

Thermo
SCIENTIFIC

**Thermo Scientific™
Smart-Tracker™**

Smartphone-Tablet User Guide

327243H01 Rev. B April 2017

Visit us online to register your warranty
www.thermoscientific.com/labwarranty

thermoscientific

IMPORTANT Read this instruction manual. Failure to follow the instructions in this manual can result in damage to the unit, injury to operating personnel, and poor equipment performance.

CAUTION All internal adjustments and maintenance must be performed by qualified service personnel.

Material in this manual is for informational purposes only. The contents and the product it describes are subject to change without notice. Thermo Fisher Scientific makes no representations or warranties with respect to this manual. In no event shall Thermo be held liable for any damages, direct or incidental, arising from or related to the use of this manual.

© 2017 Thermo Scientific S.A.S. All rights reserved. Thermo Scientific, the Thermo Scientific logo, and Thermo Scientific Smart-Tracker are the exclusive property of Thermo Scientific. All other brands mentioned are the property of their respective owners.

Table of Contents

Getting started.....	5
Introduction	5
About iOS® and Android® versions of this application	5
Main application features	6
Software details	6
Hardware Details	7
Install Smart-Tracker on your smartphone or tablet	8
Using the magnet	10
Using Smart-Tracker.....	13
Smart-Tracker home screen	13
Scanning for nearby Smart-Tracker modules	14
Configuring missions	16
What is a mission?	16
Setting up Cloud access	16
Starting a new mission	18
Selecting the start mode	19
Setting high and low limits	20
Password-protection	21
Using Flight mode	22
Viewing a currently-running mission	24
Automatic Cloud connections	24
Mission graph, data, and map	25
Saving and sending data from the current mission	25
Looking up data from previous missions	27
Settings.....	28
Monitoring with Watch Mode	29
Requirements for using Watch Mode	29
Watch Mode settings	29
Opening a .CSV file with Excel.....	31
Opening the file	31
File contents	31
Appendix 1 –Battery considerations	33
Smart-Tracker –200° to +200°C (Pt100) modules	33
Smart-Tracker –40°C to +85°C modules	34
Appendix 2 – Advanced module settings	35
Radio tools	35
Settings	36
Advanced	36
Permanently deactivating Flight mode (for current module only).....	37

Table of Contents

Appendix 3 – Supported devices, operating systems and versions.....38
 iOS®38
 Android®38

Notices

Battery warning

Thermo Scientific Smart-Tracker products contain a non-rechargeable lithium battery. Make sure you observe polarity (\pm) when inserting batteries into Smart-Tracker devices. Reversing polarity by inserting the batteries incorrectly can cause the product to heat up and may lead to a battery liquid leak. Use only batteries recommended by Thermo Scientific. Battery life depends on target temperatures. Removing the battery erases data contained in module memory. See Section 7 - Appendix 1 for more details on battery life.

FCC statements

FCC ID: QOQBLE112

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC Statements

IC: 5123A-BGTBLE112

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

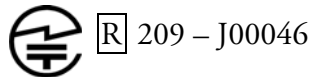
CE Thermo Scientific Smart-Tracker (Bluetooth component BLE112-A) is in conformity with the essential requirements and other relevant requirements of the R&TTE Directive (1999/5/EC). The product is conformity with the following standards and/or normative documents:

- EMC (immunity only) EN 301 489–17 V.1.3.3 in accordance with EN 301 489-1 V1.8.1
- Radiated emissions EN 300 328 V1.7.1
- Safety EN60950-1:2006+A11:2009+A1:2010+A12:2011

KCC (Korea) Thermo Scientific Smart-Tracker (Bluetooth component BLE112-A) is KCC certified with following certification number:

- KCC-CRM-BGT-BLE112-A

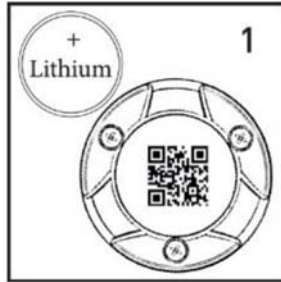
MIC (Japan) This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law.



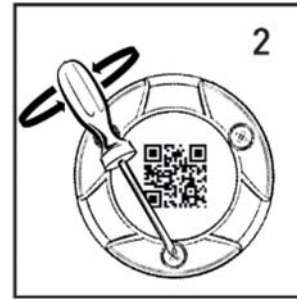
Welcome to the Thermo Scientific Smart-Tracker application. This guide shows you how to use the software to configure, read, and manage your Thermo Scientific Smart-Tracker temperature monitoring modules.

To get started, insert the battery into your Smart-Tracker module.

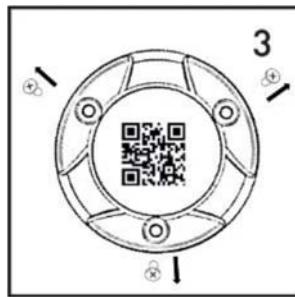
-200°C / +200°C (Pt100) modules



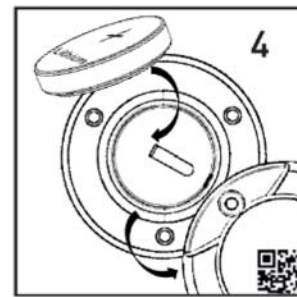
The Lithium battery is provided in the product box.



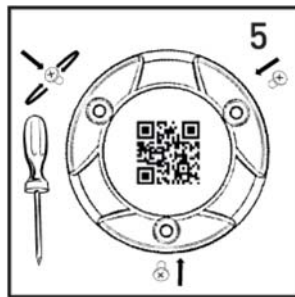
Unscrew the three screws on the back of the module (turn counter-clockwise).



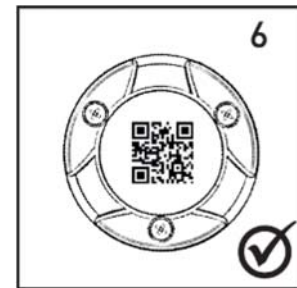
Remove the screws.



Place the battery in the slot, with the plus sign (+) facing up.



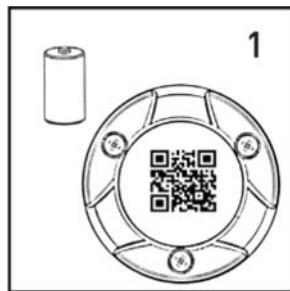
Replace the screws (turn clockwise). Ensure that the rubber gasket is properly seated.



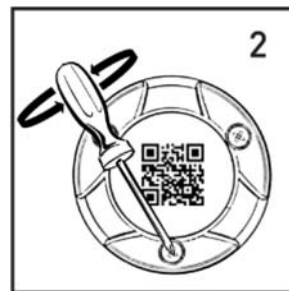
That's all. Your module is now ready to use.

Inserting the battery in your Smart-Tracker -200°C / +200°C (Pt100) module

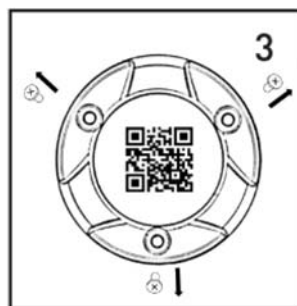
-40°C / +85°C modules



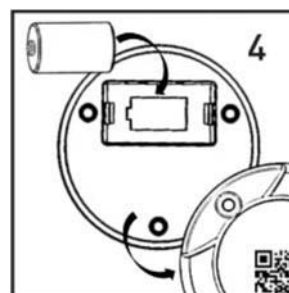
The Lithium battery is provided in the product box.



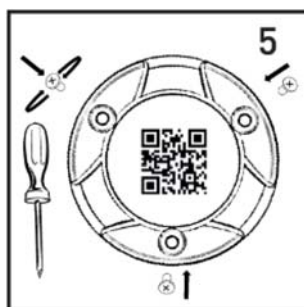
Unscrew the three screws on the back of the module (turn counter-clockwise).



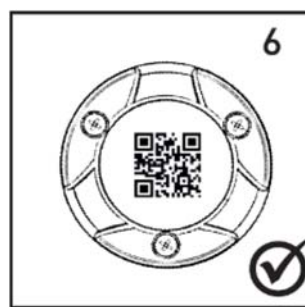
Remove the screws.



Place the battery in the slot, making sure to respect polarity.



Replace the screws (turn clockwise). Ensure that the rubber gasket is properly seated.



That's all. Your module is now ready to use.

Inserting the battery in your Smart-Tracker -40°C / +85°C module

1 Getting started

1.1 Introduction

Smart-Tracker is a Bluetooth® Smart enabled module that records ambient temperature at regular intervals and stores the information in its memory. This type of device is also known as a datalogger.

The Smart-Tracker application on your smartphone enables you to read the device wirelessly via Bluetooth at any time. You may also choose to upload the information to the Cloud* where other people can access it.



