# Ocean Sensor Systems, Inc.

## Wave Logger III, OSSI-010-010

### A Self Logging, Self Powered Wave Staff With a Self Grounding Coaxial Staff

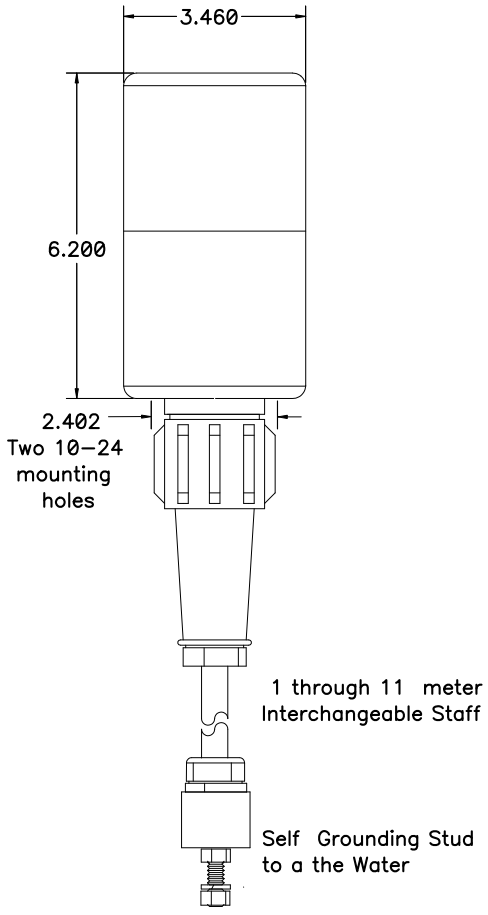
**General Description**

The OSSI-010-010 Wave Logger III combines the high performance Wave Staff circuit, a Compact Flash Card Data Logger, a rugged waterproof package and 4 C size Alkaline Batteries. A low power microprocessor stores the data on a Flash Card in an ASCII or Binary format with time and date. Then the Card is easily removed and can be read on any PC with a standard Flash Card Reader. The Logger will collect months of continuous data or years of burst data. The Wave Staff circuit is temperature stable providing repeatable measurements to better than 0.1%. The Wave Logger is easily programmed via a PC serial port using our Wave Logger Interface Software or a Hyper Terminal program. The Coaxial Cable Staff eliminates the need for a separate water ground wire and is easily changed.

**Features**

- **Compact Flash Card Data Storage up to 2GB**
- **Standard Card Reader Compatible**
- **4 C Size Alkaline Batteries**
- **Months of Continuous Operation**
- **Years of Burst Operation**
- **Rugged Sealed Waterproof Design**
- **Interchangeable Teflon Staff up to 11 meters**
- **Fully Programmable via RS232**
- **PC Interface Software**
- **Binary or ASCII Data Format**
- **Sample Rate Up to 30Hz**
- **Burst or Continuous Sampling**
- **Accuracy ± 0.25%, 20-80% of Full Scale**
- **Linearity 0.25%, 20-80% of Full Scale**
- **Resolution 0.025%**
- **Accuracy ± 1.0%, 0-100% of Full Scale**
- **Optional Air Temperature Logging**

**Dimension**



## Ordering Information

| Item Description | Staff Type | Part Number |
|---|---|---|
| 1/2 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-0.5C |
| 1 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-1C |
| 1.5 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-1.5C |
| 2 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-2C |
| 3 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-3C |
| 4 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-4C |
| 5 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-5C |
| 6 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-6C |
| 7 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-7C |
| 8 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-8C |
| 9 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-9C |
| 10 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-10C |
| 11 Meter Cable Staff III | Teflon Coaxial Cable | OSSI-010-010-11C |

Electrical Characteristics

| **Parameter** | **Conditions** | Min. | Typ. | Max. | **Units** |
|---|---|---|---|---|---|
| Battery Voltage | | 3.6 | | 10 | V |
| Battery Drain | Sleep mode | | 3 | | mW |
| Battery Drain | Continuous 20Hz Sample | | 6.8 | | mW |
| Data Accuracy | 20-80% of Full Scale | | | 0.25 | ±% |
| Data Accuracy | 0-100% of Full Scale | | | 1.0 | ±% |
| Data Resolution | Percent of Full Scale | | | 0.025 | % |
| Data Linearity | Percent of Full Scale | | | 0.25 | % |

