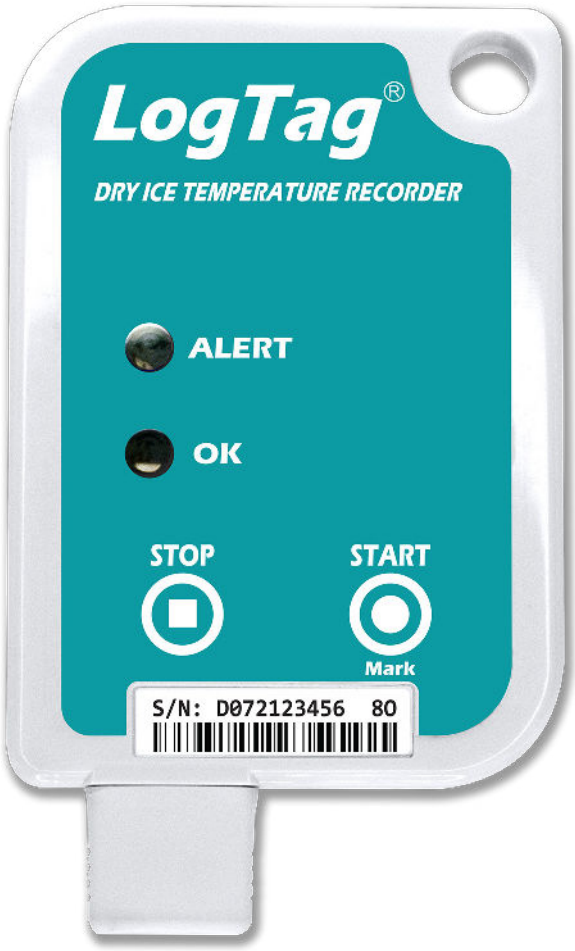
LogTag® North America Inc.



LogTag® TRIL-16U

User Guide

Version A - May 2025

www.logtag.com

Introduction

LogTag® TRIL-16U (multi-use) and SRIL-16U (single-use) are fully configurable USB PDF ultra-low temperature data loggers designed to operate without the need for proprietary software or hardware to generate detailed reports. Featuring a built-in temperature sensor, they eliminate the need for external probes. Each logger is fully configurable via LogTag® Analyzer and then placed with the goods for monitoring. When it is time to generate a report, the logger can be connected directly to a computer's USB port and it will automatically generate a temperature report in PDF and CSV format.

Safety Information

The LogTag® TRIL-16U/ SRIL-16U contains a 3.6V low temperature chemistry Lithium battery (Fixed).

Avoid exposing the device to temperatures outside of the operating range as this may damage the battery and pose a risk of injury.

Keep out of reach of children.

Liability

LogTag® North America's standard warranty terms apply. A copy can be requested by emailing support@logtagrecorders.com.

Additionally, LogTag® North America shall not be held liable:

- If the TRIL-16U/ SRIL-16U was used beyond LogTag® North America's stated limitations.
- For any claims due to the improper storage or use of the device.
- For any problems with refrigeration units.
- For the quality of the monitored goods, if any.
- For incorrect readings if the device was used with a low battery.
- For any consequential loss.

Disclaimer

The TRIL-16U/ SRIL-16U monitors temperature exposure and does not assess the quality of the goods it accompanies. Its purpose is to indicate whether further evaluation or testing of the product is necessary.

Battery Life

The battery is designed to power the TRIL-16 for a total accumulative exposure of 1000hrs @ -80°C across multiple trips, and the SRIL-16U for up to 2 weeks at dry ice temperatures provided that:

- The device was not stored for more than 12 months prior to activation
- The recording interval is not shorter than 15 minutes
- The device is stored and operated according to LogTag® North America's recommendations

Checklist - Required Equipment

- LogTag® TRIL-16U or SRIL-16U temperature recorder.
- A computer running Windows 8 or later, MacOS, or Linux.
- For configuration - a PC running Windows XP SP3 or later and LogTag® Analyzer installed.

Features

The LogTag® TRIL-16U/ SRIL-16U USB PDF temperature logger features the familiar LogTag® case layout with an included USB connection and protective cap.

Case

- Mounting lug for secure fastening of the logger to fixtures.
- USB connection with a silicone protective cap.
- Temperature sensor located inside case.
- Durable polycarbonate case, IP65.

Buttons

- START/Mark button: Can be used to start the unit or place an inspection mark in the data listing.
- STOP button: Can be used to stop the unit.

Indicator LEDs

- Green OK indicator Blinks if the unit is operating without alerts being present.
- Red ALERT indicator Blinks if an alarm condition has occurred during the trip.

What You Need

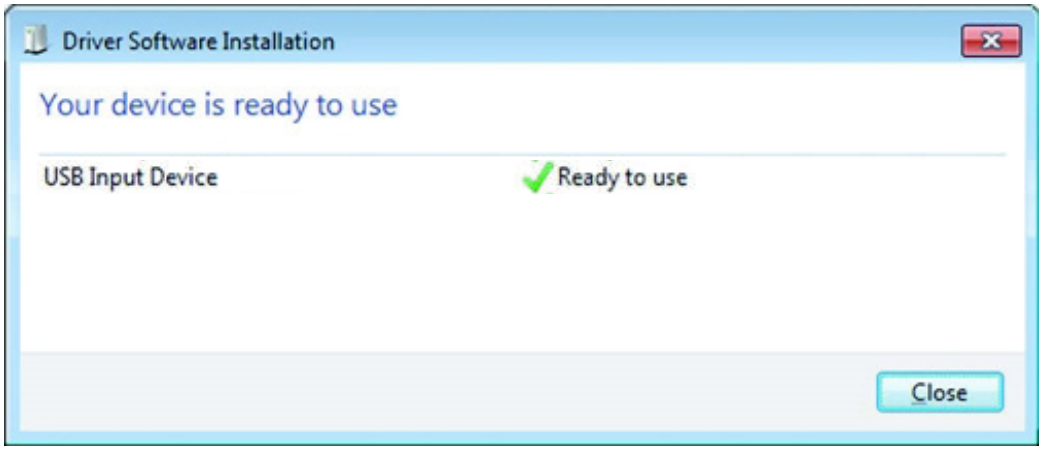
Software requirements vary depending on the type of file you want the TRIL-16U/ SRIL-16U to generate when plugged into a USB port.

