Esa Instruments Box 2000

Connections Manual and configurator

1.0 - 05/2016

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ESA INSTRUMENTS

The future of the instrumentation for the sailing boat!

The most flexible, modern and simple instrumentation system at the cost that you decide.

Choose which sensors to be installed, wired or wireless, and what type of display use, iPhone, iPad or Smart Watch.

Wi-Fi connection between the unit box EIB and your device to have the data available anywhere on the boat.

Astra application available for free, maximum performance cruising and racing, plus the capability to use your favourite App

DESCRIPTION

It is possible to see navigation data on smartphone and tablet, or having them right at your wrist with esa Watch.

You can compare in any moment your performances respect to the targets and record data for future analysis; manage winning starts with the app **esa regatta.**

There are no limits on what to do with Esa Instruments.

The instrumentation is expandable depending performances and cost targets, in any moment and in a efficient rapid manner.

DESCRIPTION

The heart of the system Esa Smart Instruments is the control unit box EIB 2000.
EIB 2000 is equipped with an internal GPS high update rate, of 4-input NMEA0183 and one NMEA 2000 port to which connect the sensors to be installed, and an analogue input for reading the data of the wind coming from the sensors of the series Raymarine ST-50 ST-60 or ST-70.
The processed data are sent via Wi-Fi to smartphones, and tablet smartwatch.
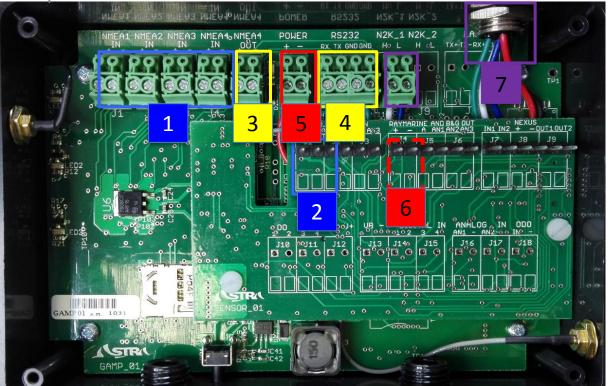It 'also NMEA0183 and NMEA 2000 output wired to connect, if necessary, fixed display, and an output 232 for Connection to a PC.
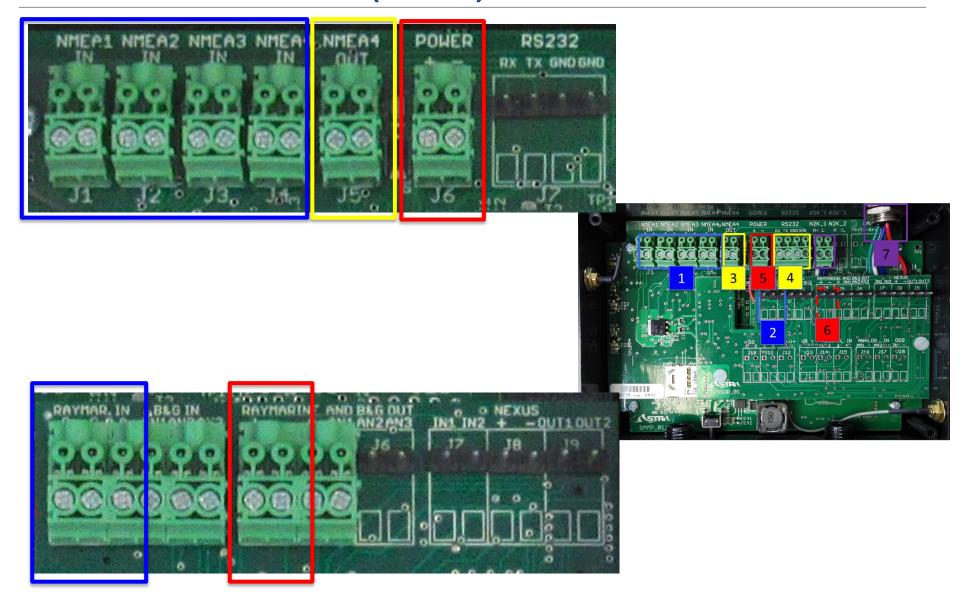
TERMINAL INPUT EIB 2000.

1. "NMEA IN" 4 input NMEA 0183
2. "RAYMARINE IN" analogue input for Sensor Wind Raymarine ST-50/60/70.
3. "NMEA OUT" NMEA 0183 output
4. "RS232" In/Out RS232
5. Power 12/24V.
6. Power 8V for Sensor Wind Raymarine ST-50/60/70
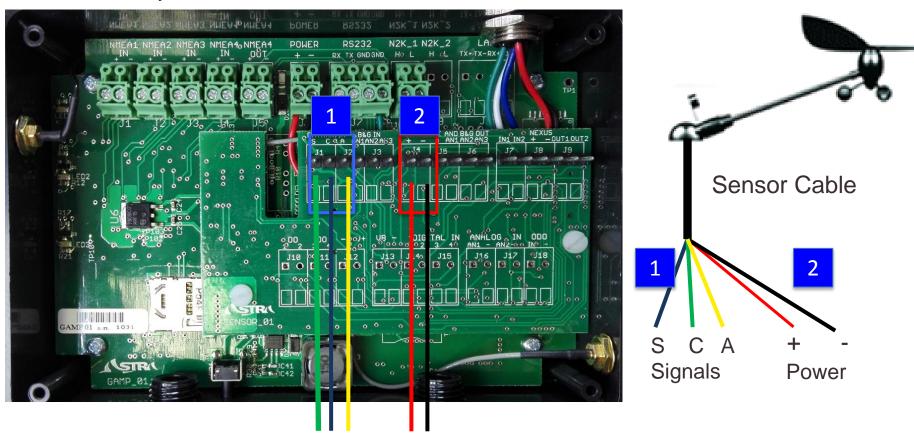7. "N2K" NMEA 2000 port