## Data and Timing Characteristics

| **Parameter** | **Conditions** | **Min.** | **Typ.** | **Max.** | **Units** |
|---|---|---|---|---|---|
| Sample Frequency (Note 1) | Programmable | 2 | | 30 | Hz |
| Serial Baud Rate | | | 9.6 | | Kbaud |
| Water Level Data | All Staff Lengths, 0%-100%Full Scale | 0000 | | 4095 | Counts |
| Temperature Resolution | Per count from 0°C | | 0.0625 | | °C |
| Temperature Accuracy | -10°C to 65°C<br>-40°C to 65°C | | | 1.25<br>2.15 | ± °C |
| Flash Card Size | FAT16 format | 64 | | 2000 | Mbytes |
| Sample Capacity<br>2000 Mbyte Flash Card | Binary data<br>ASCII data | | | 936<br>388 | Msamples |
| Sample Burst Time | Programmable | 1 | | 60 | minutes |
| Sample Burst Interval | Programmable | 1 | | 60 | minutes |
| New File Interval | Programmable | 1 | | 255 | days |
| Real Time Clock Accuracy | | | | 20 | ppm |

Note 1: 20Hz maximum when Serial Data Output and Compact Flash Card are both enabled.

**Mechanical Characteristics**

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Environment | Waterproof | | 30 | | meters |
| Cable Tension | | 0 | 50 | 500 | Newtons |

## Battery Life:

Battery life is a function of Sample Frequency, Burst Time and the Burst Interval. It may be calculated with the following formula.

Calculate Drain power first: $Dp = Sp + ( Fp * ( Bt / Bi ))$

Where Dp = Drain power in mW

Bt = Burst Time in minutes

Bi = Burst Interval in minutes

Fp = Power used per programmed Sample Frequency in mW as follows.

2Hz= 6.5mW, 5Hz=6.7mW, 10Hz= 6.9mW, 20Hz=7.2mW, 30Hz=7.5mW

Sp = 3mW, Power used during sleep time in mW

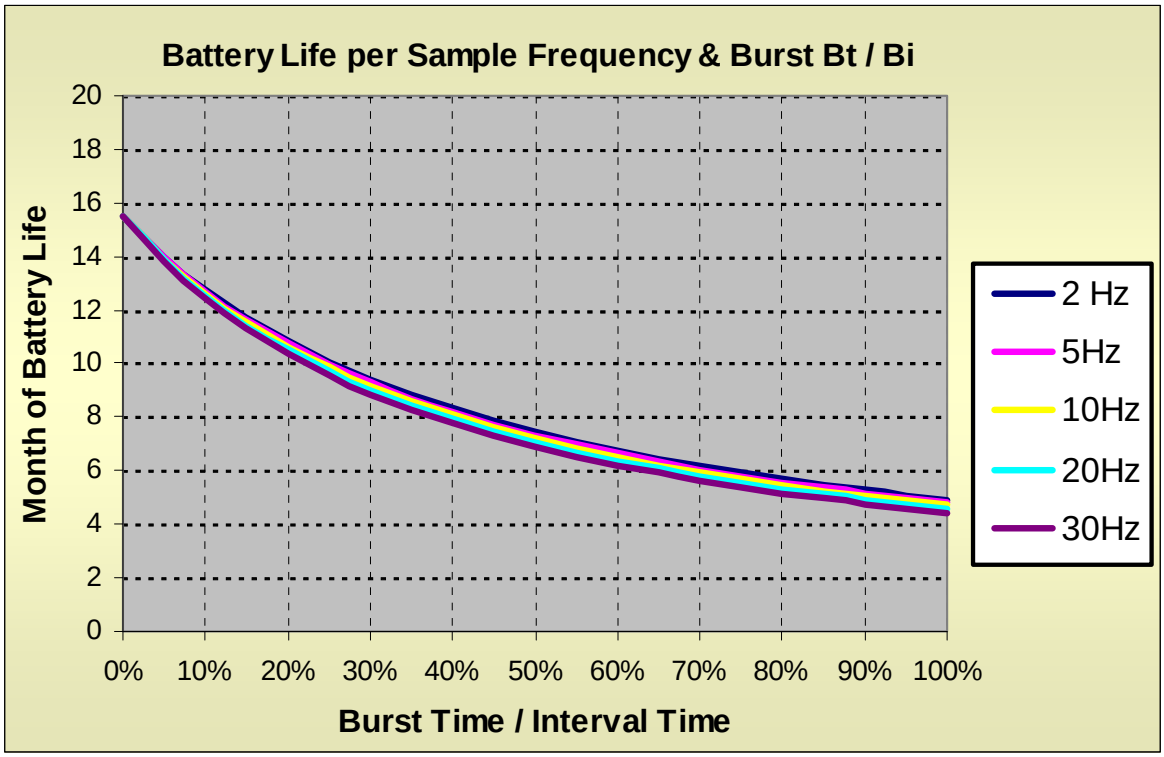
Now Calculate Battery Life: $Bl = Bc / Dp$

Where Bl = Battery Life in Hours

Bc = Battery Capacity in mWhr, 34,000mWhrs typ. for 4 C size alkaline batteries

Dp = Drain Power in mW

## Battery Life cont:




## Data Storage Time:

Data Storage Time is a function of Sample Frequency, Burst Time, Interval and Data format.

