# d10 Tactical Racing Display

INSTRUCTIONS FOR USE

# Welcome to Racegeek

Congratulations on the purchase of your **d10.**

Welcome to the racegeek family.

## The d10 was built by racers for racers

Working from our own experience as active racing sailors and taking feedback and guidance from world class professionals we have combined the best technological elements available with an interface and functionality that is designed to deliver all you need on the race course in an easy to use format.

## Your d10 will continue to improve

The d10 is a living instrument that will improve and evolve as we continuously develop and refine the device based on feedback from our professional sailors and from you the racegeek community.

## Engage with the racegeek community

We strongly encourage you to register the device so we can inform you of any updates that will provide improved and extended features and so that you can take advantage of the racegeek cloud where your data can be viewed, shared and analyzed and you can interact with the racegeek community.

it's all about the numbers
racegeek

# Warning

**THE D10 IS A TACTICAL RACE TOOL AND SHOULD NOT BE RELIED ON FOR NAVIGATION.**

See the "Safety and Product Information Manual" for this product at racegeek.ie for product warnings, safety statements, Declaration of Conformity, warranty and other important information.

# Layout

Introduction

Introduction

The d10 is designed to provide you the information you need, when you need it. It displays information broken down into three pages: Prestart, Performance and Navigation. Each of these pages displays data to you relevant to that category.

The display layout consists of four elements: Top Digits, Middle Digits, Graphic Display and Touch Controls as shown in the illustration below.

**Top Digits**

**Middle Digits**

**Graphic Display**

**Touch Controls**

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16.2

09

HEADING      DIST TO B
346°  208ᴹ

### Left Arrow
• Change display page
• Change selection

### "Fred"
• Open context menu
• Hold to open device settings

### Right Arrow
• Change display page
• Change selection

### Circle
• Start timer
• - Minute on timer
• Capture pin
• To waypoint
• Capture tack

### Square
• Stop/Sync timer
• + Minute on timer
• Capture committee
• From waypoint
• Change display items in a page

# Overview

To change pages touch the left arrow ( ◄ ) or right arrow ( ► ) in the touch controls. You can cycle though the screens back to your original screen by continuing to touch the arrow in either direction.

## Page Menus

Each page has a contextual menu that can be accessed by touching the central racegeek icon we affectionately call - Fred. When in the contextual menu the left arrow ( ◄ ) or right arrow ( ► ) scroll through the menu options. Touching Fred again exits from the menu and returns you to normal operation.

## Device Settings

You can view the device settings from any page by touching and holding the Fred button for 5 seconds.

• When in the settings menu the left arrow ( ◄ ) or right arrow ( ► ) scroll through the settings

• Change the setting value by touching the square and circle buttons

• Touching Fred again exits from the settings menu and returns you to normal operation

| Prestart | Performance | Navigation |
|---|---|---|

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06.4
05:00

NAVIGATION
**PRESTART**
PERFORMANCE

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06.4
396°

PRESTART
**PERFORMANCE**
NAVIGATION

racegeek

06.4
356°

PERFORMANCE
**NAVIGATION**
PRESTART

# Registration

Registration is done electronically at racegeek.io. <== Please note the .IO suffix.

Racegeek.IO is the cloud and analytics portal.

Racegeek.IE is the sales portal.

To register your device visit Racegeek.IO you will need the d10's UUID and PIN - found in the documentation that came with your d10.

After you register and activate your free account at Racegeek.IO you can register your d10.  Once registered you will have access to the various access codes for the d10 and WiFi in case you forget or lose them and your device will be registered for warranty.

# Connect App & Configure WiFi

A majority of the functionality of the d10 operates out of the box, but certain features such as Waypoints, WiFi and Access to Cloud must be configured with the free a10 app available from one of the links below.

More information about the free a10 app can be found at racegeek.ie



Coming Soon

## Connect a10 App to the d10

To make changes to the d10 via the a10 app you must be connected to the d10's WiFi access point with the device the app is installed on.

