CPM AnchorBot — User Guide (Hobbyist Edition)

Version 1.0 · Written for RC sailboat race committees and hobbyists who want a reliable, rapid-deploy RC mark.

What is AnchorBot?

CPM AnchorBot is a radio-controlled buoy/mark with a thruster and onboard anchor winch. You simply drive it to position, free-drop the anchor, lock the winch, and your mark is set. Repositioning is just as easy: lift the anchor off the bottom and motor to the new spot. Specs and radio requirements are listed under Specifications & Requirements below.

What's in the Box

- AnchorBot (fully built) with single steerable thruster, internal winch, drum, lock/unlock servo, and limit (micro) switch for winch "fully in."
- High-visibility cone (removable ~9.5" orange cone).
- Top hatch (white, left-hand thread; see Handling Notes).
- Anchor weight & line installed.
- Power lead for battery connection.
- (Sometimes included) 2000-5000 mAh Li-ion battery — noted by the seller in some deliveries (verify in your order email).

You will need to provide a 2.4 GHz receiver (Rx) and battery if one was not included. Recommended battery chemistry on the product page is 6.6 V LiFe.

NOTE -
It has been brought to our attention that you cannot change between models on the FlySky Radios without turning off the first model so unless you are using the FlySky Radio as a dedicated radio for the AnchorBot you will have to use a different Radio Mfg Radio system like the Spektrum or Futaba that allows changing between models with out turning off the first model.

Specifications & Requirements

- Dimensions: ~11” diameter x ~10” height mark body.
- Visibility: Removable 9.5” bright orange cone; body/lid are white and can be painted for extra visibility.
- Radio: 2.4 GHz 6-channel Transmitter (Tx) recommended (Spektrum). Many owners simply add AnchorBot as another model memory on the same radio they use for their boat. It has been brought to my attention that you cannot change between models on the FlySky Radios without turning off the first model.
- Receiver (Rx): Standard 2.4 GHz Rx (bind to your Tx).
- Battery: 6.6 V LiFe (per product page). Some shipments have included a free 5000 mAh LiFe pack—see Power & Charging.
- Operation notes: After dropping and locking the anchor you can turn off the transmitter; the buoy goes into sleep mode. A micro switch stops the winch when the anchor is fully retracted.

Safety & Handling Notes (Read First)

1. Keep fingers clear of the winch & gears. Keep hands, lines, clothing away from moving parts.
2. Thruster caution. The thruster is very powerful. You only need a tiny throttle input to move with authority.
3. Failsafe: Program failsafe so that Tx off/loss of signal = thruster STOP + winch LOCKED. Test before use.
4. No master on/off switch. Plugging in the battery powers the system. There is a small switch on the winch motor controller but it only turns off the winch, not the entire bot.
5. Hatch: The top hatch uses a left-hand thread (counter-clockwise to install). Do not overtighten; the hatch sits well above the waterline.
6. Muddy bottoms: In very soft mud, the winch is strong enough to pull the buoy lower in the water. If you see the bot sinking noticeably as you retrieve, stop the winch, let buoyancy help break the anchor free, then resume.

Getting Started

1) Bench Prep

- Charge your battery per its chemistry (LiFe vs Li-ion; see Power & Charging).
- Install Rx inside the hull, securing it to foam/Velcro. Connect channel leads (see Recommended Channel Map).

- Bind your Rx to your Tx following your radio's manual.
- Set model memory: Create a dedicated model profile named "AnchorBot."

2) Recommended Channel Map (typical 6-channel radio)

- CH1 – Steering (Right Stick X / Aileron): Steerable thruster nozzle/rudder.
- CH2 – Thruster (Left Stick Y / Throttle): Center/vertical position = STOP at startup; stick up from center = forward thrust. (ESC sees the startup stick position as neutral.)
- CH5 – Winch Motor (3-position switch):
  Down = winch in (anchor up)
  Middle = Stop/Lock
  Up = winch out (rarely used).
- CH6 (Aux1) – Winch Lock/Unlock Servo (2-position switch): Lock engages drum gear; Unlock pulls lock arm clear so the drum free-wheels to drop the anchor.

Many skippers put the 2-position lock switch under their left index finger and the 3-position winch switch under their right (or vice-versa). Choose what's natural, but be consistent.

3) Transmitter Setup (detailed)

- Startup warnings: Configure radio switch warnings so you cannot power the Tx unless:
  - Thruster stick is at center/vertical (neutral),
  - Winch motor switch is at Stop (middle),
  - Winch lock is Locked.
- Endpoints (lock servo):
  - Locked position: Adjust lock servo so winch gear is engage with the winch/drum gears firmly but not so far that the servo hums.
  - Unlocked position: The lock clears the drum gear by ~1/16" so the drum free-wheels during anchor drop.
- Throttle range: Start initial power-on with the thruster stick at center/vertical so the ESC "learns" that as stop. Anything above that gives thrust.
- Rates/Expo (optional): Add a touch of expo on steering for smoother fine control at speed.

