# Technical Note

# Shadow Log®
# How Does it Work?




## Overview

### Why Shadow Log®

All too often, shipments of temperature sensitive goods arrive with data loggers that have not been started. This defeats the purpose of using this type of monitoring device, resulting in receivers not having any visibility of temperature conditions the goods were exposed to along the route. No one will know if a break in the cold chain has occurred, when it happened, at what temperature, and how long it was out of range. The whole load may be a total loss, with no evidence available when legal actions are necessary.

### Guarantees Trip Data

Shadow Log® is a patented technology feature of DeltaTrak In-Transit Data Loggers. It guarantees temperature data is recorded even if the units are never started by the shipper, so that receivers will always have trip history for every inbound load. These reports provide complete information to verify if and when breaks occur in the cold chain. They help to identify who is responsible, and are used as evidence in claim situations and legal proceedings.

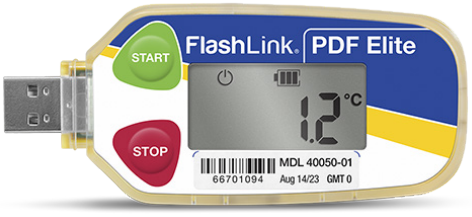
### How does it work?

- Shadow Log® starts when the logger is programmed at the factory
- Logger records temperature data at regular intervals
- Continuous loop - when memory is full, new data over writes oldest data points
- Operates with very low power, will not drain battery
- Do not press START if Shadow Log® icon is on the LCD. Pressing START will erase Shadow® data and begin normal logging at intervals based on model specifications

## How can I tell when a logger is in Shadow Log® mode?




LCD with Shadow Log® icon




LCD in normal logging mode

Models without LCD: No LED lights flashing indicates logger is in Shadow Log® mode




Green LED flashing




Red LED flashing

**Green LED flashing:** Active logging mode

**Red LED flashing:** Active logging with alarm condition

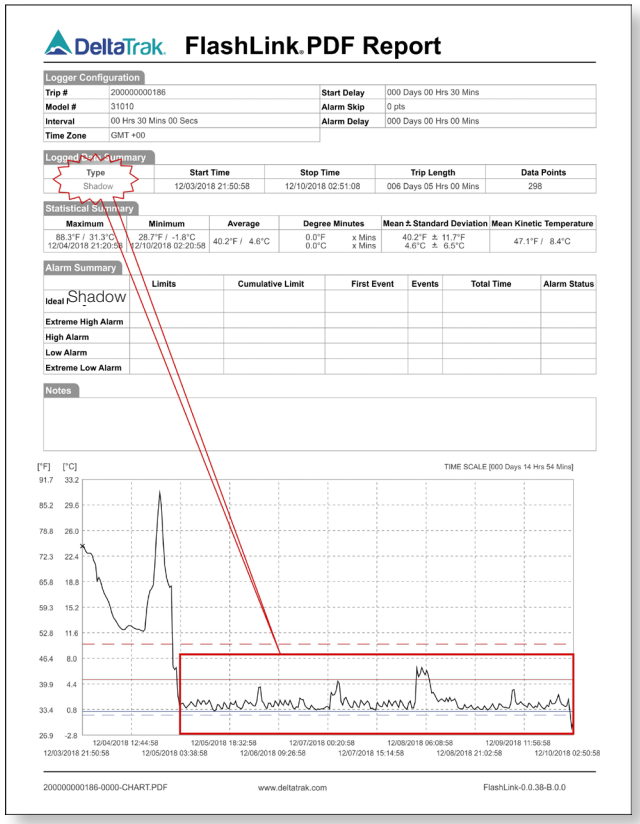
## Downloading Loggers with Shadow Log® Data

- Do not press START when logger arrives in Shadow Log® mode
- Press and hold the STOP button until STOP appears on the LDC without flashing
- Plug the logger into the USB port of a computer
- PDF and CSV reports are generated

## Compare Reports

- Indicates if data is from Shadow Log® mode or normal logging
- Shadow Log® includes data points before the trip started
- Easy to identify and verify trip data with time/date stamp visible on the graph
- Low temperature spike shows when logger went into refrigerated or frozen truck or container
- High temperature spike at end of trip, when logger is removed from the load

### Report with Shadow Log® Data



DeltaTrak FlashLink PDF Report

Logger Configuration

| | | | |
|---|---|---|---|
| Trip # | 200000000186 | Start Delay | 000 Days 00 Hrs 30 Mins |
| Model # | 31010 | Alarm Skip | 0 pts |
| Interval | 00 Hrs 30 Mins 00 Secs | Alarm Delay | 000 Days 00 Hrs 00 Mins |
| Time Zone | GMT +00 | | |

Logged Data Summary

| Type | Start Time | Stop Time | Trip Length | Data Points |
|---|---|---|---|---|
| Shadow | 12/03/2018 21:50:58 | 12/10/2018 02:51:08 | 006 Days 05 Hrs 00 Mins | 298 |