Figure 1. Smart-Tracker temperature tracker

1.2 About iOS® and Android® versions of this application



CAUTION: This User Guide describes the Smart-Tracker application for supported iOS® and Android® devices. All software features are identical on the two platforms.

** Requires Thermo Scientific Cloud subscription and Smart-Tracker desktop application for configuration.*

1.3 Main application features

- Offers an easy solution for monitoring temperature in packages, refrigerated trucks, laboratories, storage facilities, and more
- Monitors temperature-sensitive goods during shipment and view temperature readings on your Smart-Tracker modules
- Programs high/low temperature limits, read frequency, and delays
- Replicates data in secure Cloud storage*, with mapping using your device's location services
- Generates PDF reports (requires Cloud access subscription), exports and sends .CSV files by e-mail
- Maps locations where missions are stopped, read, and started, using your device's location services
- Includes Flight Mode management for airline transportation
- Uses your iOS or Android device's Bluetooth Smart (Bluetooth Low Energy), with a wireless range up to 50 meters (approximately 160 feet)

* Requires Thermo Scientific Cloud subscription and Smart-Tracker desktop application for configuration.

1.4 Software details

Module detection	Automatic when within Bluetooth® range
Watch mode	iOS & Android smartphones and tablets
Datalogging start options	Immediate, delayed, specific start date/time
	When temperature reaches target value
	Magnet
Flight mode	Delayed wakeup or wakeup via Smart-Tracker application
Read interval	15 to 59 seconds, or 1 to 255 minutes
Memory management	Stop when full, or overwrite oldest readings
Programmable limits	High and low alarm limit values (with delay)
Module name	Customizable (up to 18 characters)
Geolocation	Uses mobile device GPS features to track start, read, and stop points with detailed information
Cloud storage	Full access to data from Cloud storage

Reports	Generates PDF reports (requires Cloud storage). Reports in CSV format (MS Excel® readable) may be sent by e-mail, with mission summary and history graph.
Regional settings	Readings shown in GMT or user's local time, temperature values expressed in °C or °F
Calibration	Manage A & B correction parameters. Download correction parameters directly via Internet (for sensors calibrated by Thermo Scientific)

1.5 Hardware Details

Wireless connectivity	Bluetooth® Smart
Serial number	Unique for every module
Temperature range	–40 to +85°C or –200 to +200°C (w/ext. Pt100 sensor)
Reading precision	± 0.3°C
Sensor resolution	0.01°C
Wireless range	Up to approximately 50 meters /160 ft. (LOS)
Battery type	User-replaceable Lithium battery
Battery life	Up to about 48 weeks
Product protection index	IP67 or IP65 (Pt100)
Casing	ABS / Aluminum
Dimensions	Ø 50 mm (2 in.) D: 22 mm (0.87 in.)
Weight	57 g (2.0 oz.)
Internal memory	4,000 readings
LED indicator	Alarm status & communication
Read interval	15 to 59 seconds, or 1 to 255 minutes
Memory management	Stop when full, or overwrite oldest readings

Range control	High and low alarm limit values (with delay)
Module name	Customizable (up to 18 characters)
Mount options	Magnet / screws

1.6 Install Smart-Tracker on your smartphone or tablet

You may download and upgrade Smart-Tracker directly using your mobile device. After installing the application, you will be notified automatically when upgrades are made available. There are two ways to proceed with installation.

Option 1: use QR code to access the Thermo Scientific site

1. To go to the Thermo Scientific website, you may use your mobile device to scan the QR code provided on the back of your Smart-Tracker module or on the product box.



Figure 2. Scan QR code links to open the Thermo Scientific application download page

2. Scroll down to the Smart-Tracker application link and tap to proceed with the download via the appropriate online store.



On the site, you will also find the MS Windows Smart-Tracker companion application for your mobile software. This application is needed to view data stored by your mobile device on the Cloud and to manage the vouchers needed for Cloud access.

Option 2: Access online stores directly

iOS	Android
For iOS devices, tap on the App Store icon on your device:	For Android devices, tap on the Play Store icon on your device:
	
Alternatively, you may open the Apple App Store web site directly and download the application via iTunes.	Alternatively, you may install the application via Google Play web site.

1. Search for “Smart-Tracker” on the appropriate store page.
2. Select the Thermo Scientific Smart-Tracker application to proceed with installation.
3. Login to your account (or create one) and follow the installation instructions.
4. When installation is complete, tap on the Smart-Tracker icon to open the application on your smartphone or tablet.



Figure 3. Smart-Tracker application icon

1.7 Using the magnet

Smart-Tracker includes a magnet that can be used both for mounting the module onto a magnetic surface, and to trigger selected actions.

The provided magnet has a “weak” and a “strong” side. The metal ring is close to the edge on the “weak” side of the magnet. The deeper recess on the other side indicates “stronger” side.

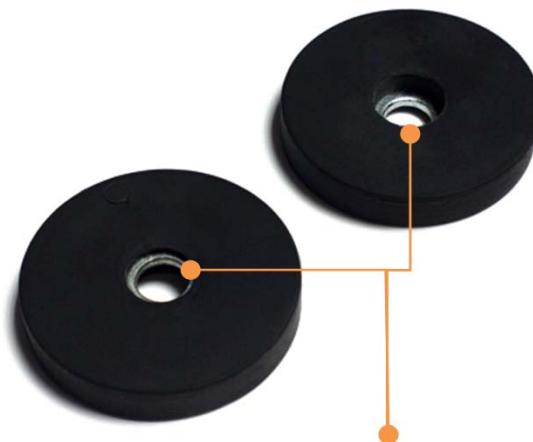


Figure 4. Metal ring close to the edge on magnet’s “weak” side. Deeper recess indicates “stronger” side

1.7.1 Mounting Smart-Tracker with the magnet

You may fix the magnet to a metallic wall or insert a screw to fix it onto other types of surfaces. Simply place the module onto the magnet as shown below:



Figure 5. Mount Smart-Tracker on magnet

Starting a mission by mounting module on magnet

You may trigger the start of a mission by mounting the module on the magnet (typically screwed into a wall or placed onto a magnetic surface). Enable this option in Smart-Tracker → **New Mission** → **Start mode** → **On contact with magnet**.

Other methods for starting missions are described in the Appendix 2 **Selecting the start mode**.

1.7.2 Use the magnet to check Smart-Tracker status

You may also hold the magnet over a Smart-Tracker module to check its status. Face the magnet's "strong" side towards the module to do this.



Figure 6. Checking status by holding magnet over module

The magnet's presence causes the LED on the front of the module to blink. The color LED indicates module status and lights up as follows:

Mission not programmed		
Bluetooth activated, module ready to be programmed, or currently connected via Bluetooth	●●●●●●●● (Flashes 8x)	
Mission programmed (● = flashing, ● fixed 3 seconds)		
	Datalogging not started	Datalogging started
Everything is OK	●	●●●●●●●●
Currently OK (previous alarm or sensor error)	n/a	●●●●●●●●

Getting started

Sensor error	●●●●●●●●	●
Low battery	●●●●●●●●	●●●●●●●●
Limit exceeded (within delay)	●	●●●●●●●●
Limit exceeded (delay exceeded)	●	●

This same behavior is obtained using the Smart-Tracker software, with the **Blink LED to identify module** function, described later.

2 Using Smart-Tracker

2.1 Smart-Tracker home screen

The Scan screen shown here opens when you first start the application. The colored zones indicate where to tap to:

1. Scan the area for nearby Smart-Tracker modules (Bluetooth must be activated on your smartphone). If Bluetooth is not activated, you will be prompted to turn it on.
2. Run Smart-Tracker in demonstration mode without actually connecting to any modules.
3. Enter your Cloud ID to use Cloud services (details in Appendix 2 **Setting up Cloud Access**).

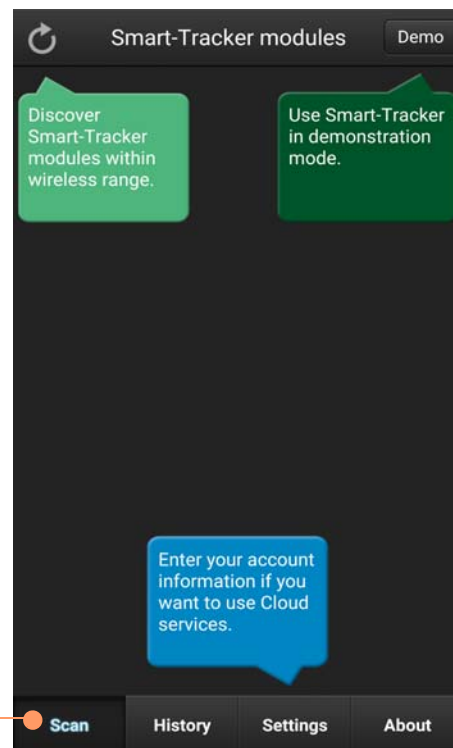


Figure 7. Smart-Tracker home screen (upon first start)




The four tabs, **Scan**, **History**, **Settings**, and **About**, are present throughout the application, and are described in detail in the following sections.

