LogTag TEMPERATURE RECORDER

Temperature Recorder / Data logger with 30 Day summary display

LOGDISP

PRODUCT SPECIFICATION

Doc Ver 1.1 Released : 4th May 2010

Contents

Document Revision History

Ver	Date	Author	Details
1.0	9/12/09	CW	Initial release.
1.1	3/5/10	MJ	Changed screen shots regarding the Day display while reviewing stats. -Added new wake up feature to Hibernation mode. -Update Time/date starting feature. -Added optional display of days collected while recording.

Overview

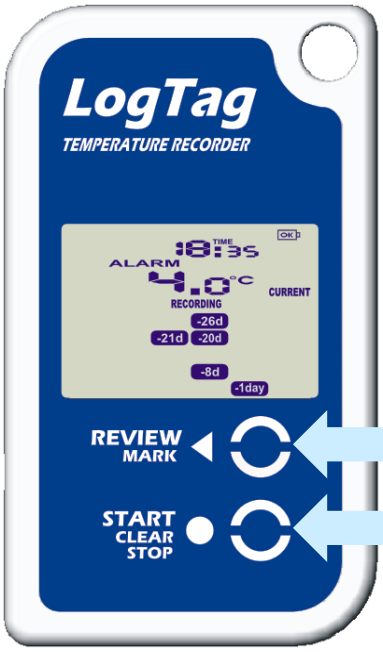
The *LogTag TRID30-7* temperature recorder features a data logging memory storing up to 7770 temperature readings and a separate rolling 30 day statistical max/min reading and duration memory.

During recording the display shows the current temperature (of the most recent reading), the status (within or outside the acceptance range), an alarm trigger summary of up to the last 30 days (today and 29 days previous) of recording, the current time and battery status.
If a reading is outside the pre-set “Alarm” limits an alarm is generated and a “day alarm indicator” appears on the display.

This display arrangement is designed to show ‘at a glance’ if temperature excursions have occurred for both the current reading and up to 30 days in the past. Details of any excursions can be checked directly by inspecting the statistics history on the recorder’s display or in more detail by downloading the logged data.

Logged temperature data can be downloaded via a standard LogTag Interface to the free companion software *LogTag Analyzer* which provides facilities for displaying data in chart, table or statistical formats and allows electronic archiving, export or transmission of the data in support of sophisticated data management systems.

Button Actions Overview

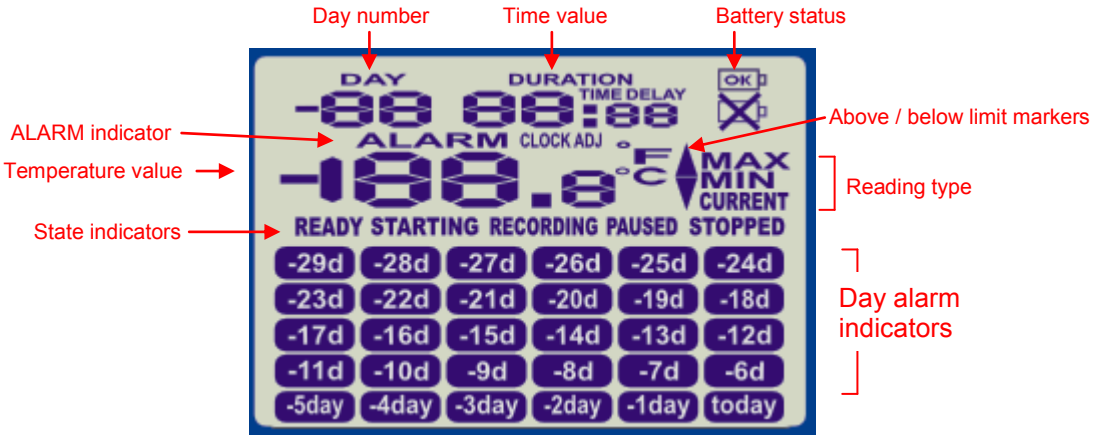


Review/Mark button
Press to enter REVIEW mode and then press again to advance through the day statistics.
This action also places an inspection mark in the log if recording is active

Start/Clear/Stop button
Press to start recording
Press to clear alarm (if function enabled)
Press to Stop recording (if function enabled)
Press to exit day summary review.

