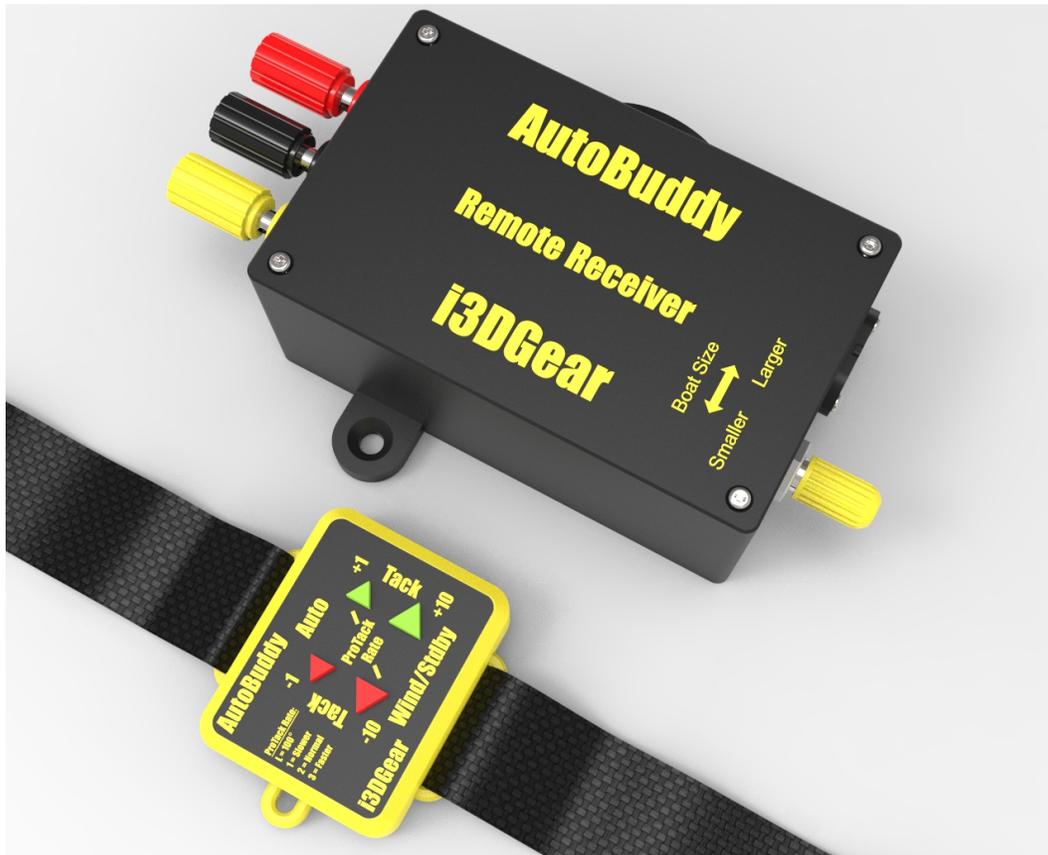# AutoBuddy

Wireless Remote Autopilot Control
SeaTalk Version
Use and Installation Guide

This guide provides installation and important usage information for your remote control.
Please read it carefully before using the product.

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Contents

Overview

<u>Your AutoBuddy</u>

AutoBuddy comes in 2 versions. One is for autopilots that communicate using SeaTalk. The other is for the Autohelm 2000, 3000, and 4000 units and has a limited functionality compared to the SeaTalk version. This manual describes the version that communicates via SeaTalk.

There are 2 components to your AutoBuddy:

1. Transmitter

AutoBuddy has a radio frequency transmitter that you wear on your wrist like a watch with the included velcro strap, or around your neck on the included lanyard. The transmitter is water resistant and has 4 buttons for navigation. Additional transmitters can be ordered from the <u>i3DGear.com</u> website.

