Tech Note

Improved data protection on Series 3 dataTaker® DT50, DT500, DT600 series data loggers.

All Series 3 dataTaker DT50, DT500, DT600 series of data loggers offer improved data protection due to the inclusion of an internal 3.6V ½AA lithium battery. The lithium battery provides protection of the internal memory and the real time clock as follows:

- Protection for the internal data and program memory occurs when a battery discharges past a safe level. If the supply of the data logger drops below a safe level it will attempt to enter a deep sleep mode to conserve battery power. Once in this mode the 3.6V lithium battery will ensure that the data and program are protected, even if all other power sources are removed. The function of the 3.6V lithium battery is not intended to provide protection if all power sources are suddenly removed.
- Protection for the real time clock occurs whenever all power sources cannot power the logger. The real time clock will be powered from the internal 3.6V lithium battery whenever there are no other power sources (AC/DC or battery). It does not matter if a battery is used or whether the power is removed quickly or not.

Recommended use of internal/external 6V lead acid or 9V alkaline batteries.

The lithium battery does not replace the functionality of the internal (DT500, DT600) or external (DT50) 6V lead acid battery. We continue to recommend the connection of this battery to improve data protection. Please ensure that the internal 6V lead acid battery of your dataTaker DT500 and DT600 series data loggers is connected prior to use. The DT50 series data loggers do not have an internal battery so we suggest you connect an external 6V lead acid or 9V alkaline battery to the battery terminals.

If you wish to preserve the internal data and program and need to replace the internal or external 6V lead acid or 9V alkaline battery then you should ensure that the data logger is either in deep sleep mode or ordinary sleep mode or powered from the AC/DC inputs. Otherwise If you remove the battery while in normal operating mode (not sleep) and it is the only power source then the logger will reset on next power up and delete all internal data and the program.

Replacement of the internal lithium battery

The 3.6V lithium battery should be replaced every two years to ensure continuous data protection.

Powering your data logger

For normal operation the data logger takes it's supply from the higher of either the AC/DC input or the internal or external battery input (not the 3.6V lithium). This ensures that if the AC/DC supply is removed the logger can continue to operate normally from the battery supply. Similarly if the battery is changed the data logger can continue to operate from the AC/DC supply while the changeover occurs.

Deep Sleep Mode

If the supply voltage drops below a safe level the data logger will enter a deep sleep mode. It takes up to one second for the logger to enter the deep sleep mode once the unsafe voltage level on the supply is detected. In the deep sleep mode the data logger suspends all data logging functions and will only exit deep sleep mode once the supply voltage returns to a safe level. It may take up to one minute for the data logger to recognise the return of a safe supply voltage level.

Should the supply voltage drop too quickly then the logger cannot enter the deep sleep mode and will reset on next power up instead. Whenever the data logger resets it clears any internal data and program (the program will not be lost if it is stored in FLASH memory – see bootstrap mode users guide).

By connecting an internal or external battery you can avoid losing data due to a sudden power supply failure on the AC/DC input. As the battery discharges it provides enough power to always ensure that the logger can enter the deep sleep mode. Should the battery be replaced when discharged care should be taken to ensure that a new battery is connected cleanly (contact bounce must be less than 100ms) so that the logger does not start and come out of deep sleep mode and then restart, as the second start will be treated as quick power failure and the logger will reset. Alternately you should power the logger from the AC/DC inputs while changing the battery.

Memory Cards

A memory card provides better data protection as a memory card is never cleared on reset or power loss. The only way the data can be cleared from a memory card is if the user issues a CDATA command while the card is inserted or if the battery in the card goes flat.

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