You connect to the d10 by WiFi the same way you would connect to any other WiFi Access point:

1. Using the device that has the a10 app installed - open the wireless settings for that device to list the available Wireless Access points

2. Locate the WiFi network with the SSID listed in the documentation that came with your d10  and select

3. When prompted for password enter the WiFi password provided in the documentation

# Configure Cloud Access*

This section will be updated in 2018 with the release of cloud and analytics functionality.

# Overview

The Prestart page can be accessed by touching the left or right arrows in the touch controls until the graphic display shows "PRESTART" in large text.

The Prestart page is used to display: Timer, Line Information and Boat Speed.

## Before Line Captured or > 100m From Line

Boat Speed

Timer

Heading
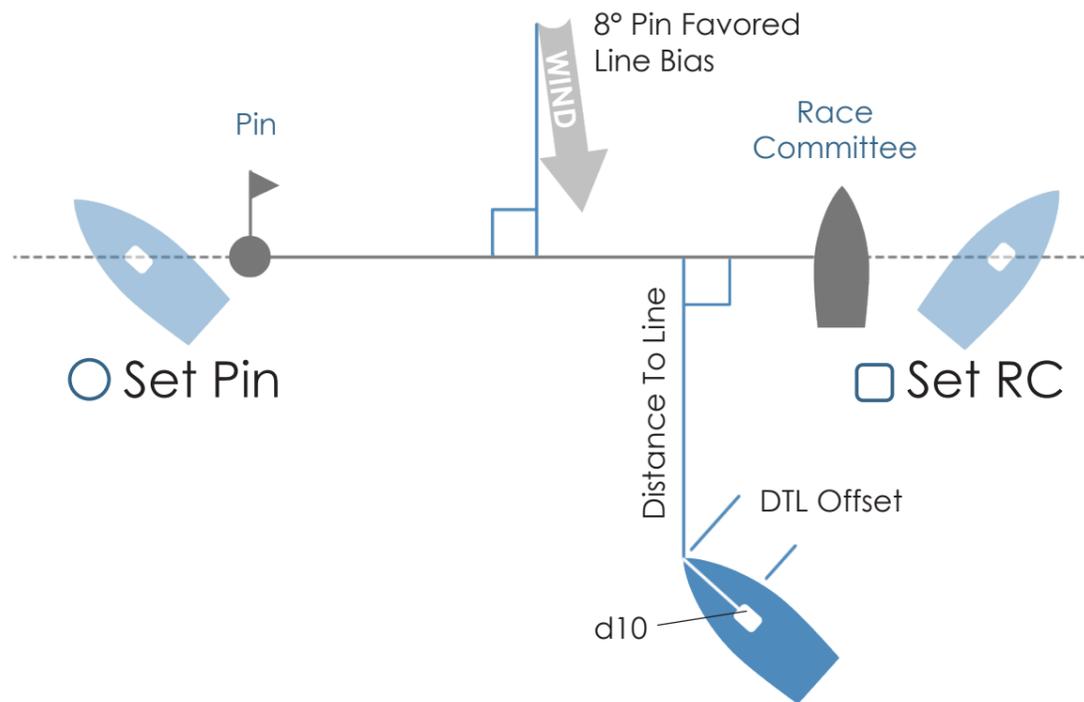
## Line Captured and < 100m From Line

Distance

Timer

Heading

Above/Below Line

Up Arrow    Behind Line
Down Arrow    Over Line

Line Bias
Pin or Committee

# 12 Distance To Line

8° Pin Favored
Line Bias

WIND

Pin

Race
Committee

○ Set Pin

☐ Set RC

Distance To Line

DTL Offset

d10

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**Using a transit view to capture a line end from outside line**

Below Line

On Line
Capture Pin Now

Above Line

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The d10 acquires the current GPS position when the ○ or ☐ are touched. Pin and Race Committee (RC) ends of the line can be captured anywhere along the line or its extension by touching the appropriate button.

To capture a more precise position for each end of the line we recommend sailing outside the line and sighting down the line and use the transit view.

### Distance To Line
The distance the d10 is from the start line measured perpendicular to the line.

### DTL Offset
Correction for the additional distance the d10 is from the bow of the boat. Configurable in d10 settings.

### Line Bias
The amount in degrees one side of the line is favored based on wind direction relative to the line.

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# Capture Line 13

To activate Distance To Line functionality, the Pin and Race Committee locations need to be captured.

