SpeedPuck Manual

Firmware Version v1.51

Revision Date April 4, 2018

Contents

Introduction

The SpeedPuck is a GPS device designed for sailing and motor sports.

Features

- Speed and compass updated twice a second
- Header/Lift indicator updated twice a second
- Maximum and best 10 second average speed recall
- Over 20 hours of GPS data storage at record rate of every 2 seconds
- Up to 20 hours of battery life (batteries not included)
- Data downloading through USB link
- User configurable device settings allow customization of select functions
- Waterproof to 3m (IPX8)
- Two year warranty

VELOCITEK

Basics

Batteries

Battery Installation

The SpeedPuck requires 3 AA batteries to operate. The battery compartment can be reached by opening the back case.

Battery Indicator

Full Half Remaining Recharge Battery

The battery indicator on the SpeedPuck is located on the bottom right of the LCD screen.

Battery Types

We recommend using rechargeable batteries over standard disposable AA batteries. Disposable batteries will provide approximately 10 hours of life while rechargeable batteries will last for 20 hours or longer.

Signal Acquisition

The operation of the SpeedPuck relies on low-power radio signals from GPS satellites that orbit the earth at an altitude of approximately 20,000 km. As a result, the SpeedPuck must be outdoors with a clear view of the sky to function properly.

When the SpeedPuck is first turned on, it must download information from GPS satellites before it can acquire a GPS solution. The data download process normally takes 1-2 minutes or up to 5 minutes if fresh batteries have just been installed.

Installation Guide

The SpeedPuck can be installed anywhere on the boat with a view of the sky. The SpeedPuck comes with an injection molded plastic clip in cradle for easy installation. Install the cradle permanently on your boat. Press the tab on the cradle to release the SpeedPuck from it. Since the introduction of the SpeedPuck Cradle, the SpeedPuck no longer comes with the 3M Dual Lock on the back of the battery compartment lid. Several alternative mounting options are available, including 3M Dual Lock. For details, go to https://www.velocitek.com/collections/accessories.

