8) Data Format Sheet

This data sheet describes the order and format of data that will be supplied from your system. The data is saved in ASCII text format. The time and date items are in quotation marks, items are separated by commas, and each data record ends with a carriage-return and line-feed character. This format can be directly imported by most spreadsheet and data base programs.

Order of Data Items:

- Date (Month/Day/Year, in quotation marks)
- Time (Hour:Minute in quotation marks)
- Temperature (degrees F, degrees C)
- Humidity (percent)
- Barometer (inches of Hg., mb (hPa))
- Wind Direction (Compass Degrees)
- Wind Speed (miles per hour, kilometers per hour, Knots, meters per sec.)
- Wind Speed Maximum (miles per hour, kilometers per hour, Knots, meters per sec.)
- Solar Radiation (Watts/m^2)
- Solar Energy (J/m^2)
- Rainfall (inches, millimeters)
- Battery Status (1=ok, 0= supply volts less than 4.75)
- Units (0=English & mph, 1=English & knts, 2=metric & mps, 3=metric & kph, 4=metric & knts)
- Checksum (An exclamation point(!) followed by three digits, 000 to 255)

Header and sample for RAM data:

DATE,TIME,T_AIR,HUM,DEW,BARO,WDIR,WSPD,WS_MAX,SRAD,SR_SUM,RAINF,BATT,UNITS,

CKSUM <cr><lf>

"04/05/94","16:17",078,029,043,29.92,270,010,015,0760,1.066E04,1.50,1,0.!xxx <cr><lf>

8.1) Data

The temperature, barometer, humidity and solar radiation data are sampled at the data save interval. The wind direction and speed are sampled every two seconds and averaged over the data save interval. The rainfall and wind speed max data are captured during the data save interval and reset after saving. When the battery voltage is less than 5.05 volts, the logger will NOT save to RAM.

Battery Life: The battery alone with no solar panel connected will operate the PortLog for over 25 days. About 1 hour at 160 milliamperes is required to replace the energy removed for one day of operation. The Solar Panel is configured to charge the battery when the PortLog is not powered up. In addition, a separate Battery charger is provided. **The charger and the serial cable connect at the same connector and may not be used at the same time.** The real time clock uses a capacitor for backup and will operate for 8 days without power.

8.2) RAM Capacity

The PortLog has 5 different options of RAM which will hold the logged records. You can find what size of RAM that was installed on your PortLog by using any communications or terminal emulator software that uses ASCII characters. The communications protocol is described in Section 8.3: "Serial Command Format", a command ".V" will give you the size of RAM.

The table below shows the maximum amount of time the PortLog can log data before its RAM will fill up.

Size of RAM	Maximum number of Records
128k	4672
256k	9344
512k	18688
1M	37376
2M	74752

The maximum recording time depends on the logging interval. The table below shows the logging interval and the number of days until the RAM is full. When the RAM fills, recording stops until the RAM is cleared so that the first data is preserved.

Logging Interval (Mins)	128k Logging Time (Days)	256k Logging Time (Days)	512k Logging Time (Days)	1M Logging Time (Days)	2M Logging Time (Days)
1	4	8	16	32	64
5	17	34	68	136	272
10	33	66	132	264	528
20	66	132	264	528	1056
30	97	194	388	776	1552
60	194	388	776	1552	3104

8.3) Serial Command Format test

The following list is command structure for communicating with the PortLog. Any communications or terminal emulator software can be used to read data from the PortLog. The host computer communicates with the logger by sending simple ASCII text commands and receiving ASCII text data.

The host computer begins a command by sending a colon character (**:**) to the logger. The unit will respond with a greater-than character (**>**). The host then sends a single command letter from the list below. The logger will respond with a question mark (**?**) if it receives an unknown command letter.

A Output the altitude setting in feet or meters.

B Barometer altitude correction: After typing B, send the adjusted pressure in either inches of mercury or millibars followed by a carriage return line feed (<ENTER>). For PortLog with measurement units set to metric, the pressure is entered in millibars to the nearest tenth, for example **":B1000.0**". The decimal point is included. For PortLog set to English units enter the current pressure to the nearest 100th inches of Mercury, for example **":B30.00**". Setting the pressure to zero in either unit system, removes the offset and the Portlog reports absolute pressure.

C Clear data RAM. All stored data is erased. The logger responds with OK.

D Dump current data. The PortLog responds with the a single line of data as shown in the "Header and Sample for RAM data" plus the battery voltage and a number which indicates the selected units.

H Selects the current hemisphere. The command returns either a **N** or a **S** to indicate which hemisphere is currently selected. The value will alternate each time the command is issued.

I Increment the RAM recording interval. The logger selects the next interval and outputs it.

K Set the data logger's clock. After the K, send the date and time to the logger as YYMMDDhhmm<cr>. For example, **:K0406031534<Enter>** sets the logger's clock for June 3, 2004, at 3:34 PM. The logger will respond "OK" if it receives 10 digits after the K, or "Clock not set." if any other character is received. Use the **:D** command to verify that the time and date were set properly.

L Output RAM recording interval. The logger responds with the logging interval in minutes.

O Output stored data. The output begins with a text header, and then is one record of data per line. The output ends with "OK". Each data line has the format shown on the "Data Format Sheet"

Q Query RAM. The data logger responds with the number of records stored.

U Outputs the current units.

V Changes the current unit setting and outputs the current units.

.**V** Outputs version information and RAM size

@ Toggle memory wrapping, if wrapping is enabled then the PortLog will begin to overwrite old records once the memory is full. When turned off logging will stop when the memory is full. By default wrapping is not enabled.

! In the case of a bad record count error during download from the PortLog, you can dump the memory and the software will sort the memory packets that are good. After you enter the command, it will say "Next download will dump memory". You may now close the window and select download to initiate the process.

For Computers equipped with Windows, "HyperTerminal" can be used with this command set from Section 8.3) Serial Command Format

1. To begin select "HyperTerminal" under the accessories menu.
2. Click on "hypertrm.exe".
3. Enter name for the connection.
4. Enter phone number.
5. In the last entry on this screen, select "Direct to Com1, or Com2." A screen for Com1 (or Com2) settings should be set as 9600 bits per sec, 8 data bits , no parity , 1 stop bit, no flow control.
6. Click on "Apply". Commands can be directly entered on the screen.
7. To save data from the PortLog, click on "Transfer" and then on "Capture Text". Type in the same of the file, and the ":" followed by the "O" command after the ">" character is sent.
8. When the data stops appearing access the screen, click on "Transfer" and then "Stop". This forces the buffer to be emptied and sent to the file. The data is now read to be imported into a spread sheet.