**1**

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06.4
04:41
CHANGE MINS
PING LINE

👓 Open Menu
Select PING LINE

**2**

racegeek

06.4
04:41
CHANGE MINS
PING LINE

○ Capture Pin
Icon fills in when successful

☐ Capture Committee
Icon fills in when successful

👓 Exit Capture Mode

**3**

racegeek

26
04:23
HEADING
076°

Once Pin and Committee are captured speed will be replaced with Distance To Line

*See Performance Section for more information*

# Setting A Fixed Line

You can create a fixed start line using mark waypoints in the d10. Once fixed line is set you return to Prestart screen you will have Distance To Line functionality.

See **Configure Marks & Courses** for more detail on creating marks/waypoints.

| | | |
|---|---|---|
| 06.4 356° PERFORMANCE NAVIGATION PRESTART | ◀ ▶ Select Navigation | **1** Start/Stop |
| 06.4 09 ▶ A SALTHILL B SAOIRSE C SEAPOINT D S. BULL | 👓 Open Waypoints<br><br>◀ ▶ Scroll Waypoints | **2** Sync Time |
| 06.4 09 ▶ A SALTHILL B SAOIRSE C SEAPOINT TO D S. BULL | ◯ Set Port End<br>Waypoint lists TO<br><br>☐ Set Star. End<br>Waypoint lists FROM | **3** Change Time |

# Timer

When the timer countdown hits zero the d10 automatically changes to display the Performance Page and the timer begins counting the race duration.

At race end we recommend stopping the timer for more accurate data analysis.

| | |
|---|---|
| 06.4 04:59 HEADING 076° | ◯ Start Timer<br><br>☐ Stop Timer |
| 06.4 04:00 HEADING 076° | ◯ Sync to nearest minute when timer is running timer keeps running<br><br>☐ Sync to nearest minute when timer is stopped and adds a minute |
| 06.4 05:48 CHANGE MINS PING LINE | 👓 Open menu Select CHANGE MINS<br><br>◯ - minute<br><br>☐ + minute |

# Overview

The Performance page can be accessed by touching the left or right arrows in the touch controls until the graphic display shows "PERFORMANCE" in large text. The Performance page is also accessed automatically when the timer in the Prestart page reaches zero.

When the boat turns upwind (above 80° of the mean wind direction) the d10 automatically changes to the Performance page.