The number of months of Data Storage for a Compact Flash Card may be calculated with the following formula.

St = (Sm * CF) / (F * (Bt / Bi) * 2,626,560)

Where St = Storage Time in months

Sm = Samples per Mbyte per storage format type

194,000 samples per Mbyte for ASCII

176,000 samples per Mbyte for ASCII format with Air Temperature sampling

468,000 samples per Mbyte for Binary

453,000 samples per Mbyte for Binary format with Air Temperature sampling

CF = Compact Flash card size in Mbytes

F = Programmed Sample Frequency 2Hz, 5Hz, 10Hz, 20Hz, or 30Hz

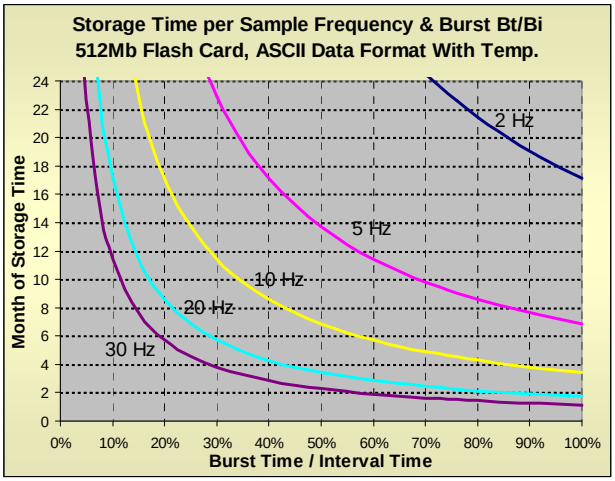
Bt = Burst Time in minutes

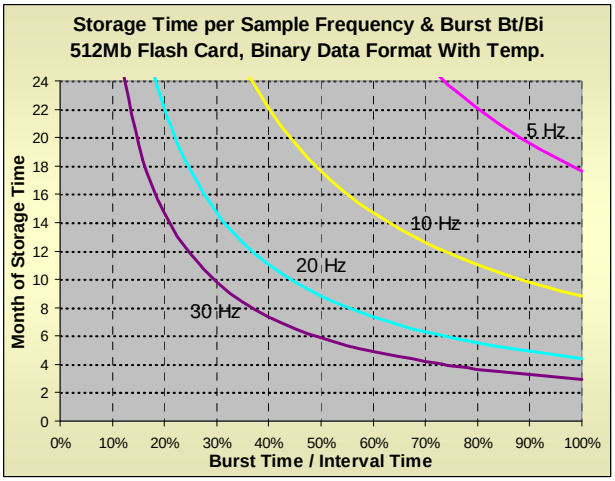
Bi = Burst Interval in minutes

2,626,560 = Seconds per month

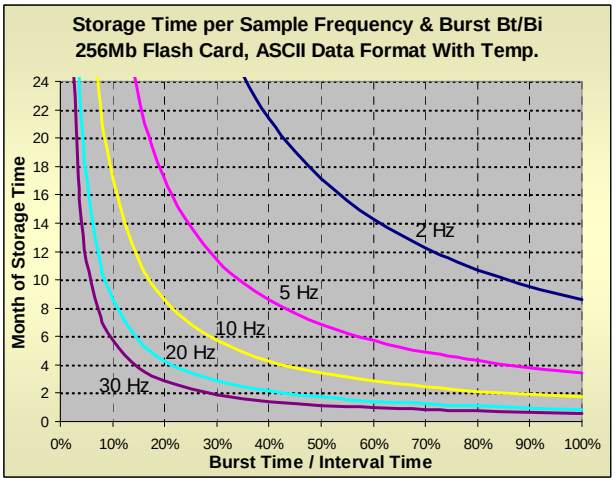
## Data Storage Time cont:

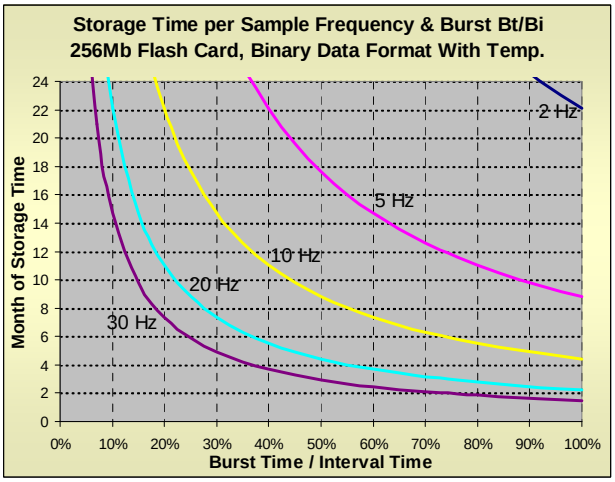
512 M byte Compact Flash card:



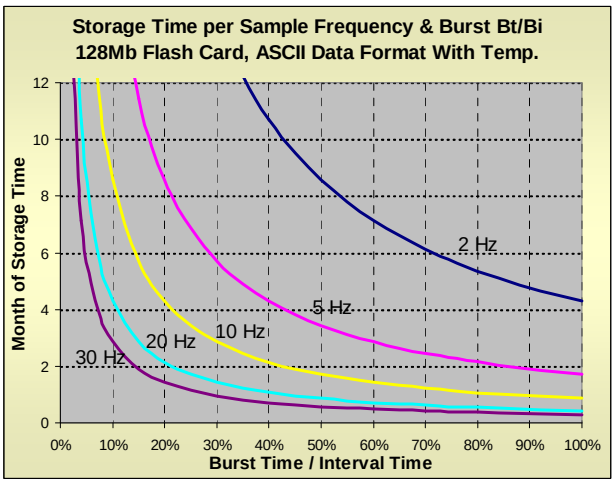



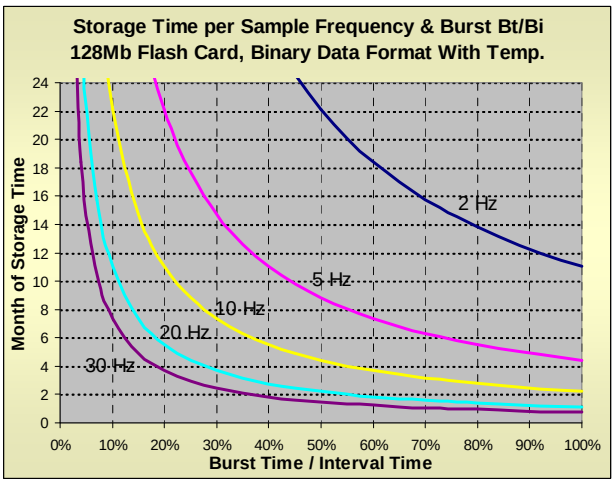

256 M byte Compact Flash card:




128 M byte Compact Flash card:



## Number of Files and File Name:

The maximum number of files that the Wave Logger can create is 512. The file names are automatically created starting at WLOG_000 and sequence up to WLOG_511. If previous files were left on the Compact Flash card those file names will be skipped. Note file name (location) WLOG_000 may be reserved and hidden by the Compact Flash Card manufacture.

## File Format:

A File Header is placed at the start of each file when created. The Header contains the creation time, date and configuration information. The time and date are also placed at the start of each new burst.

**New File Header Layout, Comma Delimited (separated)**

| Offset | Length & Type | File Status: Time, Date and Configuration Data |
|---|---|---|
| 00h | 4 ASCII bytes | Y00, to Y99, for Year 2000 to 2099 |
| 04h | 4 ASCII bytes | M01, to M12, for Month Jan to Dec |
| 08h | 4 ASCII bytes | D01, to D31, for Day of month 1 to 31 |
| 0Ch | 4 ASCII bytes | H00, to H23, for Hour of Day midnight to 23:00 hrs |
| 10h | 4 ASCII bytes | M00, to M59, for Minute of Hour 00 to 59 |
| 14h | 4 ASCII bytes | S00, to S59, for Second of Minute 00 to 59 |
| 18h | 4 ASCII bytes | F02, F05, F10, F20, F30, Sample Frequency in Hz |
| 1Ch | 4 ASCII bytes | L01, to L60, Burst Length 1 to 60 Minutes (note 1) |
| 20h | 4 ASCII bytes | I01, to I60, Burst Interval 1 to 60 Minutes |
| 24h | 5 ASCII bytes | N001, to N255, New File Interval 1 to 255 days (note 1) |
| 28h | 3 ASCII bytes | A?, Prescale value, set per Staff Length, see note 2 |
| 2Dh | 5 ASCII bytes | C???, Cycle count, set for Staff Length, see note 3 |
| 30h | 4 ASCII bytes | T00, Wave Logger Type 00 = OSSI-010-004 Version 1.0 |
| 35h | 6 ASCII bytes | R0000, Reserved |
| 3Bh | 4 Binary bytes | 0Dh 0Ah 0Dh 0Ah Two carriage return line feeds |

| |
|---|
| Note 1: 0 = continuous |
| Note 2: Note 2: A? See page 11 Staff Length Configuration Table, Column Staff Length Prescaler Hex Value and convert to decimal number |
| Note 3: C??? See page 11 Staff Length Configuration Table, Column Staff Length Counter Hex Value and convert to decimal number |