- If you wish to configure TRIL-16U or SRIL-16U products you will need to download the LogTag® Analyzer software from LogTag®'s website at http://www.logtagrecorders.com/software/download.php. Follow the instruction to install and start the software.
- If you only plan on evaluating data, plug the TRIL-16U or SRIL-16U into a computer's USB port. Depending on the settings made during configuration, your files will be generated and made available to you in a new drive:
    - **A PDF file:** you can open the file directly from the recorder's USB memory storage with a PDF reader software of your choice.
    - **A CSV file:** this file can be opened using a spreadsheet program such as Microsoft Excel.
    - **An LTD file:** LTD files can be opened using LogTag® Analyzer, where you can analyze data in detail and generate report files.
- You can also download data directly into LogTag® Analyzer without accessing the recorder's USB file storage.

Configuring the TRIL-16U/SRIL-16U

The TRIL-16U and SRIL-16U loggers require configuration before they can start recording. Configuration sets the logger up with the required temperature ranges that will trigger the ALERT indicator and mark a temperature deviation in your reports. To configure your logger:

- Start the LogTag® Analyzer software.
- Remove the protective cap and insert the TRIL-16U/ SRIL-16U into your computers USB port. You will receive a message that a new USB device has been found, and a generic driver may be installed.



- Once the driver is installed and the TRIL-16U/ SRIL-16U is ready (indicated by the green tick and "Ready to use" message on your computers pop up notification as shown above), it can receive configuration data.
- Click "Wizard" button at the top left of LogTag® Analyzer and the software will scan all USB ports and display the configuration options for the TRIL-16U/ SRIL-16U's.

Standard Configuration Options

The standard configuration options include settings such as User ID, start method, pre-start recording, logging interval and duration, start delay, temperature alarm parameters, and password protection. To set your parameters, click configure and input the required settings.

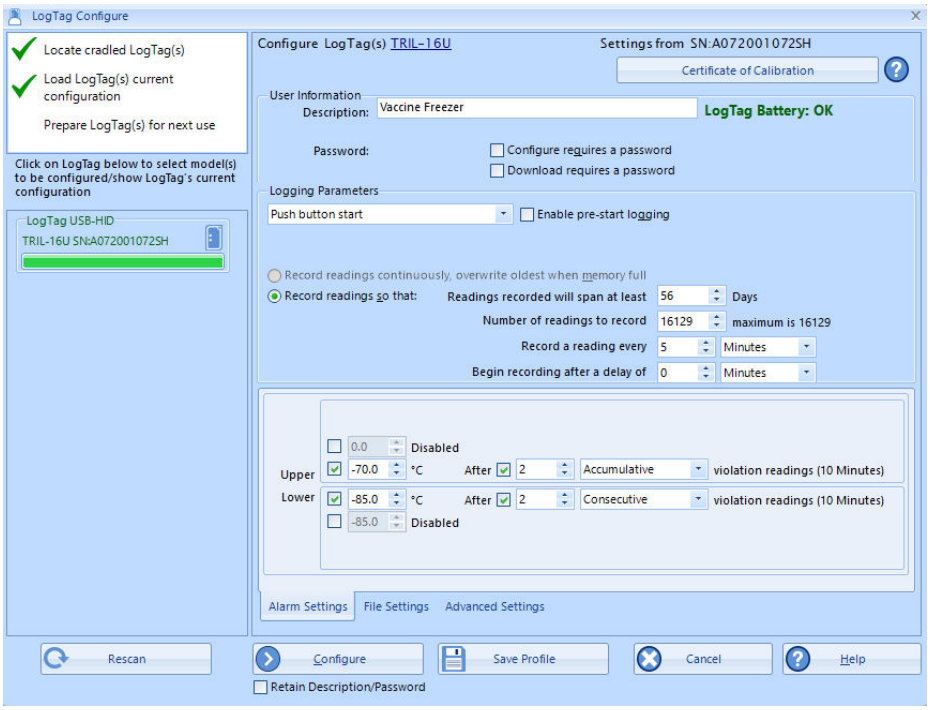


Figure 1: TRIL-16U/ SRIL-16U Standard Configuration Options

For detailed information about each parameter please read the section about configuring a LogTag® product for recording in LogTag® Analyzer's User Guide by pressing F1 on your keyboard while LogTag® Analyzer is open, or by clicking the Help button.

Configuring Multiple Alarms

LogTag® Analyzer allows up to 6 different alarm trigger conditions when configuring a TRIL-16U/ SRIL-16U for recording, depending on the model.

Each alarm trigger condition consists of a threshold temperature value, an activation type (which can be instant, consecutive, or accumulative) and a delay time, if it is not an instant alarm. If an alarm trigger condition requires readings to exceed an upper threshold temperature it is called an upper alarm. If an alarm trigger condition requires readings to go below lower thresholds it is called a lower alarm.

An alarm event is generated, when either of the entered alarm conditions is triggered. The TRIL-16U/ SRIL-16U has a primary upper and a primary lower alarm. The TRIL-16U/ SRIL-16U allows two freely configurable alarms in addition to the primary upper and lower alarms.