The Performance page has three different modes. To change the mode touch ☐

## Tactical Mode

—— Boat Speed

—— True Heading

—— Mean Wind Adjusted To Tack

## Off Wind Mode

—— Boat Speed

—— True Heading

—— Heel Angle

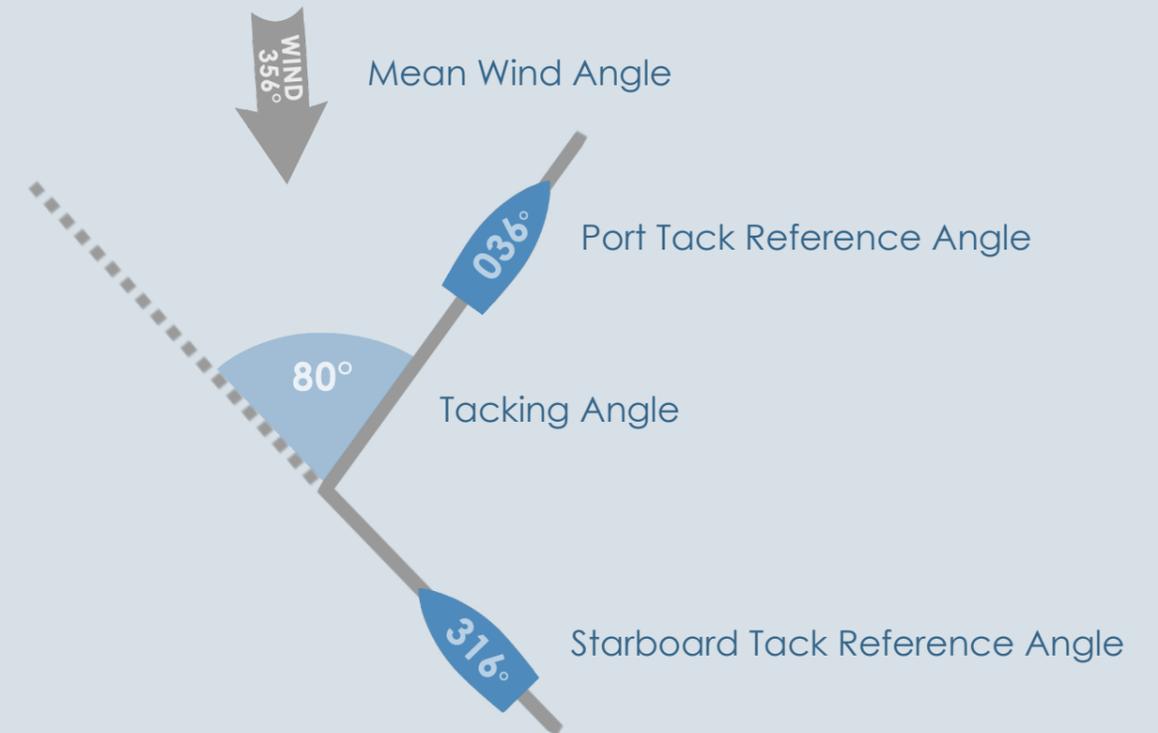## Performance Mode

—— Boat Speed

—— Shift Indicator

—— Heel Angle

# Mean Wind

The d10 stores the mean wind direction and tacking angle in order to provide shift tracking when going up wind.

## Mean Wind



Mean Wind Angle

Port Tack Reference Angle

Tacking Angle

Starboard Tack Reference Angle

### Capture Initial Mean Wind

If mean wind has not been captured yet the Performance page will show instructions in the Graphic Display.

### Update Mean Wind

Once the mean wind has been captured you can update at any time when sailing upwind by touching the ○ when in the Performance page.

### Mean Wind Before and After Start

Before the start (when the countdown is not zero) the d10 builds up an average based on the readings taken each time you press the circle button. By capturing the mean wind repeatedly you'll build up a better idea of what the average wind direction is.

### Mean Wind After Start

After the start the mean wind is reset based on the current heading and the tacking angle - no averaging is performed.

# Set Initial Mean Wind

If reference angles and mean wind have not been captured yet the Performance page will show instructions in the Graphic Display.

Follow the instructions on the screen.

| Display | Action | Instruction |
|---|---|---|
| **06.4** **316°** HEAD UPWIND AND PRESS CIRCLE | ○ | Head upwind on either tack and touch when ready |
| **06.4** **036°** CHANGE TACK AND PRESS CIRCLE | ○ | Change tack and touch when ready |
| **06.4** **038°** PORT WIND 036° | ▢ | Display switches to Tactical Mode, touch ▢ to change mode |

| **06.4** **09**▶ TACK ANGLE 80 MEAN WIND 356 | 👓 | Open menu |
| | ◀ ▶ | Select |
| | ○ | Decrease |
| | ▢ | Increase |

# Shift Tracking

The d10 uses the saved Mean Wind Direction compared to the boat's current heading to show changes in wind direction. You can reset the Mean Wind Direction at any time when sailing upwind by touching the ○
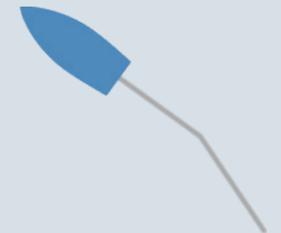
## Header

| 1 | 0° | 05° | 10° | 20° |
|---|---|---|---|---|



| 2 | 06.2 00 | 06.2 ◀05 | 06.2 ◀10 | 06.2 ◀20 |

## Lift

| 3 | 0° | 05° | 10° | 20° |
|---|---|---|---|---|



| | 06.2 00 | 06.2 05▶ | 06.2 10▶ | 06.2 20▶ |

Change Tack Angle or Mean Wind

# Overview
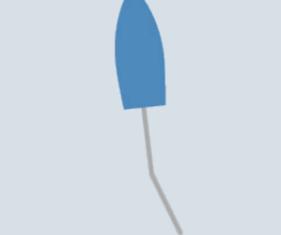
The Navigation page can be accessed by touching the left or right arrows in the touch controls until the graphic display shows "NAVIGATION" in large text.