**New Burst Header Layout, Comma Delimited (separated)**

| Offset | Length & Type | Burst Status: Start Time and Date |
|---|---|---|
| 3Fh | 4 ASCII bytes | Y00, to Y99, for Year 2000 to 2099 |
| 43h | 4 ASCII bytes | M01, to M12, for Month Jan to Dec |
| 47h | 4 ASCII bytes | D01, to D31, for Day of month 1 to 31 |
| 4Bh | 4 ASCII bytes | H00, to H23, for Hour of Day midnight to 23:00 hrs |
| 4Fh | 4 ASCII bytes | M00, to M59, for Minute of Hour 00 to 59 |
| 53h | 4 ASCII bytes | S00, to S59, for Second of Minute 00 to 59 |
| 57h | 2 Binary bytes | 0Dh 0Ah One carriage return line feed |

## File Data Format:

The file data may be stored in ASCII or Binary format and with or without Air Temperature. After each set of 12 Wave Data samples stored, an Air Temperature sample is inserted if the temperature option is selected. Then a carriage return line feed is added if in ASCII format. In binary format two hex FE bytes will be added. At the end of each burst two carriage return line feeds are added in ASCII format or two hex FF bytes in binary format.

**Sampled Data in ASCII Format, Comma Delimited with Air Temperature**

| Offset | Length & Type | Data Description |
|---|---|---|
| 59h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #1 0 to Full Scale |
| 5E | 5 ASCII bytes | 0000, to 4095, Water Level Sample #2 0 to Full Scale |
| 63h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #3 0 to Full Scale |
| 68h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #4 0 to Full Scale |
| 6Dh | 5 ASCII bytes | 0000, to 4095, Water Level Sample #5 0 to Full Scale |
| 72h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #6 0 to Full Scale |
| 77h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #7 0 to Full Scale |
| 7Ch | 5 ASCII bytes | 0000, to 4095, Water Level Sample #8 0 to Full Scale |
| 81h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #9 0 to Full Scale |
| 86h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #10 0 to Full Scale |
| 8Bh | 5 ASCII bytes | 0000, to 4095, Water Level Sample #11 0 to Full Scale |
| 90h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #12 0 to Full Scale |
| 95h | 6 ASCII bytes | -0640, To +1024, Air Temp. -40 to +65 C, 0.0625 C per count |
| 9Bh | 2 Binary bytes | 0Dh 0Ah One carriage return line feed |
| 9Dh | 5 ASCII bytes | 0000, to 4095, Water Level Sample #13 0 to Full Scale |
| ⋮ | ⋮ | ⋮ |
| ??h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #?? 0 to Full Scale |
| ??h | 4 Binary bytes | 0Dh 0Ah 0Dh 0Ah Two carriage return line feeds |

**Sampled Data in ASCII Format, Comma Delimited without Air Temperature**

| Offset | Length &/ Type | Data Description |
|---|---|---|
| 59h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #1 0 to Full Scale |
| 5E | 5 ASCII bytes | 0000, to 4095, Water Level Sample #2 0 to Full Scale |
| 63h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #3 0 to Full Scale |
| 68h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #4 0 to Full Scale |
| 6Dh | 5 ASCII bytes | 0000, to 4095, Water Level Sample #5 0 to Full Scale |
| 72h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #6 0 to Full Scale |
| 77h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #7 0 to Full Scale |
| 7Ch | 5 ASCII bytes | 0000, to 4095, Water Level Sample #8 0 to Full Scale |
| 81h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #9 0 to Full Scale |
| 86h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #10 0 to Full Scale |
| 8Bh | 5 ASCII bytes | 0000, to 4095, Water Level Sample #11 0 to Full Scale |
| 90h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #12 0 to Full Scale |
| 95h | 2 Binary bytes | 0Dh 0Ah One carriage return line feed |
| 97h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #13 0 to Full Scale |
| ⋮ | ⋮ | ⋮ |
| ??h | 5 ASCII bytes | 0000, to 4095, Water Level Sample #?? 0 to Full Scale |
| ??h | 4 Binary bytes | 0Dh 0Ah 0Dh 0Ah Two carriage return line feeds |

