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COM100 Cell Phone Power Management

MultiLogger Application Note #7

Overview:

One of the down sides of communication with battery operated data acquisition systems via cell phone is the cell phone's high current draw. It is usually impractical in terms of battery life to power the cell phone continuously. The Campbell Scientific COM100 package has a power relay controlled by the datalogger that in effect turns the phone on and off. Typically a "power window" is established during which the phone is powered for some amount of time each day. The purpose of this application note is to describe how MultiLogger can control the relay and therefore power to the cell phone with MultiLogger.

The following steps will be described:

1) Build the necessary instruction file
2) Configure the timing and duration of the "power window" defined in that file.
3) Incorporate that instruction file into the datalogger program
4) Update the datalogger

A word of warning:

The reliability of the cell phone connection can vary over time at the same location. Changes in local weather conditions or the amount of cell phone traffic in the cell or adjacent cells may affect the ability to receive calls at the datalogger.

Instructions:

1) Build the instruction file called **cell_window.ins** using the MultiLogger Editor. Press the Setup button in MultiLogger, press New, select Instruction File, select the appropriate Controller type, select a Configuration file, (in this case **default** may be used). The file is listed at the end of the MAN (MultiLogger Application Note). The file may also be copied as received via e-mail or other means to the MultiLogger directory.

2) Configure the two P92 instructions to describe the "power window". The phone will only be powered during this time. In the example the window is open (power is on) between 12:00 PM and 12:10 PM. In the first P92 the first parameter is the number of minutes after midnight corresponding to 12:00 PM. In the second P92 the first parameter corresponds to 12:10 PM. These first parameters should be modified to reflect the time during the day when the phone is to be powered. Save your work and exit the editor.

3) Incorporate the instruction into the datalogger program. Click on Program menu pull down from the main Edit Configuration screen. Select Tables. Check the box adjacent to Table 2 Interval and enter 60 in the Seconds text box. The instruction we've created must be executed at least once during the minute in which power is to be turned on or off. (See the note following the instruction file at the end of this MAN) Check the box adjacent to Table 2 Instructions. Click on the file icon to the right and select **cell_window**. Click the Accept box and return to the configuration screen

4) Click the Update icon to send these instructions to the datalogger

Instruction File cell_window.ins

```
P92   If time is ;
1:[720                  ]    Minutes (Seconds --) into a;
2:[1440                 ]    Interval (same units as above)   ;
3:[48                   ]    Command Code Option (Set Port 8 High) ;

P92   If time is ;
1:[730                 ]     Minutes (Seconds --) into a;
2:[1440                 ]    Interval (same units as above)   ;
3:[58                  ]     Command Code Option (Set Port 8 Lo)    ;
```

Note:
By using this scheme to control the power to the cell phone we are actually running two separate programs in the datalogger at the same time. Under most conditions this won't be a problem if the instructions in this MAN are used. If, however, the execution of the program takes longer than one minute there is a potential for problems. Because the program built by MultiLogger runs from Table 1 it is executed before the routine described here which runs in Table 2.

For example:

- MultiLogger has been configured to read at a single interval that occurs every 60 minutes and so executes on the even hour throughout the day.
- Cell_window.ins is configured to execute at 12:00 noon as in the example here.
- The program takes more than the first minute of the hour to execute.
- So the first opportunity the system has to run cell_window.ins is during the second minute after the hour and then it is not 720 minutes into the day it is 721 and so the IF condition is not true and C8 is not set HIGH

It is recommended that the system be tested before installation. If there seems to be a likelihood of the problem described here configure the cell_window.ins to execute at some time when the rest of the system is idle.