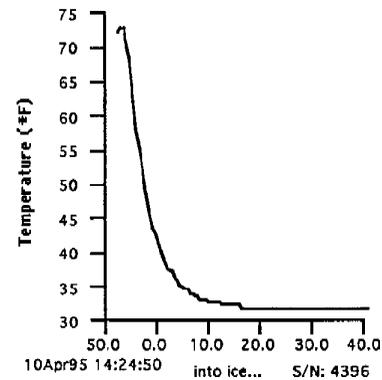


The coffee mug logger test

The freezing point of water is 0°C (+32°F) with only a tiny dependence on pressure and the salt levels found in normal tap water. You can use this information to test the accuracy of your StowAway XTI logger. Put crushed ice in an insulated container, and completely submerge the external sensor in the ice water. Place the container in a refrigerator to minimize temperature gradients. The ice will be melting slowly so the actual temperature will be above 0°C, though less than 0.1°C if you do everything right.

This isn't really a coffee mug test, but you can come pretty close with using a coffee mug instead of an insulated container.



Battery Instructions

In normal usage the 3.6 volt StowAway XTI battery is expected to last two years, although it is suggested that you change the battery every year. To change the battery, remove the logger's cover. Remove the old battery by pulling it straight away from the board. To remove the high internal resistance which builds up when this kind of battery is not in use short the new battery for one second with a paper clip before installing it. When the battery first makes contact the status LED on the board should blink brightly five times. If it does not, remove the battery, wait ten seconds and try again. Finally, place the cover back on the StowAway XTI, lining it up so that the LED shows through the intended spot on the label.

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StowAway® XTI User's Manual



Thank you for purchasing a StowAway® XTI temperature logger. The StowAway XTI has an internal temperature sensor, and a 2.5 mm jack that accepts TMC sensor cables. These cables, which are purchased separately have a mating 2.5mm plug and come in a variety of lengths. The StowAway XTI time constants are for standard TMC cables of any length. If an external probe is connected, it will log results from this external probe instead of the internal thermistor.

Launch and recovery

Connect the StowAway XTI to the host computer using the appropriate interface cable (CABLE-PC-3.5 for a PC and CABLE-MAC-HOBO for a Macintosh). When connecting the 3.5 mm interface cable to your StowAway XTI logger make sure that it is pushed completely into the connector! You will now be able to communicate with the logger using the host software. (See the software user's manual for launch details). Recommended software: BoxCar® 3.6+ or any version of BoxCar® Pro. At the end of the deployment, reconnect your logger to the host computer for readout. The StowAway XTI communicates at 1200 baud. Its cleverly optimized software allows a full 8K off-load in only ninety seconds (six minutes for a 32K StowAway).

The pushbutton and LED

The StowAway XTI logger has an optional triggered launch. It has a pushbutton which can be activated by pressing on the marked spot on the logger which may also be used to test the alarm state. If the logger has not recorded out-of-range conditions, the LED will blink weakly every half second. If the alarm conditions have been met it will shine almost continuously when the button is pressed. The StowAway will not blink when its memory has reached capacity or when it has finished logging.

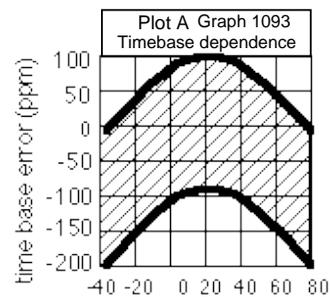
The logger's LED tells you exactly what the StowAway is doing. **Waiting for trigger:** weak blink every six seconds; **waiting out delay:** weak blink every four seconds; **logging:** bright blink every measurement, and weak blink every two seconds between measurements. If the logger is in multiple sampling mode it will blink each measurement, not each time data is recorded.

Operating temperature range -40°C to +75°C

StowAway XTI logger should not be exposed to temperatures below -40°C or above +75°C. Temperatures above the highest value in its range will be stored as the highest value, and temperatures below the lowest value in its range will be stored as the lowest value. Do not expose to an environment where condensation will form on the logger. Condensation will cause corrosion. Continuous exposure to temperatures above +45°C will reduce the battery life of the StowAway XTI logger.

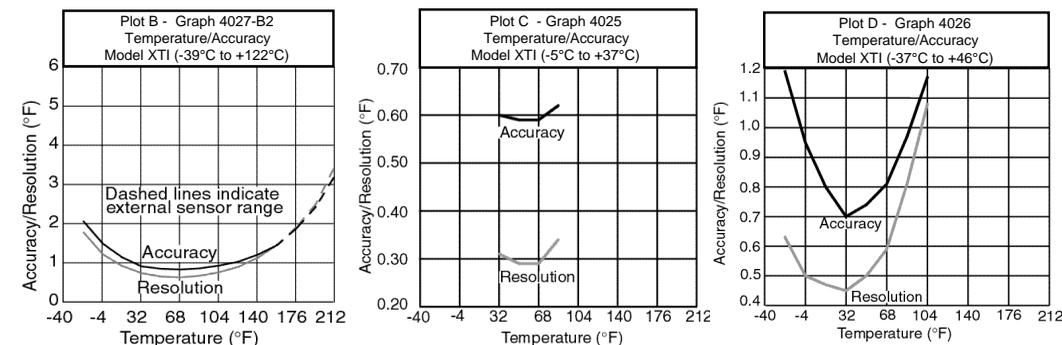
Time accuracy

At room temperature, the logger's idea of time can vary from the actual time by as much as one hour per year (100 ppm). There is an additional temperature effect shown in Plot A.



Temperature accuracy and resolution

The StowAway TidbiT logger's accuracy and resolution specifications are given in plot B, plot C and plot D. The logger's accuracy specification is its maximum measurement error, including the effects of thermistor error and quantization error. In most cases the logger's actual accuracy is better than the specified value. The logger's resolution is the difference between temperature steps



Thermal time constant

The thermal time constant (90% response to a step change in temperature) of the TMC sensor used with the StowAway XTI is fifteen seconds when it is in stirred water. The two plots below show how loggers with external, Plot E and internal, Plot F, temperature sensors respond to a sudden temperature changes in unstirred air. The external sensor shows a time constant of about three minutes. The internal sensor shows about a fifteen minute time constant. Note the freezer's temperature cycling in Plot F.