## File Data Format cont:

**Sampled Data in Binary Format with Air Temperature:**

| Offset | Length & Type | Data Description |
|---|---|---|
| 59h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #1 0 to Full Scale |
| 5Bh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #2 0 to Full Scale |
| 5Dh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #3 0 to Full Scale |
| 5Eh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #4 0 to Full Scale |
| 61h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #5 0 to Full Scale |
| 63h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #6 0 to Full Scale |
| 65h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #7 0 to Full Scale |
| 67h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #8 0 to Full Scale |
| 69h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #9 0 to Full Scale |
| 6Bh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #10 0 to Full Scale |
| 6Dh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #11 0 to Full Scale |
| 6Fh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #12 0 to Full Scale |
| 71h | 2 Binary bytes | 82 80h to 04 00h, Air Temp. -40 to +65 C, 0.0625 C per count |
| 73h | 2 Binary bytes | 0Dh 0Ah One carriage return line feed |
| 75h | 2 Binary bytes | FE FEh every 12 samples |
| | | |
| ??h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #?? 0 to Full Scale |
| ??h | 2 Binary bytes | FF FFh at end of each Burst |

**Sampled Data in Binary Format without Air Temperature:**

| Offset | Length / Type | Data Description |
|---|---|---|
| 59h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #1 0 to Full Scale |
| 5Bh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #2 0 to Full Scale |
| 5Dh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #3 0 to Full Scale |
| 5Eh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #4 0 to Full Scale |
| 61h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #5 0 to Full Scale |
| 63h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #6 0 to Full Scale |
| 65h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #7 0 to Full Scale |
| 67h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #8 0 to Full Scale |
| 69h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #9 0 to Full Scale |
| 6Bh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #10 0 to Full Scale |
| 6Dh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #11 0 to Full Scale |
| 6Fh | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #12 0 to Full Scale |
| 71h | 2 Binary bytes | 0Dh 0Ah One carriage return line feed |
| 73h | 2 Binary bytes | FE FEh every 12 samples |
| | | |
| ??h | 2 Binary bytes | 00 00h, to 0F FFh, Water Level Sample #?? 0 to Full Scale |
| ??h | 2 Binary bytes | FF FFh at end of each Burst |
| ??h | 2 Binary bytes | FF FFh at end of each Burst |

## File Data Format cont:

**Example - Sampled Data in ASCII Format Comma Delimited with Air Temperature Viewed in notepad:**

Y02,M11,D09,H21,M48,S10,F30,L02,I01,N001,A1,C073,T00,R0000,

Y02,M11,D09,H21,M49,S00,
2177,2177,2178,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0388,
2177,2177,2177,2177,2177,2177,2177,2177,2178,2177,2177,2178,+0388,
2177,2177,2177,2177,2177,2178,2177,2177,2178,2177,2177,2177,+0388,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0389,
2177,2177,2177,2177,2177,2177,2178,2177,2177,2177,2177,2177,+0387,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0388,
2177,2177,2177,2177,2177,2177,2177,2177,2178,2177,2177,2178,+0388,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0386,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0388,
2177,2178,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0387,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0386,
2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,2177,+0387,
2177,2177,2177,2177,2177,2177,2177,

Y02,M11,D09,H21,M51,S00,
2177,2178,2178,2178,2177,2178,2178,2178,2178,2178,2177,2177,+0386,
2177,2178,2177,2178,2177,2177,2177,2177,2177,2177,2177,2178,+0385,

**Example - Sampled Data in ASCII Format Comma Delimited without Air Temperature Viewed in notepad:**

Y02,M11,D09,H21,M56,S13,F30,L02,I01,N001,A1,C073,T00,R0000,

Y02,M11,D09,H21,M57,S00,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2594,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2594,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2594,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2592,2592,2593,2593,2593,2593,2593,
2593,2594,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,2593,
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Y02,M11,D09,H21,M59,S00,
2593,2592,2593,2593,2593,2592,2593,2593,2593,2593,2592,2593,
2593,2593,2592,2593,2593,2593,2593,2593,2592,2593,2593,2593,

## File Format cont:

**Example - Sampled Data in Binary Format, with Air Temperature:**

```
          0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
00000000 59 30 39 2C 4D 30 38 2C 44 32 32 2C 48 31 31 2C Y09,M08,D22,H11,
00000010 4D 35 37 2C 53 33 34 2C 46 30 35 2C 4C 30 31 2C M57,S34,F05,L01,
00000020 49 30 32 2C 4E 30 30 30 2C 41 30 2C 43 31 36 33 I02,N000,A0,C163
00000030 2C 54 30 30 2C 52 30 30 30 30 2C 0D 0A FF FF 59 ,T00,R0000,..ÿÿY
00000040 30 39 2C 4D 30 38 2C 44 32 32 2C 48 31 31 2C 4D 09,M08,D22,H11,M
00000050 35 38 2C 53 30 30 2C FE FE 05 A4 05 A4 05 A4 05 58,S00,þþ.¤.¤.¤.
00000060 A4 05 A4 05 A4 05 A4 05 A4 05 A4 05 A4 05 A4 05 ¤.¤.¤.¤.¤.¤.¤.¤.
00000070 A4 01 96 FE FE 05 A4 05 A4 05 A4 05 A4 05 A4 05 ¤.–þþ.¤.¤.¤.¤.¤.
00000080 A5 05 A5 05 A5 05 A5 ¥.¥.¥.¥
```

## Communications and Configuration:

The Wave Logger may be configured with a PC's RS232 serial port. Use our convenient programming software or a Hyper Terminal with the following commands. The serial port settings on your computer are as follows: 9600 baud, 8 data bits, parity none, 1 stop bit, and no flow control.