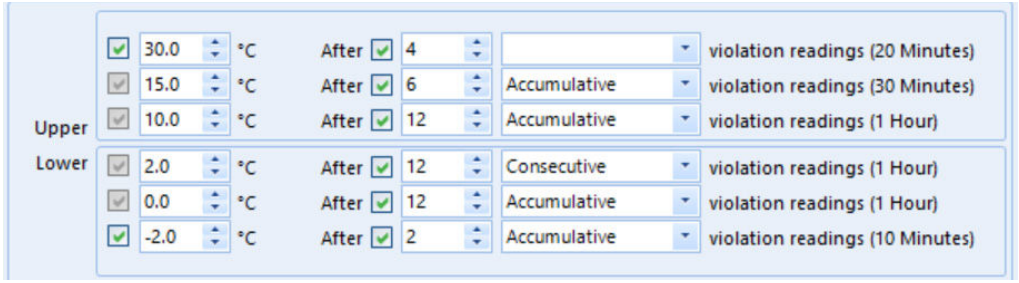


Figure 2: TRIL-16U/ SRIL-16U Configure Multiple Alarms

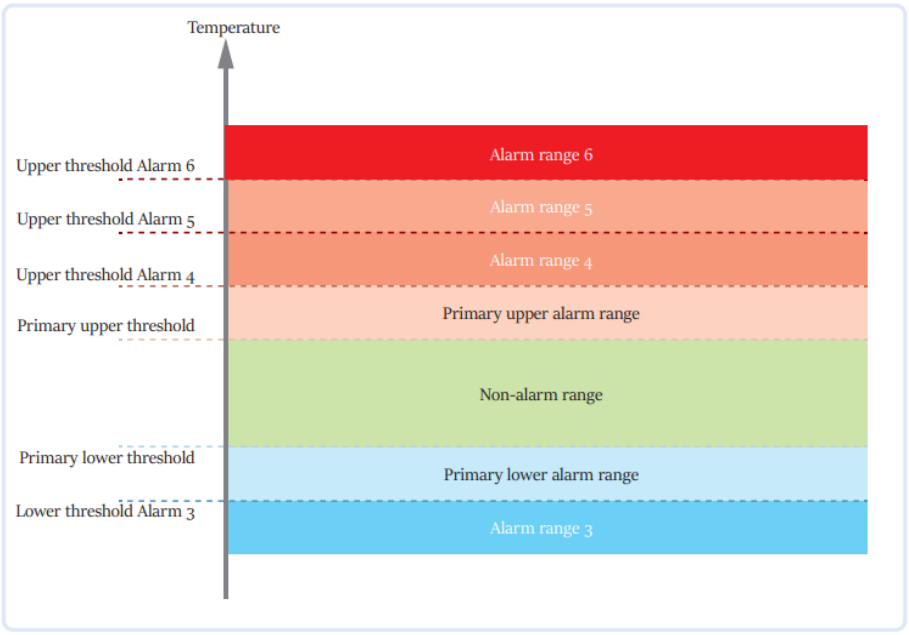


Figure 3: TRIL-16U/ SRIL-16U Alarm ranges and thresholds example

You need to observe some basic rules when entering alarm conditions into the configuration screen in LogTag® Analyzer:

- A primary upper alarm must be entered before more upper alarms can be entered.
- A primary lower alarm must be entered before more lower alarms can be entered.
- Any additional upper alarms must have higher threshold values than any previously entered alarm.
- Any additional lower alarms must have lower threshold values than any previously entered alarm.
- You can enter a different number of upper and lower conditions, or only upper, or only lower conditions, or none at all. You can, however, not make all alarms upper alarms, and you cannot make all alarms lower alarms either.
- Threshold values for adjacent alarms can be equal and combined with different alarm types and delay time values.
    - Instant = one temperature reading is above (below) the threshold.
    - Consecutive = temperature readings are above (below) the threshold for the time defined in the activation delay without interruption.
    - Accumulative = temperature readings are above (below) the threshold for the total time defined in the activation delay time, but may not necessarily be sequential.

File Configuration Options

Click File Options for additional configuration settings. These settings decide which files -if any- are generated at the end of the trip and also determine the appearance and contents of the generated files.

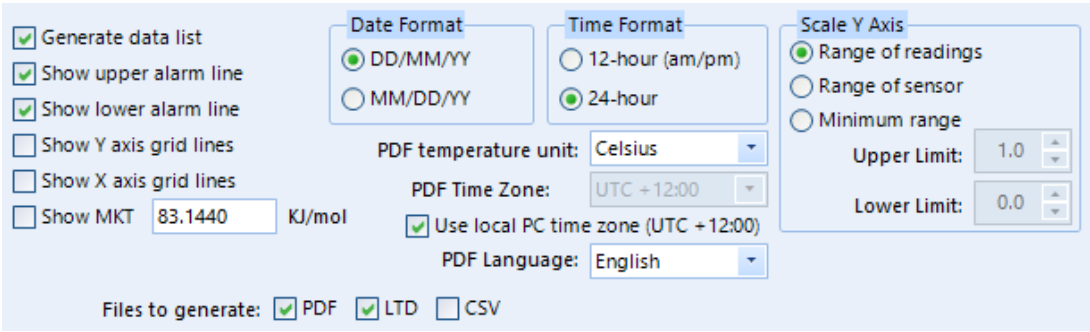


Figure 4: TRIL-16U/ SRIL-16U File Settings

Parameters that influence the appearance of all files are:

- Setting of the temperature units used in the files.
- Date and time format.
- Time zone and MKT values.

Parameters specifically influencing the appearance of the PDF file are:

- Scaling parameters for the chart.
- Showing or hiding grid lines.
- Showing or hiding alarm threshold lines.
- Creation of the data list.

You can also set whether or not the recorder can be stopped using the STOP/Review button, and if the communication with LogTag® Analyzer should be prioritized over the generation of files when the unit is plugged into a computer.

Advanced Options

Select Advanced Options for additional configuration settings. Additional settings available for the TRIL-16U/ SRIL-16U are:

- Clear and reset alarm when the START/Mark button is pressed.
- Leaving the alarm turned on, even if readings return to the normal temperature range again.
- Allowing the user to reset the alert with the START/Mark button.

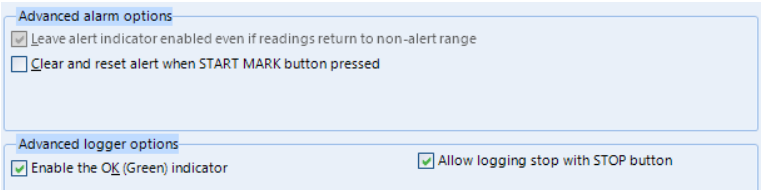


Figure 5: TRIL-16U/ SRIL-16U Advanced Settings

Finalizing the Configuration

To confirm your selected settings, click “Configure” to commit to the settings to your logger. When the configuration is complete, the green bar on the left will say “Configured” and you are safe to unplug the TRIL-16U/ SRIL-16U from the USB socket and replace the protective cap.

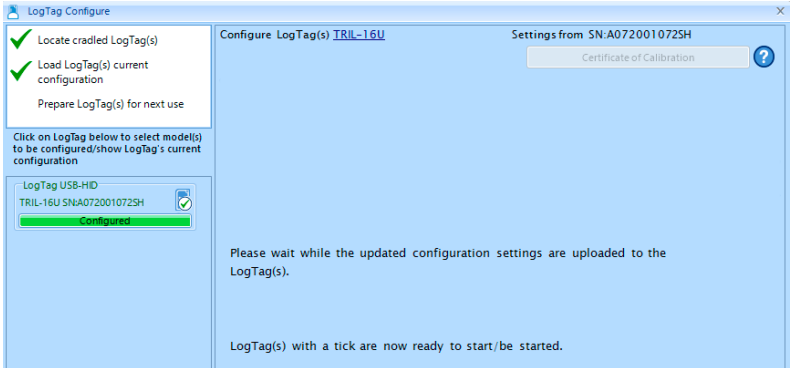


Figure 6: TRIL-16U/ SRIL-16U Configuration Complete Confirmation

If you wish to configure more TRIL-16U/ SRIL-16U units with the same configuration, you can use the Profile feature to configure multiple units with the same settings. Instructions are included in the LogTag® Analyzer User Guide (F2 from your keyboard while LogTag® Analyzer is open).

You can upload the configuration settings to a TRIL-16U/ SRIL-16U recorder as often as required, however once a SRIL-16U logger has started recording, the unit cannot be configured again.