The page name displays for 2 seconds before the Graphic Display reverts to active mode.

The Navigation page provides: Boat Speed, Turning Angle, Heading, Distance To Mark, Time To Mark, Course Over Ground.

When the boat turns downwind (below 80° of the mean wind direction) the d10 automatically changes to the Navigation page.

The Navigation page has two different modes. To change the mode touch □

## Distance Mode

— Boat Speed

— Turning Angle

— Heading and Distance To Mark

## Time Mode

— Boat Speed

— Turning Angle

— Heading and Time To Mark

# Configure Marks & Courses

Marks and Courses can be added to the d10 via the free racegeek a10 app.
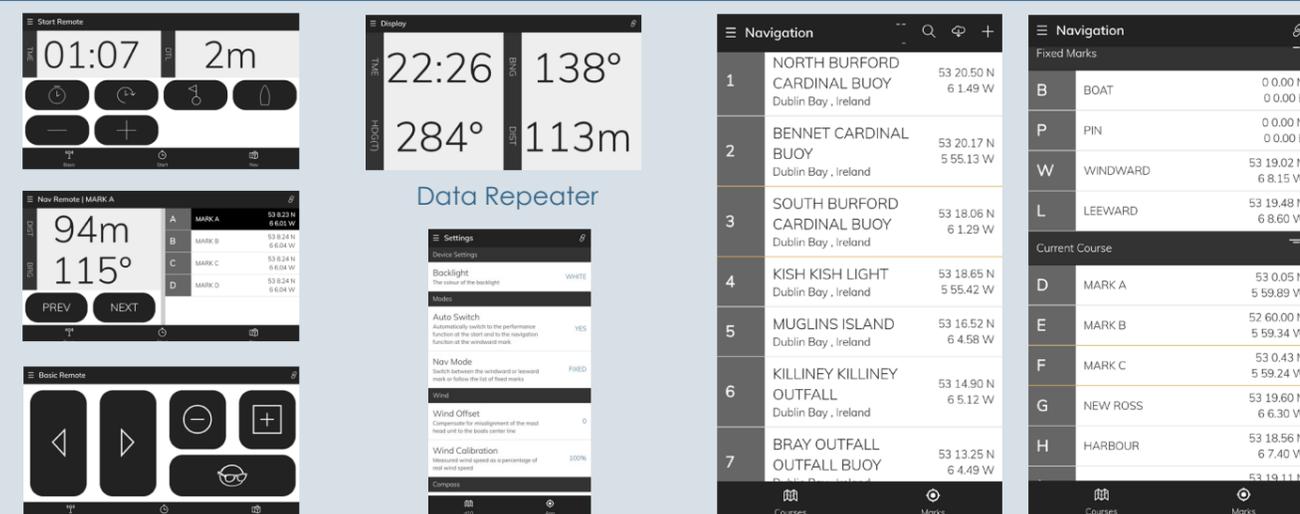
The a10 app supports PCs, IOS and Android phones. You can download from the links below and find more information in the app or at racegeek.ie.

Available on the App Store

ANDROID APP ON Google play

Coming Soon

## Some screens from the a10 app

Context Specific Remotes

Data Repeater

Control d10 Settings

Store Courses & Marks

# Manually Choose Marks

Waypoints can be selected manually from the Navigation menu at any time during a race.