Note *The first time you launch Smart-Tracker, the application will request your authorization to access geolocation features. If you would like to include details location information with your readings, you must allow access.*

2.2 Scanning for nearby Smart-Tracker modules

On the **Scan** tab, tap the scan/refresh icon to discover and list the Smart-Tracker modules within range.

The icon colors are as follows in this mode (referred to as “Discovery mode”):

-  Indicates a programmed module that has not exceeded its limit values during the current mission (no alarms).
-  Indicates a programmed module on which one or more alarms have been detected during the current mission.
-  Indicates an idle module (not running, ready-to-use).

Tap anywhere on one of the lines to manage the selected Smart-Tracker module and access module details.

Module signal strength

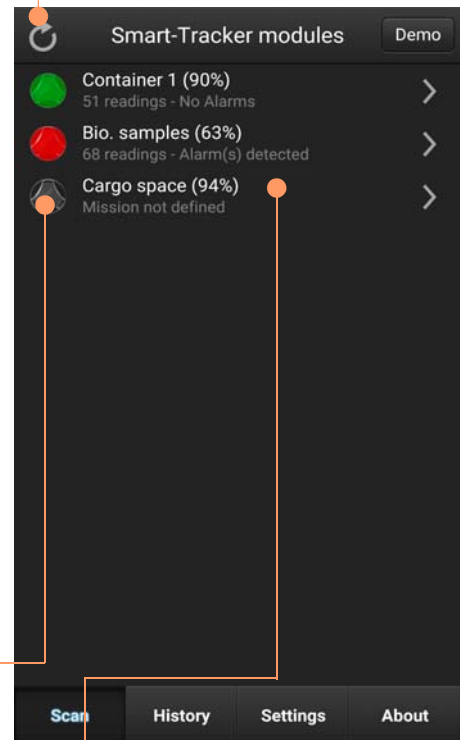


Figure 8. List of Smart-Tracker modules after scanning

The actions available actions on this screen are:

Return to the home screen

Press the **Back** button if you want to return to the previous screen in the application.

Set up new mission

Tap here to configure a new mission for your module.

Show last recorded mission

Tap to see the data from the last mission recorded in module memory.

Blink LED to identify module

When several Smart-Tracker modules are present, you might not always know which one you are working with in Smart-Tracker. If you are unsure, simply tap on **Blink LED to identify module**, and a light on the front of the module will blink for a few seconds.

The LED blinks different colors depending on the module's status.

On-demand reading

Click on **Read current temperature** to display the ambient temperature where the Smart-Tracker module is located.

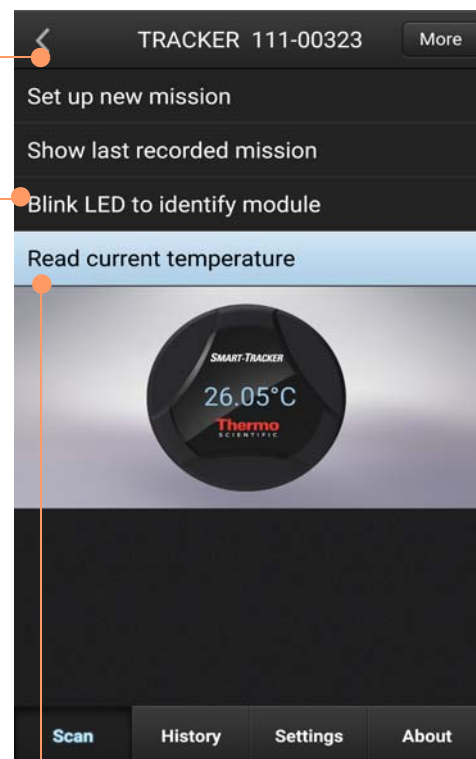


Figure 9. Accessing and configuring your module

3 Configuring missions

One of the main features about Smart-Tracker is its ability to record temperature data intelligently (datalogging) during “missions.” To begin datalogging, you must create a mission for the module.

3.1 What is a mission?

A mission is a set of configuration options that apply to a Smart-Tracker module. Mission parameters include:

1. A name for the module
2. How often temperature is read
3. How and when the module should begin tracking data
4. High and low alarm limits
5. Whether data should be pushed to the Cloud
6. Whether to use a password to prevent unwanted stopping or reprogramming of a mission

3.2 Setting up Cloud access

If you have an Thermo Scientific Cloud account, you may use your mobile device to push Smart-Tracker data to the Cloud so that other users may accessed it over the Internet from the Smart-Tracker PC application.:

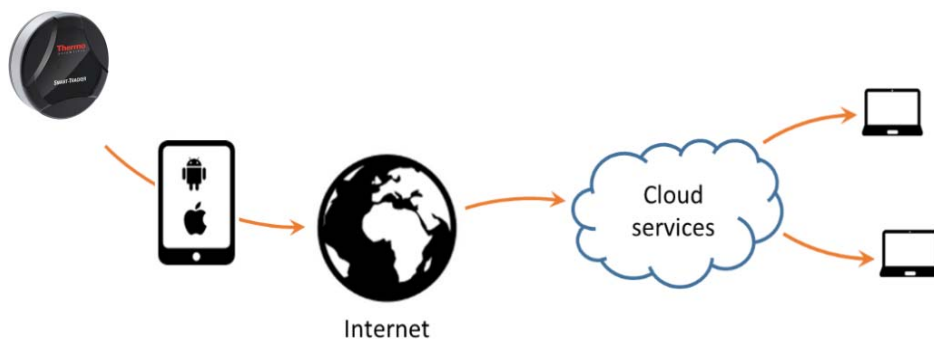


Figure 10. Mission data can be pushed to the cloud by your smartphone or tablet



CAUTION: To access Thermo Scientific Cloud, you must install Thermo Scientific’s Smart-Tracker PC application and use it to create your company account and user accounts and enter a voucher number authorizing a specific number of modules for a specific period of time.

Please contact your sales representative for more information on Thermo Scientific Cloud.

Good to know:

- Assign Cloud ID to push data**
 For a given mission to be pushed to Cloud, the person programming the mission must provide a Cloud user account name in Smart-Tracker mobile, on the smartphone or tablet that is used to program the module (**Settings**→**Cloud account**). This user account must be valid and listed for your company account.
- Pushing data anonymously**
 When the module is on a mission, other users with Smart-Tracker application installed on their mobile device can read your datalogger module, for example at intermediary locations during the mission. Those users do not have to configure anything in their smartphones or tablets. They simply remain “anonymous,” yet they can also push mission data to Cloud.
- Stopping a Cloud-enabled mission**
 As with programming, only mobile devices configured with a user account linked to your company account are allowed to stop a mission that has been pushed to the Cloud.

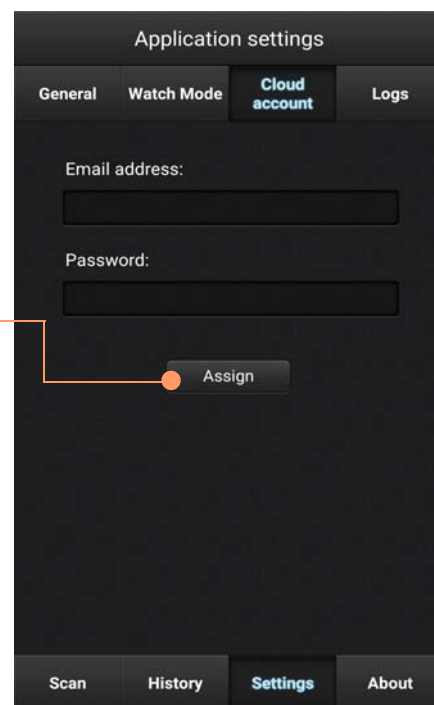
The above points are all covered in the following sections.

3.2.1 Assigning the Cloud account in Smart-Tracker application



Assign the Cloud account to your mobile device (one account per device) as follows:

- In **Settings** → **Cloud account**, enter the Email address and Password for your Cloud account
- Tap on **Assign**
- Proceed with Starting a new mission (next page)

This steps allows you to configure missions for which data can be uploaded to the Cloud.



3.3 Starting a new mission

1. In the Scan screen, tap  to refresh the list of Smart-Tracker modules. You may define and start a mission for modules with a gray icon . Red or Green icons indicate that the module is already on a mission.
2. Tap to select the module you want to configure → **Set up new mission.**
3. Fill in the information on the **General** tab (shown here).