Wi-Fi antenna connector.

GPS Antenna connector.

TERMINAL INPUT EIB (ZOOM)

EIB 2000: CONNECTION TO WIND SENSORS RAYMARINE ST50/60/70

1. Analogue Digital signals
2. Power 8V Raymarine
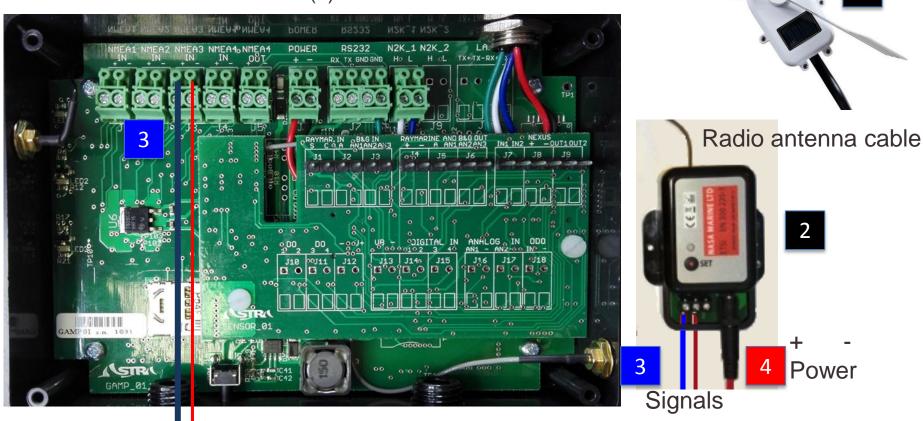

Sensor Cable

S C A   + -
Signals   Power

Cable Sensor Wind Raymarine five-wire, see on photo connection diagram with EIB
Keep the connections cables colours as in the picture
- Blue/green: angle indication (analogue signals S/C)
- Yellow: speed indication (digital signal A)
- Red/Black: EIB 200 power 8V (+/-)

EIB 2000: CONNECTION TO SENSOR WIND NASA WIRELESS

Sensor masthead wireless (1)
Receiver to be connected to EIB (2)

1

Radio antenna cable
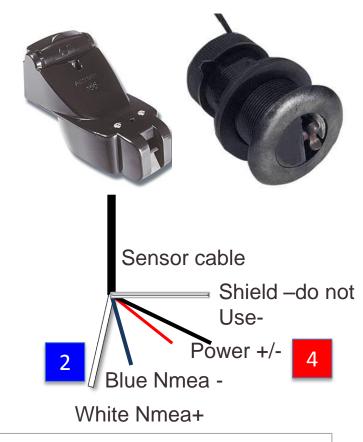**2**

3

3 Signals

4 + - Power

Cables from the control unit Connection radio sensor masthead, see on photo connection diagram with EIB, to be connected to port 3, set to 4800 baud
- Blue / Red (Nmea +, -) contains information on wind speed and angle (see 3)
- Red plug Connection to power (battery boat +/- 12v) (see 4)

