

esa Regatta Watch

Operative Manual

1.1 - 3/2015

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Introduction: welcome in esa Regatta Watch (easy sailing assistance)

Esa Regatta Watch is the first smartwatch with an application specifically designed for sail and regatta, able to provide all the information on boat's performances with a professional level, in a simple, direct and completely automatic way right on your wrist.

esa provides the comparison of the actual performance respect to the target, provides all data for a winning start, works as a repeater for the onboard instrumentation data, records navigation data al allows a further editing of them.

esa is an instrument useful at every level:

- for the beginners who wants to improve the basic setting of his sails, both in cruise and regatta;
- for the racers which searches for the best performances on his boat without renouncing to use a professional instrumentation that usually has much higher costs and complexity respect to **esa.**

Thankfully to the extreme portability is possible to access to all performance and navigation data of the boat in any position onboard!

esa is connected to onboard instrumentation through Wi-Fi connection which transmits NMEA0183 data.

The following instruction will let also the beginners to use easily **esa** app

CAUTIONS

In order esa to work properly and to let work it at the maximum potential is important to have onboard instrumentation calibrated.

For its own calculation **esa** imports from onboard instrumentation a series of essentials data that elaborates on its own: Boat Speed (BS), Magnetic Heading (HDG), Apparent Wind Angle (AWA) and True Wind Angle (TWA).

We recommend to carefully read the instruction of yours navigation system and to perform the data calibration of those mentioned above as written in their manual. Calibration values could change through time, is better to check them periodically to be ensured the onboard instrumentation and consequently **esa** work properly.

It is better to learn the meaning of the abbreviations comparing in esa displays.

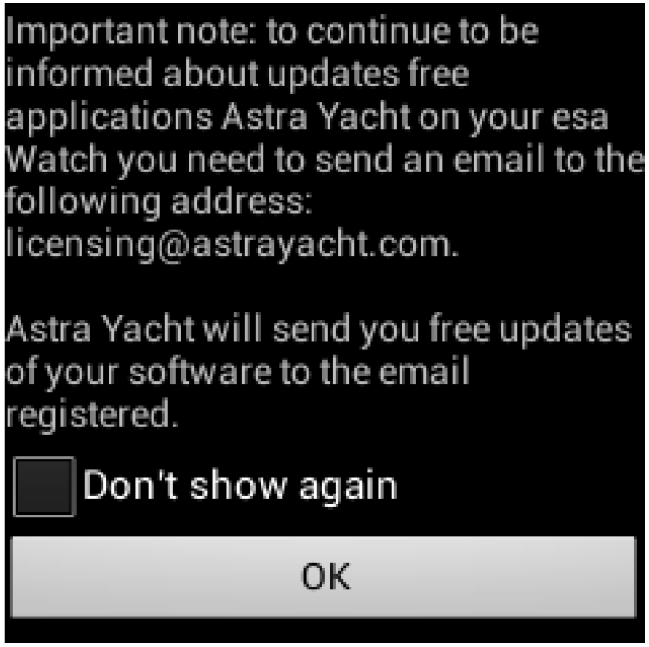
Initial	Denomination	Meaning
BS	Boat speed	Boat speed on water (knots)
Pol	Boat speed polar	Boat speed as polar (knots)
AWA	Apparent Wind Angle	Apparent wind angle(°) respect to the bow (+ from right; - from left)
AWS	Apparent Wind Speed	Apparent Wind Speed (Knots)
TWA	True Wind Angle	True Wind Angle (°) respect to the bow (+ from right; - from left)
TWS	True Wind Speed	True Wind Speed (Knots)
TWD	True Wind Direction	True Wind Direction respect to the magnetic North
%	Boat Speed Perc.	Boat Speed Percentage respect to the polar (target data)
HDG	Heading	Bow magnetic heading (°)
SOG	Speed Over Ground	Boat Speed over Ground (from GPS) (Knots)
COG	Course Over Ground	Boat course over ground (from GPS) (Knots)
OPP TACK	Opposite Tack	New bow Heading (HDG°) after a veer or shoot down, on TWA tgt course
BS tg	Boat Speed Target	Boat Speed Target for Bowline/Stern (Knots)
TWA tg	True Wind Angle Target	True Wind Angle Target for Bowline/Stern (°) (+ from right; - from left)

INITIAL SET UP PROCEDURE FOR THE APP

At THE FIRST BOOT of the app is useful to follow all the onscreen instructions.

In particular please remind to write with your reference email for **esa Regatta** Watch at the address displayed below, : “**licensing@astrayacht.com**”

By this, Astra will be able to freely send to you all **esa** upgrades via email through .apk files to be installed on your esa Watch



IT'S EASY, FEW STEPS AND GO!



1. **Select reference yard polar file**
2. **Press "Connect" button**
3. **Choose Between Wi-Fi or Demo (in case of Demo is sufficient press Start then)**
4. **In case of Wi-Fi, select ESA or NMEA, esa Watch o be previously connected with through system settings of the smartwatch itself, see also pag 18**
5. **Press Start**

The following presentation is for getting in the way of functioning of esa.
It's recommended to use demo to practice in esa, with the help of this manual.

WARNING

If you want to restart **esa** (in particular after errors of data computation, with crash of the app), is recommended to press and hold "home" button, and swipe out the app itself from the list. After this, it is possible to restart **esa** from zero.

4 MAIN SCREEN



1. **Navigation Data visualization.** It is possible to select 2 data per time, until 8 minor screen by pressing on arrows on the side of the screen (see pg 11)



2. **Target Display:** wind angle and and boat speed for best WMG (bowline and stern)



3. **Target Speed indication** for any wind angle



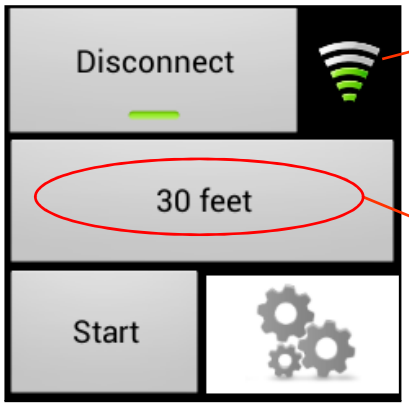
4. **Starting Procedure:** time and distance from the starting line.