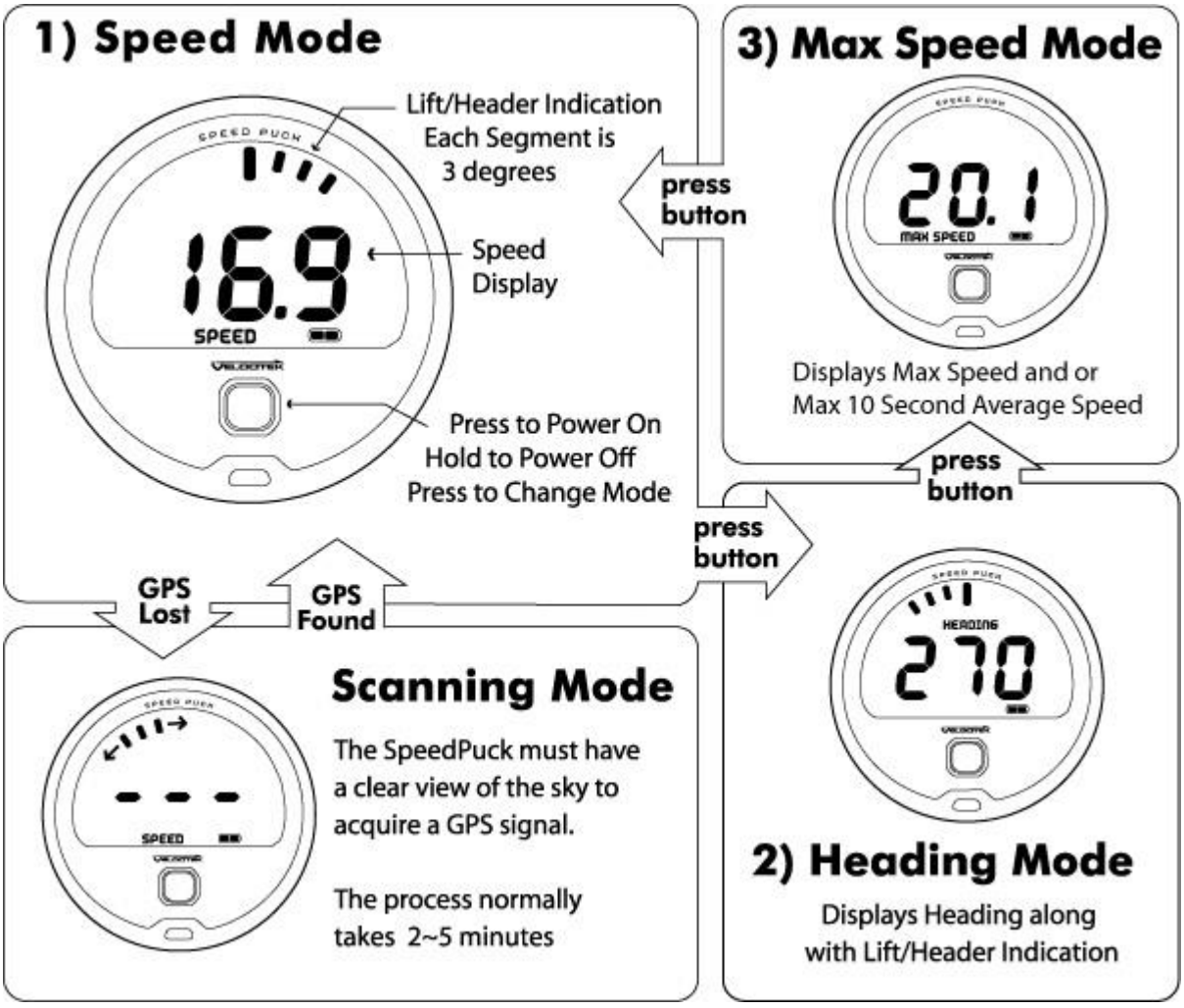
GPS Data Storage

The SpeedPuck records GPS data whenever the device is on and GPS signal is detected. The device can be configured to record data every second, every 2 seconds or every 4 seconds. The SpeedPuck can store up to 20 hours of data when recording GPS data every 2 seconds.

Operation

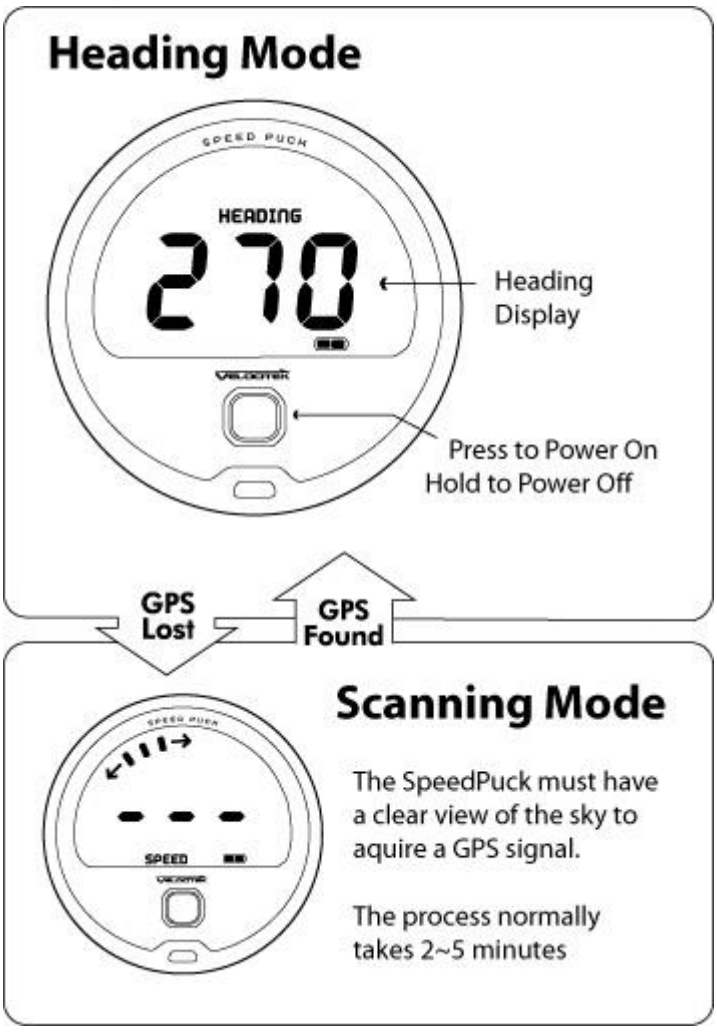
This section will be split by SpeedPuck utility. The SpeedPuck can be configured by editing the device operation option to suit a utility. The SpeedPuck has 4 operation options, sailing, racing, motor sports and data logger which can be configured by editing the device settings.