The transmitter allows you to issue the following standard autopilot commands:

Navigation: Press individually for +1/-1/+10/-10 degree course change.
Tack Port: Press -1/-10 together.
Tack Starboard: Press +1/+10 together.
Auto: Press the top 2 buttons (-1/+1) together to engage the autopilot.
Wind Mode: Press the bottom 2 buttons (-10/+10) together for Wind mode,
                     ———> or (optionally substitute Standby for Wind) <———
Standby Mode: Press the bottom 2 buttons together (optionally configured below)

and, the following command, specific to AutoBuddy to activate and adjust ProTACK tacking:

Tack Rate Adjust: Press diagonal keys together (either diagonal) to change ProTACK rate.
                     (The Tack Rate setting is remembered even when the unit is powered off)

Auto Tack modes are explained in more detail in the section below called "ProTACK Explained".

Wind mode will only work if you have a SeaTalk compatible wind instrument installed and functioning. Wind mode can be disengaged by pressing Auto and the autopilot will return to Auto mode. Refer to your auto pilot documentation for Wind mode instructions.

The control head of your auto pilot is always active. Commands can always be issued from the control head as well as AutoBuddy (see Safety Recommendations at the end of this manual).

2. Receiver
The receiver unit connects to your auto pilot control head with a SeaTalk cable, or to your auto pilot computer with wires, and receives the signals from your wrist transmitter. These signals are interpreted by the receiver microprocessor and passed on to your auto pilot in the form of SeaTalk digital commands.

Your receiver unit will beep each time it receives a command from the transmitter.

Disengaging the Auto Pilot into Standby Mode
The bottom 2 buttons are labeled Wind/Stdby on the wrist transmitter. AutoBuddy's default mode is for these 2 buttons to be Wind mode. This is intentional as it would be very dangerous to disengage the autopilot without a person at the helm navigating. Disengaging the autopilot should be done from the autopilot control head at the helm. If you would like to change the bottom 2 buttons to perform Standby, refer to the Programming Mode section later in this guide.

ProTACK Explained
The standard auto tack with your autopilot simply conducts a 100 degree course change. For many sailors this is not optimal as it pulls the boat through the wind too quickly, without providing adequate time to handle the sails properly, resulting in excessive winching of the sheets.