All different screen are reachable by swiping left or right the finger on the screen.

esa Functionalities OTHER ASPECTS

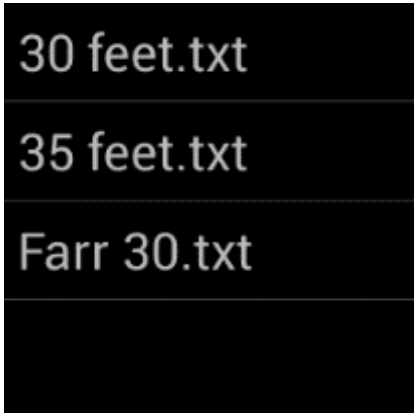
- Wi-Fi connection system able to connect with both NMEA0183 transmitting system and GAMP 0183 esa system by Astra
- Target data constantly updated depending on wind intensity and angle (continuous interpolation)
- Data collection of navigation and possible storage on your PC
- Damping setting
- Possibility to insert target data (polar) of the boat by putting them in the appropriate folder
- Possibility to ask Astra Yacht s.r.l. specific analysis

Starting Screen: choiche of the reference polar



Wi-Fi signal strenght

Choice of files Polar reference from which will be extracted the value of the target boat speed (can be one of those present by default in esa or entered by the user)



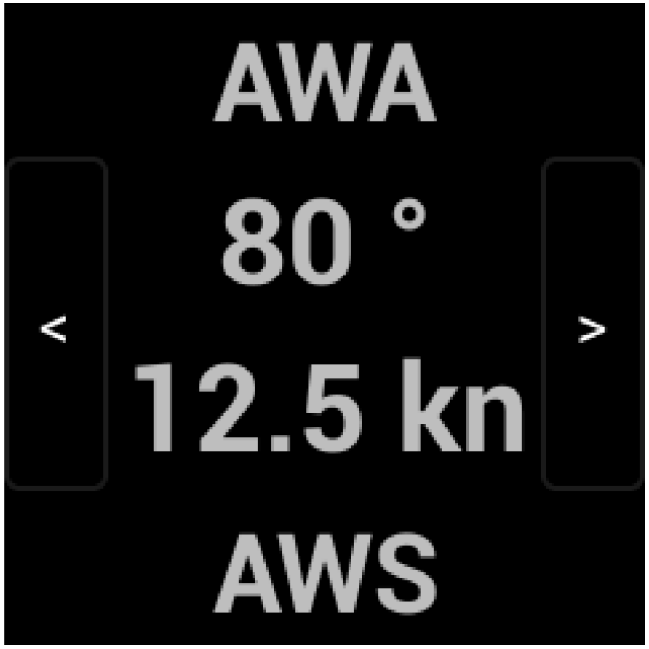
REFERENCE POLAR FILE:

- Select a file in storage
- A new polar can be inserted following the appropriate procedure (see page 19-21)

Main Screen: NAVIGATION DATA (1/2)

It can be displayed 2 data per time, between 8 different combinations, selectable by pressing the arrows on the side of the screen (left and right)

In addition to data obtained by boat's instrumentation, there are those calculated by **esa: BS tg, Opp Tack.**



Couple of data display switchable by arrow press on the side of the screen

Main Screen: NAVIGATION DATA (2/2)

Here below all the possible combination of navigation data displayable



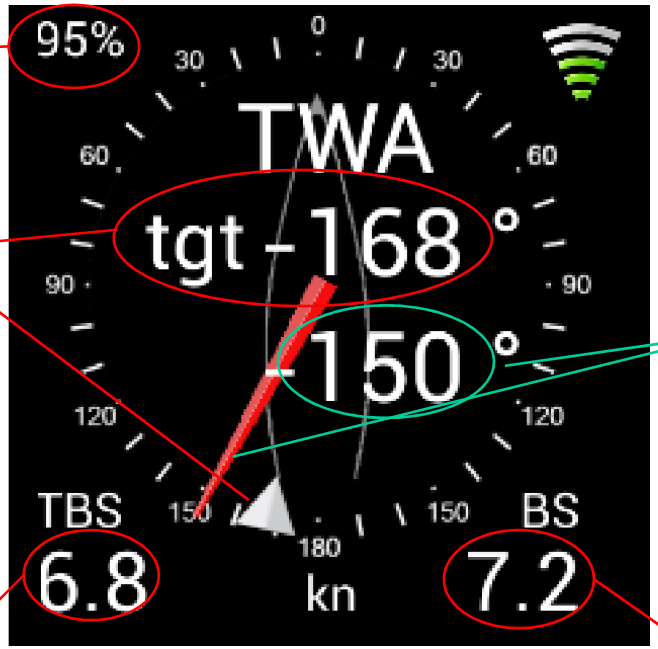
Main Screen: PERFORMANCE TARGET (bowline and stern) (1/2)

This page displays the optimum speed boat and true wind angle that generate maximum VMG (Velocity Made Good) going to bowline and stern, extracts from the polar table, given the intensity and angle of the wind.