Start/Stop/Clear button functions require the button to be pressed continuously for 4 seconds and then released when the related flashing indicator stops flashing. This reduces the possibility of vibration or a load being placed on the recorder that causes permanent or intermittent button press to falsely trigger a function.
Review mode is exited immediately by pressing the STOP button.

Display Overview



Display item	Description	
Temperature value	Temperature value (in °C or °F)	
Reading type	CURRENT = the temperature of the last reading taken MAX = The maximum reading in a given 24hour period MIN = The minimum reading in a given 24hour period	
Above/below limit indicators	▲ Up arrow marker appears when the temperature displayed is above the specified upper temperature limit ▼ Down arrow marker appears when the temperature displayed is below the specified lower temperature limit	
ALARM indicator	ALARM appears when an alarm is triggered.	
Time value	The time (in HH:MM) can be current time, time remaining to start of a delayed start or duration of a given max or min value above/below the specified limits. The value displayed is indicated by the following :- TIME = displaying Current Time (READY and RECORDING modes). TIME DELAY = displaying remaining time to recording start when a DELAYED START time has been configured (STARTING mode) DURATION = displaying duration of a given MAX or MIN statistic above/below the limits in a given day. (REVIEW mode)	
Battery status	Performs battery test hourly. OK displayed when battery is tested OK. displayed when battery is tested LOW.	
State indicators	READY	Ready to start recording
	STARTING	Preparing to start recording. If a delayed start is configured then displays time remaining to recording start.
	RECORDING	Recording
	PAUSED	Max/Min statistics collection paused due to button press activity
	STOPPED	Recording has stopped
Day alarm indicators	The display is organized with a table of 'day alarm indicator' segments named "Today" to "-29d" which are switched on when a given day has an alarm trigger present.	
Day number	The day number of the currently selected day statistic is displayed when in Review mode. TODAY is DAY 0, yesterday is day '-1'. Can be configured to display the total number of days collected while recording.	

Alarm triggering and function.

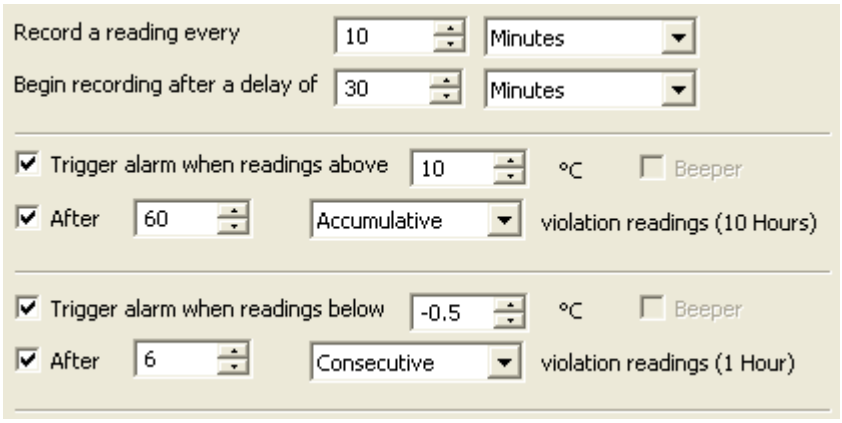
A visual alarm trigger is displayed if one or more of the configured alarm trigger conditions have been met. An alarm trigger condition can be a single violation reading (a reading above the upper or below the lower threshold value), a set of consecutive violation readings or a total of violation readings encountered (called ‘accumulative’).