Start Options

During configuration with LogTag® Analyzer you can decide when the TRIL-16U/ SRIL-16U starts taking temperature readings from the following options:

- **Push button start:** The recorder will start taking temperature readings as soon as you have pressed the START/Mark button.
- **Date/Time start:** The recorder will start taking temperature readings at the date and time you specify (local time).

When you choose the push button start option, you can select to record pre-start readings or begin recording after a delay.

- **Pre-start readings:** The TRIL-16U/ SRIL-16U starts recording as soon as it is unplugged from the USB port and will continue to do so until you start the unit. No alarms are processed while pre-start readings are being taken, pre-start readings will not appear in the PDF file, and no PDF file will be generated. Using pre-start readings is a good way do avoid data loss if you forget to start the unit, as you can still access the data using LogTag® Analyzer.
- **Delay Start:** The recorder will not immediately record temperature readings after you have pressed START/Mark, but start a countdown timer instead, and record readings only after the timer has ended. It will, however, continue to take pre-start readings if enabled.

You cannot combine a date/time start with pre-start readings or the start delay function.

During Recording

While the TRIL-16U/ SRIL-16U is recording the green OK indicator blinks every 4 seconds if none of the configured alarm conditions have been.

Alerts

As soon as one of the alarm trigger conditions is met, the red ALERT indicator blinks every 4 seconds. Depending on the alarm configuration the red indicator may remain on for the rest of the trip, or the green OK indicator may blink again once conditions return back inside the limits.

If configured, you can reset an alert by pressing the START/Mark button. Alerts which are a result of accumulative alarms cannot be cleared.

Marking a Reading with an Inspection Mark

When you press the START/Mark button, the next reading taken by the TRIL-16U/ SRIL-16U will be identified in the downloaded data with an inspection mark.

If the Allow stopping with the Stop button feature is enabled, a mark will also be registered when you press the STOP button, but do not complete the process of stopping the recorder.

Stopping the Logger

Automatically

The TRIL-16U/ SRIL-16U automatically stops recording temperature when the maximum number of readings specified during configuration has been reached.

Manually

You can configure a TRIL-16U/ SRIL-16U so it can be stopped using the STOP button. This feature is useful when you take the recorder out of a shipment and don't want the logger to continue recording after it has been removed from the shipment. The stop function is enabled in the Advanced Options dialogue during configuration.

When enabled, the following actions will stop the unit:

- Press and hold the STOP button. For the next 4 seconds both indicators blink simultaneously.
- When the indicators start blinking more rapidly release the button. The recorder will now stop taking readings. SRIL-16U loggers cannot be restarted once recording has been stopped.

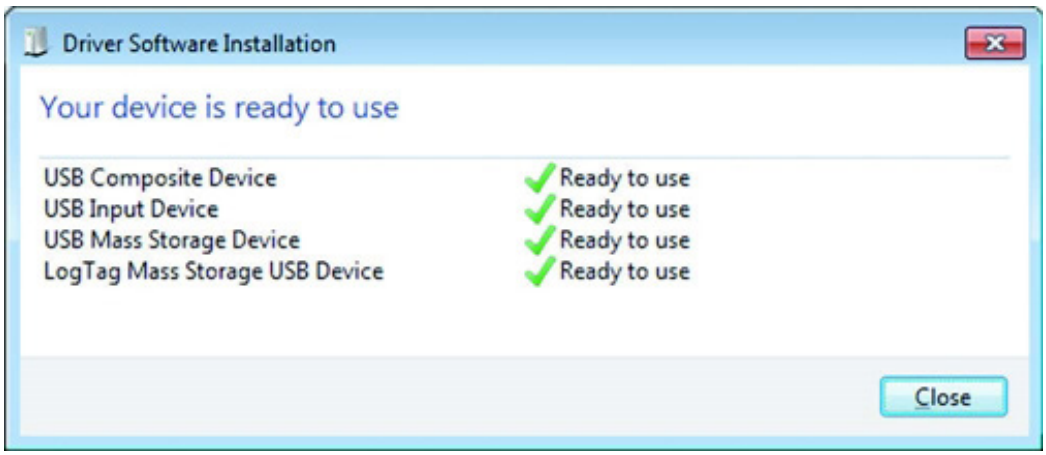
If this process has inadvertently been started, simply continue holding the STOP button until all indicators have stopped blinking. Instead of stopping, an inspection mark will be recorded against the next temperature reading taken.

Plugging The Logger into a USB Port

What happens when you plug your TRIL-16U/ SRIL-16U into a USB port depends on the operating system of the computer, the settings made during configuration and whether or not LogTag® Analyzer is running.

Microsoft Windows

Up to four drivers will now be installed, depending on the TRIL-16U/ SRIL-16U's configuration. All drivers are part of the operating system and will typically not require administrator privileges for your computer to install.



1. **USB Composite Device Driver**

This driver signals that multiple devices are involved when plugging in a TRIL-16U/ SRIL-16U.

2. **USB Input Device (HID) Driver**

This device is used for communication to LogTag® Analyzer and its driver will always be installed, even if LogTag® Analyzer is not present on the computer.

3. **Mass Storage Device Driver**
4. **LogTag® Mass Storage USB Device Driver**

These two devices are required so you can access the data files in the same way as a USB memory stick. These drivers will not be installed if the TRIL-16U/ SRIL-16U does not generate files.

If you have configured the TRIL-16U/ SRIL-16U to generate files, these will be created every time you plug the recorder into the USB port. While the file creation takes place, the green OK indicator is permanently on.

Once finished, the green OK indicator starts blinking every second, twice in quick succession, to indicate these files can now be accessed.
A new drive or mounted device will appear. The device name will be created from the serial number of the TRIL-16U/ SRIL-16U.

If you have disabled file generation, the TRIL-16U/ SRIL-16U's green OK indicator will blink once every second.

While a TRIL-16U/ SRIL-16U is plugged into USB, no temperature readings are taken.

The graph will display a gap and the data list will show --- followed by the # symbol.

MacOS and Linux

Typically in these operating systems a new drive will be mounted, from which you can open the PDF file. You will not be able to configure the TRIL-16U/ SRIL-16U using either of these operating systems, unless you use virtualization software such as Fusion or Virtualbox to create a hosted Windows environment. You need to discuss these options with your network administrator.

Accessing the files

If the recorder was configured to generated files, a new drive or mounted device will appear. The device name will be created from the serial number of the TRIL-16U/ SRIL-16U. You can access the files by browsing to the newly created drive and double-clicking the PDF, CSV or LTD files. For PDF files you need Adobe Acrobat Reader or a similar PDF viewer. To open the LTD file you need to install the free LogTag® Analyzer software. CSV files can be opened with a text editor, or imported into a spreadsheet program such as Microsoft Excel.