These values are compared with the values obtained from the vessel and provides an indication of the percentage VMG current than the

% shows the comparison between real and target VMG

tgt: target angle of the wind for the max VMG, shown with a white triangle



True wind Angle, shown also by the instrumentation needle (and the red one on the graphics)

Target BS: target speed of the boat for max VMG

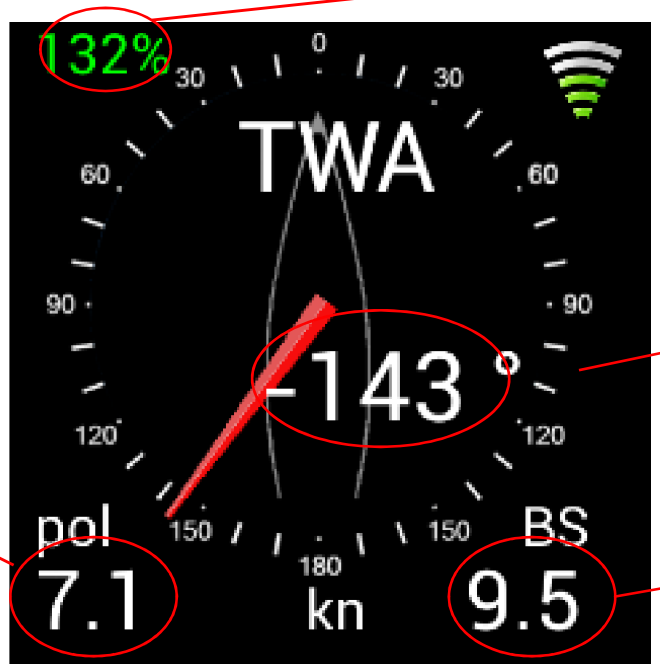
Boat Speed: real time boat speed.

The starting procedure page is on the right by swiping the finger on the screen from right to left from navigation screen.

Main Screen: PERFORMANCE TARGET (in all points of sailing) (2/2)

In different points of sailing from bowline and stern, target speed to be reached is shown, obtaining data from polar table, based on boat angle respect to the wind and its intensity: target are constantly update in real time.

%: comparison between boat and polar speed



TWA : true wind angle, both number and needle (red one)

Polar BS: optimal speed extracted from the polar table, interpolated with wind angle and intensity

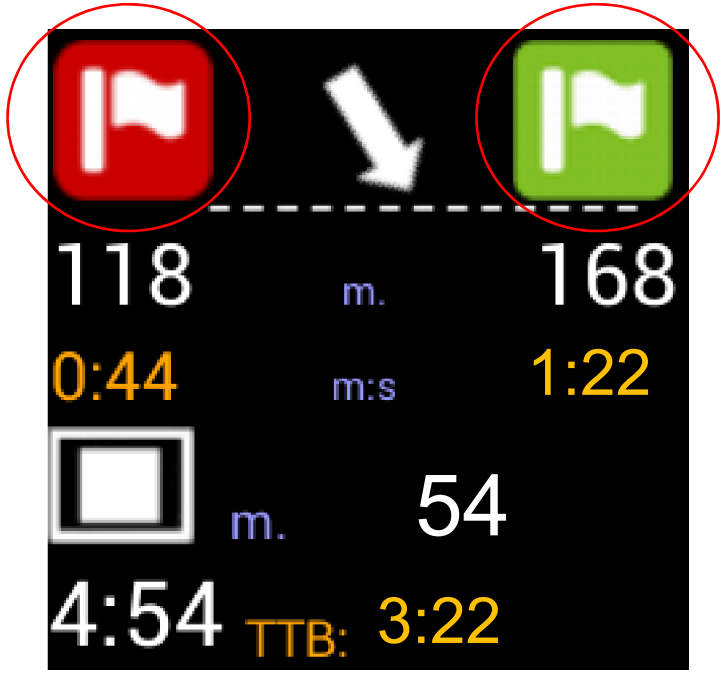
Boat Speed: actual boat speed

The starting procedure page is on the right by swiping the finger on the screen from right to left from navigation screen.

Main Screens: STARTING PROCEDURE (1/3)

STARTING LINE DEFINITION

Bring the boat near the left side of the starting line, with a little pressure on the left flag (initially blue) the firts side is fixed. The left flag becomes red. On the same way proceed with the right side (the flag becomes green)



• The positioning has to be made at low speed, evaluating the point on the bow of the boat, in order to prevent unalignment between GPS and bow.

• It is possible to replace the points by keeping pressed the flag where desired.

Once set the starting line, the app provides all data automatically.

The starting procedure page is on the right by swiping the finger on the screen from right to left from navigation screen.

WARNING:

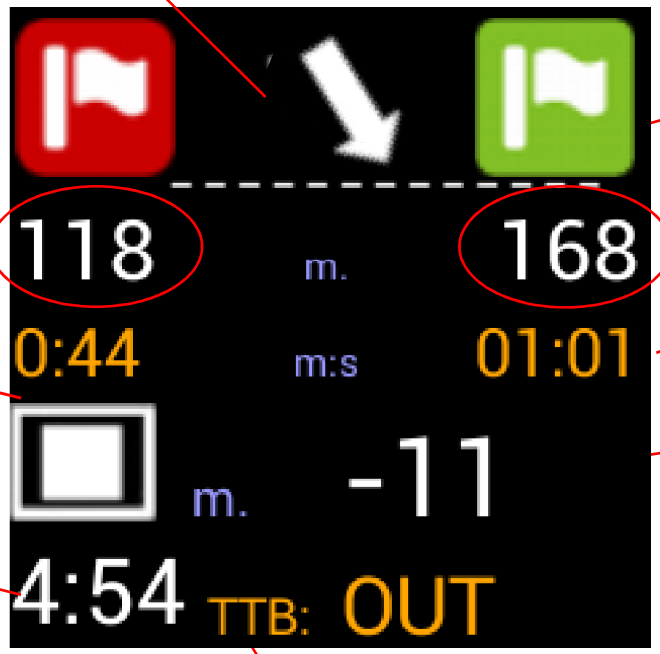
In order to the system to work is necessary to interface the onboard instrumentation with a GPS antenna, and that **esa** receives GPS data (is sufficient to verify that SOG is on, with the boat under movement and the value has to be different than zero)

Main Screens: STARTING PROCEDURE (2/3)

SIZES HIGHLIGHTED IN STARTING PROCEDURE

Positioned the ends of the line (green flag and red), the system provides, on a single page, the data necessary for a proper setting of the start

Graphic indication of the wind angle respect to the line



START/STOP
5 minutes timer

Sync timer.
Press for a second to change by + or – one minute

Meter distance of the boat from right (green) or left (red) end of the line.