The alarm triggering structure within the recorder supports many different alarm trigger configurations..

For example, a possible alarm trigger configuration could be :-

- High Trigger when temperature is 10°C or greater for an accumulative time of 10 hours.
- Low Trigger when temperature is -0.5°C or below for continuous 1 hour.

This is configured in using *LogTag Analyzer* as shown below :-



Note: Accumulative or consecutive alarms automatically retrigger after the configured delay if the temperature remains in violation.

Real time clock

The time shown on the recording display is linked to the recorder's internal real time clock.
A *day change* occurs when the display time rolls through midnight (i.e 00:00) and this is the main function of the display clock.

The display clock value is set to the current time (or timezone) when the recorder is configured with *LogTag Analyzer* and can be also directly adjusted using button actions. (see *Adjusting the display clock*)
Note however that the recorder's internal real time clock value is only updated when the recorder is configured with *LogTag Analyzer.* This prevents the data logging becoming discontinuous with changes to the real time clock.

LogTag Analyzer can display the data logged readings with the following time stamp options:-

- UTC (GMT)
- UTC + configuration time zone
- UTC + download timezone
- UTC + display clock timezone (default)

Starting the recorder

Recorder in *READY* mode

The recorder must be in Ready mode for it to be started.
In Ready mode the recorder displays the time, battery status and the READY icon.

Press and hold the Start button and observe that the STARTING icon starts flashing.

The button needs to be held down until the flashing stops (normally 4-6 seconds however can be longer if the button is not continuously depressed)

Release the Start button when the STARTING icon stops flashing

The recorder enters STARTING mode.
If a *start delay* has been configured then the TIME DELAY to recording commencement is shown.

After the start delay has timed out (if configured) then the recorder enters RECORDING mode.
If no start delay is configured then immediately proceeds to RECORDING.

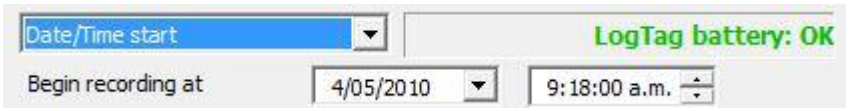
The display shows the current temperature, current time, battery status and any alarm triggers and is updated each time a log is taken.

Date and Time Starting

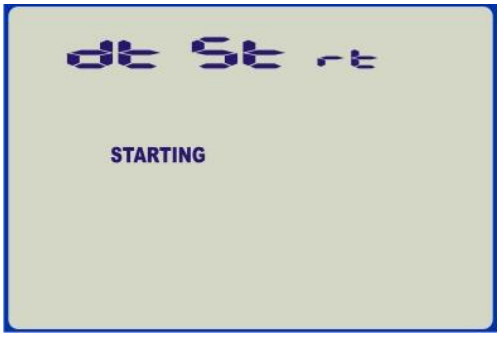
The recorder can be set to start recording on a specific date and time from within LogTag Analyzer.

Date/Time Starting mode is enabled or disabled via LogTag Analyzer software configuration function *Configure TRID* - dialogue.

Select 'Date/Time start' from the drop down menu then select the Date and Time you wish the recorder to start on.



The recorder will display the following once 'Date/Time Starting' has been enabled :-



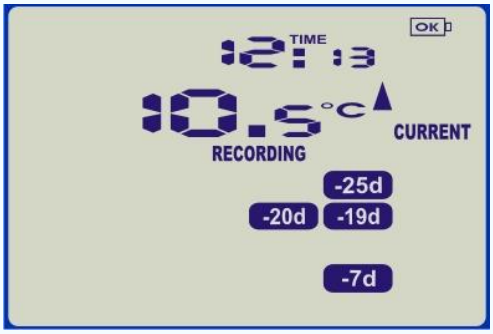
Note

Placing the recorder into Hibernate mode using LogTag Analyzer will disable the Date/Time start function.