Sailing Operation



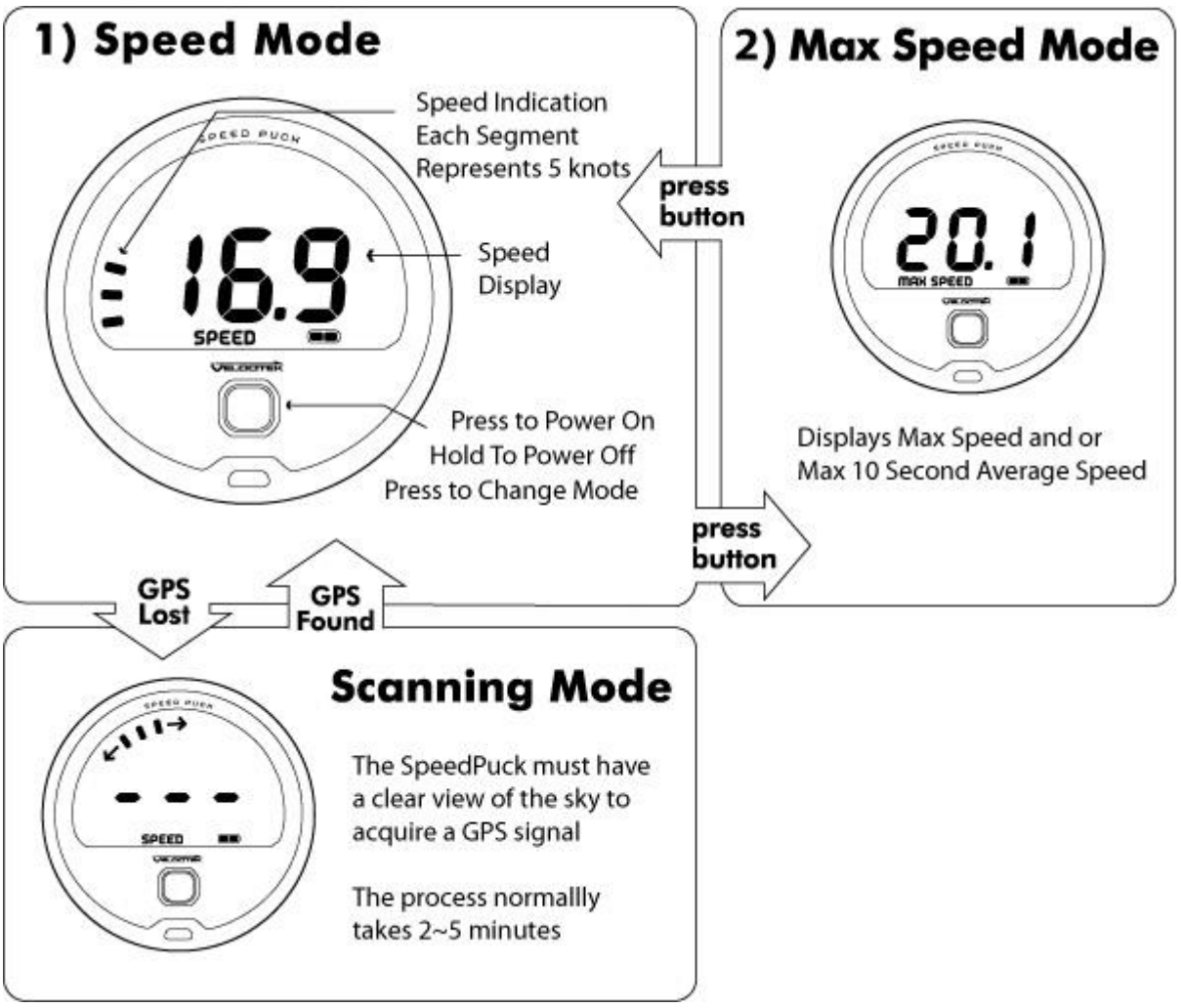
The sailing operation is for those racing dinghy boats. All modes are enabled for maximum performance.