4) Power & Charging

- Battery chemistry: Product page recommends 6.6 V LiFe. Some users received a 5000 mAh Li-ion pack as a courtesy. Use the correct charger for your chemistry and never cross-charge. Label your pack.

- No master power switch: Once you plug in, the bot is live. The external switch is winch-motor only.
- Pre-launch check: With battery connected and on the bench, verify failsafe (Tx off = no thruster movement + winch Locked).

On-Water Setup & Operation

Quick-Start Checklist (ramp/dock)

1. Tx ON (correct model). Verify startup warnings are clear.
2. Battery plugged in; hatch installed (snug, left-hand thread, not overtight).
3. Range check (optional but recommended).
4. Steer & Thruster test: A blip of throttle only—it's powerful.
5. Lock/Unlock test: Flip to Unlock; confirm drum disengages. Flip back to Lock; confirm engagement without servo hum.

Setting the Mark (standard deployment)

1. Drive to target using minimal throttle.
2. Bring thruster to idle/neutral (stick centered).
3. Unlock the winch lock (drum free-wheel).
4. Drop anchor: Weight free-falls—usually ~2 seconds to bottom (varies by depth).
5. Lock the winch (engage gears).
6. Turn off Tx (optional). The buoy enters sleep mode and holds position.

Important NOTE -
Do not "pay out" line with the winch motor. Anchor drop is via free-wheel only (unlock). If you need a bit more line, unlock and slowly drive the buoy away from the set point to let more line pull out, then lock again.

Repositioning / Retrieval

- To move:
    1. Tx ON.
    2. Winch the anchor off the bottom (you don't need to pull it all the way up).
    3. Stop the winch
    4. Drive to the new spot.

5. Drop Anchor and Lock again.

To recover to shore:
1. Winch the anchor off bottom,
2. Stop winch
3. Drive to dock. The micro-switch will stop the winch if you pull the anchor fully in. In very muddy bottoms, pause if the buoy is being pulled low; let buoyancy pop it free, then continue. I do not usually winch the Anchor all the way up until I retrieve the AnchorBot on shore to avoid any possible winch problems.

Optional: Some users add a small cross-deck loop/handle so you can snag the bot with a hook on a staff from shore.

Best Practices

- Use tiny throttle inputs. The thruster is over-specced on purpose for reliability; finesse prevents overshooting.
- Re-check endpoints anytime you notice a humming lock servo or sloppy engagement.
- Paint for visibility (body & lid can be painted); keep the orange cone for distant marks.
- Avoid towing loads with AnchorBot; it's a positioning buoy, not a tug.
- Salty water: Rinse externals with fresh water after salt use; dry before stowing.
- Lines: Inspect for fray, knots, or grit in the drum.

Troubleshooting

Symptom	Likely Cause	Fix
Thruster runs when Tx is off	Failsafe not set	Program Rx failsafe to neutral thruster + winch Lock; re-bind as needed and retest.
Thruster too "jumpy"	Too much stick, no expo	Use very small inputs. Optionally add expo on steering; practice.
Winch won't drop anchor	Lock not fully disengaging	Increase Unlock endpoint so the lock clears the drum by ~1/16". Confirm free-wheel.
Servo hums in Lock	Over-travel jamming gears	Reduce Lock endpoint until hum stops but gears remain fully engaged.

Symptom	Likely Cause	Fix
Bot sinks lower during retrieval	Anchor stuck in mud; winch pulling hull down	Stop winch, let buoyancy break it free, then resume. Consider leaving some line out to avoid deep burial in very soft bottoms.
Winch won't stop at top	Limit switch not reached or faulty	Verify anchor is actually at the stop; check micro-switch function; avoid "hammering" at the top.
No response on any channel	Battery not connected / dead	Confirm pack voltage, connector seating, and that you actually plugged in (there's no master switch).
Winch runs but line doesn't move	Drum not engaged (still unlocked)	Flip Lock switch to engage gears; verify with slight tug on the line.
Can't install top hatch	Wrong direction	Remember left-hand thread: counter-clockwise to install, clockwise to remove. Don't overtighten.

FAQ

Q: What radio do I need?
A: A standard 2.4 GHz 6-channel radio (e.g., Spektrum or SkyFly) works well. Many users just program AnchorBot as a second model memory on their boat radio and switch between models.

Q: How do I set the anchor line length?
A: Do not motor “out” the line with the winch. Unlock to free-wheel the drum, then drive the buoy away from the set point to pull additional line, and Lock again.

Q: Is there a power switch?
A: No system on/off. Plugging in the battery powers the bot. The visible switch is for the winch motor only.

Q: Can I turn my Tx off once the mark is set?
A: Yes. After anchor dropped and locked, you can turn the Tx off; AnchorBot enters sleep mode and holds position.

Q: What if the water is very muddy?
A: While retrieving, if you notice the buoy being pulled low, pause the winch, let buoyancy break the anchor free, then continue.

Q: Can I paint the buoy?
A: Yes. The body/lid are white and paintable to improve visibility. The orange cone is already very visible and removable.

Q: Is there a video of the winch in action?
A: Yes — the site includes a short clip (prototype shown) demonstrating the winch behavior.

Maintenance

- Post-sail rinse (especially after saltwater).
- Inspect anchor line, knots, and drum regularly.
- Re-verify lock/unlock endpoints any time you feel chatter or see partial engagement.
- Battery care: Store at appropriate voltage for your chemistry; use the right charger.

Control Reference (Quick Card)

- Steer: Right stick (like your sailboat’s rudder).

- Thruster: Left stick — center = stop, up = go (use tiny inputs).
- Winch Motor (3-pos): Down = IN (anchor up) · Mid = STOP · Up = OUT (rare).
- Winch Lock (2-pos): Lock (engage drum) / Unlock (free-wheel to drop).
- Set Mark: Drive → Idle thruster → Unlock → Drop (~2 s) → Lock → (optional) Tx OFF for sleep.
- Move Mark: IN just off bottom → Stop → Drive → Drop → Lock.

Contact & Support

Chesapeake Performance Models (CPM)
227 Main Street, Stevensville, MD 21666

Shop Phone: 410-604-3907 (Mon–Fri 9:30 am–6:30 pm ET; leave a message off-hours/regatta days)
Email: david@rcyachts.com (best way to reach support)
Web - www.rcyachts.com

Appendix A — Suggested Failsafe Test

1. With bot powered and in Lock, turn Tx OFF.
2. Confirm no thruster movement and winch stays locked.
3. Turn Tx ON, regain control.
4. Repeat at least twice and before each race day.

Appendix B — Video

- "CPM AnchorBot Winch in action" (prototype) — useful for understanding drop/retrieval behavior.

Open Items / Mark-for-Review (please confirm)

- Battery standard: Product page specifies 6.6 V LiFe, but some units shipped with a 5000 mAh Li-ion pack. I've documented both; please confirm which chemistry you want as the official default for this manual.

Final Checks Before Racing (laminate this!)

- Battery charged & connected (correct chemistry/charger).
- Hatch on, left-hand thread, snug.
- Startup warnings clear; thruster neutral, winch STOP, lock engaged.
- Endpoints correct (no hum; ~1/16” clearance when Unlock).
- Failsafe verified (Tx off = safe).
- Spare hook/staff ready (optional) for shore retrieval.
- Go set the course. Have fun!

Clarification Q3 (last one):

For the manual’s standard power spec, should we list 6.6 V LiFe as the official battery, or do you want to note either 6.6 V LiFe or the supplied 5000 mAh Li-ion as acceptable (with charger-specific cautions)?

Great call — here’s a clean one-page Quick Reference Card you could laminate and keep at the dock. I’ve pulled the essentials from the full manual and tightened the wording for fast use:

⚓ CPM AnchorBot — Quick Reference Card

Pre-Launch Checklist

- ✅ Battery charged & connected (LiFe or Li-ion, per your pack).
- ✅ Hatch snug (left-hand thread, don’t overtighten).
- ✅ Tx ON, correct model selected.
- ✅ Thruster stick centered (neutral).
- ✅ Winch switch at STOP (middle).
- ✅ Winch lock ENGAGED (locked).
- ✅ Failsafe verified (Tx OFF = thruster STOP + winch LOCK).

Control Reference

- Steer: Right stick (like rudder).
- Thruster: Left stick up = go (use tiny input). Center = stop.
- Winch Motor (3-pos):
    - Down = Anchor IN
    - Middle = STOP
    - Up = Anchor OUT (rarely used)
- Winch Lock (2-pos):
    - Lock = Drum engaged
    - Unlock = Free-wheel for drop

Setting the Mark

1. Drive to spot (low throttle).
2. Thruster neutral.
3. Unlock winch.
4. Drop anchor (~2 sec to bottom).
5. Lock winch.
6. (Optional) Turn Tx OFF — AnchorBot sleeps.

Moving / Retrieving

1. Tx ON.
2. Winch anchor off bottom (not all the way up).
3. Stop winch.
4. Drive to new location or dock.
5. Drop + Lock again.

Safety / Notes

- Thruster is very powerful — small inputs only.
- Don’t “pay out” line with the motor. Unlock & drive away instead.
- Watch in soft mud: if buoy sinks low, stop winch, let buoyancy free anchor, then resume.
- Hatch is left-hand thread (counter-clockwise to install).

Contact (Support)

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🌐 www.rcyachts.com