Open Menu

Select Waypoint

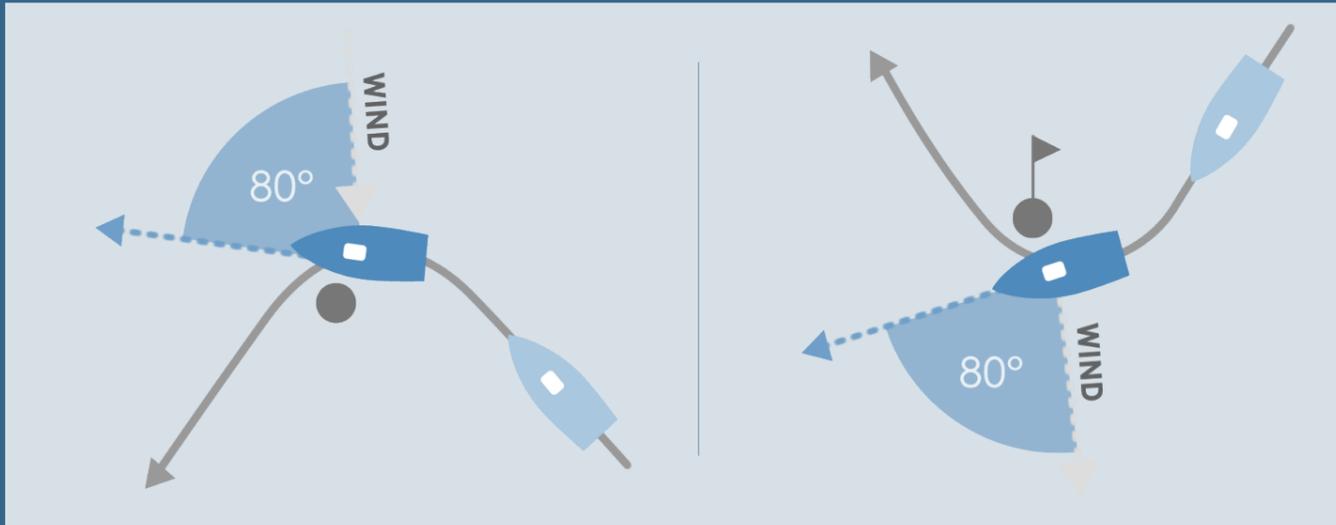Select Waypoint TO

Select Waypoint FROM

# Auto Acquire Marks

When Navigation Mode in settings is set to: Windward/Leeward, the d10 uses the current heading, mean wind direction and GPS position to acquire the windward and leeward mark positions.

Once the heading passes 80° above or below the mean wind direction the GPS grabs the boat's current position and saves it.
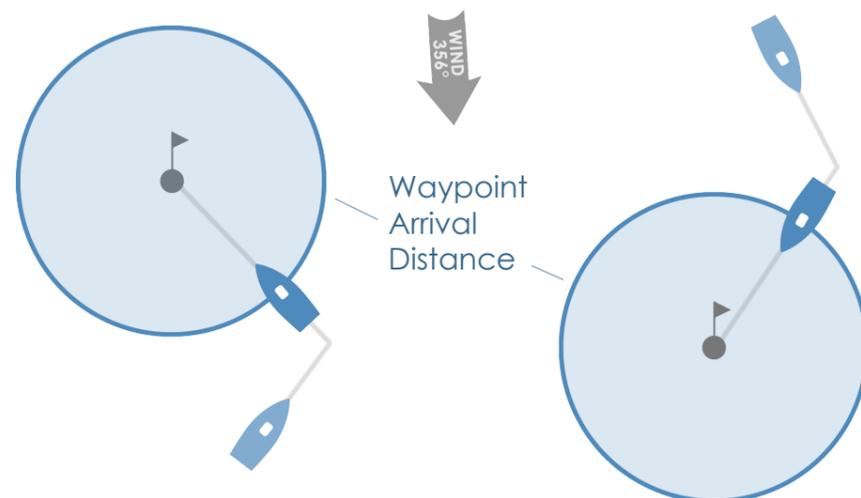
## Windward Mark