Commands are two bytes and Acknowledgements are 4 bytes

**Commands**:
st = Stop running sample routine and wait for command instructions.
w = Write configuration data to Wave Logger from PC.
r = Read back configuration data to PC.
i = Read back ID number to PC.
g = Go run main sample and store data to Compact Flash card routine.

**Acknowledgements**:
STOK = Acknowledge Stop running command and wait for command instruction.
WOK = Acknowledge Write configuration and wait to receive data from PC.
ROK = Acknowledge Transmit configuration and transmit configuration data to PC.
IOK = Acknowledge ID Command and transmit ID (serial) number to PC.
GOK = Acknowledge go command and go run main sample and store data routine.
BAD = Receive failure or check sum on configuration data error
DOW = Do, write configure Wave Logger. (Wave Logger has not been configured)
DOK = Data Ok, Received configuration string with correct check sum

**Monitoring the sampled data:**
The sampled data may be monitored via the RS232 serial port if the configuration control byte is set to enable the RS232 port:
Example with Air Temperature enabled:
2345 +0384
: :
2345 +0384
Example without Air Temperature enabled:
2345
:
2345

## Configuring the Wave Logger:

To Configure the Wave Logger a 44 comma separated 2 ASCII character string must be sent to the Wave Logger.

Configuration String, Comma Delimited, Transmitted via RS232 serial port to Wave Logger

| Offset | Length & Type | Name | Range and Description |
|---|---|---|---|
| 00h | 3 ASCII bytes | Sensor Type | 00, = Wave logger |
| 03h | 3 ASCII bytes | Staff length Counter | 00, to FF, Hex value determined by Staff Length, See Table below "Staff Length Configuration values" |
| 06h | 3 ASCII bytes | Staff length Prescaler | XX, Hex value determined by Staff Length, See Table below "Staff Length Configuration values" |
| 09h | 6 ASCII bytes | Gain Correction | 00,00, to FF,FF, 16 bit unsigned Hex value, Gain correction value 1000 Hex = 0% 119A Hex = +10% 0E66 Hex = -10% |
| 0Fh | 6 ASCII bytes | Zero Correction | 80,00, to 7F,FF, 16bit Sign 2s comp. Hex value, Zero correction value 00,00, = 0 % 00,05, = +5 counts FF,FB = 5 counts, Correction is 1 for 1 |
| 15h | 3 ASCII bytes | Sample Frequency | 02, or 05, or 0A, or 14, or 1E, Hex. Selects Sample Frequency 02, or 05, or 10, or 20, or 30 Hz |
| 18h | 3 ASCII bytes | Burst Length | 01, to 3C Hex, Burst Time value, 1 to 60 Minutes (note 4) |
| 1Bh | 3 ASCII bytes | Burst Interval | 01, to 3C Hex , Burst Interval value, 1 to 60 Minutes |
| 1Eh | 3 ASCII bytes | New File Interval | 01, to FF Hex value, New File Interval 1 to 255 days (note 4) |
| 21h | 3 ASCII bytes | Set RTC seconds | 00, to 59 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 24h | 3 ASCII bytes | Set RTC Minutes | 00, to 59 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 27h | 3 ASCII bytes | Set RTC Hours | 00, to 23 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 2Ah | 3 ASCII bytes | Set RTC Day of week | 00, to 07 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 2Dh | 3 ASCII bytes | Set RTC Date | 01, to 31 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 30h | 3 ASCII bytes | Set RTC Month | 01, to 12 Dec value, Real Time Clock, set only when control byte bit 3 is set |
| 33h | 3 ASCII bytes | Set RTC Year | 00, to 99 Dec value, = 2000 to 2099, set only when control byte bit 3 is set |
| 36h | 3 ASCII bytes | Start Minutes | 00, to 59 Start logging data on compact Flash Card |
| 39h | 3 ASCII bytes | Start Hours | 00, to 59 Start logging data on compact Flash Card |
| 3Ch | 3 ASCII bytes | Start Date | 00, to 31, Start logging data on compact Flash Card |
| 3Fh | 3 ASCII bytes | Start Month | 00, to 12, Start logging data on compact Flash Card |
| 42h | 3 ASCII bytes | Start Year | 00, to 99 Start logging data on compact Flash Card |
| 45h | 54 ASCII Bytes | (reserved) | 00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00, = Reserved space, 18 comma delimited 3 ASCII char. |
| 7Bh | 3 ASCII bytes | CF Status | 00, read only, Compact Flash status |
| 7Eh | 3 ASCII bytes | Control Byte | See Control Byte Table below |
| 81h | 3 ASCII bytes | Check Sum | 00, to FF, Value is the sum of the Hex values in offset 00h to 81h (Note: Treat all Dec. values as Hex Values) |

