

smartOar[®]

Instrumented Oar

User's Guide

Version 1.2 for Rev. 4.8 and Higher Oars

smartOar[®]
Real-Time Force Curve Feedback

Questions?
Call us at: 303.443.7425 or
Email us at: bob@smartoar.com

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Table of Contents

smartOar[®] The Real-Time Force Curve Feedback System	3
1. Charging the Oars	4
2. Using Oars with the Coach's Tablet	5
3. Using the Oars in Self-Record Mode	5
<i>A. Setting Up the Boat</i>	5
<i>B. Setting up the Oars</i>	6
<i>C. Starting/Stopping Self-Recording</i>	7
<i>D. Turning the Oars Off</i>	8
<i>E. Downloading the Data from the Oars</i>	8
<i>F. Customizing Your Oars</i>	9
<i>G. Deleting Data from the Oars</i>	10
<i>H. Recording Simulated Strokes (Test Mode)</i>	10
4. Maintaining Oars	10
5. Self-Recording Quick Reference Sheet	11

smartOar[®] The Real-Time Force Curve Feedback System

Thank you for buying our product. You are now an owner of the first and only force measuring equipment of its kind on the market.

With smartOar[®] - YOU CAN

- See the actual force exerted – per oar, through every stroke
- View and record up to 8 oars – simultaneously
- See the catch and release timing – to an accuracy of 1/100 of a second
- Monitor the check in the boat and see the set – on every stroke (with our in-boat accelerometer)
- Tailor the shape of the curves – to match your coaching philosophy
- Send your crews off on their own and record workouts – for later download and analysis
- Make videos of the data – let your crews see what you see
- See the angle of the oars as they move through the stroke in real-time (with our new oar angle sensor)

Now, everyone is involved and competing on each stroke.

Self – Recording with smartOars[®]

Allows you to record data without the use of a tablet. You might be wondering, “Why do I want to do that? How does this help me?” Here’s the catch –

- You are building your fleet on a budget. You get all the benefits of smartOar[®] - with the exception of real-time data.
- You are busy during practices and it allows you to review boats on which you weren’t focused after the practice is over.
- Setup is fast and easy - Under 60 seconds.

Using self–recording with smartOars[®] allows you to have very minimal intrusion during practice. With the press of a button you can have all the data you need.

1. Charging the Oars

Before using, you must charge your **smartOar**[®] oars, which can take up to five hours to reach full charge. Charge your oars using the provided quad USB charger and charging cable. For best results, charge the oars until the battery reaches full charge.

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 coach's tablet and longer in self-record. When the red light comes on, you have less than one hour of battery life left.

smartOar[®] charging cables have three gold prongs. The cables plug into the Oarpod. These cables run parallel to the Oarpod and back toward 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's battery.

NOTE: *If you own an early version of the charging cables, the cables plug into the oar with the cable perpendicular to the oar shaft.*

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

NOTE: *smartOar*[®] *batteries should last at least for 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 several times before recharging, it reduces the frequency of charging and extends the life of the battery.*

2. Using Oars with the Coach's Tablet

The Coach's Tablet displays instructions for using the oars. The Tablet will tell you to turn the oars on and then communicates 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.

It is a good idea to check that the shutdown process has completed correctly so that all oars are off. In case 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 the Oars in Self-Record Mode

The smartOar® series of training videos (available online on YouTube) will walk you through several examples of setting up oars to self-record. Please view the videos and read the instructions below. Be sure to call 303.570.6749 if you need help! This manual describes 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. To accomplish this, assign each oar a position in the boat. There are two ways to accomplish this: either assign a position number for each oar, or use the quick alternative method of assigning all the position numbers at one time. In either case, it is best to order the oars in the boat so that the oar sticker number matches the seat position in the boat.

You can assign positions as you prefer, but we recommend going bow to stern. This makes it easy to keep track of who had which oar when you download the data.

When you download the data, both the **Download and Display Programs** let you enter rower's names 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 as it can quickly get confusing if you don't.

Once your crews get used to smartOar, they can match the oar numbers to their seat positions. Training coxswains on how to self-record data can relieve you of that task as well.

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.

Make a Master Oar: Press and hold desired Master Oar's button. When the green light begins flashing rapidly, **release immediately**.

TIP: In a sculling boat, make *the 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 more easily control the oars. Seat 4 shortens the distance between the Master Oar and the farthest oar, which can increase reliability if there is a lot of radio interference.*

Set Master Oar Position: Press the Master Oar's button 1-8 times. 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.

Assign Other Oar Positions: Press each oar 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.

The Alternate Method of assigning oar positions is fast and simple. With all oars in the boat turned on, make one of the oars the Master Oar as described above. Next, instead of pressing the Master Oar button the number of times according to the desired oar position, **Press and hold** the button of the oar until the green light, which goes out on the press, turns back on. **Release** the button immediately. If your oar numbers match the seat positions, then you are done and no adjustments need to be made in the Download Program.

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.

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.*

C. Starting/Stopping Self-Recording

Once the oars have been set up, pressing 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 and all oars will resume flashing. You have now recorded a “piece”. You can record up to 31 pieces which can later be downloaded and saved as a single file called a session.

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.*

TIP: *smartOar® can record your entire row, but it will take longer to download. Keep total recording time as short and focused as you can.*

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 will also turn off all other oars in the boat. At any time, you can turn off individual oars by pressing and holding the button until the green light turns off.

NOTE: *When you turn an oar on and there is data recorded in the oar, it will give you a single flash before turning solid to tell you there is already data saved in the oar. If you record multiple sessions with different oars in multiple boats/configurations, the Download software will separate them out and save them as individual sessions. Each session will have its own file name. 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 workout.*

E. Downloading the Data from the Oars

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

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

NOTE: Some older versions of Oarpod software cannot be updated by this method. If this is the case, you will need to contact smartOar®.

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.

Download works with the **Download Box** to transfer recorded strokes taken in the self-record mode into a Windows laptop or computer. Run the **Download** program by double-clicking on the icon. A screen prompts you to plug the **Download Box** into a USB port if you haven't already done so.

It then prompts you to turn the oars. After you press **Next**, it then attempts to locate them. When you are satisfied that all the oars have been found, the software gives you the option of downloading or just deleting the data. There are times when you don't want the data and just want to clear out old data in the oars. In that case, select **Delete**.

If you want the data, select **Download**. You will then be given the option of moving oars to different seat positions and to eliminate duplicate oars in a given seat position because, occasionally, more than one oar may be inadvertently assigned to the same seat position. Note: This is your only opportunity to change the oar positions.

When the download is complete, a screen appears that allows you to enter rower's names along with a short description for each session that was recorded. Sometimes the conditions for downloading the data are not ideal and you would prefer not to enter the extra information. In that case, the **Display** software allows you to enter that information along with additional comments at a later time.

The software writes the data to a file in c:/stroke_data with a file name that includes the date and time of the download to make it easy to find. It is then simple to change the name of the file to one you choose. We highly recommend that you select the **Delete Data** option at this time to delete the downloaded data from the oars.

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 smartOar® Software Guide that can be downloaded from smartoar.com.

G. Deleting Data from the Oars

In **Self-Record mode**, it is best to make sure the data is deleted after downloading. 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 turns off. This will take about seven seconds. The data has now been deleted.

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, 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 the internal oar number. You can then tell the oars to record and download the test strokes as usual.

4. 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.

Although the Oarpods' two gold connectors on the top 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 you row in salt or brackish water, it is important to rinse the Oarpod charging connectors after each row to minimize corrosion.

When transporting the oars, it is good practice to protect Oarpods and sensors from hitting other oars. Wrapping in foam padding is very effective.

5. 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 (or do it in the boat).
- 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) **Assign Master Oar Position:** Press the Master Oar's button 1-8 times. 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. Alternatively, press and hold the Master Oar's button until the green led comes back on. All oars will now be assigned automatically, so you can skip Step 5.
- 5) **Assign Other Oar Positions:** Press each oar 1-8 times. The green light will begin flashing 1-8 times, according to the number of presses. If you accidentally assign the same number to multiple oars, keep track of the problem and fix it during the Download.
- 6) **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.
- 7) **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 seat number.
- 8) **Each time you record**, you are creating a recorded piece. You can have up to 31 pieces before you need to transfer the data out of the oars.
- 9) **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).
- 10) **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. The oar is now off, and the data has been erased.

Any questions? We're here to help. Call us at 303.443-7425 or email at bob@smartoar.com