

Completed power saving experiment

Measuring power consumption no power saving enable constantly running and polling data. Draw = 13.3 mA.

In order to meet client's needs to last six months required mA of battery: 56 Ah!!!! That's huge and very expensive. Something has to change.

Power saving implementation. Taking advantage of power saving features of the microprocessor. Power draw with power-saving enabled and no indicator LED: Draw= 1.4mA Using 4 AA batteries (6 Ah)

standard alkaline battery is 1500 mAh costs \$0.50 each
Using 3 18650 li-ion cells (7.8 Ah)

each cell is 2600 mA costs \$5.00-\$10.00 each

Approximate operational life: 192 days or 6.5 months The specifications can realistically be met

To do

Current draw experiment:

Equipment:

Oscilloscope

DC power supply

Data logger

1 ohm resistor

Multimeter

Goal:

Goal is to determine the correlation between current draw and sample rate. Using this data power consumption is determined and operation life can be calculated for each rate.

Setup:

Connect the data logger for normal operation with the DC power supply set at 3.7V. The 1 ohm resistor is placed in series with the power supply to monitor the current via the oscilloscope. The oscilloscope is connected to measure voltage across the resistor. The multimeter can be used to verify the current readings by connecting it in series set to measure current. The microSD card has the setup file loaded with desired interval rate.

Procedure:

Using the oscilloscope monitor the duration of peak current draw and use this time to determine average current draw. Changing the setup file to query at a faster rate measure the time between rising edges of the signal. Observe the difference in average current draw. Repeat this for multiple settings and derive the relationship.

Determine current draw and operational life given measurement interval.