Recording Display

The normal *recording* mode display displays the current temperature *of the last log taken* so is updated at the same rate as the logging interval.
The current time, battery status and alarm trigger day summary are displayed.

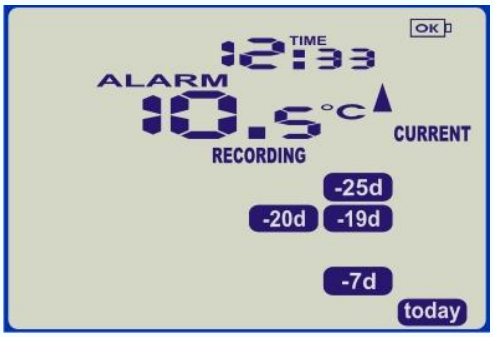
Some recording display examples are shown below :-



The recorder shows alarm triggers 7, 19, 20 & 25 days ago.

The current temperature is over the upper limit (as indicated by the up arrow) but the duration of this temperature excursion has not yet triggered an alarm.

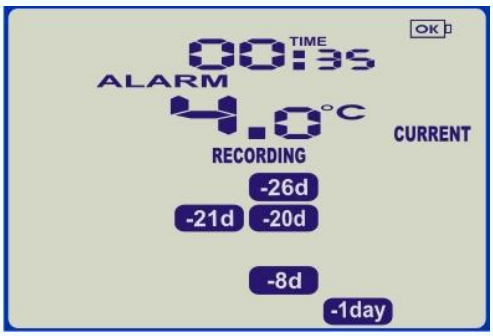
20 Minutes later



The temperature excursion has triggered an alarm.

The **ALARM** symbol is shown and the today marker day alarm indicator is shown.

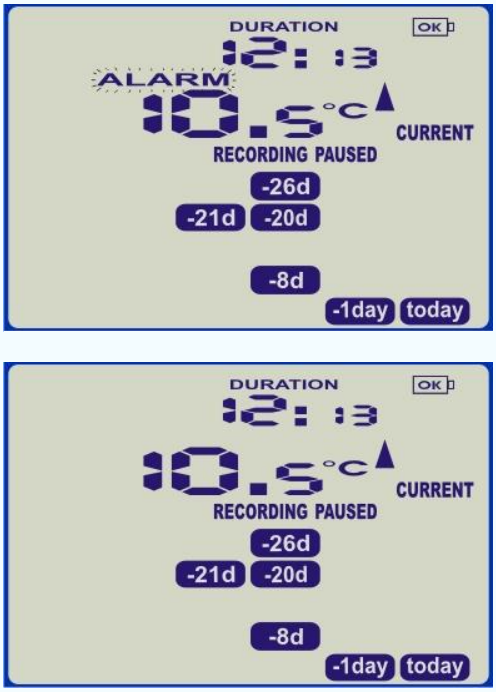
12 hours later



The temperature has returned to the acceptable range but the alarm remains present.
(i.e has not been inspected and cleared)

The day summary has shifted by 1 day as the display time has gone through midnight (00:00).

Clearing an alarm



Press and hold the START/CLEAR/STOP button.

The ALARM icon will flash.

Wait until the flashing to stop then release the button within 2 seconds to clear the flagged alarm.

Note that for this function to operate it needs to be enabled in the *Configure TRID - Advanced Options* configure dialogue.

☑ Clear and reset alarm when STOP/Clear button pressed

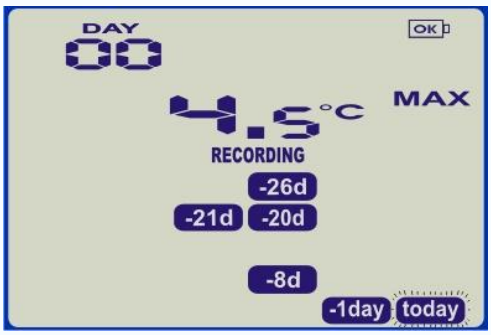
Note

Only the **ALARM** icon can be cleared, the day alarm icons remain as they are part of the statistic summary.