The file names contain information about the recorded data, which is detailed in the section about Interpreting the Data on page 10. If a recorder has only taken pre-start readings, PDF and CSV files will not be created.

You should copy the files generated by the recorder to a permanent storage location on your computer, such as the Documents folder, as the files are not automatically copied. The data on the unit is retained, and each time you plug the TRIL-16U/ SRIL-16U back into the computer the files are re-generated with the updated data. Once the battery is exhausted, however, the real time clock on the unit stops and dates and times may no longer be accurate.

Unplugging

You can unplug a TRIL-16U/ SRIL-16U at any time; there is no need to stop the device via the shortcut menu in the notification area on the task bar. If you plug a unit into a USB port during a start delay, the delay period will re-start when the unit is unplugged. You will see the start and delay signals indicated by the LED's. The delay will also be restarted if you press the START/Mark button during the delay period.

You may see the start signal if you have configured a time start, but have left the unit plugged in beyond the start time of the TRIL-16U/ SRIL-16U.

Tips and Tricks

Configuration

When configuring a USB recorder, allow enough time for the unit to acclimatise to the target environment, particularly if you have configured an upper alarm. This can be best achieved with a start delay, or a date/time start if you know when the shipment takes place.
Make sure you remove your TRIL-16U/ SRIL-16U from the USB socket when you use a date/time start, so it starts at the time you want, rather than when unplugged from the port.

During the trip

Always replace the USB protective cap before placing the TRIL-16U/ SRIL-16U with the goods. While recording, make sure the TRIL-16U/ SRIL-16U's protective cap is facing down. The protection rating can only be achieved when used in this orientation. For applications requiring a higher IP rating the unit should be used in the protective case, available as an accessory.

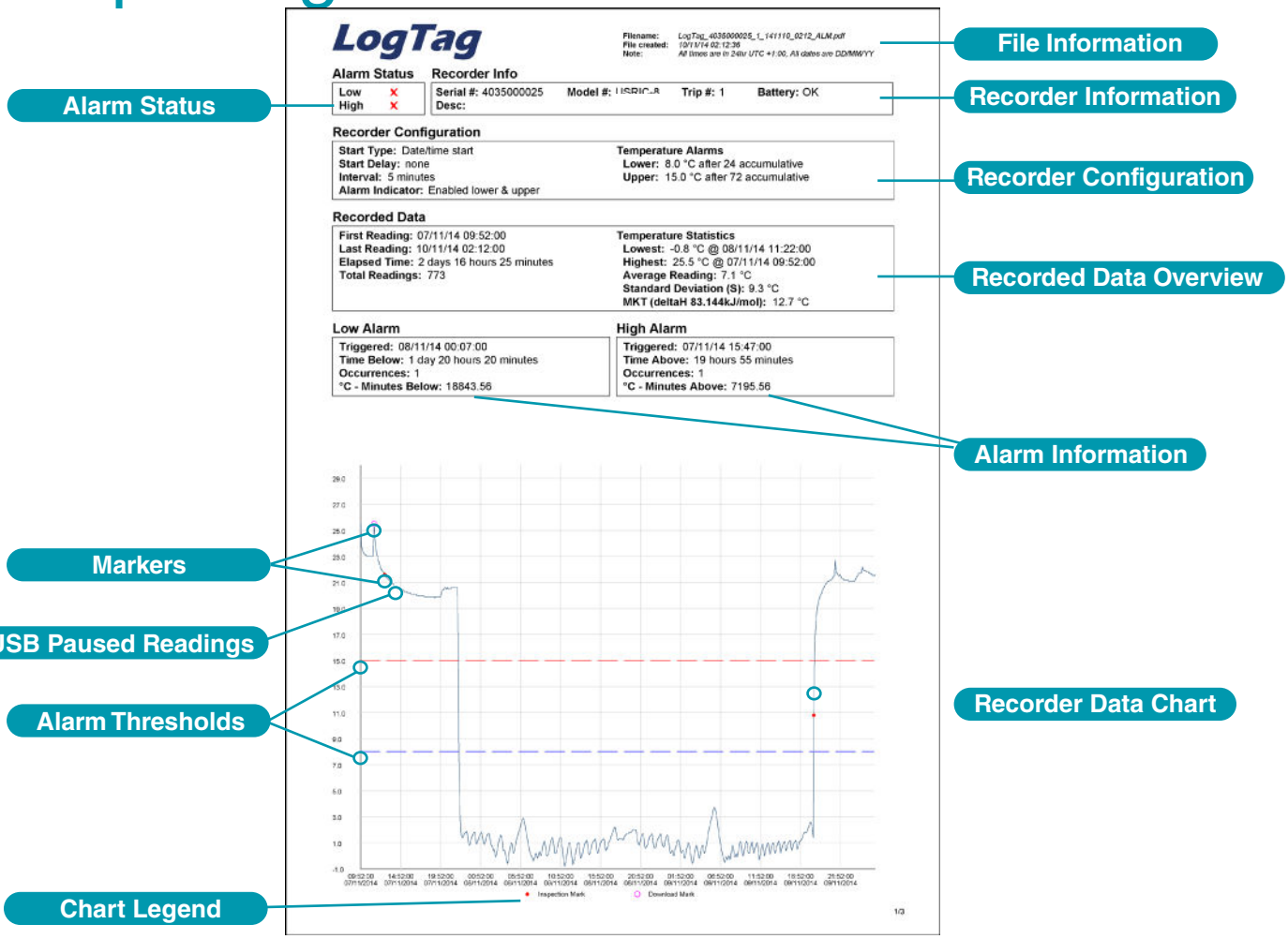
Getting Help

If after studying this Product User Guide and the relevant Quick Start Guide you still need further information, please visit the support section of the LogTag® Recorders website at: http://www.logtagrecorders.com/support/support.html .

Light Patterns on USB Recorders

Signal	Sequence	Occurrence
Wake-up signal	Sequence of four quick alternate flashes of green OK and red ALERT indicators.	• Displayed after configuration has been successfully applied to the logger.
Start signal	Sequence of ten alternate flashes of green OK and red ALERT indicators.	• Displayed when the logger starts its recording cycle. • The delay timer is re-started (followed by Delay Signal).
Mark signal Delay Signal	Sequence of five simultaneous flashes of green OK and red ALERT indicators	• Displayed when pressing START/Mark button while recording to indicate an inspection mark in the software. • Displayed directly after the start-up signal following a push button start where a recording delay has been configured. In this instance the start-up signal is repeated when the actual recording begins.
Logging active, no alert present	Single flash of green OK indicator every 4 seconds (approx.)	• Indicates logger is recording. This is not displayed when pre-start is active and the main logging cycle has not yet started. It is also not displayed when the green LED has been turned off in the configuration screen.
Logging finished, no alert present	Single flash of green OK indicator every 8 seconds (approx.)	• Indicates logger has finished recording. This is not displayed when the green LED has been turned off in the configuration screen.
Logging active, alert condition present	Single flash of red ALERT indicator every 4 seconds.	• Indicates logger is recording, an alert condition has occurred. This is not displayed when pre-start recording has been configured and the recorder has not yet been started.
Logging finished, alert condition present	Single flash of red ALERT indicator every 8 seconds.	• Indicates logger has finished recording and an alert condition was present during the trip.
Communication	The green OK indicator will flash occasionally.	• During USB communication the green LED will flash occasionally; no additional information is conveyed in this.
Initiate Stop	Sequence of simultaneous flashes of green OK and red ALERT indicators for 4 seconds.	• This LED sequence appears when the stop sequence is initiated and requires that the STOP button is enabled.
Stopping	Sequence of very quick simultaneous flashes of green OK and red ALERT indicators for 2 seconds.	• When this LED sequence starts, the STOP button must be released for the recorder to stop.
Ready for USB	Two quick flashes of the green OK indicator every second.	• The logger is connected to a USB port and waiting for USB communication.
Generating Files	The green OK indicator is on permanently.	• The logger is generating files. No USB activity will be observed on the computer screen during this time
Ready for re-flash	The red ALERT indicator is on permanently.	• The logger is ready to receive new firmware. Special software is required to upload new firmware to the logger.

Interpreting the Data



Data Evaluation - Report

Alarm Status
This shows at a glance if the TRIL-16U/SRIL-16U recorded alarm conditions during the trip (showing a red ✗) or if no alarms were recorded (green ✓)

File Information
This section shows general information about the PDF file, such as generation time, date and time formats and the file name, which is compiled from information about the data it contains: LogTag_[serial_number]_[trip number]_[file creation date]_file creation time]_[OK or ALM].

Recorder Information and Configuration
These sections show general information about the recorder such as serial and model numbers, trip number, battery status and description. It shows how the recorder was started, if a start delay was active and the interval used for taking readings.

Recorded Data Information
This block contains information about the data recorded during the trip. It shows the time covered by the recording and statistical data of the trip. You can see the conditions for which each alarm was to be triggered, and how often such a condition occurred.

High Alarm and Low Alarm Information
These two sections summarize the alarm occurrences during the trip, including statistical data.

Recorded Data Chart
The chart shows a graphical representation of the data during the trip. As part of the TRIL-16U/SRIL-16U configuration process you set the parameters that influence how the chart is presented.

Markers
The chart will show marks where the TRIL-16U/SRIL-16U has been downloaded (°) or where an inspection mark has been placed with the **START/Mark** or **STOP** button (•).

USB Paused Readings
A gap is shown in the graph where the TRIL-16U/SRIL-16U was plugged into a USB port at the time it would otherwise have taken a reading.

Alarm Thresholds
The alarm thresholds are shown with red and blue dashed lines (---- for upper, ---- for lower) so you can see at a glance where temperatures went outside these limits.

Chart Legend
Shows the symbols for download marks, inspections marks and paused marks if they appear in the readings.

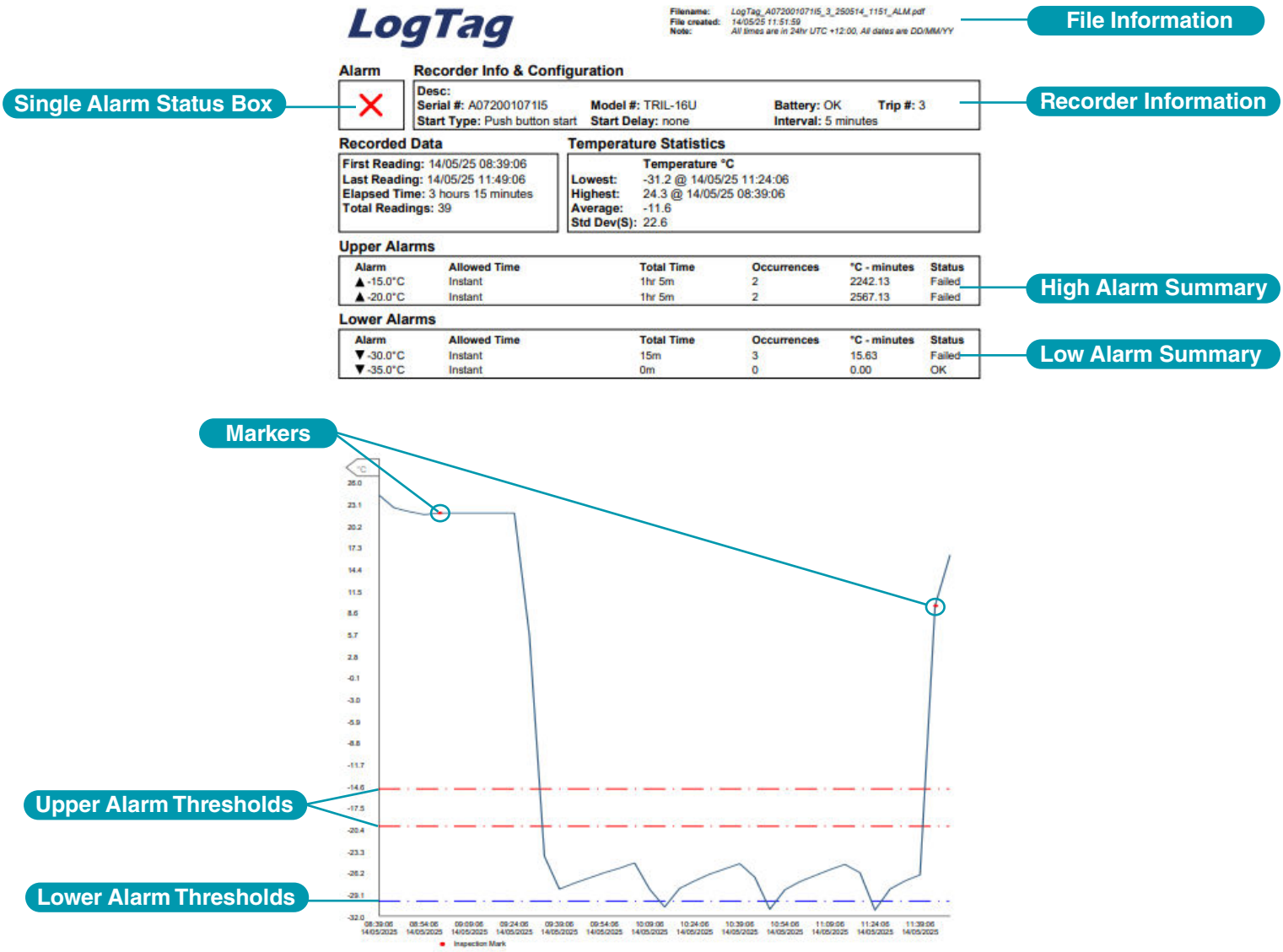


Figure: Sample report page with Multiple Alarm Thresholds

Data Evaluation - Report with Multiple Alarms

A TRIL-16U/SRIL-16U shows a different report summary page to accommodate the extra alarms. Most of the elements are the same, with these exceptions:

Alarm Status Box

This shows at a glance if the TRIL-16U/ SRIL-16U recorded alarm conditions during the trip (showing a red ✗) or if no alarms were recorded (green ✓). Instead of an upper and a lower status, this box shows a single pass or fail.

Upper Threshold values

The upper alarm thresholds are shown with red dashed lines ---- so you can see at a glance where temperatures went above the set limits. You may see up to five lines depending on configuration and zoom settings.

Recorded Data Information

This block contains information about the data recorded during the trip. It shows the time covered by the recording and statistical data of the trip. You can see the conditions for which each alarm was to be triggered, and how often such a condition occurred.

Lower Threshold values

The lower alarm thresholds are shown with blue dashed lines ---- so you can see at a glance where temperatures went below the set limits. You may see up to five lines depending on configuration and zoom settings.

High Alarm and Low Alarm Information

These two sections summarize the alarm occurrences during the trip, including statistical data. You may see up to 5 alarms for each direction, depending on configuration and zoom settings.

Recorder Information and Configuration

On recorders with multiple alarms these sections are combined and show general information such as serial and model numbers, trip number, battery status and description. It shows how the recorder was started, if a start delay was active and the interval used for taking readings.

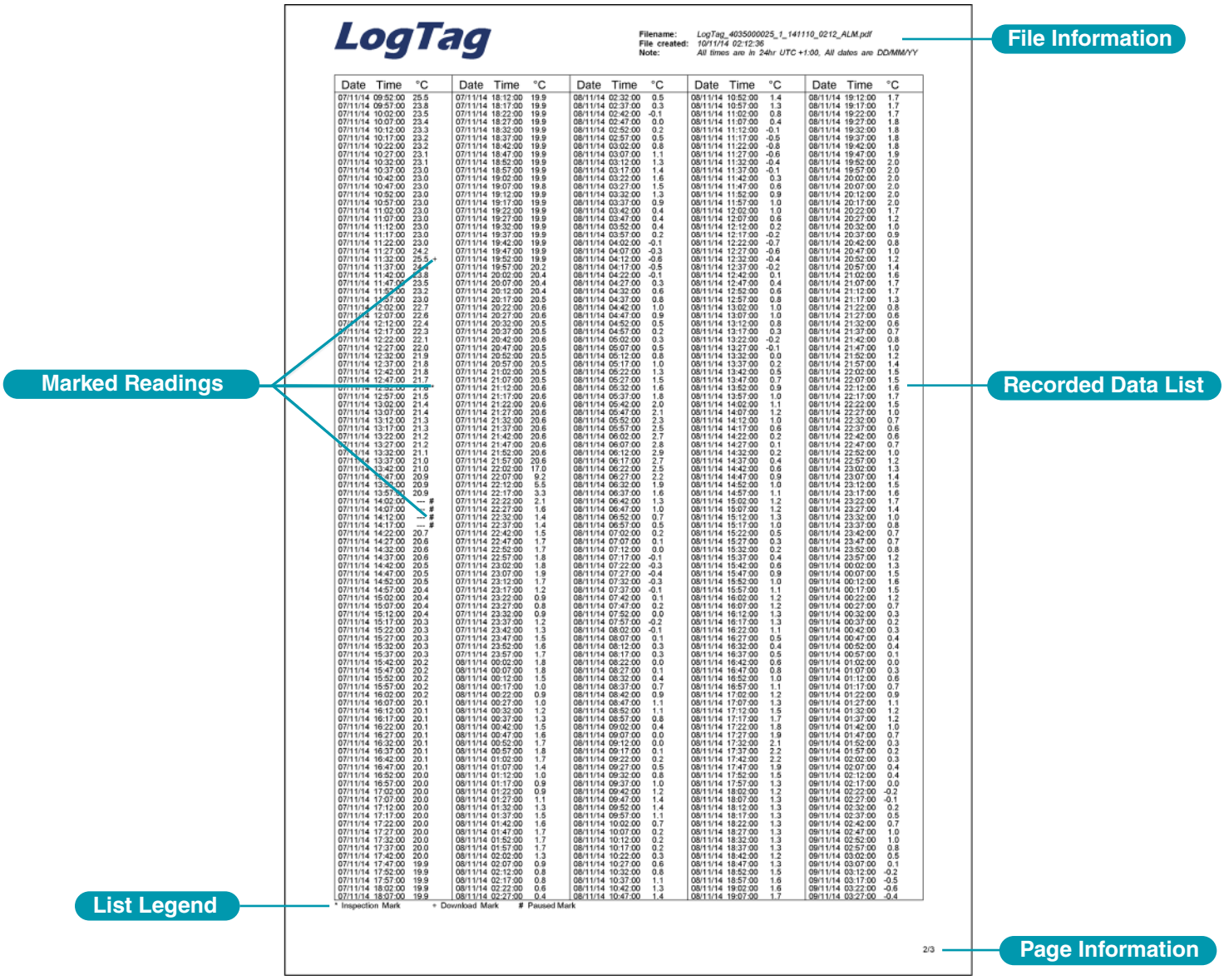


Figure: Sample Data List

Data Evaluation - Data List

File information

The information from the report page is repeated here

Recorded Data list

The Data list shows a single row for each recorded reading, along with the with date, time and temperature values, plus any special events that were recorded against this reading.

Marked readings

In the data list readings are marked after the temperature value...

- ...with a + symbol where the TRIL-16U/ SRIL-16U has been downloaded with LogTag® Analyzer.
- ...with a * symbol where an inspection mark has been placed with the **START/Mark** or **STOP** button.
- ...with a # symbol where the recorder was plugged into a USB port at the time it would otherwise have taken a reading.

List legend

Shows the symbols for download marks, inspections marks and USB paused readings if they appear in the data.