## Leeward Mark



# Auto Progress Course

When Navigation Mode in settings is set to: Course Mode, the d10 uses the current GPS position, saved mark GPS position and the Waypoint Arrival Distance to auto progress the course to the next saved mark. The Waypoint Arrival Distance can be changed in the d10 settings.
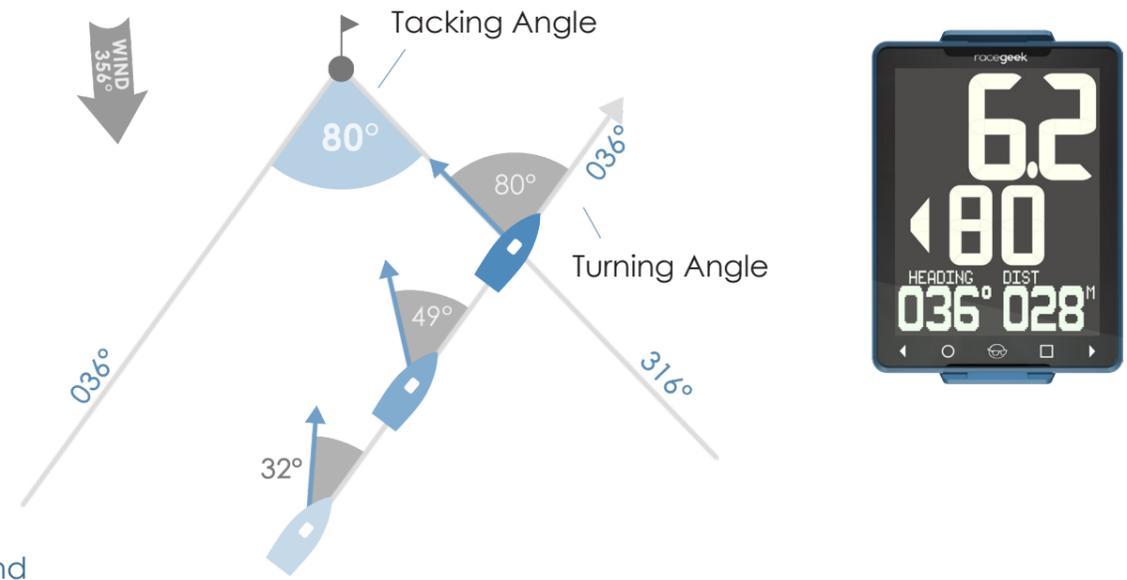
## Windward Mark

## Leeward Mark



Waypoint Arrival Distance

# Turning Angle

The middle digits in all Navigation modes shows the Turning Angle. The left and right arrows show the direction of turn required to travel directly towards the waypoint.
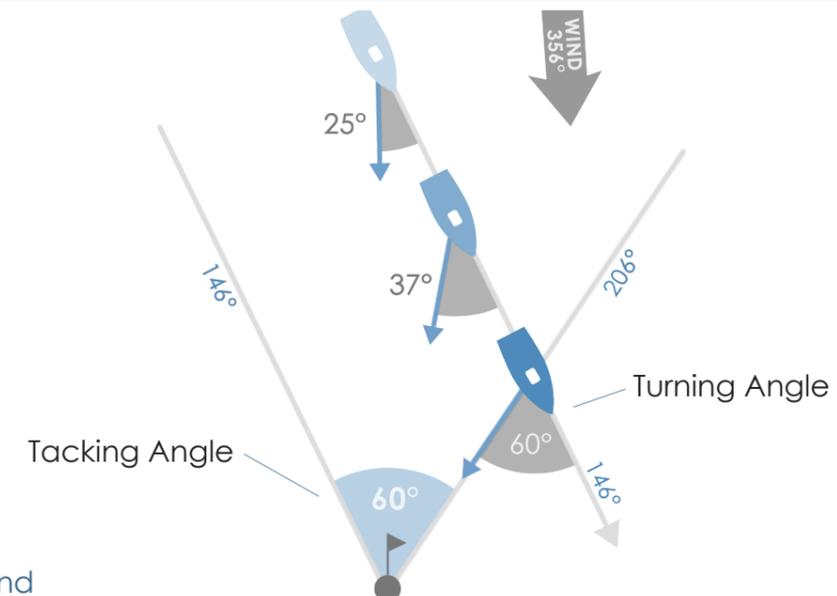
## Upwind



Tacking Angle

Turning Angle

Upwind

Sailing upwind the turning angle shows the difference between the heading and bearing to a waypoint or mark. When the Turning Angle equals your tacking angle then you are on the layline.

## Downwind



Tacking Angle

Turning Angle

Downwind

Sailing downwind the turning angle shows difference between the Course Over Ground (COG) and bearing to the waypoint.

