

smartOar®

Instrumented Oar User's Guide

Version 4.0 For Oar Software Rev 7.3 or higher

smartOar®

Real-Time Force Curve Feedback

Questions?

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smartOar®: *The Real-Time Force Curve Feedback System*

smartOar® oars share a common platform and work in similar ways. All can be used with the Coaches Tablet or with the Android App. They also operate in a unique self-record manner where the oars record together without the need of the Coaches Tablet or App. Data is then downloaded from the oars, using a smartOar® Download Box into a Windows PC for viewing and analysis. The term Oars and Oarpods are used interchangeably. This document assume the Oarpod software revision is 7.2 or higher.

1. Charging the Oars

Before using, you must charge your **smartOar®** oars). Charge your oars using the provided quad USB chargers and charging cables. For best results, charge the oars until the battery reaches full charge (up to 9 hours of charging). We recommend connecting the oars to the chargers **BEFORE** plugging the chargers into the wall outlets and unplugging from the wall outlets before removing the charging cables from the oars.

The red light indicates that the oar is charging and turns off when the oar reaches full charge. A full charge lasts for about 10 hours when used with the coaches tablet and longer in self-record. During operation, if the red light comes on, you have less than 10 minutes of operation left before the oar turns off. If low battery is detected when the oar is first turned on, the red light will flash 20 times then the oar will turn off. When either condition occurs, charge the oar as soon as possible.

smartOar® charging cables end in a small board with three gold prongs. The cable plugs into an Oarpod running parallel to the Oarpod with the cable alongside the handle. Two of the prongs plug into the Oarpod. The third prong fits along the side of the Oarpod. This prevents incorrect insertion of the other two prongs that supply power to charge the Oarpod battery. **The Oarpod connectors can be damaged if the prongs aren't inserted straight into the Oarpod and removed by pulling straight out of the Oarpod.** They can also be damaged by salt water. We no longer recommend using smartOars in salt water although we have provided oars with extra protection from the salt in the past. If you must row on salt water, talk to us first.

NOTE: *Early versions of the charging cables plug into the oar with the cable perpendicular to the oar shaft.*

Each instrumented oar comes with a charging cable. An AC powered USB Quad Charger comes with each one to four oars purchased. Quad battery-powered USB chargers are available inexpensively from sources like Amazon and are ideal when AC power is not accessible. For further information, contact sales@smartoar.com

NOTE: *smartOar® batteries should last at least 3 years. However, much like cellphones, the life of all such batteries depends primarily on the number of charging cycles. If you use the oars **multiple** times before recharging, it reduces the frequency of charging and extends the life of the battery. We also charge the batteries at a relatively low charging rate to further prolong the life of the batteries. Defective batteries can be replaced at the factory.*

2. Using Oars with the Coaches Tablet

The Coaches Tablet displays instructions for using the oars (devices). The Tablet will tell you when to turn the oars on and then communicate with the oars to allow you to assign a given oar to a particular seat in one of multiple boats. When a session is over, the Tablet will turn the oars off for you. You can record strokes with the Coaches Tablet for later viewing or transfer the data via a thumb drive to the PC software for analysis.

After the Coaches Tablet turns off the oars, it's a good idea to check that the shutdown process has completed correctly so that all oars are off. This may fail if the Tablet is out of range at the time of powering down the oars. You can manually turn the oars off by pressing the power button on the oar

NOTE: *The oars will turn themselves off after 90 minutes of no activity.*

3. Using Oars with the Android App

The Android App allows you to connect to oars and see real-time force curves on Android devices such as cell phones and Tablets. You can assign oars to different boats, and seat positions. You can also assign rowers names to their oars. The App also lets you record and playback strokes. You can email files for analysis by the PC software. The App also has some analysis features. When a session is over, the App will turn the oars off for you.

After the App turns off the oars, it's a good idea to check that the shutdown process has completed correctly so that all oars are off. This may fail if the Tablet is out of range at the time of powering down the oars. You can manually turn the oars off by pressing the power button on the oar

NOTE: *The oars will turn themselves off after 90 minutes of no activity.*

4. Using the Oars in Self-Record Mode

The smartOar® series of training videos (see www.smartOar.com) will walk you through two methods for setting up oars to self-record. Please view the videos and read the instructions below. Practice before you hit the water and email or call if you need help. This manual describes several additional features not shown in the videos.

A. Setting up the Boat

First, you must tell the oars that they are grouped together in the same boat and assign each oar to a seat position. The quickest way to accomplish this is to match the oar sticker number to the seat position and assign all the oars at one time.

When you download the data, both the Windows-based **Download** and **Display** programs let you enter the name of the rower associated with each oar. You need to remember who had which oar until you can assign the names. The **Download** Program will also let you reassign the oar number relative to the position in the boat. Taking good notes will help you keep track of rowers/workouts and eliminate confusion.

Once your crews get used to smartOar®, they can easily match the oar numbers to their seat positions on the dock. Training coxswains to self-record data can relieve you of that task as well. It is also helpful to assign someone with the task of becoming the “expert” in maintaining the equipment.

B. Setting up the Oars

Turn all oars on: Press and release each oar's button once. The green light will turn on. Make sure only the oars for the boat you want to set up are on. If you have multiple boats going out you need to avoid capturing oars from another boat. One boat at a time, turn oars on and set up the boat before going on to the next boat. Note: The Coaches Tablet can capture oars from multiple boats and you can switch between them.

When you first turn on an oar, the green led will flash once if there is already data recorded on the oar. It will flash twice if the data memory is full. An oar with full data memory will work fine with the Coaches Tablet or the Android App but will not work in self-record mode. An attempt to start recording will cause the green led to flash quickly for the duration of the recording. If an oar reaches its full memory while actively self-recording, it will stop recording and the green led will begin flashing.. In the case of the master oar, it will stop recording for itself but continue to control the other oars. In order to self-record again, the data on the oar must be deleted or downloaded then deleted. Data can be deleted without saving the data turning on an oar then pressing and holding the button until the oar just stops flashing.

NOTE: *If you record multiple sessions with different oars in multiple boats and configurations, the **Download** software will separate them out and save them as individual sessions. Each session is saved as a separate file. It is strongly suggested you download and delete the data from the oars after each session to avoid confusion in matching the saved files to the workouts.*

The Primary Method of assigning oar positions in self-record mode is fast and simple. It is now the default method for setting up oars. There is a

method for reverting an Oarpod back to the older “Classical” method that gives you the option of setting the oars seat position during setup.

a.) With all oars in the boat turned on, decide which oar (device) will be the Master Oar. To make a Master Oar, **press and hold** the desired oar's button. When the green light begins flashing rapidly, **release immediately**. The Master Oar will communicate with the remaining oars and instruct them to use the oar number already programmed into the oar. Each oar will then flash a number of times equal to its oar number. You are done. It's that easy.

The Classical Method of assigning oar positions is useful when oars are not matched to their seat positions. This method is inactive but can be made into the default as follows: With the Master Oar off, turn it on and keep holding the button down. After about 5 seconds the green led will turn off. Keep holding the button down for about 5 seconds longer until the green led turns back on. The Master Oar is now in the alternative setup mode and will remain in that mode until switched back by repeating the process.

a.) With all oars in the boat turned on, make one of the oars the Master Oar. To make a Master Oar, **press and hold** desired Master Oar's button. When the green light begins flashing rapidly, **release immediately**.

b.) Next, **press and release** the master oar's button 1-8 times, depending on the seat position of the oar. The green light will begin flashing 1-8 times in a repeating sequence. The remaining oars should begin flashing rapidly under the control of the Master Oar.

c.) **Assign Other Oar Positions:** **Press** each Oarpod button 1-8 times, based on the seat position of the oar. The green lights begin flashing 1-8 times, according to the number of presses. If you make a mistake here, you will need to turn **all** the oars off and start over or make a note of the mistake then fix it during the Download process. Remember to take good notes to fix any mistakes.

d.) You can also set up all the oars at one time in Classic mode. When the master oar starts flashing rapidly, release the button. Now, instead of pressing the master oars button multiple times to set the seat position, press and hold the button for about two seconds until the green led turns back on. The master oar and captured oars will all flash according to the number on the oar and you are ready to record.

TIP: *If you inadvertently assign the same position to multiple oars, the Download software will prompt you to correct this before it downloads the data.*

TIP: *In a **sculling** boat, make the starboard bow the Master Oar and position #1. In a **sweep** boat, make either seat 8 or seat 4 the Master Oar. Seat 8 allows the cox to easily control the oars. Seat 4 shortens the distance between the Master Oar and the furthest oar, which can increase reliability if there is a lot of radio interference.*

C. Starting/Stopping Self-Recording

Once the oars have been set up, pressing, and quickly releasing, the button on the Master Oar will put all of the oars in record mode. Each oar starts recording and its light will turn solid green. To stop recording, press the button on the Master Oar again and all oars will resume flashing. You have now recorded a “piece”. You can record up to 25 pieces which can later be downloaded and saved as a single file called a session. Only the master oar controls recording. The crew needs to keep their hands off the buttons on their oars to avoid inadvertently turning them off.

NOTE: *If the oars are set up but don't start their first recording session for 90 minutes, they shut off to save the battery. You will have to set them up again on the water. When racing, this should be sufficient time to get to the start of the race. If you plan to wait more than 90 minutes before recording, just start and stop recording within the 90-minute window to*

reset the 90-minute timer. You will end up with a piece with no strokes that you can ignore.

TIPS: *smartOar® can record your entire row, but it will take longer to download. Keep total recording time as short and focused as you can. If you plan to do a lot of self-recording, consider purchasing a Quad Download Box which will download four oars simultaneously.*

D. Turning the Oars Off

After you have stopped recording for the last session, **press and hold** the Master Oar's button until it turns off. The Master Oar then turns off all other oars in the boat. Also, at any time, you can turn off individual oars by pressing and holding the button until the green light turns off.