Note 4: 00, = continuous

## Staff Length Configuration values for Coax Cable Staff

| Staff type | Staff Length Meters | Staff Length Counter Hex Value at offset address 03h | Staff Length Prescaler Hex Value at offset address 06h |
|---|---|---|---|
| Coax Cable Staff | 0.25 | C7 | 2 |
| Coax Cable Staff | 0.5 | C7 | 1 |
| Coax Cable Staff | 1 | C7 | 0 |
| Coax Cable Staff | 1.5 | 85 | 0 |
| Coax Cable Staff | 2 | C7 | 8 |
| Coax Cable Staff | 2.5 | 9F | 8 |
| Coax Cable Staff | 3 | 85 | 8 |
| Coax Cable Staff | 3.5 | 72 | 8 |
| Coax Cable Staff | 4 | 64 | 8 |
| Coax Cable Staff | 4.5 | 58 | 8 |
| Coax Cable Staff | 5 | 50 | 8 |
| Coax Cable Staff | 5.5 | 48 | 8 |
| Coax Cable Staff | 6 | 42 | 8 |
| Coax Cable Staff | 6.5 | 3D | 8 |
| Coax Cable Staff | 7 | 39 | 8 |
| Coax Cable Staff | 7.5 | 35 | 8 |
| Coax Cable Staff | 8 | 32 | 8 |
| Coax Cable Staff | 8.5 | 2F | 8 |
| Coax Cable Staff | 9 | 2C | 8 |
| Coax Cable Staff | 9.5 | 2A | 8 |
| Coax Cable Staff | 10 | 28 | 8 |
| Coax Cable Staff | 10.5 | 26 | 8 |
| Coax Cable Staff | 11 | 24 | 8 |

| Control Byte | |
|---|---|
| Bit 7 | 0 |
| Bit 6 | 0 |
| Bit 5 | 1 = Enable Start Sampling Time control |
| | 0 = Start Sampling Immediately |
| Bit 4 | 1 = Air Temp. enabled |
| | 0 = Air Temp disabled |
| Bit 3 | 1 = Set Real Time Clock Time and Date per this file |
| | 0 = No change to Real Time Clock |
| Bit 2 | 0 = 9600 baud, default |
| Bit 1 | 1 = RS232 output enabled battery power drain 18 mW in cont. sample mode |
| | 0 = RS232 output disabled, battery power drain 5 mW in cont. sample mode |
| | Note Transmit data always sent in ASCII format |
| Bit 0 | 1 = BIN Data carriage return every 60 digits file stored |
| | 0 = ASCII Data File comma delimited and carriage return every 60 char. |

**Sample 44 comma separated 2 ASCII character Configuring string:**
Example: 3 meter Staff, 10Hz sample rate, 5 min. burst time, 30 min. burst interval, 1 day new file, clock 3:10:00 PM Saturday May 19,2003, start sampling immediately, air temp enabled, set real time clock, RS232 enabled, ASCII data
00,49,01,10,00,FE,0B,0A,05,1E,01,00,10,15,07,17,05,03,00,00,00,00,00,00,00,00,00,00,00,00
,00,00,00,00,00,00,00,00,00,00,00,1A,F6

## Checking the Battery Pack:

Measuring the open circuit voltage of the Alkaline battery pack to determine the amount of service life will only yield a rough estimate.

An open circuit reading of 6 volts or greater for the 4 cell Alkaline Battery Pack indicates essentially that the battery pack has at least 90% capacity.

## Installing and Removing the Compact Flash card:

Install the Compact Flash card with the top label facing down as viewed below. If the power plug is connected the File Status LED will turn on for 3 seconds. If the power plug is not connected the File Status LED will turn on for 3 seconds when it is connected. If the card size or format is incorrect the File Status LED will blink fast for 4 seconds. If the battery voltage is low the LED will not turn on at all.

To remove the card, first press the Close File Button. The File Status LED will indicate that it's ok to unplug the card by a continuous 1 second on and 1 second off blinking. The File Status LED will stop blinking when the card is removed. If the card is removed before pressing the Close File Button **the last file will be corrupted.** The File Status LED will blink fast for 4 seconds to indicate this error.

## Installing and Removing the Compact Flash Card cont.: