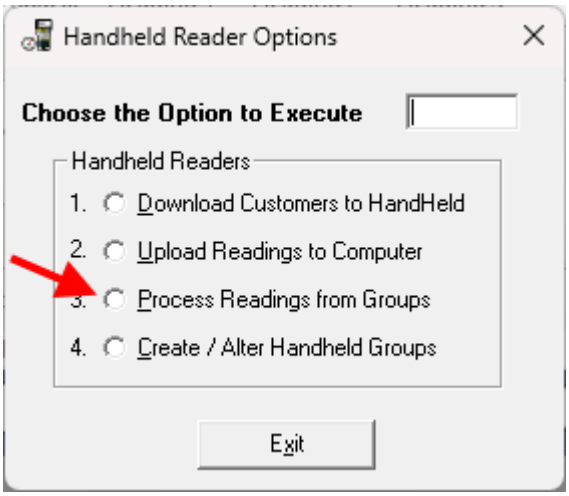
Connect the handheld to the USB port of the computer running Mosaics and then click “Transfer (Upload) From Handheld”.



If successful, the following message will be displayed:



6.2.7. Close RVSHHFM and then select “Process Readings from Groups” in the Handheld Reader Options dialog.



Then follow the standard Mosaics procedure for processing the readings and viewing the upload report.