Reviewing day statistics

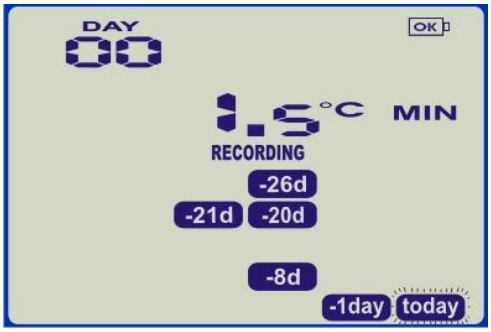
The Review of day statistics history is accessed by pressing the REVIEW button and is accessible in RECORDING and STOPPED modes.

An example of a reviewing days statistics is shown below :-

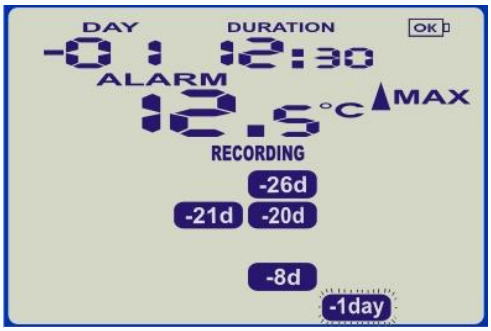


Pressing *Review* button displays current day's max statistic.

The "Today" segment flashes and 'Day 00' is shown to indicate the 'Today' selection.
In this screen example the selected day (Today) does not have any recordings that are outside the acceptance range.

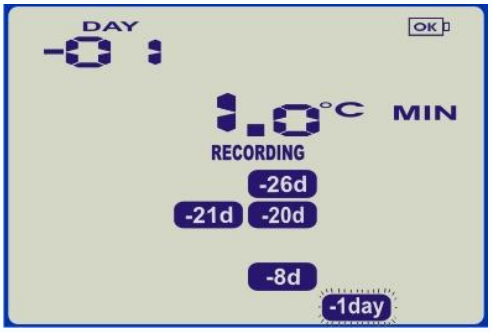


Pressing *Review* button again displays the day's minimum statistic.



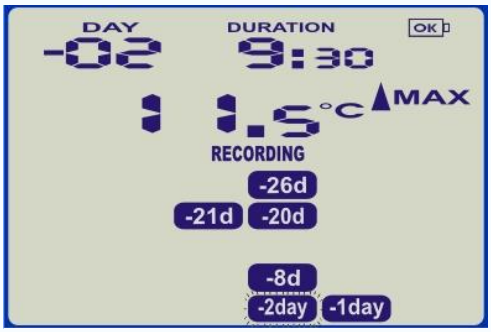
Pressing the *Review* button again displays the next previous day's max statistic.

In this screen example the selected day has recordings that are above the upper limit and the duration value shows the amount of time recorded above the limit. The max statistic is above the upper limit so the up arrow is shown and an alarm was triggered by this statistic as indicated by the ALARM text shown.



Pressing the *Review* button again displays the day's minimum statistic.

The min statistic is not below the lower limit and did not trigger an alarm.



Pressing the *Review* button again displays the next previous day's max statistics.

The **"-2day**" day marker flashes and DAY '-02' is displayed.

In this screen example the selected day does have recordings that are above the upper limit however did not exceed the alarm trigger durations so only the up arrow is shown and no ALARM trigger has occurred

Pressing the Review button again displays the day's minimum statistic.

Each time the ***Review*** button is pressed the cursor advances to the next previous day.

If less that 30 days of recordings have been collected so far then the day marker only advances as far as there is data available after which the next press rolls the summary back to the statistic for Today

Pressing the button at any time reverts the display back to the *normal* mode.