Race Operation



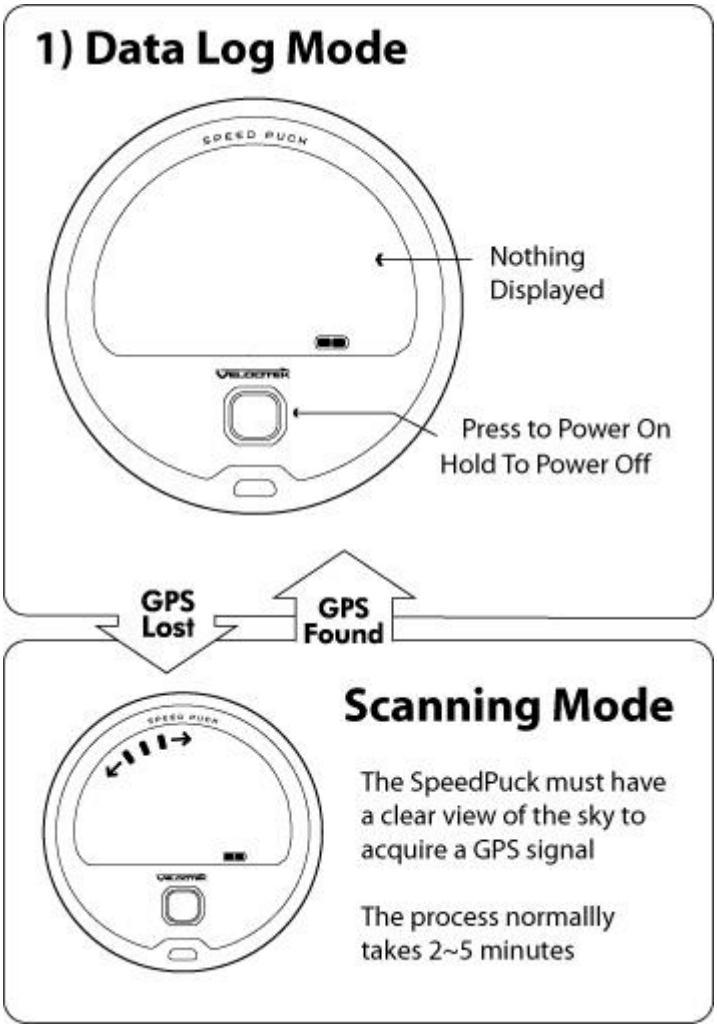
The race operation is for racing in one design classes where the rules ban the use of a speedometer. The SpeedPuck only works as a GPS compass in race operation to conform to one design rules.

Motor Sports Operation



The motor sports operation option is for the motor sports enthusiasts who want to know exactly how fast they are going. No heading information is displayed in this operation as speed is the focus. The bar graph acts as a secondary speedometer in speed mode so you know how fast you are going at a glance.

Data Logger Operation



The data logger operation option is available in case rules prevent you from using the features offered by the SpeedPuck. The data logger mode displays blank, but records your GPS data which can be replayed later for analysis.

Displays

Following are details on the various displays.

Speed

Speed is calculated by the GPS unit by measuring the Doppler shift in GPS signals. It can be displayed in knots, miles/hour, kilometers/hour or meter/second by editing the device settings. The default is knots.

Heading

Heading (Course Over Ground) is calculated by the GPS unit by measuring the Doppler shift in GPS signals.

Either true or magnetic heading can be displayed in compass mode by configuring the device settings. True heading is referenced to true north. Magnetic heading is referenced to the local magnetic north. When using a magnetic compass in conjunction with the SpeedPuck, the magnetic heading is useful since both measurements will be referenced to magnetic north. By default the compass displays true heading. To display magnetic heading the local magnetic declination must be defined in device settings.

The SpeedPuck displays heading only when your speed is greater than 1 knot, otherwise it will show a heading of 0 degrees regardless of which direction you are actually moving.

The difference of the SpeedPuck to a conventional magnetic compass is that the SpeedPuck measures the direction the device is moving in rather than the direction it is pointed in. A major benefit of the SpeedPuck over a conventional magnetic compass is that it will give you accurate heading information, regardless of the orientation in which it is mounted on your boat. SpeedPuck 's compass reading depends only on the direction you are moving, not the direction the device is pointing.

Max Speed

Instantaneous and or 10 second average max speed can be displayed. The max speed mode can be set to display, the maximum instantaneous speed, the maximum 10 second average speed or flash between both. To configure max speed display, edit the device settings.

Lift/Header Bar Graph Indicator

The SpeedPuck automatically detects when a sailor is trimmed to a heading then provides the header/lift indication. When the device detects that the sailor is trimmed at a heading the trim angle is set. Then header/lift indication is given off of that trim angle. Once a tack or a jibe is detected the indicator resets and nothing is indicated until another trim angle is set. Each bar segment represents 3 degrees of wind shift.

Speed Bar Graph Indicator

The Speed Bar Graph Indicator displays a bar graph with each bar segment representing 5 knots.

Configuration

The SpeedPuck can be configured by editing the device settings by connecting it to a PC via USB cable.

Device Settings

The following device settings are available.

Device Operation

The device operation should be set depending on the SpeedPuck utility. The 4 operation options available are sailing, race, motor sports and data logger. Each of these options tailors the SpeedPuck functionality to the utility. For details on operation options refer to Operation.

Logging Rate

Logging rate is the rate at which the SpeedPuck records data. User can select from 1Hz (once every second), 1/2Hz (once every 2 seconds), and 1/4Hz (once every 4 seconds). The default logging rate is 1/2Hz

Speed Displayed In

Speed can be displayed in 4 different units of measurement, knots, miles/hour, kilometers/hour and meters/second. The default unit of measurement is knots.

Max Speed Display

There are 3 different maximum speed display modes you can choose from. Display maximum 10 second speed, maximum instantaneous speed and flash between both maximum speeds. The default is to display maximum 10 second speed.

Speed and Heading Damping

Damping on the SpeedPuck corresponds to the amount of time to which the raw GPS data is averaged over before it is displayed. Damping has the effect of smoothing out the displayed data while low damping allows the displayed data to update faster.

High damping is good for evaluating different trim settings as it smoothes out spikes in the measurements resulting from gusts and wave action. On the other hand, low damping will help you to quickly identify the effect of gusts and wind shifts.

The damping on the SpeedPuck can be set for speed and heading independently to 10 different settings, from no damping to damping of 4 minutes. The default damping is 1 second for both speed and heading damping.

We recommend that you experiment with different damping levels. The optimal setting will depend on your boat, the conditions and what you are using the instrument for.

Bar Graph Display

Option to turn the display on or off is available when the sailing device operation option is selected.

Compass Declination

When defined to the local declination, the heading will be referenced to local magnetic north. Positive declination represents east and negative declination represents west. To reference the compass measurement to true north, input 0 for compass declination. Default compass declination is 0 degrees. When using a magnetic compass in conjunction with the SpeedPuck, setting the compass declination to the local declination is useful since both instruments will be referenced to magnetic north.

Firmware Update

Firmware is the software that runs on the SpeedPuck. The SpeedPuck firmware is stable and no features or performance will be added to your device through a firmware update. We only release new firmware versions when we are forced to do so by a minor hardware change. Please do not update the firmware unless you are directed to do so by Velocitek technical support (support@velocitek.com).

Software

There are two software packages, Velocitek Control Center (Windows and Mac) available from Velocitek which allow you to perform GPS data download, customize device functionality and update firmware.

Velocitek Control Center / Velocitool

Velocitek Control Center and Velocitool are free software. To find out more and download the software, go to http://www.velocitek.com/support/software.

Maintenance

To ensure your SpeedPuck's enclosure remains watertight and the electronics are not destroyed by corrosion, please take the following precautions:

- Dry case with a towel before opening.
- Wipe away sand or debris on the gasket before screwing the back case on.
- Once the case is open wipe away any loose water droplets.
- If you ever see signs that water is leaking inside the enclosure please contact Velocitek immediately at (866)-498-6737 or support@velocitek.com to arrange for your device to be repaired and made watertight again.

Contact

Mail: Velocitek, Inc.
126 N B Street
San Mateo, CA 94401
USA

Fax: +1-650-618-2679

Phone: Calls will be answered 9AM ~ 6PM, US Eastern Time (UTC-4 Summer, UTC-5 Winter)
US and Canada: +1-866-498-6737
International: +1-650-529-4519

Email: support@velocitek.com

Website: http://www.velocitek.com

Support: http://www.velocitek.com/support

Compliance

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Canadian Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.

European Community Compliance Statement

The equipment complies with The EMC Directive 2004/108/EC.

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