

## **Farnell Campbell Weather Station**

**In these notes:** General description of the weather station, available sensors list and their locations, things to note and calibration calculations, wiring list for all sensors, how to download the weather station, and associated images.

### **General description:**

Campbell: CR1000

Serial Number: 24913

Program: FarnellValley\_WS\_WD\_RH\_Tair\_P\_Sol\_Tgrnd\_Tsub1\_2.CR1

**\*\*Deployed:** Dec 1, 2010 – logger set to local New Zealand time (an hour off of standard local sun time)

Data fill days: 3625 days

Memory: 4 Mb

Scan interval: 30 Min

**\*\*Power:** 5W solar panel and box contains three 30 Amp hour batteries connected in parallel

**\*\*Location:** 77S 53.028', 160E 41.027', 1672 m; depth to ice-cemented ground = 42 cm

### **Sensors & location description:**

Above surface:

- Light (LI200X) – about 1m above ground, mounted on top of T/RH grill – 1.42 m height
- Wind Speed/Dir, RH, Pressure, Temp (Climatronics AIO) – 1.28m above ground

Surface & Subsurface:

- Temp (107) – T107\_Cgrnd – on surface
- Temp (107) – T107\_Csub1 – 20 cm depth
- Temp (107) – T107\_Csub2 – 42 cm depth, at ice-cemented ground interface

### **Additional hobo instruments:**

- T/RH sensors at 10 cm, and 30 cm depth

### **\*Things to Note\*:**

1. The uploaded Campbell CR1 program is modified from the ShortCut program to:
  - Accommodate the Climatronics AIO. This is not supported by Campbell software so it had to be manually added.
  - To allow the data to be collected by the SC115 USB device
2. Since the Climatronics AIO sensor is not supported by Campbell software, code had to be written to support it. Climatronics produced a simple program written in CRBASIC that would allow the AIO to communicate with the CR1000. The program opens up a serial port on the CR1000 (com1) and reads the input string. A simple split string command was used to split the input string into its 5 components so they could be read into a table and stored.
3. This station is set up so that when the SC115 USB storage device is connected, all the latest data is sent to the module. This allows for easy downloads. The procedure for adding this is found in the SC115 documentation. To have the CR1000 read to the SC115 a single line of code was added which told the CR1000 to read its stored data to the SC115 after a period of time.

**Wiring as deployed in the field:**

1H – T107 (T107\_Cgrnd) – red

1L – T107 (T107\_Csub1) – red

Ground – T107\_Cgrnd and T107\_Csub1 – Purple + Clear for both sensors

2H – T107 (T107\_Csub2) – red

2L – Empty

Ground – T107\_Csub2 – Purple + Clear

VX1 – T107\_Cgrnd, T107\_Csub1, T107\_Csub2 – Black for all 3 sensors

3H – LI200X – Red

3L – LI200x – Black

Ground – LI200X – White + Clear

C2(COM1 Rx) – AIO – Grey

Ground – AIO – Orange + Black

12V – AIO – Red

*All other channels are empty*

**How to download the weather station:****Option 1**

1. The weather station box is closed by a clamp on either side of the box – be careful in opening the box since the solar panel wire runs from the box to the Campbell.
2. Plug the SC115 USB storage module into the Campbell CS I/O port.
3. Wait till the red LED completely goes out.

**Option 2**

1. Install PC200W on your computer
2. If there is no serial port on the computer, get a Keyspan or other Serial to USB adapter working.
3. The weather station box is closed by a clamp on either side of the box – be careful in opening the box since the solar panel wire runs from the box to the Campbell.
4. Attach the Keyspan/serial port to the top serial port input on the Campbell RS-232 port (the bottom serial port is used for the Campbell keypad and the SC115 storage module).
5. Connect to the datalogger (top left icon on PC200W).
6. Collect the data – beware of the filename and possibly overwriting previous data. Even if you're not overwriting an old file, PC200W will warn you that you *may* be overwriting a old file.

**Associated images**