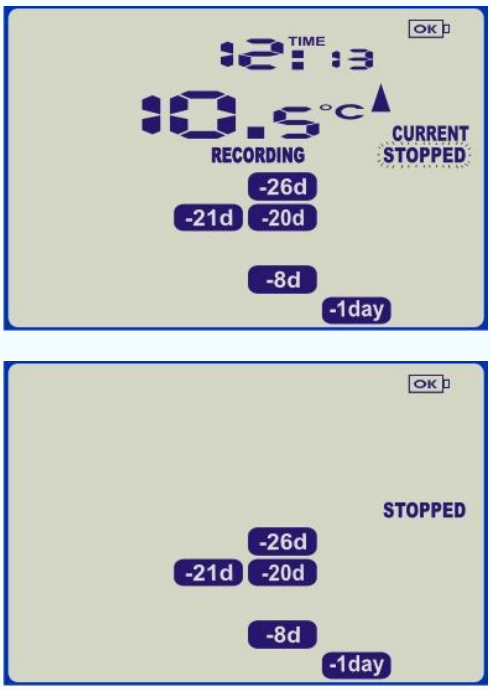
The display will revert back to normal mode after 30 seconds of no button activity.

Note

1. If exposure to alarm temperatures occurs in a continuous period of time that is cut with the day shift (midnight) then the time count continues and if the alarm period is finally exceeded then the day in which the time count was completed is displayed with day alarm indicator and the time exposure split appropriately over the two days.

2. The duration values above or below the specified High/Low temperature are always displayed. Presence of a day alarm trigger marker means that exposure to an alarm temperature for a continuous period greater than the configured trigger duration has occurred on that day.

Stopping the recorder

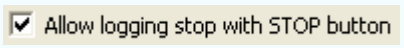


Press and hold the STOP button.

The STOPPED icon will flash.

Wait for the flashing to stop then release the STOP button within 2 seconds to stop recording.

Note that for this function to operate it needs to be enabled in the *Configure TRID - Advanced Options* configure dialogue.

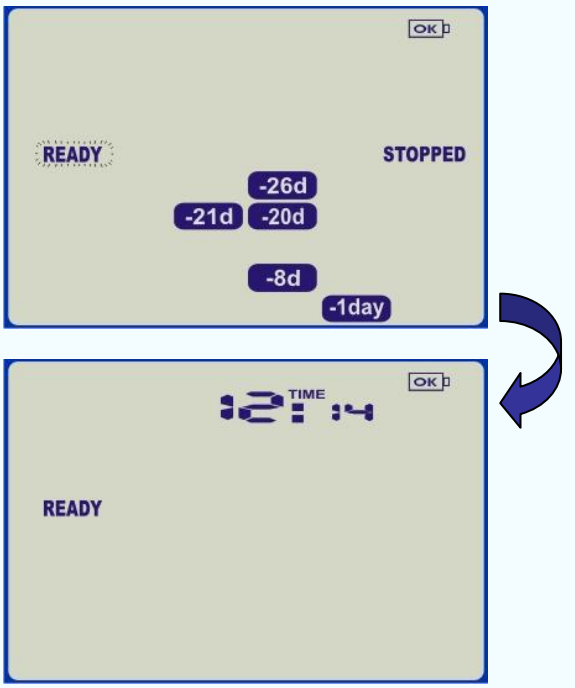


Note

If an ALARM is present (and the clear alarm by pressing STOP button function is enabled) then it will need to be cleared first before being able to stop the recorder.

Resetting the recorder back to *Ready* state

Once the recorder is back in *READY* state, recording can be restarted.



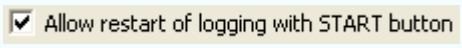
Press and hold the START button.

The READY icon will flash.

Wait until for the flashing to stop then release the START button within 2 seconds to revert the recorder to READY state.