Time needed to reach the ends of the line

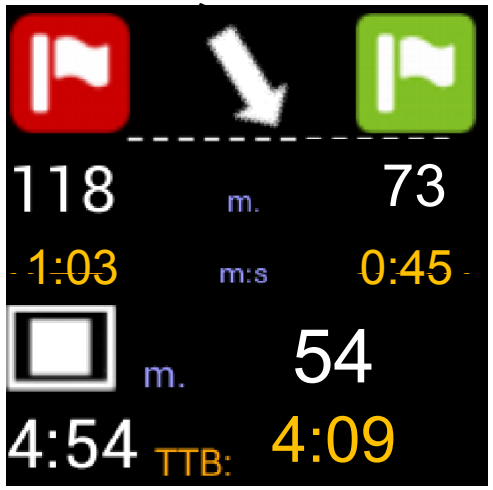
DISTANCE TO LINE: distance to the line measured perpendicularly to line itself:
Positive value: In
Negative value: out

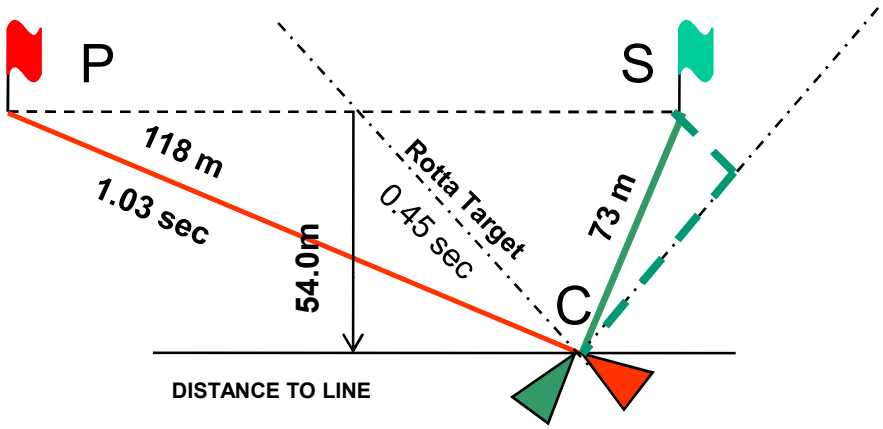
TTB: Time to Burn is the time that we are ahead on the starting line from the current position if sailing bowline to target speed; If the display is OUT (see image above) means that you are over the line (see p. below)

Main Screens: STARTING PROCEDURE (3/3)

TIME EXTIMATION METHOD:

esa before the start creates specific targets, reducing those from yard polar for a predefined percentage, accounting that in this phase the performance are slightly lower. With these new target and the distances provided by **esa**, the time needed to reach the ends of the starting line.



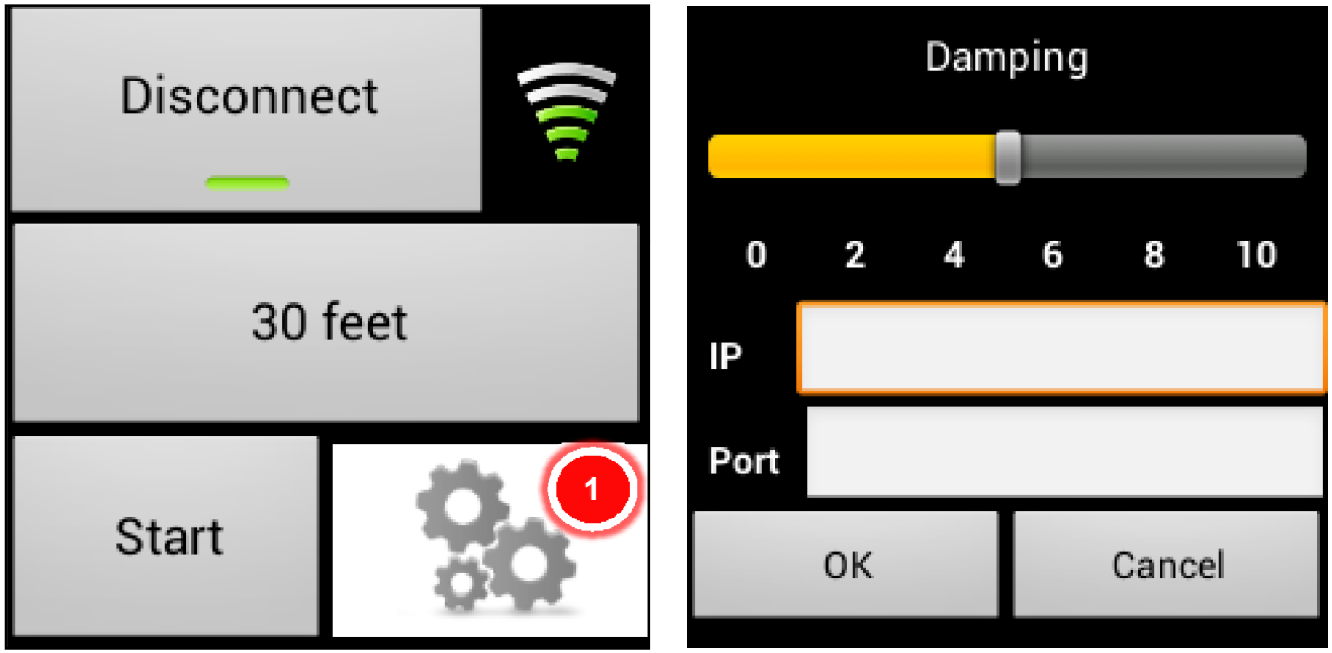


If, in the point in which the boat is, is impossible to reach directly one of the ends of the starting line, sailing in strict bowline, the time indication text is replaced by “OUT”.
Also in this way you obtain the indication that you are behind the lay line for the end in question, therefore is necessary to veer at least one time to reach the end itself.