Page information

Current page number and total number of pages appear on every page.

Factory Presets

LogTag® TRIL-16U/SRIL-16U recorders can be client configured using LogTag® Analyzer. For an out-of-box solution they can also be ordered in volume, pre-configured with a factory profile, ready for starting.
If a default configuration does not suit, customers can compile their own profile by specifying the parameters in the tables below when ordering. Please note that minimum order quantities apply for TRIL-16U/SRIL-16U recorders with profiles not stocked by LogTag® Recorders .

Description		Default Profile	Range/Option	Your requirement
Profile Name				
Standard Options				
UserID		-	ASCII text up to 38 characters[1]	-
Record pre-start readings		Enabled	Enabled or disabled	
Number of readings to record		16,000	1-16,000	
Sampling interval		5 minutes	1 minute to 18 hours	
Start Delay		60 minutes	1 minute to 72 hours, 0=no delay	
Enable Green OK indicator		Enabled	Enabled or disabled	
Reset alarm with **START/Mark** button		Disabled	Enabled or disabled	
Alarm remains active when readings return to spec		Enabled	Enabled or disabled	
Configure requires password		Disabled	Enabled or disabled	
Download requires password		Disabled	Enabled or disabled	
Password		-	Up to 6 ASCII characters	
Advanced Options				
Generate PDF file		Enabled	Enabled or disabled	
Generate LTD file		Enabled	Enabled or disabled	
Generate CSV file		Disabled	Enabled or disabled	
Temperature units		°C	°C or °F	
Time Zone		UTC +0:00	-12:00 to +14:00 in 15min steps	
Time format		24-hour	24-hour or 12 hour (am/pm)	
Date format		DD/MM/YY	DD/MM/YY or MM/DD/YY	
Calculate MKT		Enabled	Enabled or disabled	
Activation Energy		Default	Default or custom value (please specify)	
PDF Options				
Generate Data List		Enabled	Enabled or disabled	
Y-Axis scaling	Range	Range of readings	Range of readings, range of sensor or custom	
	Custom upper[2]	-	-25 °C to 60 °C (-13 °F to 140 °F)	
	Custom lower	-	-25 °C to 60 °C (-13 °F to 140 °F)	
Show Y-axis grid lines		Enabled	Enabled or disabled	
Show X-axis grid lines		Enabled	Enabled or disabled	
Show upper alarm line		Disabled	Enabled or disabled	
Show lower alarm line		Disabled	Enabled or disabled	
Allow stopping with **STOP** button		Enabled	Enabled or disabled	
Prioritize download over file generation		Disabled	Enabled or disabled	

1 All units associated with a profile must have the same UserID. The text cannot be individually customized per unit. The text cannot contain characters from an extended character set such as Chinese or Cyrillic.
2 Upper value must be above lower value.

Description		Default Profile	Range/Option	Your requirement
Standard Alarm Parameters				
Upper Alarm	Alarm direction	Upper	Upper	Upper
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value3	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type4	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	
Lower Alarm	Alarm direction	Lower	Lower	Lower
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	
Multi-Alarm Parameters				
Alarm 3	Alarm direction	-	Upper or lower	
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	
Alarm 4	Alarm direction	-	Upper or lower	
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	
Alarm 5	Alarm direction	-	Upper or lower	
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	
Alarm 6	Alarm direction	-	Upper or lower	
	Trigger this alarm	Disabled	Enabled or disabled	
	Temperature threshold value	-	-25°C to 60°C (-13°F to 140°F)	
	Alarm activation type	Instant	Instant, accumulative or consecutive	
	Activation delay time	-	1 minute to 45 days	

For rules regarding setting up multiple alarms please see Alarm Configuration Options page.

3 Upper value must be above lower value

4

- Instant = one temperature reading is above (below) the threshold
- Consecutive = temperature readings are above (below) the threshold for the time defined in the activation delay without interruption
- Accumulative = temperature readings are above (below) the threshold for the total time defined in the activation delay time, but may not necessarily be sequential.

Technical Specifications

Product Model	TRIL-16U (Multi-Use) SRIL-16U (Single-Use)
Sensor Measurement Range	-80 °C to +40 °C (-112 °F to +104 °F)
Operating Temperature Range	-80 °C to +40 °C (-112 °F to +104 °F)
Storage Temperature Range	-20 °C to +40 °C (-4 °F to +104 °F)
Rated Temperature Reading Accuracy	Better than ±1 °C (±1.8 °F) for -30 °C to +20 °C (-22 °F to +68 °F). Better than ±1.2 °C (±2.1 °F) for -45 °C to -30 °C (-49 °F to -22 °F) and +20 °C to +40 °C (+68 °F to +104 °F). Better than ±1.7 °C (±3.1 °F) for -80 °C to -45 °C (-112 °F to -49 °F). Actual performance is typically much better than the rated values. Accuracy figures can be improved by recalibration.
Rated Temperature Reading Resolution	Less than 0.1 °C (0.2 °F) for -80 °C to 0 °C (-112 °F to +32 °F). Less than 0.2 °C (0.4 °F) for 0 °C to +20 °C (+32 °F to +68 °F). Less than 0.5 °C (0.9 °F) for +20 °C to +40 °C (+68 °F to +104 °F). LogTag® Analyzer currently displays to one decimal place of °C or °F. The native resolution is what is stored in the LogTag®.
Sensor Reaction Time	Typically less than 5 minutes (T90) in moving air (1m/s)
Recording Capacity	16,000 temperature readings, supporting up to 66 days of data at 6-minute intervals
Sampling Interval	Configurable from 1 minute to several hours
Logging Start Options	Push button start or specific date and time
Recording Indication	Flashing ‘OK’ indicator / flashing ‘ALERT’ indicator
Download Time	Typically less than 5 seconds for full memory (16,000 readings), depending on computer or readout device used
Environmental	IP65 (roughly equivalent to NEMA 4)
Power Source	3.6V low temperature chemistry Lithium (Fixed) battery.
Battery Life	Maximum storage life of 12 months before ‘start’ (if it is in hibernation mode). Single use version rated for a typical trip of 2 weeks duration at dry ice temperatures. Multi-use version is rated for up to a total accumulative exposure of 1000hrs @ -80°C across multiple trips.
Real Time Clock	Built-in real time clock. Rated accuracy ±25ppm @ 25 °C (equivalent to 2.5 seconds/day). Rated temperature coefficient is -0.034 ±0.006ppm/°C (i.e. typically +/- 0.00294 seconds/day/°C).
Connection Interface	USB A-Type metal plug
Size	86mm(H) x 54.5mm(W) x 8.6mm(T)
Weight	33g
Case Material	Polycarbonate