# Settings

The d10 Settings can only be changed from the free a10 Companion app. You can also use the free embedded web app found at racegeek.ie/apps/a10

| Name | Function/Description | Options |
|---|---|---|
| UUID (info only) | The unique ID of this d10 | |
| VERSION (info only) | The version of hardware and software you are using | |
| BACKLIGHT | Change the backlight colour<br><br>The options are none, white, red and pink (red and white together) | None, White, Red, Pink (red/white together) |
| **Modes** | | |
| AUTO SWITCH | Turn on/off d10 automatic page switching<br><br>In auto mode the d10 changes pages at the end of the countdown and when you change between windward and leeward | Auto, Manual |
| NAV MODE | Switch between Windward Leeward and Course Mode<br><br>In windward/leeward mode the destination way point is changed between the windward and leeward mark depending on whether you are going upwind or downwind. In course mode the d10 will move to the next mark in the waypoint list on arrival. | Windward/Leeward, Course |
| **Wind** | | |
| WIND OFFSET | Compensate for misalignment of the mast head unit to the boats center line | Value |
| WIND CALIBRATION | Measured wind speed as a percentage of real wind speed | Value |
| **Compass** | | |
| COMPASS RATE | Number of times a second the heading is updated | 10x, 5x, 3x, 2x, 1x |
| OFFSET | Compensates for any error between the angle of the d10 to the boats center line | Value |
| DECLINATION | The difference between true and magnetic North, automatically updated from GPS | Value |
| COMPASS PRE-FILTER | The amount of prefiltering done to the accelerometer and magnetometer | Value |
| COMPASS GYRO - BIAS | How much influence the Gyro has on stability of heading | Value |
| COMPASS DAMPING - LOW | The amount of damping applied to the compass heading during a slow/small turn | Value |
| COMPASS DAMPING - HIGH | The amount of damping applied to the compass heading during a fast turn | Low, Medium, High |
| COMPASS THRESHOLD - LOW | Rate of turn that the Compass Damping-Low is applied | Value |
| COMPASS THRESHOLD - HIGH | Rate of turn that the Compass Damping-High is applied | Value |
| **Speed** | | |
| BOATSPEED RATE | Number of times a second the boatspeed is updated | 10x, 5x, 3x, 2x, 1x |
| PADDLE TYPE | Paddle wheel type connected to d10. | 'SIGNET', 'Airmar ST Series', 'Airmar DST/CST' |
| PADDLE CAL | Single point multiplier for raw to calibrated boat speed | Value |

| Units | | |
|---|---|---|
| DTL UNITS | Units displayed for distance to line | 'Feet', 'Meters', 'Boat lengths 20ft', 'Boat lengths 25ft', 'Boat lengths 30ft', 'Boat lengths 35ft', 'Boat lengths 40ft' |
| BOW OFFSET | Distance behind the bow that the d10 is mounted, | Value |
| ARRIVAL DIST | Distance to the mark at which the d10 switches to the next mark in fixed mark navigation mode | Value |
| RECALIBRATE (command) | Manually recalibrate the compass | |
| FACTORY RESET (command) | Reset all settings to default values | |

# Specs

# Maintenance

### General

- 190mm x 136mm x 24mm 7.5" x 5.3" x .9"
- 640g / 1.4lbs
- Touch sensitive buttons
- White and red backlights

### Display

- Large 60mm and 40mm LCD digits
- 35 mm graphic display
- Anti-Glare Corning® Gorilla® Glass protective cover

### Compass

- State of the art 9 axis AHRS (gyroscope, accelerometer, magnetometer)
- 1 degree accuracy
- 10 hz rate
- GPS/GLONAS

### WiFi

- WiFi Access Point & WiFi Device
- NMEA0183 & SignalK

### Connectivity

- NMEA0183
- NMEA2000 (with external cable)
- SignalK
- Analog

### Memory

- 128MB on board memory
- Logs data at 10hz*
- Race Processor
- 85Mhz programmable processor

### Case

- IP67 Rating
- Tested to 24hrs submersion @ 1.5m

### Power

- @12v - 80mAh w/Backlight 120mAh
- External Battery - 9-32v (not supplied)

*avail 2018

The d10 is totally sealed against water and is not serviceable.

Any attempt to take the d10 apart will invalidate the warranty.

To clean, use only a damp soft cloth. No detergents, solvents or abrasives should be used.