

# Satlantic ISUS Operation

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## Setting up and using the ISUS with Seabird CTD

1). Connect the ISUS Analog Out port to a 6-pin CTD port – we use voltage channel 6 on a universal Y-cable, allowing pH to occupy channel 7. Map that port in Seasave as user-polynomial; under the user-polynomial, enter: A0 = - 7.1168, A1 = 27.155.

These are linear regression coefficients from an earlier CalCOFI (1501NH).

2). Connect the battery cable to the ISUS fifteen minutes **prior** to deployment to "warm-up". This improves data quality & stability.

3). SIO-CalCOFI uses a 10m charging cable strung from an AC adapter in the wetlab to the battery mounted on the CTD-rosette. Between casts, the battery is left mounted on the rosette and charged. This method has improved the reliability of the ISUS to have adequate power for the full cast, provided the battery has been charged between deployments.

Occasionally, the CTD operator forgets to unplug the ISUS and it logs deck data until discovered - usually next station, draining the battery & filling the ISUS internal memory.

The original method was swapping batteries every three 500m cast then charging inside the ship. The Wetlabs 12v lead-acid batteries usually lasted ~3.5 hours before requiring removal and charging. Charging takes 12-15hrs so three primary batteries were rotated.

Regardless of charging method, be sure to unstopper the battery's vent plug to allow hydrogen emissions. Re-stopper, greasing lightly if necessary, before mounting the fresh battery on rosette. When charging on the rosette, protect from seawater intrusion by keeping the vent-plug closed but vent the battery before deployment.

4). Remove the ISUS on casts deeper than 1000m. The 512kb memory allows storage of ~75 casts without the need to download data and purge the memory. Data are downloaded by connecting the ISUS to a Windows laptop's serial port. If the ISUS memory is full, the sensor will still work but the sensor data profile will "stair-step" significantly.

- For v2 :
  - Use terminal.exe to handshake with the ISUS, settings are 38400,n,8,1. You will see the ISUS boot messages and after several seconds it will start counting down for data acquisition.
  - Press S to stop the countdown then M (or H) to get the system menu, follow the prompts.
  - Use the file commands to delete all the data or download all data.
    - To download data
      - initiate the download in terminal.exe by sending the command to the ISUS, selecting 115200 baud
      - disconnect terminal.exe then switch to HyperTerminal (Windows default com program – I usually have it already setup in the background at 115200,n,8,1)
      - connect to the ISUS then *Transfer/Receive File*, select *yodem-g*.  
It will download **three** files then **requires** you to *Transfer/Receive File YModem-G* again, repeat 10x to download 30 files.
    - Delete all data to free up the memory.
    - Collect more data, repeat step 4 as necessary.
- For v3:
  - connect the ISUS USB connector to laptop's USB port
  - run Satlantic ISUScom program on the laptop then connect the battery to the ISUS if needed to power up the sensor
  - download all the data files then delete them. This should free up the internal memory for the next set of casts.