E. Downloading the Data from the Oars

The smartOar® PC Software Users Guide can be downloaded from www.smartoar.com. It provides detailed information on using the software. When the software is installed on a Windows 7/8/10 computer, icons appear the desktop. They are: **Download**, **Display**, and **Update**.

Download works with the single or quad **Download Boxes** to transfer recorded strokes taken in the self-record mode into a Windows laptop or computer. Refer to the Windows-Based Software Users Guide to transfer the data from your oars.

Display is used to display stroke data from the oars in self-record mode as well as data recorded by the Coach's Tablet. It has an analysis section with useful metrics and the ability to create videos of segments of the data to share with crews.

Update is used in conjunction with the **Download Box** to wirelessly update the Oarpod/Device software as well as customize oar names.

F. Customizing Your Oars

The **Update** program allows you to customize your oars. You can reassign the oar numbers and add a description of the oars. It also allows you to update the software programmed into an Oarpod. Updating software is covered in detail in the Windows Based Software Users Guide e that can be downloaded from www.smartoar.com.

G. Deleting Data from the Oars

In **Self-Record mode**, it is best to make sure the data is deleted after successfully downloading. You are given that option after the data has been downloaded and saved in a file. You can also delete the data without downloading the data.

Data on an oar can also be deleted on the oar itself. To delete data from an oar, first verify that there is already data on the oar. When you first turn an oar on, the green light will flash once indicating the presence of data. To delete this data, turn the oar off. With the oar off, **press and hold** the button until the green light just turns off. This will take about seven seconds. The data has now been deleted. If you fail to release the button and the green led turns back on, you will have inadvertently performed a record mode switch.

H. Recording Simulated Strokes (Test Mode)

Each oar contains a simulated stroke generator that can be used to test the oar in the self-record mode. To activate this feature, the Master Oar must be set to the "Alternative Method" (above). Turn on all the oars

and set up the master oar as though you were planning to assign the oars through button presses. In this case, press the master oar button 12 times. The oar will enter the test mode, and tell all the other oars to enter test mode. Each oar will use its internal oar number, which should match the sticker number on the oar. You can tell the oars to record, then download the simulated strokes.

5. Maintaining Oars

The oars are waterproof and require little special maintenance. The force sensor is mounted midway down the shaft. It has several protective coatings, including a high-quality tape on the outside. If this tape begins to wear or fray, we recommend refreshing it with a layer of electrical tape. We highly suggest a "professional grade" tape such as Scotch Super 33+ made by 3M. Cheaper tapes degrade quickly in the outdoors.

Although an Oarpods two gold connectors, used for charging the oars, can get wet during the row, the oar should be stored in a dry environment. Salt or brackish water can corrode even gold-plated connectors. If your oars are exposed to salt water make sure you rinse off the charging contacts. These connectors are now replaceable. Contact us if you need to order replacements.

Improper insertion and removal of the charging cable will damage the charging contacts. The most common fault is pulling the cable instead of removing or inserting the charging cable pins by pressing or lifting the charging cable straight off the Oarpod. When transporting the oars, it is good practice to protect Oarpods and sensors from hitting other oars. Wrapping in foam padding is very effective.

Self-Recording Quick Reference Sheet

Print this page, watch the video, take this Quick Reference with you the first couple of rows, and above all, practice on dry land a few times first.

TIP: *Have one person set up all the oars in the boathouse before launching.*

- 1) **Set out oars in order** of bow to stern in the boathouse or on the dock
- 2) **Turn all oars on:** Press each oar's button once to turn the green light on.
- 3) **Make a Master Oar: Press and hold** the desired Master Oar's button. The green light will begin flashing rapidly. **Release** the button immediately.
- 4) The green leds on the master and remaining oars will begin flashing a number of times equal to the number of the label on the oar. This means the oar has been captured and is ready to go. If, for some reason, an oar does not match the seat position, you can reassign it in the Download program.
- 5) **Start Recording:** Press the Master Oar's button. The green light on each oar will stop flashing and remain on. The oars are now recording the stroke data.
- 6) **Stop Recording:** Press the Master Oar's button. The green light on each oar that was solidly on, will now begin flashing according to the position number.
- 7) **Each time you record**, you are creating a recorded piece. You can have up to 25 pieces before you need to transfer the data out of the oars.
- 8) **Turn Oars Off:** Press and hold the Master Oar's button. After about four seconds, all the oars will turn off. If an oar doesn't turn off, press and hold the button on the oar that didn't turn off until it turns off (about 7 seconds).
- 9) **Delete Unwanted Oar Data:** With the oar off, press and hold the oar's button for around seven seconds until the green light turns off. Release immediately so that you don't accidentally initiate a mode change in the Oarpod. The oar is now off, and the data has been erased. You can also easily delete the data in the Download Program.

Any Questions? We're here to help. Call us at 303.443-7425 or for faster response, email bob@smartoar.com