Statistical Summary

| Maximum | Minimum | Average | Degree Minutes | Mean ± Standard Deviation | Mean Kinetic Temperature |
|---|---|---|---|---|---|
| 88.3°F / 31.3°C 12/04/2018 21:20:58 | 28.7°F / -1.8°C 12/10/2018 02:20:58 | 40.2°F / 4.6°C | 0.0°F x Mins 0.0°C x Mins | 40.2°F ± 11.7°F 4.6°C ± 6.5°C | 47.1°F / 8.4°C |

Alarm Summary

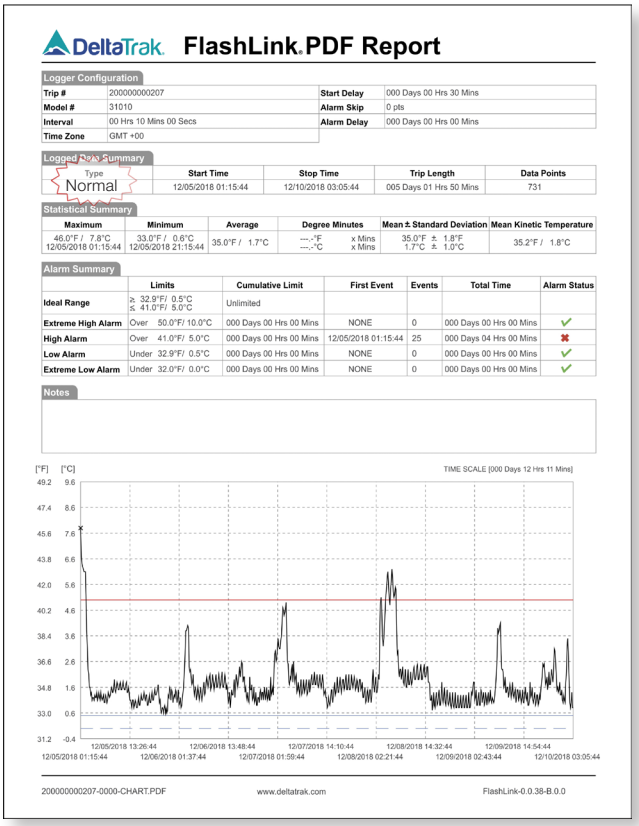
| | Limits | Cumulative Limit | First Event | Events | Total Time | Alarm Status |
|---|---|---|---|---|---|---|
| Ideal Shadow | | | | | | |
| Extreme High Alarm | | | | | | |
| High Alarm | | | | | | |
| Low Alarm | | | | | | |
| Extreme Low Alarm | | | | | | |

Notes



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### Report with Normal Data



DeltaTrak FlashLink PDF Report

Logger Configuration

| | | | |
|---|---|---|---|
| Trip # | 200000000207 | Start Delay | 000 Days 00 Hrs 30 Mins |
| Model # | 31010 | Alarm Skip | 0 pts |
| Interval | 00 Hrs 10 Mins 00 Secs | Alarm Delay | 000 Days 00 Hrs 00 Mins |
| Time Zone | GMT +00 | | |

Logged Data Summary

| Type | Start Time | Stop Time | Trip Length | Data Points |
|---|---|---|---|---|
| Normal | 12/05/2018 01:15:44 | 12/10/2018 03:05:44 | 005 Days 01 Hrs 50 Mins | 731 |

Statistical Summary

| Maximum | Minimum | Average | Degree Minutes | Mean ± Standard Deviation | Mean Kinetic Temperature |
|---|---|---|---|---|---|
| 46.0°F / 7.8°C 12/05/2018 01:15:44 | 33.0°F / 0.6°C 12/05/2018 21:15:44 | 35.0°F / 1.7°C | ---.-°F x Mins ---.-°C x Mins | 35.0°F ± 1.8°F 1.7°C ± 1.0°C | 35.2°F / 1.8°C |

Alarm Summary

| | Limits | Cumulative Limit | First Event | Events | Total Time | Alarm Status |
|---|---|---|---|---|---|---|
| Ideal Range | ≥ 32.9°F/ 0.5°C ≤ 41.0°F/ 5.0°C | Unlimited | | | | |
| Extreme High Alarm | Over 50.0°F/ 10.0°C | 000 Days 00 Hrs 00 Mins | NONE | 0 | 000 Days 00 Hrs 00 Mins | ✔ |
| High Alarm | Over 41.0°F/ 5.0°C | 000 Days 00 Hrs 00 Mins | 12/05/2018 01:15:44 | 25 | 000 Days 04 Hrs 00 Mins | ✖ |
| Low Alarm | Under 32.9°F/ 0.5°C | 000 Days 00 Hrs 00 Mins | NONE | 0 | 000 Days 00 Hrs 00 Mins | ✔ |
| Extreme Low Alarm | Under 32.0°F/ 0.0°C | 000 Days 00 Hrs 00 Mins | NONE | 0 | 000 Days 00 Hrs 00 Mins | ✔ |

Notes



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