## OutputFormat=0 (raw frequencies and voltages in Hex)

Data is output in the order listed, with no spaces or commas between parameters. Shown with each parameter is the number of digits, and how to calculate the parameter from the data (use the decimal equivalent of the hex data in the equations).

1. Temperature A/D counts = ttttt
2. Conductivity frequency (Hz) = cccccc / 256
3. (if **PType=1**) Strain-gauge pressure sensor
   pressure A/D counts = pppppp
4. (if **PType=1**) Strain-gauge pressure sensor
   pressure temperature compensation voltage = vvvv / 13,107
5. (if **PType=3**) Quartz pressure sensor pressure
   pressure frequency (Hz) = pppppp / 256
6. (if **PType=3**) Quartz pressure sensor temperature compensation
   temperature compensation voltage = vvvv / 13,107
7. (if **Volt0=Y**) External voltage 0= vvvv / 13,107
8. (if **Volt1=Y**) External voltage 1 = vvvv / 13,107
9. (if **Volt2=Y**) External voltage 2 = vvvv / 13,107
10. (if **Volt3=Y**) External voltage 3 = vvvv / 13,107
11. (if **Volt4=Y**) External voltage 4 = vvvv / 13,107
12. (if **Volt5=Y**) External voltage 5 = vvvv / 13,107
13. (if **SBE38=Y**) SBE 38 temperature (°C, ITS-90) = (ttttt / 100,000) – 10
14. (if **WetLabs=Y**) WET Labs RS-232 sensor = wwwwxxxxyyyy
    where wwww, xxxx, and yyyy are raw signal counts for each sensor;
    yyyy all 0's for dual sensor; xxxx and yyyy all 0's for single sensor
15. (if **GTD=Y** or **DualGTD=Y**)
    GTD #1 pressure (millibars) = pppppppp / 100,000
16. (if **GTD=Y** or **DualGTD=Y**)
    GTD #1 temperature (°C, ITS-90) = (ttttt / 100,000) – 10
17. (if **DualGTD=Y**) GTD #2 pressure (millibars) = pppppppp / 100,000
18. (if **DualGTD=Y**)
    GTD #2 temperature (°C, ITS-90) = (ttttt / 100,000) – 10
19. (if **Optode=Y**) Optode oxygen (micromoles/liter) = (oooooo / 10,000) – 10
20. (if **SBE63=Y**) SBE 63 oxygen phase (µsec) = (oooooo / 100,000) – 10
21. (if **SBE63=Y**) SBE 63 oxygen temperature voltage = (ttttt / 1,000,000) – 1
22. (if **SeaFET=Y**)
    SeaFET internal reference cell voltage (V) = (iiiiiii / 1,000,000) – 8
    SeaFET external reference cell voltage (V) = (eeeeeee / 1,000,000) - 8
23. Time (**Moored mode [MM] only**)
    seconds since January 1, 2000 = ssssssss

**Notes:**

- If you will be using Seasave to acquire real-time data, you must set **OutputFormat=0**.
- When using Seaterm232's Upload menu, Seaterm232 always uploads data from memory in raw hex, regardless of the user-programmed format, providing the data in a format that SBE Data Processing can use.
- Our software uses the equations shown to perform these calculations; alternatively, you can use the equations to develop your own processing software.
- The pressure sensor is an absolute sensor, so its **raw** output includes the effect of atmospheric pressure (14.7 psi). As shown on the Calibration Sheet, Sea-Bird's calibration (and resulting calibration coefficients) is in terms of psia. However, when outputting pressure in **engineering units**, the 19*plus* V2 outputs pressure relative to the ocean surface (i.e., at the surface the output pressure is 0 decibars). The 19*plus* V2 uses the following equation to convert psia to decibars:
  pressure (dbar) =
  [pressure (psia) - 14.7] * 0.689476

*Example*: Profiling mode, strain-gauge pressure sensor, 2 external voltages sampled, example scan = ttttttccccccppppppvvvvvvvvvvvv
= 0A53711BC7220C14C17D8203050594

- Temperature = ttttt = 0A5371 (676721 decimal);
  temperature A/D counts = 676721
- Conductivity = cccccc = 1BC722 (1820450 decimal);
  conductivity frequency = 1820450 / 256 = 7111.133 Hz
- Pressure = pppppp = 0C14C1 (791745 decimal);
  pressure A/D counts = 791745
- Pressure sensor temperature compensation =
  vvvv = 7D82 (32,130 decimal);
  Pressure temperature = 32,130 / 13,107 = 2.4514 volts
- First external voltage = vvvv = 0305 (773 decimal);
  voltage = 773 / 13,107 = 0.0590 volts
- Second external voltage = vvvv = 0594 (1428 decimal);
  voltage = 1428 / 13,107 = 0.1089 volts