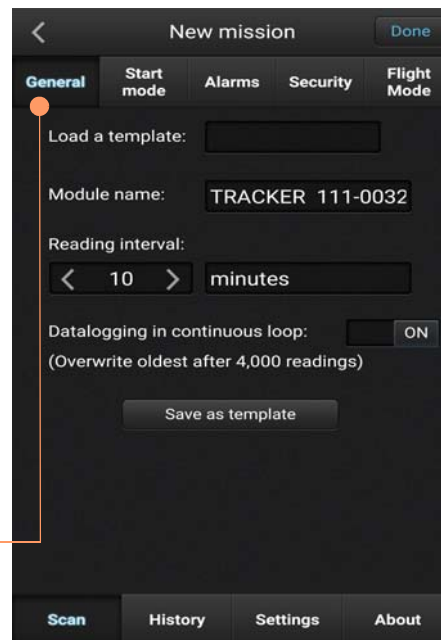


Figure 11. General mission settings

- Load a template** You may load an existing mission template (if there are any) by tapping in the field and choosing a name from the pull-down list.
- Module name** Enter a name to use for the module during this mission (up to 18 characters). This name is displayed throughout the application when referring to the module.
- Reading interval** Specify the frequency with which the module reads and records temperature from its sensor. Choose values in minutes or seconds by tapping on the **minutes** field.

Note To activate *Low/High delays* in the *Alarms* tab, *Reading interval* must be set in *minutes* (see below).
- Datalogging...** Up to 4,000 readings can be stored in module memory. To continue datalogging after this limit is reached, the oldest readings can be overwritten by new readings if you select **Datalogging in continuous loop**. Otherwise, datalogging stops when the limit of 4,000 readings has been reached.
- Save as template** When you are done adjusting the settings, you may tap on **Save as template** at the bottom of the screen if you want to save the current mission as a template for future use.

3.4 Selecting the start mode

There are several ways to start datalogging on your Smart-Tracker module, depending on your needs.

Adjust the following options in the **Start mode** tab as necessary. All options other than **Immediately** may be combined for use together.

Immediately

Datalogging begins when the module receives its programming information.

On contact with magnet

Datalogging begins when the Smart-Tracker module comes into contact with its magnet. For example, you could start datalogging when you mount the Smart-Tracker on a magnet installed in a refrigerated truck.

Temperature below / Temperature above

Datalogging begins when Smart-Tracker module detects the specified temperature (one or the other). This is useful for automatically starting datalogging when the module is placed in the environment to be monitored, such as in a cooler when it is ready for transportation.

Delayed for: Datalogging will begin after the number of minutes you indicate (after mission has started). Tap in the field to change the number.

Delayed until: Datalogging will begin at the exact time and date you indicate.

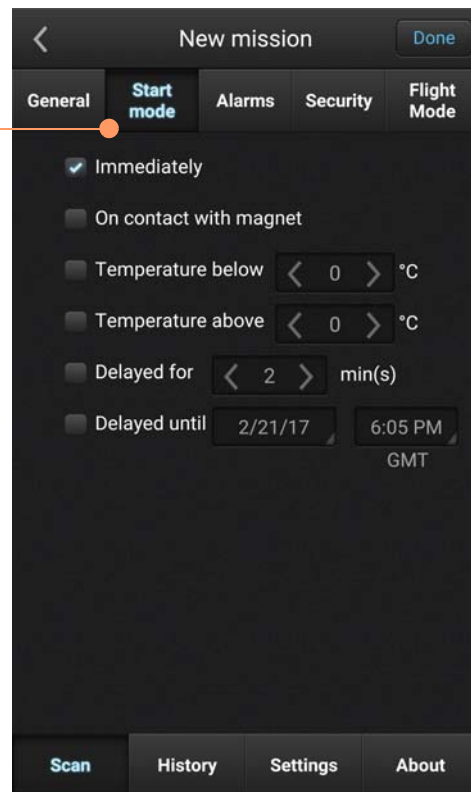


Figure 12. Mission start options

3.5 Setting high and low limits

If you would like to ensure that the temperature in the container or environment you are monitoring remains within a specific range, you may set high and low limits in the **Alarms** tab.

The default values in the fields show the module's available temperature range. Tap on checkboxes to enable options and in fields to adjust settings.

Low limit: the lowest acceptable temperature reading.

High limit: the highest acceptable temperature reading.

Low delay : how long the reading is lower than the Low limit (multiple of the reading interval, in minutes only).

High delay : How long the reading is higher than the High limit before triggering an alarm (multiple of the reading interval, in minutes only).

If an alarm condition arises at any point since the start of the mission, the module shows an alarm on the Scan screen (unless Watch Mode is activated. See Appendix 2 **Monitoring with Watch Mode**).

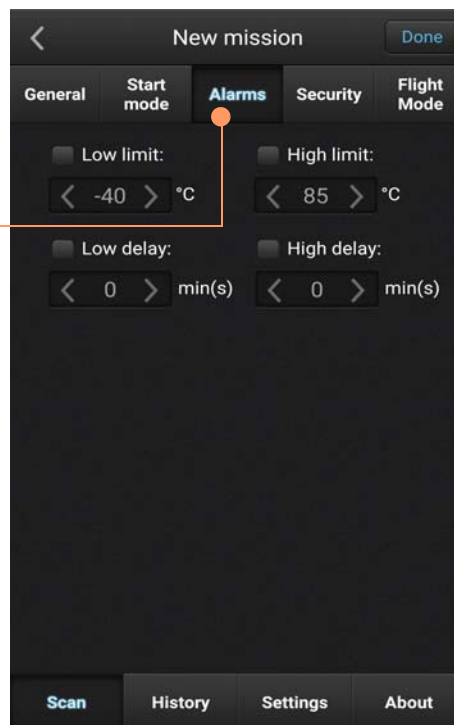


Figure 13. High and low temperature range limits

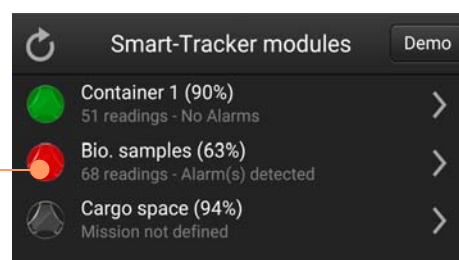


Figure 14. Alarm condition indicated by red icon

3.6 Password-protection

Smart-Tracker enables you to assign a password to prevent other users from stopping a Smart-Tracker module that is currently on a mission. To do this, tap on the **Security** tab.

Password required to stop mission : Requires a user to enter the password configured here to stop this mission after it has been started.

Important : If you forget your password, please contact Thermo Scientific technical support.

Tap in the **Password** field to enter the **password**. The checkbox to the right of this field shows or hides the password characters.

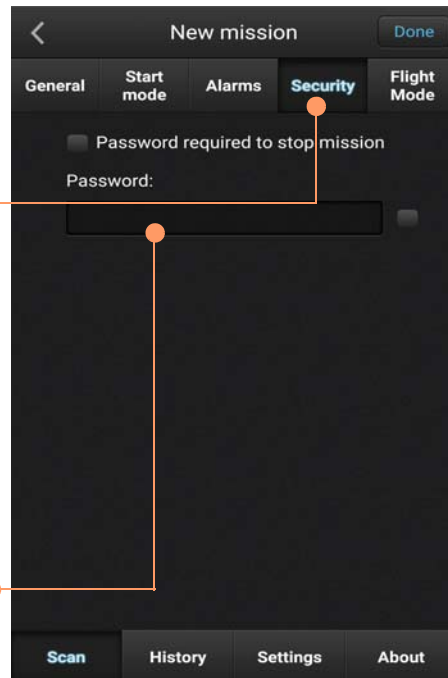


Figure 15. Protecting Smart-Tracker mission with a password

3.6.1 Pushing mission readings to the Cloud



CAUTION: To push Smart-Tracker data to the Cloud during its mission, you must assign your Thermo Scientific Cloud ID and password in **Settings**, as mentioned earlier.

To push data to Thermo Scientific Cloud via your smartphone or tablet:

1. Tap on the **Cloud** tab
2. Select **Use Cloud for this mission**

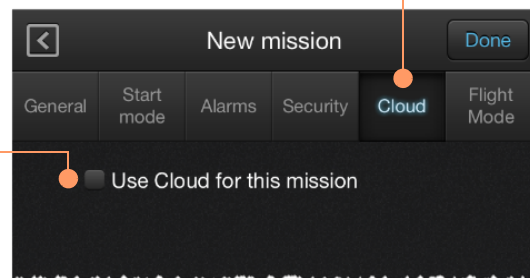


Figure 16. Pushing data to the Cloud upon mission start, read, and stop

Data is pushed by your mobile device:

- When the module is programmed
- When the module is read during the mission
- When the mission ends

Note Use the *Smart-Tracker desktop application for Windows to configure cloud access and to view module readings on your computer.*

3.7 Using Flight mode

In order to be compatible with airline transportation requirements, your modules' Bluetooth radio may be set to a special standby mode, in which wireless transmission is deactivated temporarily. This is referred to as **Flight mode**, a mode in which Bluetooth advertisement frames are not emitted.



CAUTION: Flight mode is available in module firmware versions 1.2 and later. The firmware version can be seen on **More → Radio tools**.

If you do not wish to use Flight mode, make sure **Disabled** is selected.

Tap on **Enabled with wake-up** to use this feature. Flight mode offers two options to reactivate normal Bluetooth operation:

After [number] hours: The Bluetooth radio will resume emission after the number of hours that you specify. This method is the most effective in terms of battery consumption: datalogging is activated and Bluetooth is simply deactivated for the specified period of time.

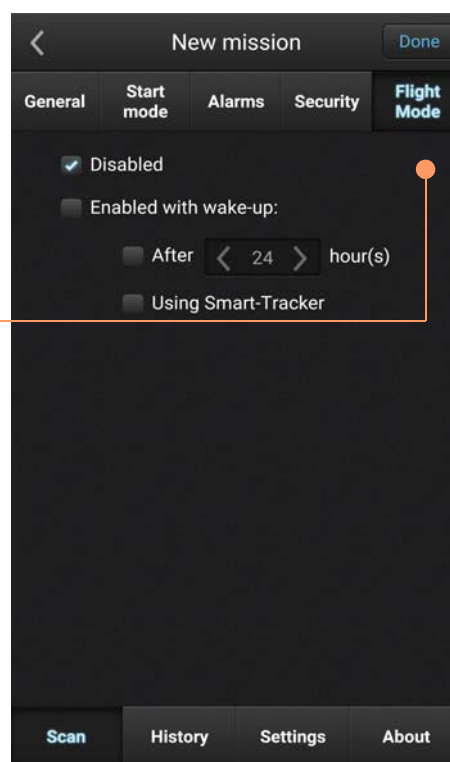


Figure 17. Enabling Flight mode

Using Smart-Tracker: The module is “woken up” for 5 minutes when communication is established with the Smart-Tracker application. That is, Bluetooth remains in listening mode until Smart-Tracker attempts to connect to it. This mode consumes more battery power than regular Bluetooth operation.

To activate modules (within wireless range) that are in the “Wake up with Smart-Tracker” Flight mode:

1. Press and hold the **Scan** button on the module list screen.

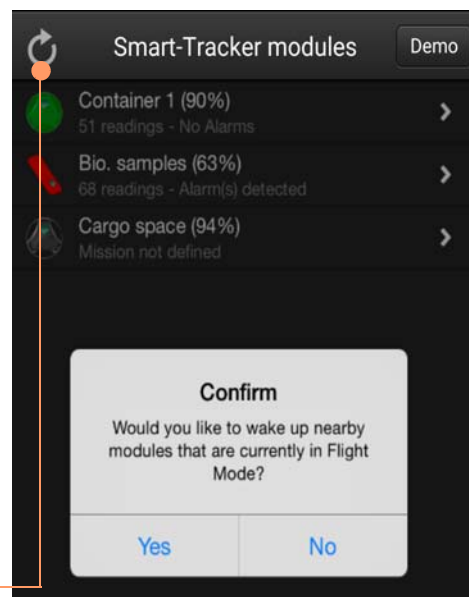


Figure 18. Exiting Flight mode

2. A message asks you to confirm wake-up, which acts on all modules within wireless range that are in Flight mode. Click on **Yes** to wake up modules, or on **No** to leave them in Flight mode.



CAUTION: The Bluetooth “listening” function in Flight mode consumes more battery power than regular operating mode. It is thus not recommended to use this mode for extended periods of time, but rather to ensure travel compatibility for the first days or weeks of operation.

3.7.1 Deactivating Flight mode manually

With either Flight mode option, you may reactivate Bluetooth at any time by passing the magnet over the module as described earlier.

See also: **More → Flight mode** in Appendix 2 – Advanced module settings

Saving your changes Starting the mission

After you have finished defining the various settings in **General**, **Start mode**, **Alarms**, and **Security**, you may save this configuration as a template for future use if you want (return to the **General** tab).

Then tap on **Done** to transmit your settings to the module. A confirmation message is displayed in Smart-Tracker and the module is displayed with a green ● icon on the Home page (or red ● if the module already has an alarm).

3.8 Viewing a currently-running mission

General information

When a module is activated and configured for a mission, you may view, store, and email various details:

1. Tap on the module name in the home screen → **Show current mission**.
2. General information about the mission is displayed.
3. You may tap on **Stop** to terminate the mission if appropriate.

Access detailed information and maps

Tap on **Mission details** for more complete information regarding the Smart-Tracker module on its mission.

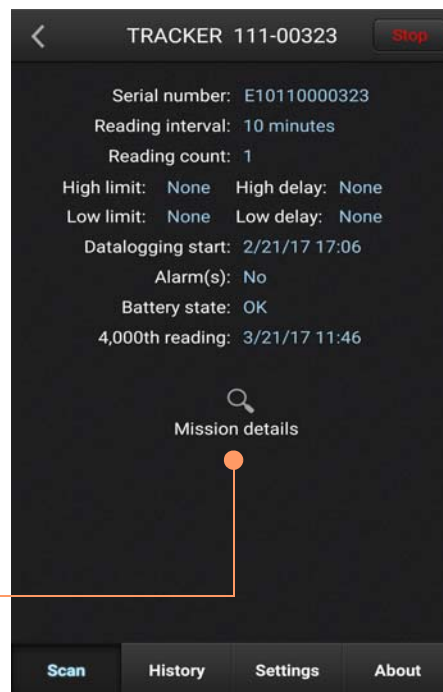


Figure 19. Summary of current mission

3.9 Automatic Cloud connections

If the Cloud option is activated for the mission:

1. When you tap on **Mission details**, data is pushed to the Cloud before refreshing the screen. Data can be pushed to the Cloud even if no Cloud account is assigned in the user's Smart-Tracker application.

This “anonymous” push enables people reading the module at remote locations to update the data on the Cloud without having to configure their application.

2. If you tap on **Stop**, the module must be linked to your Cloud account, and the Cloud account configured in the application.

3.10 Mission graph, data, and map

Graph

Tap on the graph tab to see a summary graph of the readings in the current mission.

Zoom in by swiping diagonally (left to right) with your finger anywhere in the graph. Zoom out by swiping diagonally right to left.

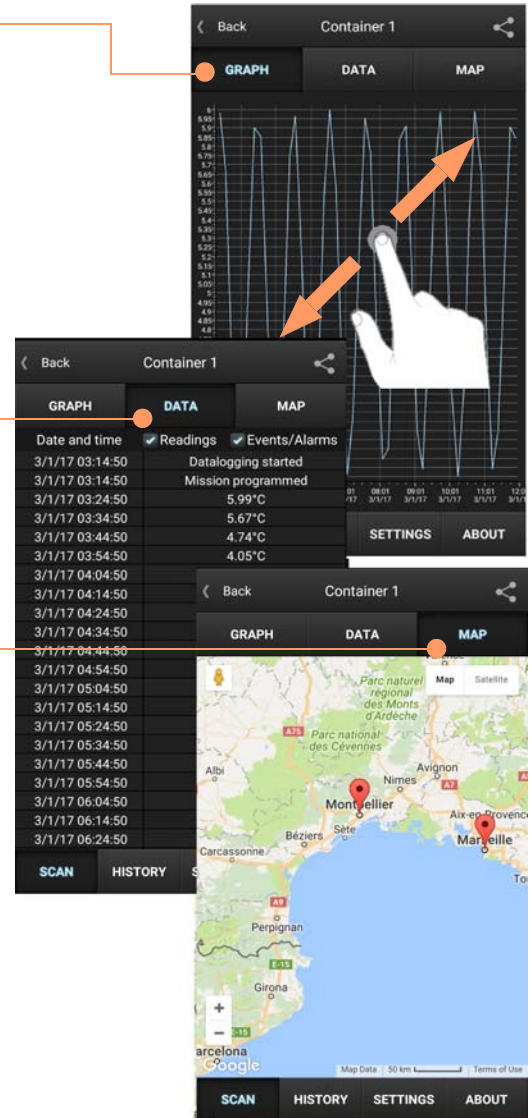
Data

For a list of all the readings, events, and alarms related to the current mission, tap on **Data**.

Map

If the option **Location Services** is enabled on your mobile device (**Settings** → **Restrictions**), the location is stored when Smart-Tracker reads the Smart-Tracker module.

Tap on **Map** to view a Google Map showing the locations at which the Smart-Tracker module was programmed, read, and stopped.



3.11 Saving and sending data from the current mission


You may save or store data at any time during a mission by tapping on the  icon.



Figure 20. Backup, Transfer and Visualization of mission data

Save in memory Saves up to five missions in your mobile device's memory, which you may access via the **History** tab. If you save the current mission more than once, it is saved as a new file.

Send by email Sends all stored readings in CSV format, along with a JPG image of graph from the current mission, to an email address that you specify. This action requires your mobile device's email functionality and Internet (or Wi-Fi) access to be operational on your mobile device.