AutoBuddy has an **optional** advanced tacking technology called ProTACK, which you can engage with the wrist transmitter. The default mode is to use the autopilots simple 100 degree tack as above. By pressing the diagonal keys on your transmitter, you can engage ProTACK and you will hear a sequence of coded beeps as in the table below. These modes are useful for adjusting the tack for varying wind and sea states. The ProTACK rate setting is remembered even when the unit is powered off.
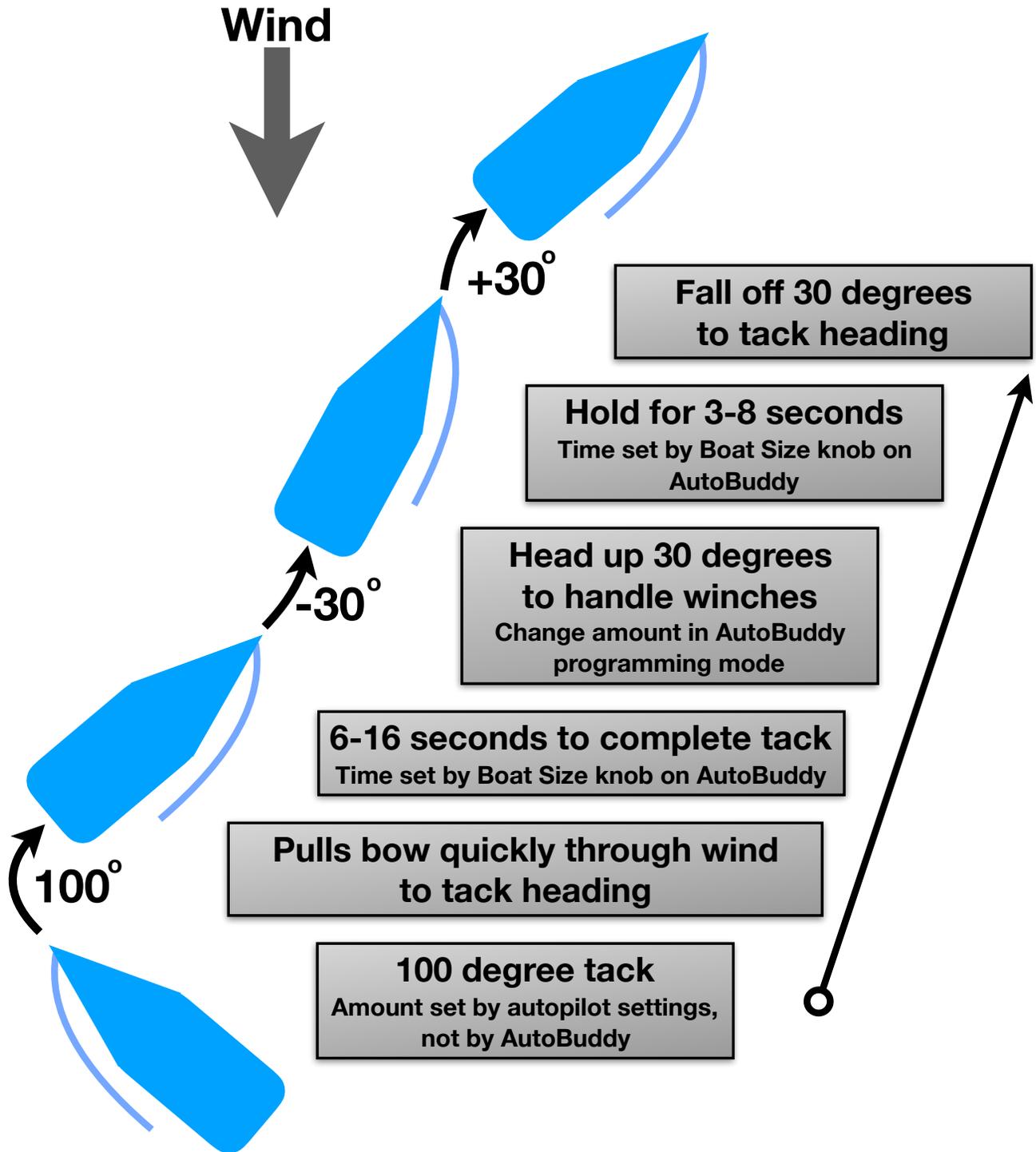
Beeps	Tack Mode	Description
1 Long	Default	Standard 100 degree tack that your autopilot would normally perform
1 Short	Slower	ProTACK - 20% slower to tack
2 Short	Normal	ProTACK - normal speed as set by boat speed adjustment knob
3 Short	Faster	ProTACK - 20% faster to tack

Before using ProTACK it is useful to know what it is doing. A ProTACK tack will proceed through the following 4 stages. Initiate the tack by pressing either the +1/+10 (Starboard) or -1/-10 (Port) buttons simultaneously. You will hear 3 beeps, followed by a continuous 1 second chirp which indicates you are in a ProTACK auto tack. If you don't hear the 3 beeps or chirping, ProTACK is not engaged. Press the diagonal Tack Rate buttons to engage as in the above table.

1. A 100 degree tack is issued, cranking the wheel hard and pulling the bow quickly through the wind.
2. After a delay of between 6-16 seconds, the helm will head up 30 degrees (called the ProTACK Headup) in 10 degree increments, indicated by a short up beep each, to give you time to handle the sails and crank the winches.
3. The boat will hold this course, just off the wind, for a short delay of between 1-4 seconds.
4. The boat will fall off 30 degrees quite quickly, in 10 degree increments, indicated by a short down beep each, to resume course and harden up the sails.

All of these delays are modified by the combination of the Boat Size Adjustment knob (set during installation) and the Tack Rate adjustment on the wrist transmitter. ProTACK requires that you correctly set the boat size adjustment knob on the receiver unit as described below.

AutoBuddy ProTack
Operation

Wind

+30°

-30°

100°

**Fall off 30 degrees
to tack heading**

Hold for 3-8 seconds
Time set by Boat Size knob on
AutoBuddy

**Head up 30 degrees
to handle winches**
Change amount in AutoBuddy
programming mode

6-16 seconds to complete tack
Time set by Boat Size knob on AutoBuddy

**Pulls bow quickly through wind
to tack heading**

100 degree tack
Amount set by autopilot settings,
not by AutoBuddy

<u>Canceling a ProTACK</u>
To cancel a ProTACK in mid tack, press either tack combination again. AutoBuddy remembers how many 10 degree increments it has issued and which stage of the tack it is in and will 'unwind' the tack accordingly, regardless of which stage of the tack you are in. You will hear the 1 second chirping stop and your course will resume from where you started the tack.

Installation

<u>Connecting your Receiver</u>

AutoBuddy can be connected either to your autopilot control head, or directly to the autopilot computer (often installed below decks). It is preferable to connect the receiver unit to your control head at the helm so you can hear the audible beeps which AutoBuddy emits while it is performing commands.

You can connect your receiver unit with either of the 2 connection methods supplied on the device. You only need to use one set of connections. The SeaTalk signal can be propagated (or daisy chained) to another device by connecting it to the other set of connectors.
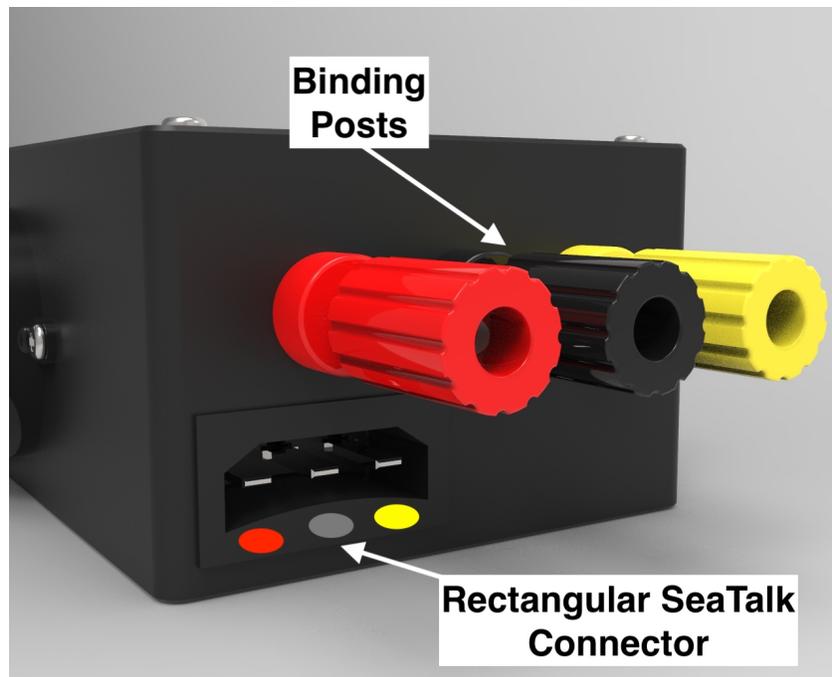
The 2 connections are in parallel and are as follows:

1. Binding posts. There are 3 coloured binding posts on your AutoBuddy. These are for direct wire connections to the SeaTalk labeled connections on either the back of your autopilot (if you don't have a SeaTalk connector cable) or direct to your autopilot computer. Standard spade connectors can be used to connect to the back of your autopilot control head, although it is recommended to use a proper SeaTalk cable. Refer to the wire colour table below.

2. Rectangular SeaTalk connection. This connector is the most common SeaTalk connection. Plug this into the back of your control head with a SeaTalk cable (not supplied), or use small 1/8" automotive spade connectors (6 are supplied) and wire, being careful to match the colours of the connections exactly according to the following chart.

AutoBuddy Colours	Electrical Meaning	SeaTalk Colours	
Red	+12 VDC	Red	
Black	0 VDC (Ground)	Grey	
Yellow	SeaTalk Data	Yellow	

Automotive spade connectors supplied (preferably the smaller 1/8" width)

Connecting to the ST1000, ST1000+, ST2000 and ST2000+

Connect wires from the AutoBuddy binding posts to the rear connector on the autopilot as shown in the following diagram:
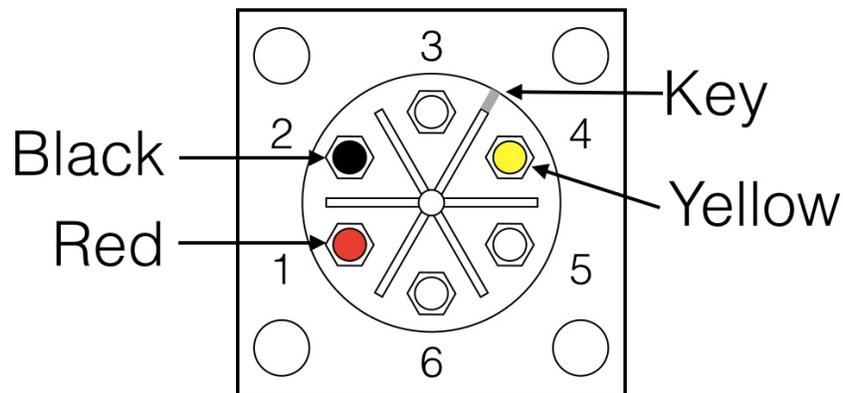
Connecting to Course Computer (ie. S1, SPX5 through SPX30 models)

For connecting to these course computers, connect the red, yellow and black binding posts on the AutoBuddy receiver to a spare SeaTalk connection on the course computer as shown below:

AutoBuddy Binding Posts

Black   Red   Yellow
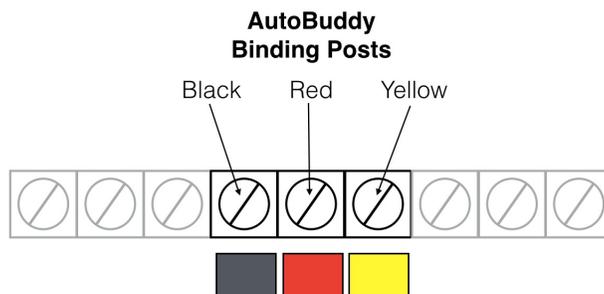
You must be absolutely certain that you connect these wires correctly to the corresponding connections on your autopilot for it to work properly. An incorrect connection can cause the communication bus to become unresponsive for all instruments connected. For maximum transmitter range, if your course computer is located below decks, you may wish to run long wires so the receiver can be mounted above decks.

Connecting to the ST4000 and ST4000+

Run wires from the AutoBuddy receiver binding posts to the connections on the back of the ST4000/4000+ control head. Connect the wires as shown below. You can connect to either set of Red/Yellow/Grey SeaTalk connections (not both).
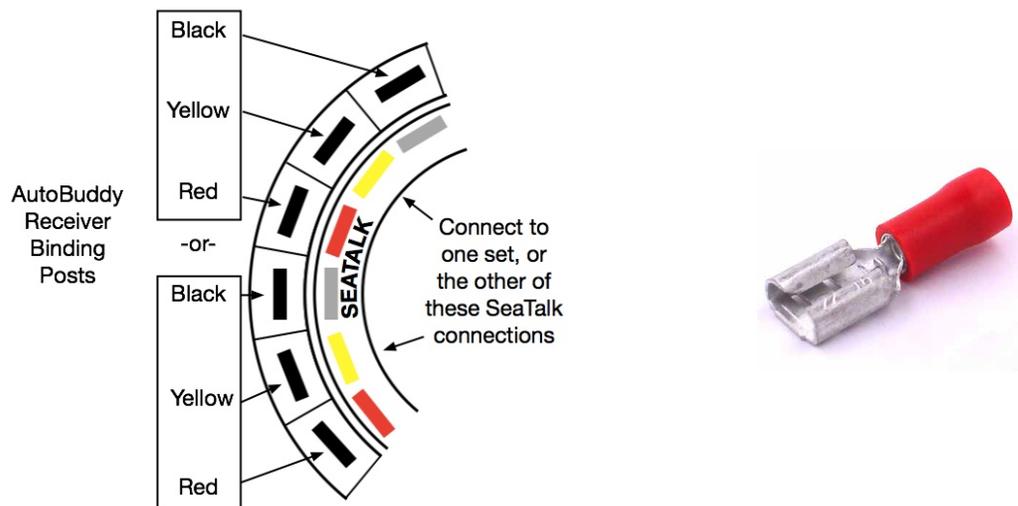
Use automotive spade connectors that are supplied (1/8" width preferably). Crimp the wires into the connectors and gently push them onto the Red/Yellow/Grey labelled pins on the back of the control head. Connect the other ends of the wires to the corresponding Red/Yellow/Black binding posts on the AutoBuddy Receiver.

Connecting to Evolution Autopilots (ie. P70, EV100, 200, 300 & 400)

For connection to Evolution autopilots, it is necessary to purchase a SeaTalk to SeaTalkNG converter unit, available from Raymarine (part number E22158). You can find a link to purchase this kit from Amazon or eBay as well as detailed pictorial installation instructions on the i3DGear.com website under Support/P70 Installation.

Testing the Installation

After installation always test the unit at dock to ensure that it is functioning properly prior to navigating on the water.

Turn on the power to the instruments and you should hear an audible beep from AutoBuddy indicating that the unit is connected properly. If you do not hear any sound, or there is no display on your autopilot control head, turn off the power, check your connections and try again.

Once you have established that the receiver is receiving power, test the unit by pressing buttons on the transmitter. Press Auto and your autopilot should enter Auto mode. Pressing navigation buttons (+/- 1/10) should turn the wheel and change course correspondingly.

Test the range of your transmitter by going to the bow of the boat and pressing buttons. You are now ready for on the water testing and adjustment.

Boat Size Adjustment

NOTE: The boat size adjustment is only necessary if you wish to use ProTACK tacking mode. If you only wish to use the standard 100 degree tack provided by your autopilot, you can skip this section.

The Boat Size Adjustment knob on the receiver essentially just dictates the rate of the tack in ProTACK by changing the delays in the various stages. For a large boat, or a boat with a full length keel, the tack rate will need to be slower ie. longer delays. Turn the knob clockwise towards Large Boat. For a small boat - in the 20-30 foot range, a faster tack will be desirable.

To adjust this, take your boat out sailing in moderate winds. Set the tack rate adjustment on your wrist transmitter to the simple 100 degree tack mode (long beep). While on course, close hauled, and in Auto mode, press auto tack and time how many seconds it takes for the boat to pass through the wind. Use this number below as the 'time to pass through the wind'.

Now, put the autopilot into Standby mode. Set the wrist transmitter tack rate to Normal by pressing the diagonal buttons till you hear two short beeps. With the autopilot in Standby mode, press tack again. The boat will not actually tack but you will hear AutoBuddy sending the tack commands.   Listen and count the one second chirps until you hear the first stage end, whereupon you will hear AutoBuddy beep each time it issues a course change, heading up in 10 degree increments.

Turn the boat size adjustment knob a little either way, so that the 'time to pass through the wind' is equal to the time till you hear the first stage end as above. Keep trying this until the boat size adjustment is set correctly.

At this point, you should try the ProTACK for real. Press Auto to engage the autopilot and try a tack now.   With a little experimentation, and possibly some small tweaking of the boat size adjustment, you will find that this is a much better way to tack than simply a 100 degree tack. You may now mount your receiver unit away in your instrument console.

Completing the Installation
The receiver unit should be hidden away inside your helm once installation is complete, testing is finished, and adjustments have been made. Try to locate the receiver unit in a dry location away from other sources of RF interference, such as large bundles of wires, and other instrumentation.   This will ensure the best possible radio frequency signal range for your transmitter.

Programming Mode

Some advanced adjustments can be made to your AutoBuddy functionality by entering 'Programming Mode'. In Programming Mode, you can adjust:

ProTACK Headup Amount: Refer to the section above called "ProTACK Explained" to understand this setting. This is the number of degrees that the ProTACK function will head up while you handle the sails and can be set from 10-60 degrees, in 10 degree increments (ie. 10, 20, 30, 40, 50, or 60 degrees). The default factory setting is 30 degrees.

Standby or Wind mode: You can substitute the bottom 2 buttons (ie. pressing +10/-10 together) to either activate Wind mode (default) or to perform Standby (ie. deactivate Auto). When set to Standby, pressing the bottom 2 buttons will now always perform a Standby and deactivate the auto pilot. **Please note that this can be dangerous** if Standby is pressed and the autopilot is deactivated with nobody near the helm and the course were to suddenly change uncontrollably. When Standby has been substituted, Wind mode can only be activated from the autopilot control head.

Disable mode: The diagonal buttons (-1/+10) normally also adjust the Tack Rate. You can substitute these buttons to allow you to disable the single button (-1/+1/-10/+10) functions temporarily so they can't be accidentally pressed on the remote. When this is enabled, pressing the diagonal buttons (-1/+10) together will activate and deactivate the transmitter buttons. When deactivated, they will make a low frequency 'bonk' sound rather than the normal chirp. Multi key functions like Auto, Standby, and Tack will still always be active. You'll hear a down shrill when you deactivate the buttons, and the normal up shrill (like the power on sound) when you re-activate the buttons.

To enter Programming Mode, press the following sequence on your wrist transmitter (while the autopilot and AutoBuddy are powered on), according to the following picture:

To enter Program Mode, sequentially press:

1,2,3,4,1,2,3,4

(ie. start at +1 and go clockwise around twice)

You will hear AutoBuddy emit 2 long beeps after this sequence, after which it will recite the current setting of ProTACK Headup Amount with one short high pitch beep for every 10 degrees (ie. 3 beeps will indicate a 30 degree setting).

To change the ProTack Headup Amount, press either +10 or -10 to increment or decrement the setting by 10 degrees. Each time you press, AutoBuddy will recite the current setting as above with a short beep for every 10 degrees.

To change the Wind/Standby mode, press Wind mode (ie. press both -10 and +10 together). This will toggle the setting from Wind to Standby to Wind etc each time you press them.

Standby setting is indicated by 3 long beeps (low-high-low) and Wind setting is indicated by 3 long beeps (high-low-high).

To change the disable mode, press the diagonal keys (-1/+10) and the setting will toggle on and off to allow disabling of the transmitter keys function.

After 5 seconds of non-activity, AutoBuddy will return to normal operation mode and save the settings in permanent memory (you will hear 2 long beeps and the ProTack Headup Amount will be recited again). Settings can always be changed again by entering Programming Mode again with the above sequence. These settings are remembered and used even after AutoBuddy is turned off and on again.

Maintenance

Replacing the Transmitter Battery
The transmitter battery should last for many years with normal use and will likely never need replacing. If you need to replace the battery, unscrew the transmitter back plate and carefully lift the circuit board out. Note the polarity of the coin cells before removing them. Replace the 2 Lithium CR2016 coin cells by sliding them out and sliding the new ones in making sure the polarity is correct.   Reassemble, making sure the silicon seal is properly seated around the circuit board before screwing on the back cover.

Water Resistance of Transmitter
The transmitter unit is waterproof for normal use. If the transmitter is accidentally immersed in water, particularly salt water, it is best to immediately open the transmitter unit by removing the 4 screws on the back and thoroughly drying everything. Reassemble.

Firmware Update
In the event that the receiver needs a firmware upgrade it can be performed by visiting the i3DGear.com website, downloading the update, and installing it using the supplied mini USB cord.

On the side of the AutoBuddy receiver, beside the Boat Size Adjustment knob, you will see a small door affixed with 2 screws. Remove the 2 screws and door to access the mini USB port.

Follow the instructions on the website to perform the upgrade.   Reinstall the door to prevent moisture and water from entering the receiver.

Specifications

Electrical Supply Voltage:	6.5 - 15 VDC
Supply Current	<100 mA
Transmitter Range:	50' (15m)
Transmitter Frequency:	315 MHz
Transmitter Battery:	2 x CR2016 Lithium coin cells
Receiver Data Format:	SeaTalk1

Compatibility

AutoBuddy supports the following autopilot models:

Combined control head/computer units:
ST1000, ST1000+, ST2000, ST2000+, ST3000, ST4000, ST5000, ST4000+, ST5000+

Control heads:
ST6000, ST7000, ST6000+, ST6001+, ST6002+, ST7000+, ST7001+, ST7002+, ST8001+, ST8002+,
P70

Computers:
ST6000, ST7000, Type 100, Type 300, Type 150, Type 400
S1, S1G, S2, S2G, S3, S3G, SPX-5, SPX-10 through SPX-30

Evolution Autopilots: add a Raymarine SeaTalk to SeaTalkNG converter (see i3DGear.com for
details and a link to order).

Safety Notices Regarding Product installation and Use

This equipment must be installed and operated in accordance with the instructions contained in this handbook. Failure to do so could result in poor product performance, personal injury and/or damage to your boat.

As correct performance of the boat's steering is critical for safety, we STRONGLY RECOMMEND that an experienced marine electrician properly fit this product to your boat.

WARNING: Electrical Safety
Make sure the power supply is switched off before you make any electrical connections.

WARNING: Navigation aid
Although we have designed this product to be accurate and reliable, many factors can affect its performance. As a result, it should only be used as an aid to navigation and should never replace common sense and navigational judgement. Always maintain a permanent watch so you can respond to situations as they develop.

WARNING: Autopilot controller
The autopilot can be engaged from the remote control, but for safety reasons, it is NOT advised to disengage the autopilot using the remote. Placing the autopilot in Standby mode should be done from the autopilot control head at the helm station.

AutoBuddy will give you freedom and efficiency you haven't previously had on your boat. However, it is your responsibility to ensure the safety of the boat and crew at all times by following a few basic rules:

- Ensure that someone is present at the helm AT ALL TIMES, to take manual control in the event of an emergency.
- Make sure that all members of crew know how to disengage the autopilot and control the vessel.
- Regularly check for other boats and any obstacles to navigation. Do not go below or otherwise lose sight of your boats trajectory through the water.
- Do not use AutoBuddy to navigate in close quarters, such as in a marina, harbor or within close proximity to other boats.

General Care and Safety
Do not attempt to open the AutoBuddy receiver unit for repairs or alterations. The transmitter unit may be opened to replace the coin cell battery. After doing so, the transmitter should be thoroughly tested before use at sea.

Liability Disclaimer
In no event shall i3DGear, hGear Inc, it's owners or employees be liable for any direct, indirect, punitive, incidental, special consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of the device. If you are not wiling to accept these conditions, do not use this device.

Intended Use
AutoBuddy is intended for small pleasure craft use.

Handbook Information
The information in this user guide is accurate to the best of our ability. The company cannot accept any liability for any inaccuracies or omissions it may contain.