**Workhorse Sentinel 1200 kHz Deployment Setup**

1. Check ADCP for notation that it may have been used in a prior deployment or testing. Open ADCP to check O-rings and lubricant along with the hardware (memory cards). Check the dummy plug for a good seal.
2. Change clock settings on the PC to UTC for the instruments reference.

**Quickstart commands:**

In WinSC, open a Terminal session to run the commands:

> **af** (compass calibration, see 9 – 12 below)

> **pc1** (beam continuity test, see below)

> **deploy?** (Lists all current settings on the ADCP)

> **cs** (deploys the ADCP – make sure you really want this to occur!)

Otherwise, follow the steps below to do all calibrations and settings within a deployment set up

**WinSc Software**

1. Connect the ADCP to PC by the appropriate USB Serial Converter and male plug for the ADCP. Connect the power box to the wall and to the black cable.
2. To connect with the ADCP, plug in the USB to COM converter into the PC and go to the “Control Panel” application for Windows. Select “Devices and Printers” à Find the USB Serial Converter. Left Click on the icon and select “properties” à Select the heading “Hardware”. Take note of the specific COM # (EX: COM 8)
3. Open **Win SC** and **exit out of the “Welcome”** window by clicking the “**X**” or selecting “**Cancel**”.
4. Go to “**ADCP**” à “**COMM Settings**” à Select the COM # that was noted from Step 2. Click “**Apply**” à “**OK**”.
5. Go to “**File**” à “**New Deployment**” à Exit out of the planning screen. It will be completed after the compass calibration of the ADCP. This creates a new deployment file, which is not ready to be completed yet.
6. Go to “**File**” à “**Terminal**…” à ADCP Terminal will pop up. Select “**File**” à “**Break**”.
7. To start the “Compass Calibration” enter > “**af**” in the command line of the ADCP Terminal. Type “**b**” in the command line to select “remove hard and soft iron error”. Type “**a**” to start the calibration procedure. The ADCP unit will need to be tilted in any direction so that its combined tilt angle will be between 10-20 degrees. If the tilt measure meets the criteria it will prompt “**ok tilt**” enter “**y**” to continue.
8. Follow the instructions for the “**Field Calibration Procedure**”. Rotate less than 5 degrees/sec!
9. Press any key to continue. It will now prompt you to rotate the ADCP to a different sitting position at the 10–20-degree inclination. Until it registers a “**Tilt is OK**”, you must move the unit around in different positions.
10. Next, perform the “**Second Rotation**” à then the Final “**Verification Rotation**” for the compass calibration. The “**total error after calibration**” needs to be less than 2 degrees. Record your error compass calibration error for notes on deployment log. Run the command > “**cz**” before exiting the ADCP Terminal.
11. Exit the ADCP Terminal.
12. Next, Select “**Functions**” à “**Deployment Wizard**”. Click “**Next**”
13. Select “**Configure an ADCP for a new Deployment**” à Click “**Next**” if the window comes up. If not continue with the Plan ADCP Deployment Wizard, as it is already set up for configuring a new deployment.
14. A planning wizard window will open to being the instrument configuration process. Select “**Next**”.
15. The PlanADCP Basics window will open. PlanADCP is the planning window for sampling and deployment specifications.
    1. Select “**Workhorse** **Sentinel**” 🡪 click “**Next**”.
    2. Select “**1200 kHz**” 🡪 “**Next**”
    3. Battery pack selection is **2** for an equivalent of 800 Whrs. Click “**Next**”.
    4. Deployment environment. Select “**Ocean**” 🡪 “**Next**”.
    5. Application: Select “**Wave Gauge**” 🡪 “Next”.
    6. Depth range of measurement: Input depth in meters for deployment location (**10 m**) 🡪 “**Next**”.
    7. Resolution: The depth cell size can be modified in a later window before exiting PlanADCP 🡪 “**Next**”.
    8. Data Storage: Internal memory cards are stored in the unit with a capacity of **1000 MB** 🡪 “**Next**”.
    9. Wave Gauge Timing: Wave burst duration (**20 minutes**) & Time between wave bursts **(40 minutes**) 🡪 “**Next**”.
    10. Water profile timing: **12** measurements (ensembles)/hour 🡪 “**Next**”.
    11. Duration: Anticipated duration of deployment **(22 days**) 🡪 “**Next**”,
    12. Click “**Finish**” and go to the advanced window to modify and ensure accuracy of deployment plans.
    13. In “Environmental Setup” -
        1. check for the correct transducer depth in **meters**.
        2. salinity in ppt = **35**
        3. the magnetic variation can be computed by entering the lat & lon for the approximate deployment location at this website: <https://www.ngdc.noaa.gov/geomag/calculators/magcalc.shtml> (**-9** **deg**)
        4. Temperature in degrees Celsius for the area of deployment: **25 deg C**.
    14. In “**Deployment Timing Setup**”, uncheck the box for “**Ping Immediately After Deployment**”. Set a date and start time for the ADCP to begin sampling.
    15. Within “**Profiling Setup**” –
        1. modify the pings per ensemble to **600**
        2. ensure the number of depth cells is **+3 meter** above deployment depth to account for tidal fluctuations and waves
        3. depth cell size of **0.5 m**.
    16. Click “**backToSC**”. The deployment and sampling configuration is complete.
16. Set ADCP’s Clock: Click “**Next**”.
17. Compass Verification: Click “**Next**”. Follow the prompt from the WinSC commands to ensure correct compass verification. The instrument will need to be rotated 360 degrees at an inclination of 10-20 degrees. A total error of < 2.0 degrees.
18. Pre-deployment test: Click “**Next**”.
    1. The ADCP terminal window will run diagnostics and quality checks on the instrument’s internal hardware. It will prompt you to look over the diagnostics and press any key to continue.
    2. Continue in the ADCP Terminal to the “**BEAM CONTINUITY TEST**”. Here you will need to rub each of the four beams until it registers a “**PASS**” à the terminal will run the command > **cz** when finished with the test.
19. Zero Pressure sensor: Click “**Next**”.
20. Erase Recorder Data: **Uncheck the box** 🡪 “**Next**”.
21. Deploy the ADCP: Clicking “**Next**” will complete the deployment wizard. Naming the deployment file by clicking “**yes**” and selecting a file directory along with a directory name. A Win SC window will prompt you to disconnect from the device. Do so by unplugging the cord at bottom of the ADCP.