Note that all recordings and statistics are lost

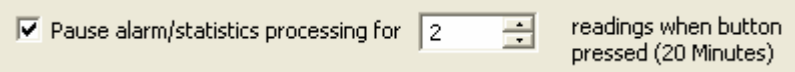
Note that for this function to operate it needs to be enabled in the *Configure TRID - Advanced Options* configure dialogue.



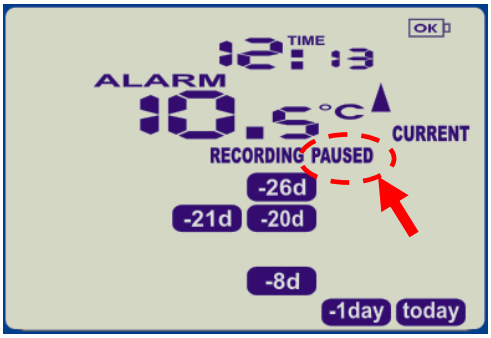
Paused function

The recorder can be configured to suspend processing of readings for alarms and max/min statistics for a period of time after button press activity.
This allows the user to review the current statistics or clear an alarm without causing a false alarm or statistic while handling the recorder.

The delay is expressed in multiples of logging interval and is set in the LogTag Analyzer *Configure TRID - Advanced Options* configure dialogue.



Paused processing is indicated on the display by the PAUSED icon being present as shown in the display example below :-



Note

Data logging continues but each log that is taken during the paused period is flagged and labelled as paused. Logs that are flagged as ‘paused’ are not used in the summary statistics.

Power save mode

When Power save mode is enabled the display will automatically switch off after 30 seconds of no button activity.
The recorder uses significantly less battery power with the display off (typically to around 1/3 of the average power with the display on).
This function is appropriate in applications where the current temperature display is not required to be often seen such as a transit monitoring application.

Press any button to cause the display to re-activate.

The power save mode is enabled or disabled via LogTag Analyzer software configuration function *Configure TRID - Advanced Options* dialogue.

Adjusting the display clock

The display clock of the recorder can be set to the correct time zone either by using LogTag Analyzer software or directly using key actions on the recorder itself.

The clock can be adjusted to local time by pressing the ◀ and ● buttons together continuously for a period of 8 seconds.

During this button press period **CLOCK ADJ** icon flashes. Release the buttons when the flashing stops to enter clock adjustment mode.

The display then changes as shown in the example below with the minutes digits flashing.

In the example below the hours is 18 and the minutes is 38:-

Press the ◀ button to increment the minutes digit (rolls back to '00' after '59' with multiple presses).

Press the ● button to accept the minutes value and the display then flashes the hours value.

Press the ◀ button to increment the hours value digits (rolls back to '00' after '23').

Press the ● button to accept the hours value and the display then reverts to the normal display.

NOTE: It is advised that the real time clock Hours is only adjusted when in STOPPED or READY modes (i.e not recording) to avoid large shifts in day boundary data.

If a display clock adjustment is made while in *RECORDING* mode then the next log taken records a flag indicating a time change took place.

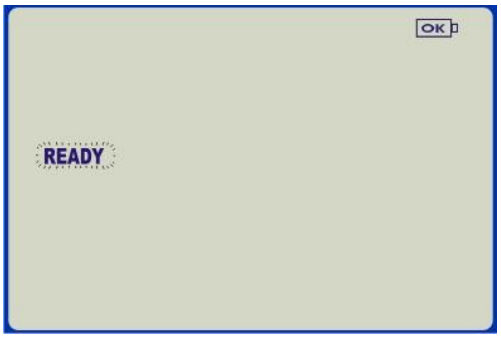
Changes to the display clock do not affect the internal real time UTC+timezone offset value so the logged data does not experience time gaps.

Hibernation

When hibernated, the recorder's power consumption falls nearly to zero and the battery life approaches the shelf life of the battery (typically 5+ years).
This state is useful for conserving battery life during periods of non use.

A hibernated recorder has no active display however a button press will wake the recorder up and it will display just the battery status for a few seconds then revert back to display off.