Open as PDF **Note** *The mission must be Cloud-enabled for this feature to work.*

Tap on **Open as PDF** to view mission information and data in PDF format, using your mobile device's viewer. You may use the viewer's native features to save, send, print, or otherwise share this PDF file.

Note *This report is generated by the Cloud service, and it includes all the data transferred from the beginning of the mission, and not just the data recently downloaded from the module. An Internet connection is required for this function.*

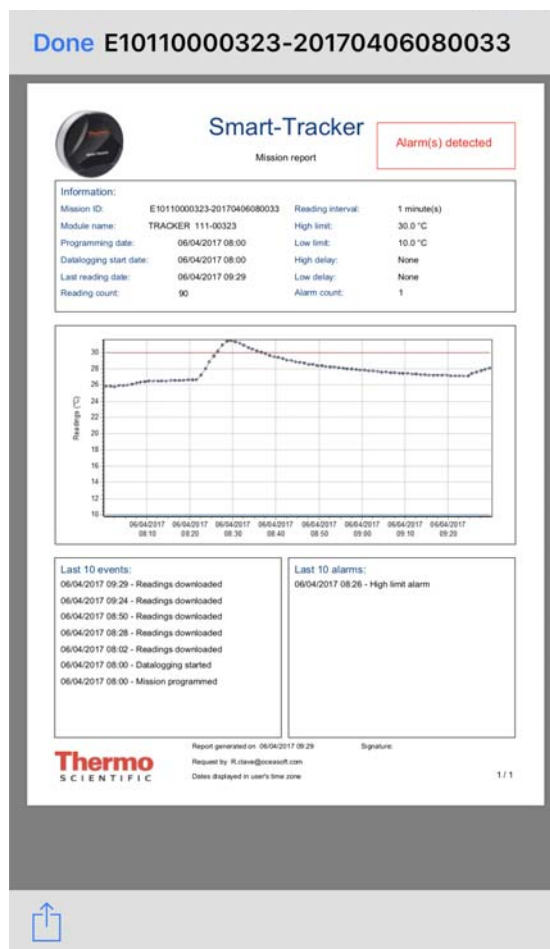


Figure 21. Viewing mission as PDF

3.12 Looking up data from previous missions

Tap on **History** to see stored information from Smart-Tracker missions.

Tap on the desired mission to see complete details regarding that mission.

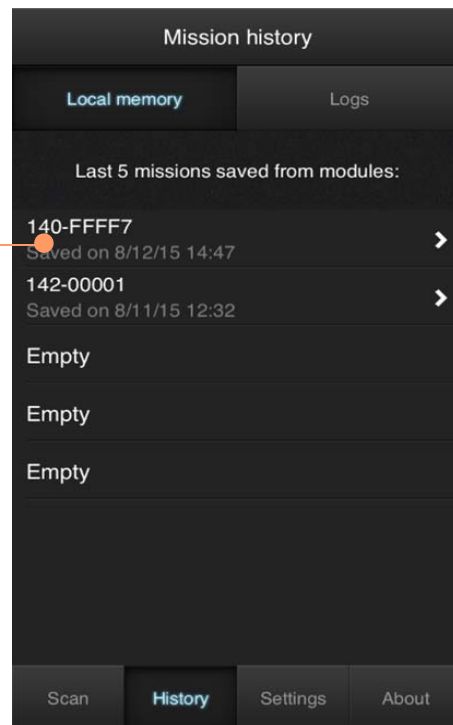


Figure 22. Displaying data from previous missions

4 Settings

The Settings tab contains various options for configuring Smart-Tracker behavior.

Temperature unit: Choose to display values in Celsius (°C) or Fahrenheit (°F).

Enable module access for signal strength above: Modules with a signal strength lower than the level specified here are listed on the Scan screen, but you cannot connect to them. This enables you to avoid trying to connect to modules whose signal is too weak to ensure reliable transmission. The default value is 30%.

Show data with GMT time: Data is always stored using GMT time. This option lets you display the data with GMT time or the smartphone's current local time.

Show wireless signal strength: Enabling this option displays signal strength (in%) in the module list on the home screen.

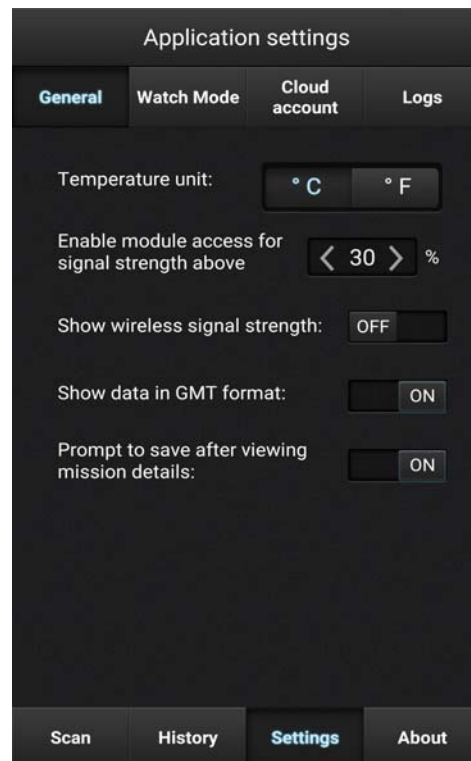


Figure 23. Configuring Smart-Tracker behavior

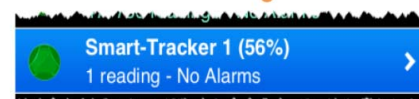


Figure 24. Displaying wireless signal strength

Prompt to save after viewing mission details: When viewing mission details (tap module in home screen → **Show current mission** → **Mission details**), current data is downloaded temporarily to your smartphone for display purposes. You may save it or send it by email if you want. This option simply serves to remind you at that time.

5 Monitoring with Watch Mode

Smart-Tracker's Watch Mode enables you to monitor Smart-Tracker modules on an ongoing basis, and upload the data to the Cloud automatically. When activated, Watch Mode displays the latest reading for all modules within range.

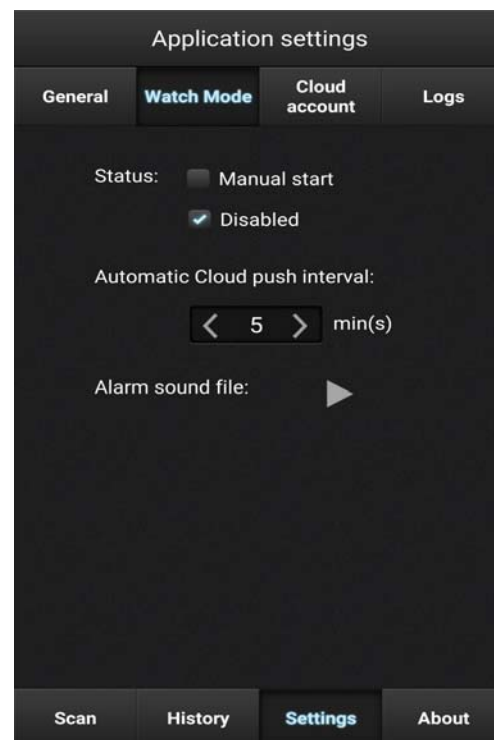



Figure 25. Watch mode settings

5.1 Requirements for using Watch Mode

1. The Smart-Tracker module must be programmed, with datalogging active. Modules that are not on a mission do not monitor temperature and therefore are not applicable to Watch Mode.
2. With an iOS mobile device, the Smart-Tracker application must remain in the foreground (it must be the active application). Android devices support applications running as background a background task.
3. Autolock must be turned off on your iPhone so that Smart-Tracker stays open in order to scan nearby Smart-Tracker devices.

5.2 Watch Mode settings

Manual start: Enables you to activate Watch Mode from the **Scan** tab. With this option selected, an **ON/OFF** button is displayed on the **Scan** screen.

Slide the button to the right to activate **Watch Mode** 

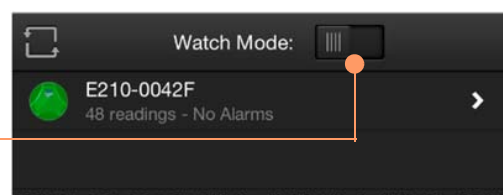


Figure 26. Enabling Watch mode manually

Disabled: Watch Mode is disabled by default. Tap on **Manual start** to activate this function.

With Watch Mode activated, the latest temperature reading is updated once per minute and displayed in the list on the **Scan** tab.

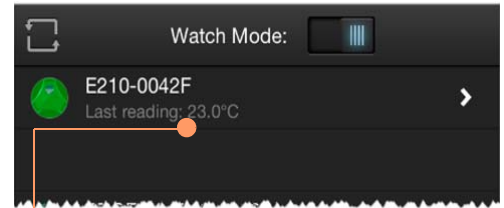





Figure 27. Latest temperature

When **Watch Mode** is activated, the colored icons on the Scan tab have a slightly different meaning than for “Discover mode.”

-  Indicates a programmed module whose last-read value has not exceeded its limit value (not currently in an alarm state).
-  Indicates a programmed module whose last-read value has exceeded its limit value (currently in an alarm state). Smart-Tracker plays an alarm sound once a minute, for several seconds, if the latest reading on one or more Smart-Tracker modules has exceeded a programmed limit.
-  Indicates either a non-programmed module or one on which there was an error reading the sensor (i.e. the current reading is not available). The text beneath the module name shows the status (“Not started” or “Last reading N/A”).

Pushing readings to Cloud automatically with Watch Mode

If you selected **Use Cloud for this mission**, the latest reading in module memory is uploaded to the Cloud at the interval you specify in **Automatic Cloud push interval**.

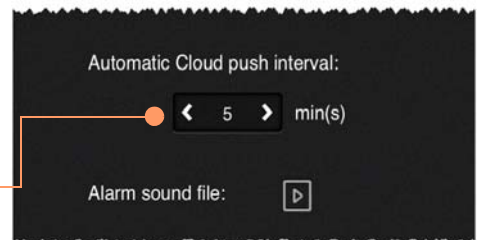


Figure 28. Pushing readings to Cloud automatically

Your mobile device must be connected to the Internet to push data to the cloud. It is not necessary to enter a valid Cloud user e-mail and password in **Settings → Cloud account**.

Testing the alarm sound

You may test the alarm sound by tapping on the Test button. The alarm sounds for approximately 8 seconds, enabling you to adjust the volume as necessary.

6 Opening a .CSV file with Excel

As mentioned earlier, Smart-Tracker can send reports to you in a .CSV format for use in MS Excel or other compatible spreadsheet software. The instructions provided here are valid for the latest version of MS Excel as of this writing. The exact behavior of your software may vary slightly.

6.1 Opening the file

To open the file: Simply double-click on the .CSV file with your mouse. The file should open directly.

6.2 File contents

The .CSV file exported by Smart-Tracker is a “tab-delimited” format, in which data is separated by the “tab” character. This should enable most software to open the file directly, without any other actions on your part.

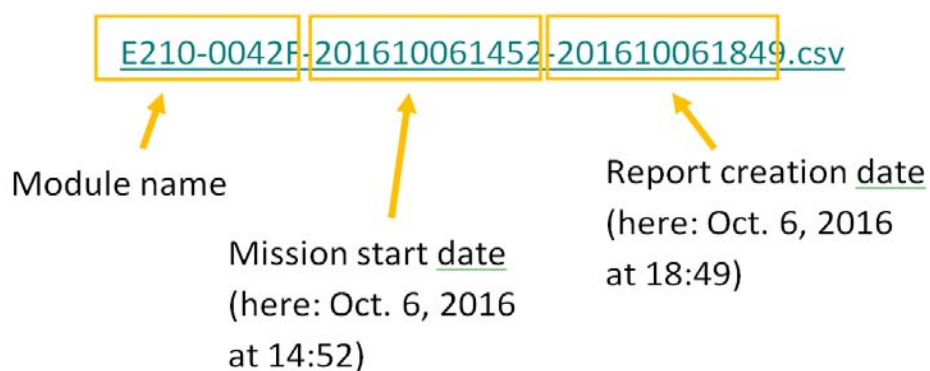
6.2.1 Region-dependent values

Several values contained in the .CSV file are dependent on your regional settings. The current settings on your mobile device are used for the following:

- Decimal value (i.e. 24.5 or 24,5)
- Date format

6.2.2 File name

The diagram below shows the composition of the exported file name:



6.2.3 File contents When opened in MS Excel®, the report looks like this:

	A	B	C	D	E	F	G
1	E	16-10-06	14:52:25	Mission programmed	3.9146	43.6138	
2	E	16-10-06	14:52:26	Datalogging started	NAN	NAN	
3	E	16-10-06	14:53:17	Readings downloaded	3.9146	43.6139	
4	E	16-10-06	15:01:19	Readings downloaded	3.9146	43.6139	
5	E	16-10-06	15:12:48	Readings downloaded	3.9146	43.6139	
6	E	16-10-06	15:49:29	Readings downloaded	3.9144	43.6139	
7	E	16-10-06	16:07:45	Readings downloaded	3.9146	43.6139	
8	E	16-10-06	16:49:06	Readings downloaded	3.9145	43.6139	
9	R	16-10-06	14:52:27	28.03 °C			
10	R	16-10-06	14:53:27	27.84 °C			
11	R	16-10-06	14:54:27	27.69 °C			
12	R	16-10-06	14:55:27	26.70 °C			
13	R	16-10-06	14:56:27	25.41 °C			
14	R	16-10-06	14:57:27	24.75 °C			
15	R	16-10-06	14:58:27	24.30 °C			
16	R	16-10-06	14:59:27	23.97 °C			

The columns in this file are:

- A E: Events
- A: Alarms
- R: Readings
- B Date
- C Time
- D Description/Value
- E Longitude
- F Latitude

Note “NAN” indicates that no value is available, or not applicable to a particular case. For example, “NAN” is indicated for the. “Datalogging started” event, as the Smart-Tracker software does not know the module’s location in cases of delayed datalogging start.

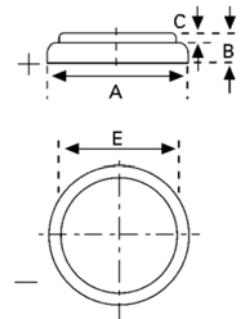
7 Appendix 1 – Battery considerations

Smart-Tracker module battery life varies with the ambient temperature, and thus varies with the different available models. Generally speaking, batteries last less long in colder environments. This information provides some general battery information.

7.1 Smart-Tracker – 200° to +200°C (Pt100) modules

7.1.1 Battery specifications:

Diameter (A):	min 0.95 in (24.2 mm) max 0.96 in (24.5 mm)
Height (B):	min 0.18 in (4.6 mm) max 0.2 in (5.0 mm)
Type Number:	6450
IEC designation:	CR2450
System:	Li-Manganese dioxide / Organic Electrolyte



The chart below shows estimated battery life (in weeks) at various temperatures for this module, with the temperature representing the module's operating (ambient) temperature.

This information is based on one data download per day (regardless of the number of sensor readings recorded during that day).

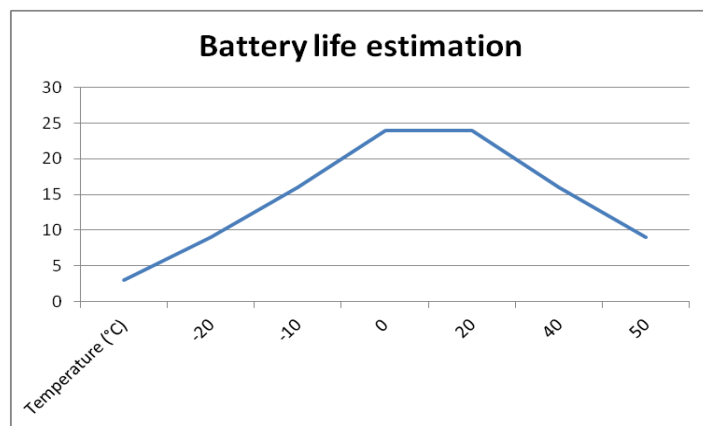
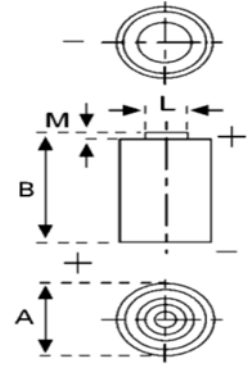


Figure 29. Battery life estimation for 0 to 50°C and –200° to +200°C modules

7.2 Smart-Tracker – 40°C to +85°C modules

Battery specifications:

Diameter (A):	min 0.55 in (14 mm) max 0.55 in (14.6 mm)
Height (B):	min 0.95 in (24.1 mm) max 0.99 in (25.1 mm)
Shoulder Diameter [L]:	min 0.16 in (4.1 mm) max 0.18 in (4.5 mm)
Shoulder Height [M]:	min 0.03 in (0.8 mm) max 0.05 in (1.2 mm)
Type Number:	ER 1/2 AA
CEI designation:	14250
System:	Primary Li-Thionyl Chloride / LiSOCl ₂



The chart below shows estimated battery life (in weeks) at various temperatures for this module, with the temperature representing the module's operating (ambient) temperature. This information is based on one data download per day (regardless of the number of sensor readings recorded during that day).

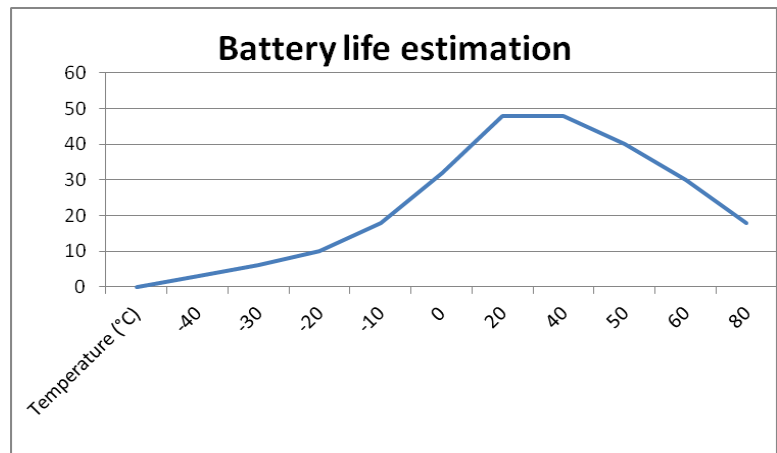


Figure 30. Battery life estimation for –40°C to +85°C module

8 Appendix 2 – Advanced module settings

Several advanced options are available from the Module details screen by tapping on the **More** button.

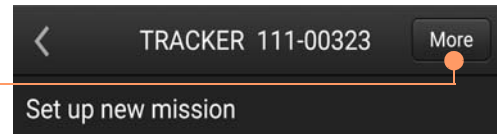


Figure 31. Advanced module settings

8.1 Radio tools

To see the Smart-Tracker module's battery level, tap on **Get Current**. To reset the counter to 100% (only after changing the battery), tap on **Reset**.

To see wireless signal strength or the module's firmware version, tap on the appropriate **Get Current** buttons.

If a more recent firmware version is available for your module, an option to update is offered on this screen.



Figure 32. Radio tools

8.2 Settings

8.2.1 Calibration parameters

This tab enables you to manage the calibration parameters (a.k.a. “correction parameters”) for your module.

Get current

You may view the current A and B calibration parameters of your Smart-Tracker module by tapping on **Get current**.

Download

If your module was calibrated by Thermo Scientific, the A and B parameters are downloaded from the Thermo Scientific calibration database and entered into the A and B fields (without updating the module itself). This requires an Internet connection.

Update

To update the module with the parameters contained in the A and B fields, tap on **Update**.

Note *The value for A must be between 0.001 and 2.*

8.2.2 Password-protect programming

To protect the Smart-Tracker module from unwanted programming, you may protect it with a password:

1. Tap on **Enable** to enter a password
2. Tap on **Disable** to remove the password

8.3 Advanced

You must contact technical support to use these options. They enable you to unblock and/or completely reset your module.

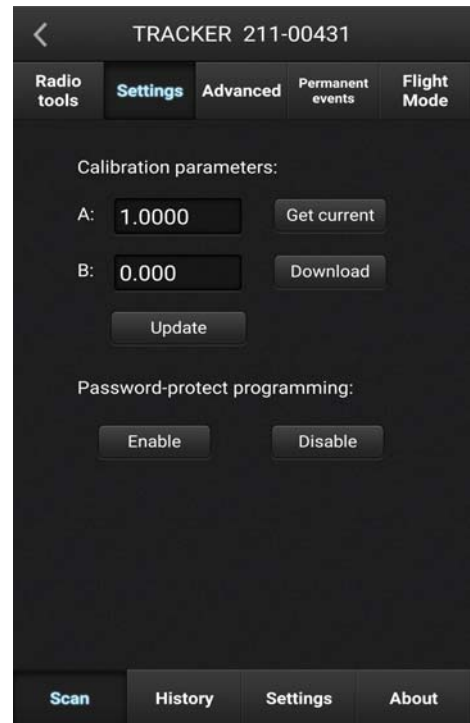


Figure 33. Managing calibration parameters

Note The *Permanent events* tab may be useful in case you need to contact Technical Support.

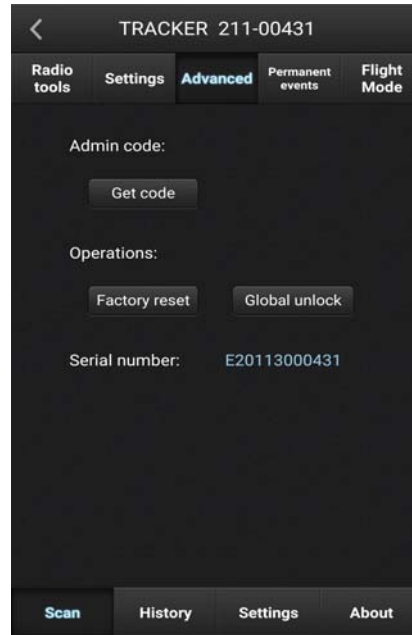


Figure 34. Unblocking/resetting your module

8.4 Permanently deactivating Flight mode (for current module only)

This feature deactivates Flight mode permanently, for this module only.

As mentioned earlier, deactivating Flight mode by pressing and holding the refresh button on the Scan tab only deactivates Flight Mode for 5 minutes. Bluetooth then returns to listen-only mode.



Figure 35. Permanently deactivating Flight mode (for current module only)

9 Appendix 3 – Supported devices, operating systems and versions

9.1 iOS® **Supported iOS® versions:**

- iOS® version 7 / 8 / 9 / 10

Supported Apple® devices:

- iPhone : 4S / 5 / 5C* / 5S* / 6* / 6Plus* / 7 / 7Plus
- iPad: iPad 3* / 4 / Air* / mini* / Pro

** Limited testing has been performed and no incompatibility has been found.*

***Performance problems could be encountered. This combination is not recommended regardless of the version of iOS.*

9.2 Android® **Supported Android® versions:**

- Android® 4.3* and 4.4
- Android® 5* and higher*
- Android® 6

** Limited testing has been performed and no incompatibility has been found.*

Mobile devices compatibility:

Only Android® mobile devices powered by an ARM v7 processor with NEON instructions set are supported.

Particularly, the following Android® devices are **NOT supported** (non-exhaustive list):

- Galaxy S (GT-I9000)
- Samsung Galaxy Mini (GT-S6500T)
- Samsung Galaxy Ace (GT-S5830D)
- Motorola Droid X2
- Galaxy Tab 7 (P1000)
- Samsung GT-S5690
- Samsung Galaxy Ace (GT-S5830i)
- Samsung Galaxy Tab 10.1 (P7500/7510)
- Samsung Galaxy S Duos (GT-S7562)
- Zenithink AML-MX REF (10 Inch Tablet)
- Samsung Galaxy Tab 3 7inch (SM-T211)
- Samsung Galaxy Pocket Neo
- Motorola Atrix 4G
- Samsung Galaxy Fame GT-S6810
- Samsung Galaxy Tab 3 10.1" 3G (GT-P5200)
- Samsung Galaxy Tab 3 10.1" WiFi (GT-P5210)
- Samsung Galaxy Tab 3 10.1" 3G (GT-P5220)
- Samsung Galaxy Tab 3 10.1" 4G (GT-P5220)
- Galaxy Tab 3 (GT-P5220)
- Huawei Ascend P6
- Galaxy tab 3 GT-P5210

The following Android® devices are known to NOT be supported with temporary wake-up (advertisement) (non-exhaustive list):

- Nexus 7 ASUS 32GB Tab

Important

For your future reference and when contacting the factory, please have the following information readily available:

License Number: _____

Date Purchased: _____

The above information can be found on the dataplate attached to the equipment. If available, please provide the date purchased, the source of purchase (manufacturer or specific agent/rep organization), and purchase order number.

IF YOU NEED ASSISTANCE:

Thermo Scientific products are backed by a global technical support team ready to support your applications. We also offer cold storage accessories, including remote alarms, temperature recorders and validation services. Visit www.thermoscientific.com or call:

USA/Canada

Sales: +1 866 984 3766

India toll free

Sales: 1800 22 8374

India

Sales: +91 22 6716 2200

China

Sales: +800 810 5118 (or)
+400 650 5118

Japan

Sales: +81 3 5826 1616

Australia

Sales: +61 39757 4300

Austria

Sales: +43 1 801 40 0

Belgium

Sales: +32 53 73 42 41

France

Sales: +33 2 2803 2180

New Zealand

Sales: +64 9 980 6700

Germany international

Sales: +49 6184 90 6000

Germany national toll free

Sales: 0800 1 536 376

Italy

Sales: +32 02 95059 552

Netherlands

Sales: +31 76 579 55 55

Nordic/Baltic/CIS countries

Sales: +358 9 329 10200

Russia

Sales: +7 812 703 42 15

Spain/Portugal

Sales: +34 93 223 09 18

Switzerland

Sales: +41 44 454 12 22

UK/Ireland

Sales: +44 870 609 9203

Other Asian countries

Sales: +852 2885 4613

Countries not listed

Sales: +49 6184 90 6000

Thermo Fisher Scientific Inc.

275 Aiken Road
Asheville, NC 28804
United States
www.thermofisher.com

thermoscientific

327243H01 Rev.B