Note well: **esa** does not take count of veer time, for reach the point S, boats on point C in figure, the indicated time will be the same for each boat, but for the read one one more veer will be needed, and consequently more time will be spent for reach the point

SETTING: Damping

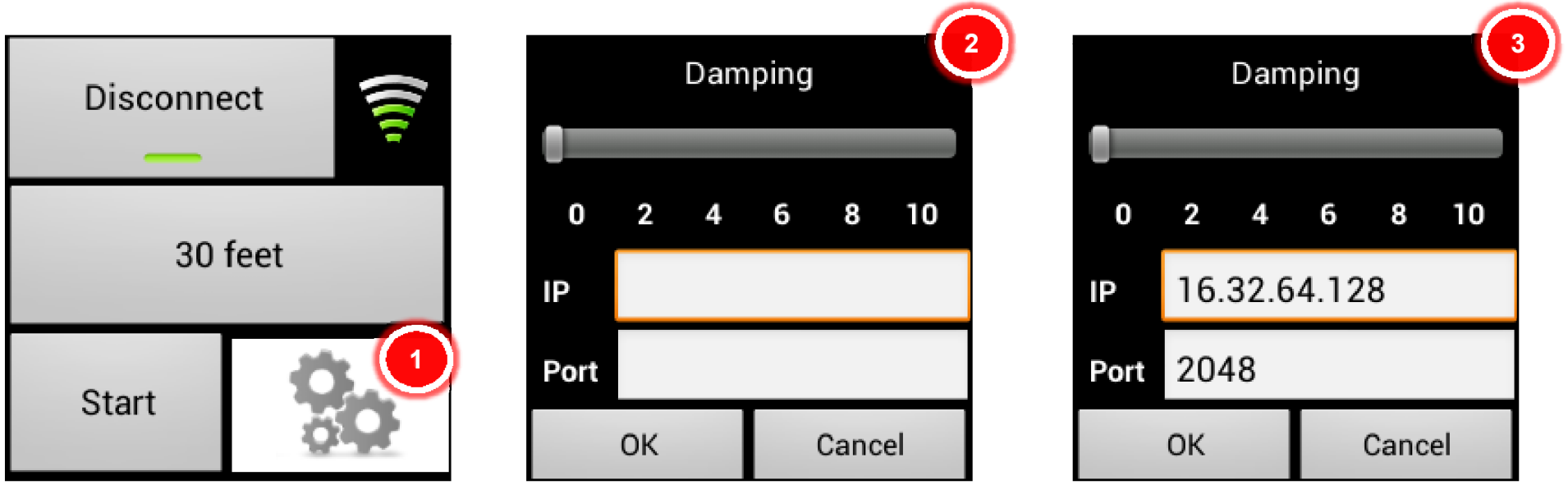
To access the screen, press the button on the low right (1)
Through this setting is possible to set the Damping level of entering data.
In particular Damping is the value of softening over data variation displayed. It can be selected to move from minimum of 1s (established data) to a maximum of 9s (input data in esa very unstable)



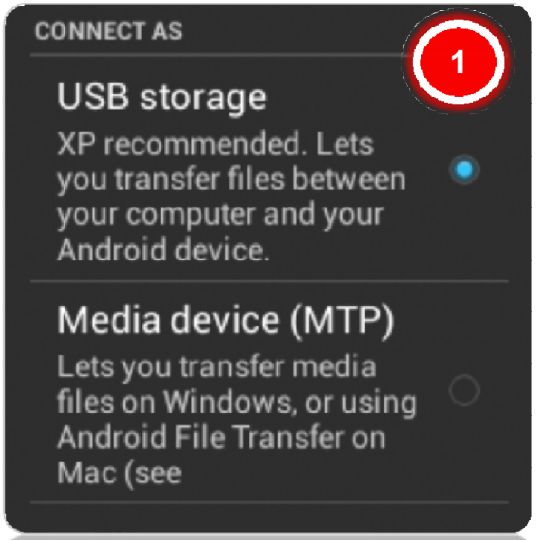
SETTING: Wi-Fi Connection

First connect the Wi-Fi on the smartphone to your on board Wi-Fi net
Then if you don't use an Astra Wi-Fi device, you has to set the connection
To access to the Wi-Fi setting, press the button on the low right (1)
Through this setting is possible to set the connection parameters (IP, Port), write the data of your Wi-Fi device (2)
If the IP and Port fields are empty the app try to connects to the GAMP (Astra Yacht Multiplexer Wi-Fi) with default IP and Port. (2)
Otherwise the app connects with IP and Port inserted. (3)

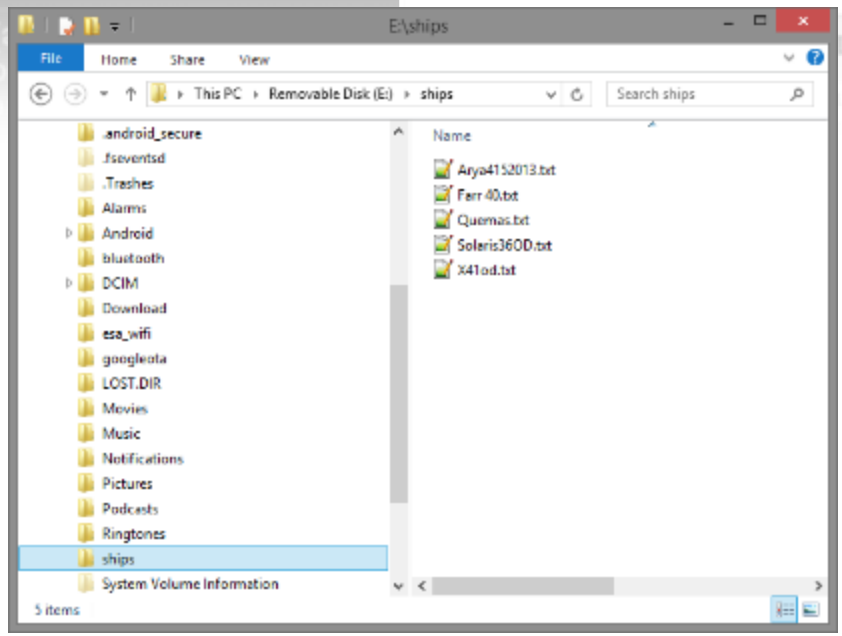
NOTE: the number that you see on the figure (3) is only for example, please check the instruction of your device to find the rights numbers.



Attachment 1: POLAR FILE UPDATE FROM FILE MANAGER (1/2)







Is it possible to insert polar file data in **esa,** by uploading the file in the appropriate folder, once you connect the watch to the PC.

esa Watch connection to a pc:

-**Windows:** connect esa Watch through usb directly to the pc. Select from notification tent (go home, swipe down the finger) connect as “usb storage” **(1)** Press then “Turn on USB storage” **(2).**

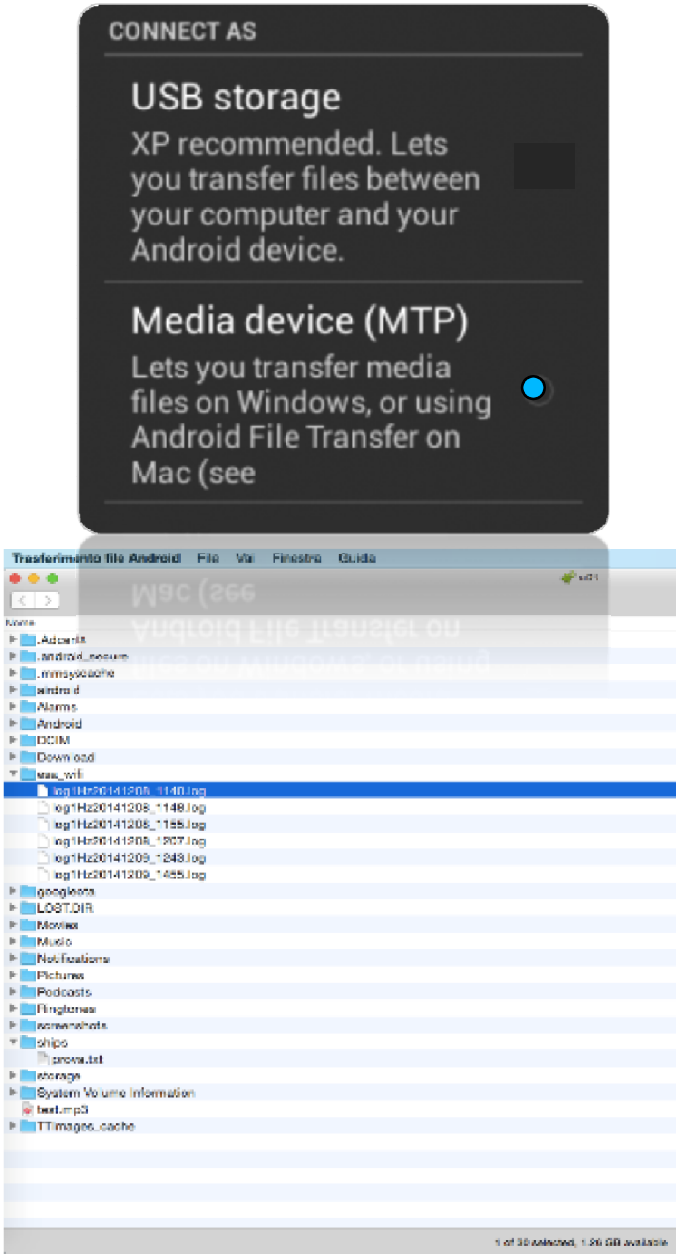
Select then polar file to be inserted, drag it in “ships” folder from your.
After inserting it, it will be visible in selection screen in the app itself, like one of the polar file originally inserted.

WARINING:
Use exclusively **esa-YardPolar .txt** file format (see pg 21)

See website www.AstraYacht.com : **Yard Polar File** (under: product, documentation)



Attachment 1: POLAR FILE UPDATE FROM FILE MANAGER (2/2)



- **MAC system**: connect esa Watch through usb directly to the pc. Select from notification tent (go home, swipe down the finger) connect as **media device MTP.**
- **N.B. if you find difficults** to connect the **device to your Mac esa Smartwatch** you must have previously downloaded and installed the program "File Transfer Android" available at: www.android.com/filetransfer

Then select the file to insert polar, dragging it to the folder "ships" from your Mac.
After inserting the file will appear in the data visible in the selection screen within the program itself esa, between polar and is selectable as a polar originally inserted

WARINING:
Use exclusively **esa .txt** file format (see pg 21)

See website www.AstraYacht.com : **Yard Polar File** (under: product, documentation)



Attachment 2: how to create a new Polar File Data

File Yard Polar eng

Save the file with the name you want and insert it into iTunes screen, by selecting the program in the lower left and subsequently pressing the add button in the lower right.
When you open the program you will find the polar and may be selected, and also wanting to change from your Apple device
within the software esa

The first line, define the type of boat:
Cruise (cruise boats)
Cruise-Regatta (performance boat but dislocating),
Regatta (only planing boats)

If you need to specify a larger number of values ??for TWS continue to enter in a progressive manner vx and ax
If you have access to fewer values ??or different values, clear the values ??in excess.