A hibernated recorder can be placed into the Ready state by pressing the  and  buttons together continuously for a period of 6 seconds.
During this button press period the READY icon flashes. Release the buttons when the flashing stops to enter *READY* state.



Recorders can only be placed into Hibernation with *LogTag Analyzer*.

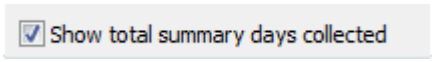
Note

The real time clock is not running in a hibernated recorder and must be setup once hibernation is manually exited to the *READY* state (see 'Adjusting the display clock').

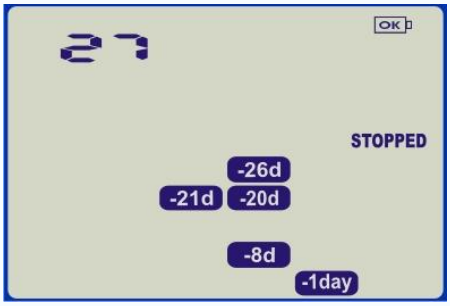
Total summary days collected

The recorder can be setup to show the Total number of days collected. This is shown on both the *Recording* and *Stopped* status screens.

The total number of days collected can be enabled in LogTag Analyzer *Configure TRID - Advanced Options* configure dialogue.



RECORDING status showing ‘13’ days of data has been collected.



STOPPED status showing ‘27’ days of data has been collected.

Specifications

LogTag Part codes	LOGDISP : (replaceable battery) LOGDISP : (fixed battery)
Rated Operating Temperature Range	-30°C ~ +60°C (-22°F ~ +140°F)
Rated accuracy	Better than ±0.5°C (±0.9°F) for better for measurements from -20°C ~ +40°C (-22°F ~ +104°F) - *typically ±0.3°C (0.6°F)* Better than ±0.8°C (±1.5°F) for other measurements - *typically ±0.5°C (0.9°F)*.
Rated temperature resolution on LCD	0.1°C(0.2°F) for measurements -30°C ~ +40°C (-22°F ~ +104°F) 0.2°C(0.4°F) for measurements above +40°C (+104°F)
Recording Capacity	Data logging memory : 7770 logs (eg 53.9 days @ 10min logging, 80.9 days @ 15min logging) Day summary statistics memory (for display on LCD): up for 30 days of Max/Min and duration values
Sampling Interval	configurable from 30 seconds to hourly
Logging modes	Supports 'continuous' wrap around or specific recording period
Read time clock accuracy	Quartz crystal locked real time clock. Rated accuracy ±25ppm @ 25°C (equiv to ±2.5 seconds/day) Rated temperature coefficient is -0.034±0.006ppm/°C (i.e typically +/- 0.00294seconds/day/°C)
Download Time	Typically with full memory in less than 5 secondss depending on computer or readout device used.
Environmental	IP65 (when vertically mounted or hung)
Power source	3V Lithium-Manganese Dioxide extended temperature chemistry
Battery life	LOGDISP : typically 1 year of operation LOGDISP : typically 2 years of operation
Size	93mm(H) x54.5mm(W)x8.6mm(T)
Weight	LOGDISP : 39grams, TRID30 -7F : 43grams
Case Material	Polycarbonate
EMC Compliance	Complies with EC EMC directives (EN50081-1:1992 & EN 61000-6-1:2001) Complies with FCC Part 15 Subparts A and B.
FDA 21CFR Part 11 Compliance	Designed to comply with FDA 21CFR Part 11 (Digital signatures)
Pb RoHS COMPLIANT 2002/95/EC	Manufactured to meet the European RoHS Directive
Reader Interface	Standard LogTag Interface cradle

Contact Details

Postal Address : PO Box 170
Mt Kuring-Gai
NSW 2080
Austrailia

Phone : 1300 880 441

Fax : 1300 880 451

Email : sales@rollexmedical.com