

## Technical Specification

### System

Accuracy : better than 20cm ( Race-Trax position enhancement) 95%rms  
Board Size : 110mm x 65mm x 39mm (4.4" x 2.6" x 1.5")  
Tracker Size : Typically 140mm x 72mm x 48mm (5.5" x 2.8" x 1.9")  
Battery life : 8hrs to more than 72hrs (battery specification dependent)  
Update Rates : 20Hz, 10Hz, 5Hz, 2Hz, 1Hz and less  
Data Transfer : GPRS (Quad Band)  
Sat.Comm (1.6GHz)  
UHF (458M, 868M, 900M, 2.4G & 3.5G Hz)

Weight :485 grammes

### Mechanical

Material : ABS / PVC  
Waterproof : I.P. 67  
Shock : Vertical axis 30G, other axes 20G

### Environmental

Operating temp : -40 °C +80 °C (-45°C to +80°C storage)  
Humidity : 95% max (non condensing)

### Antenna

RF Modem : 458MHz, 868MHz, 900MHz, 2.4GHz, 3.56GHz and 1.6GHz

GPS : L1 / L2 bands (1575.42MHz)

Data : Type :  $\frac{1}{2}$  wave matched dipole

Gain : 2dBi

Connector : SMA (F) gold plated

GPS (internal / external) : Type : ceramic patch 28dB

Gain : 28dB Low Noise : 0.8dB noise

Coverage : Low elevation angle coverage

Connector : SMA (F) gold plated

Output impedance : 50 Ohm

VSWR : 1.5:1 max (at connectors)

Ground plane : Internal

### Electrical

Voltage : 5V - 14.8V

Current : Sleep <1mA,

Standby <18mA,

Transmit 125mA - 760mA

Typ. Av 260mA

Battery : 3600mAh LiPol (others by specification)

Battery life : Transmit @1Hz > 8hrs Standby > 72hrs

Recharge time : < 2hrs 30mins

Connector : Lemo 5 pin keyed

Charger : Switch mode AC/DC (world-wide connectors)

### Network

Number of users : RF Modem - 64 (@1Hz Typ.) 96 max per data channel.  
GPRS - 999 max.

Protocol : EireTech proprietary (dynamic, self-healing stateless wireless)

## Race-Trax : Setting the standard in tracking systems...



**Race-Trax**  
LIVE! Tracking

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**Race-Trax**  
LIVE! Tracking

Conventional remote tracking systems use GPRS or Sat. Comm. telemetry to transfer data to the web. The systems do not "talk" directly to the Race Officer and his team on the Committee Boat and only limited information, over and above public web viewing, is available to the Event Management Team ashore. Update rates are often limited to once per 15 - 20 seconds and delays in delivery and patchy coverage are not unusual whilst accuracy is often no better than 3 to 10 metres. In addition, data usage costs can make the system expensive to use on an ongoing basis.

### The Race-Trax difference...

The Race Trax system offers sub ½ metre accuracy, 20 times per second update rates, a large secure onboard data log, inbuilt heading, pitch & roll sensor, wind sensor connectivity and, in addition to the more normal GPRS and Sat. Comm. modes of operation, a free-to-use, 25km, UHF telemetry module.



Race-Trax can broadcast second-by-second competitor, safety boat, mark and wind data *simultaneously* to the Committee Boat, to the Race Office, to the Web, to TV and a multitude of other on-site media teams.

In GPRS or Sat. Comm. modes, where updates can be less frequent, the secure inbuilt data storage provides historical access to a tracker's progress - second by second - at any time.

In addition, the Race-Trax system can be integrated with existing on-board systems data, has an 8 hour operating





time between recharges and comes in a robust, marinised waterproof package that at, 160mm x 77mm x 52mm and 485gms, can quickly and easily be sited anywhere.

### For Race Management Teams...

The wealth of data Race-Trax trackers deliver means the system can be used as a tool for Race Management Teams ashore and afloat.



Data accuracy and instant availability can assist Race Officers with various tasks such as determining the number of competitors on the water, mark rounding times and provisional finish times. Those ever difficult judgements about On Course Side (OCS) and race infringement rules are also simplified

by having the Race-Trax 'eye-in-the-sky' view available for instant review. Location and direction of safety boats to a particular incident can be of major benefit. The Race-Trax mark laying

module simplifies laying and changing of the race course in changeable conditions whilst on-course wind data can help Race Officers create precise start



line bias for that perfect windward beat and exact leg lengths for any required race duration.

AIS capability also ensures commercial traffic data may be overlaid on the Race-Trax screen to aid that all important interface between the Race Management Team and local Harbour Authorities.



The Race-Trax instant transmission capability ensures Race Management Teams ashore are kept aware of those all important conditions and decisions afloat such as start times and postponements, course layout, wind speed and direction, number and location of on-course competitors (even identifying the one or two who may not have left the dock), first mark rounding times and provisional finish times etc.

### For Competitors and Coaches...

The Race-Trax solution enables advanced analysis of the days race and training data. Without the LIVE! Event Management features, Race-Trax<sup>LITE</sup> simplifies the uploading of tracker data (wirelessly of course) to



the replay suite where it may be merged with other training data and replayed on any local PC or laptop at any time for Post-event tactical review and two boat tuning.

Race-Trax<sup>LITE</sup> does not need an internet connection to function making it available not only in the class room but also on the train, the plane or the bus.

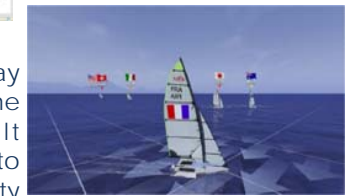
Speed, course, heading, pitch and roll, wind and a host of other data may be combined within the replay suite to produce advanced features such as Time to Go, points of sailing and VMG Vectors along with a host of other performance related data.

Data may also be uploaded to GoogleEarth™ and saved as a FLASH™ or WMV file for YouTube™ or website sharing.

### For Spectators & Sponsors...



The LIVE! race information does far more than provide Event and Race Management Teams with accurate on-the-water information. Linked to the Race-Trax 2D web based



Race-Viewer, data may be streamed LIVE! to the web, whilst inbuilt functionality to stream to 3<sup>rd</sup> party 3D virtual reality web players is supplied as standard. In all cases LIVE! race information can be made available to a host of applications, both locally and on the web.



### In short...

Race-Trax provides Race and Event Management Teams with sophisticated and highly accurate LIVE! on-the-water information, delivers added value for sponsors, and allows friends and family to follow the racing LIVE! from the comfort of their own sofa anywhere in the world via the internet or local broadcast media teams (only previously seen at events like the America's Cup).