WARNING: the values ??of BS and TWA should be entered in the format xx.yy (eg 146.5 3:56)

Enter here the type of boat, choose from (Regatta Cruise-Regatta, Cruise)

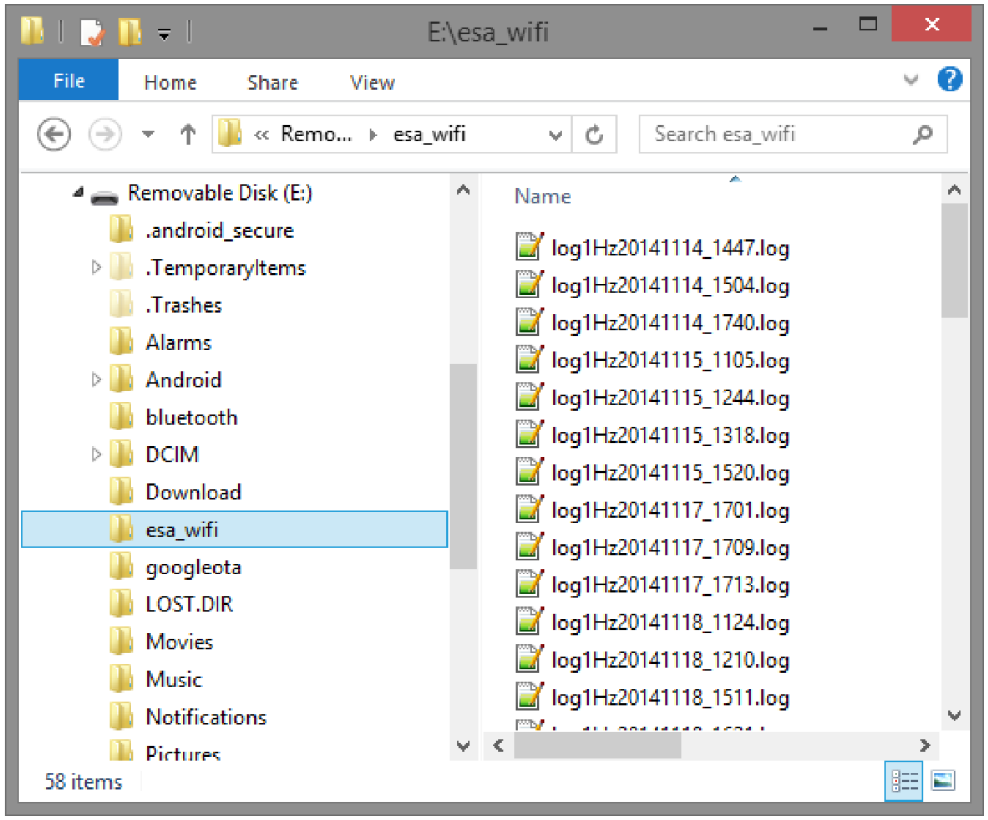
TWS_TWA	v1	a1	v2	a2	v3	a3	v4	a4	v5	a5	v6	a6
6	5.20	43.0	6.14	60.0	6.60	90.0	6.34	120.0	5.62	135.0	5.30	143.0
8	5.95	40.0	6.89	....	.....							
10												
12												
14												
16												
20												

The following is an example (you can copy and modify it to enter the Vs. data)

Cruise-Regatta

TWS_TWA	v1	a1	v2	a2	v3	a3	v4	a4	v5	a5	v6	a6
4	3.9	47.5	5	75	5.33	90	4.39	120	3.69	130.4	2.1	180
6	5.58	43.6	7.07	75	7.41	90	7.08	120	5.18	141.6	3.33	180
8	6.64	41.7	7.96	75	8.2	90	8.07	120	6.39	144.5	4.45	180
10	7.03	38.9	8.47	75	8.55	90	8.71	120	7.16	149.4	5.51	180

Attachment 3: log files, saved data and PC saving



For each use of the program esa Regatta Watch is automatically saved to a file that records every second some navigation data, you can save the file on your PC by connecting esa Watch and copying the chosen file (marked by date and start time of recording) on your PC, at this point the data is available for your processing

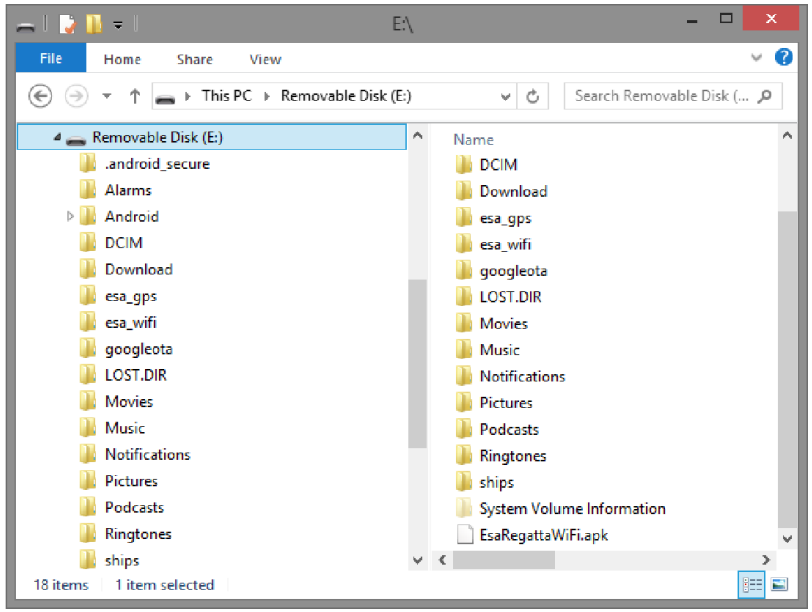
Here's an example of the header of the file with the type of data being stored.
There are some data meaningful nonstandard: Ts indicates a sequential number of rescue, tgt type indicates the type of polar (always y)

Is under development a program to do simple analyzes and comparisons that will be downloadable for free from Astra Yacht

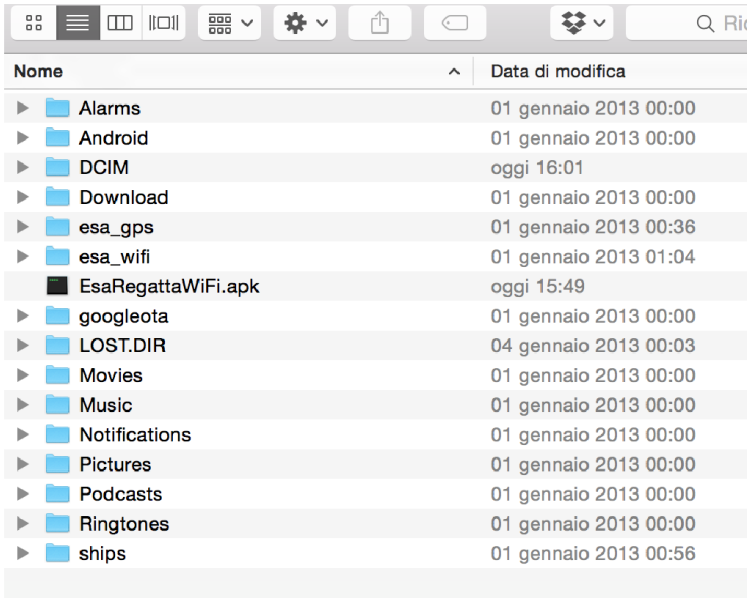
---------- log1Hz20141115_0958.log ----------

Date	Time	Ts	Boatspeed	AW_angle	AW_speed	Heading	TW_angle	TW_speed	TW_Dir	Ext_SOG	Ext_COG	Latitudine	Longitudi	BS_target	TWA_targ	BS_polar	tgt_type

Attachment 4: upload and install the .apk to update application.



1



In case of file update if you followed the pag5 indications, you will receive from Astra Yacht, for free, the new apk file version on your email.

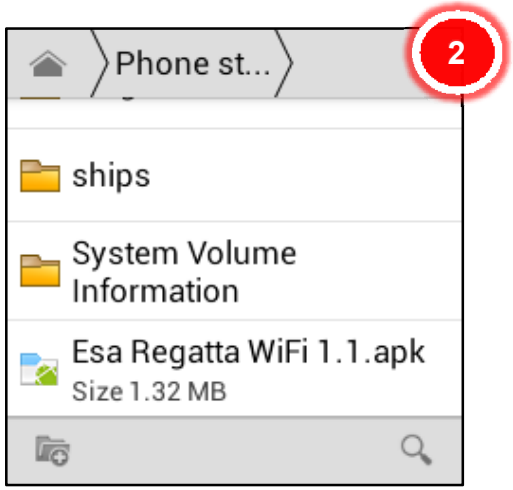
Connect the smartwatch to your computer as indicated also in pg 19 (windows) or 20 (Mac)

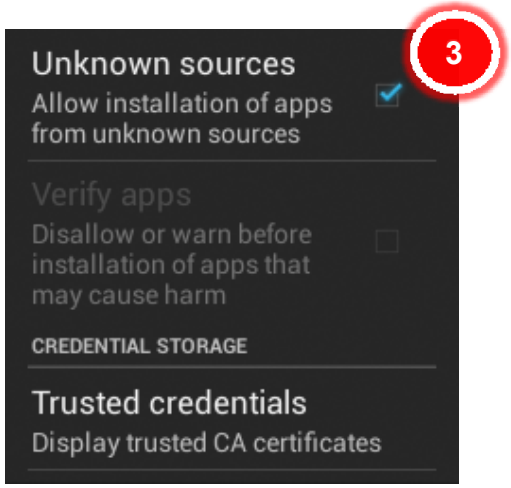
Copy the file in the space of storage of the phone (1) , see ever next page

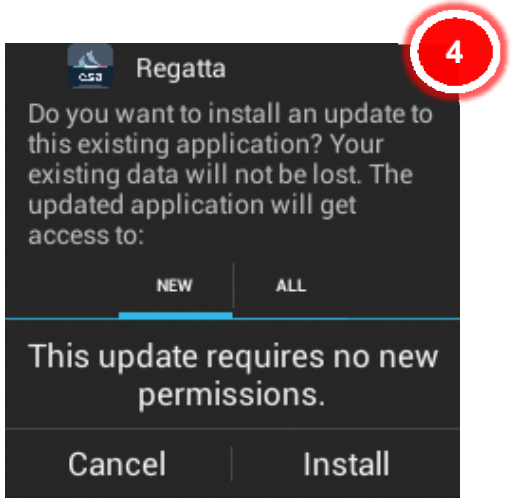
MORE IN DETAIL HOW TO DO

- Connect the Esa Watch to the PC
- Turn on the USB storage (at this point you will find you Esa Watch like removable Disk)
- Copy the new Esa WiFi Regatta.apk on the storage of the removable Disk "Esa Watch"
- Open the "File Manager App"
- Click on "Phone Storage" on File Manager
- At the list bottom you will find Esa Regatta WiFI.apk, click on
- Click over install button
- Now you have the new version installed
- Go again in "Phone Storage" on File Manager and long press over the file Esa Regatta WiFI.apk, then will appear the recycle bin icon, click over to remove .apk file

Attachment 4: upload and install the .apk to update application.







Proceed to the installation by clicking on the file in the File Manager app (2) after making sure to authorize the installation of "applications of unknown origin" (3)

Follow the procedures on screen (4) pressing installed to complete the upgrade



E A S Y H I G H
T E C H N O L O G Y

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