EIB 2000: Connection TO SENSORS AIRMAR TRIDUCER

1. Signals NMEA 0183
2. Power 12v

Sensor cable

Shield –do not Use-

Power +/-

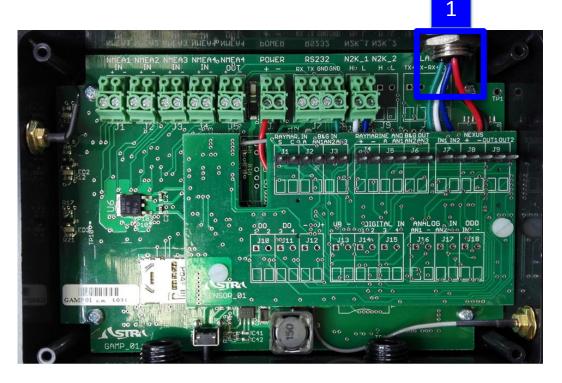**2** Blue Nmea -

4

White Nmea+

Airmar Smart Triducer (DST800, P99); provides: boatspeed (BS), depth, watertemperature (data not used) For using it, set baud rate port 2 at 4800
Maintain connection of the cables and the colors like in picture.
- Blue/White NMEA data (see.2)
- Red/Black: power with 12V source (it could be the same of EIB 2000) (see 4)
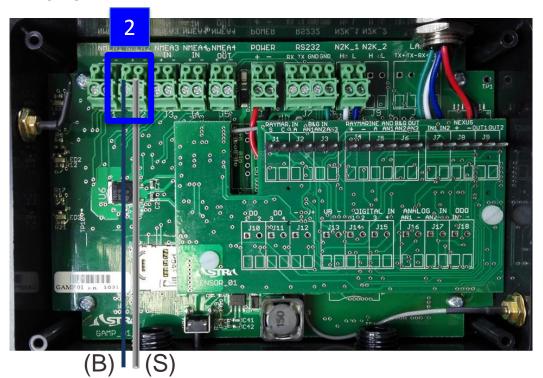
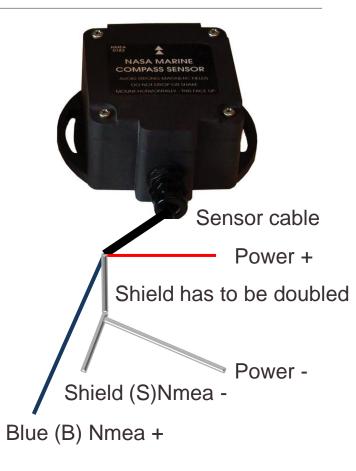# EIB 2000: Connection TO NMEA 2000 NETWORK

1. EIB NMAE 2000 connector

Connect the EIB 2000 with a NMEA 2000 cable to a free T-connector in your NMEA 2000 network in order to send and read data from the NMEA 2000 network.

EIB 2000: Connection TO NASA NMEA COMPASS SENSOR

1. Signals NMEA 0183
2. Power 12v

Sensor cable
Power +
Shield has to be doubled
Power -
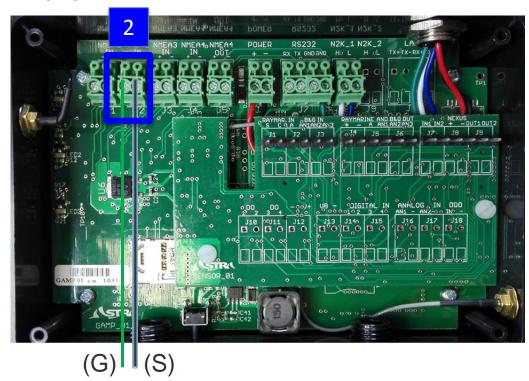Shield (S)Nmea -
Blue (B) Nmea +

(B)   (S)

NASA NMEA compass sensor (set Baud rate port 2 at 4800)
Keep connections cables colours as in picture
- Blue: data cable of fluxgate (analouge signals) (see.2)
- Shield: double the cable, use one side fo NMEA -, the other for Power –
- Red: POWER 12V +
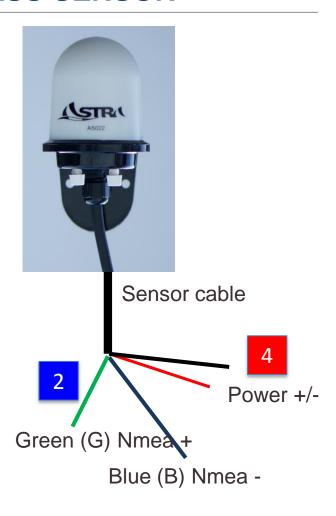- Power can be the same of EIB 2000

EIB 2000: Connection TO ASTRA COMPASS SENSOR

1. Signals NMEA 0183
2. Power 12v

ASTRA NMEA compass sensor (set Baud rate port 2 at 4800)
Maintain connection of the cables and the colors like in picture.
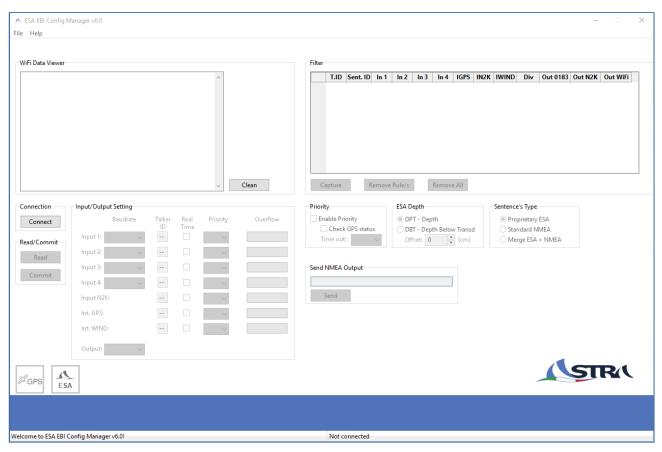Green/Blue NMEA data (see.2)
Red/Black: power with 12V source (it could be the same of EIB 2000) (see 4)

Configuration EIB 2000

To configure the unit box you must use the program ‚EBI_2000_v6_0.exe' that you will find on our site www.astrayacht.com in the Download section: PC software.

Below are the main information for using the configurator; for a more complete description, refer to the manual of GAMP NMEA 2000 that you always find on our site www.astrayacht.com in the download section: Docs & Manuals.
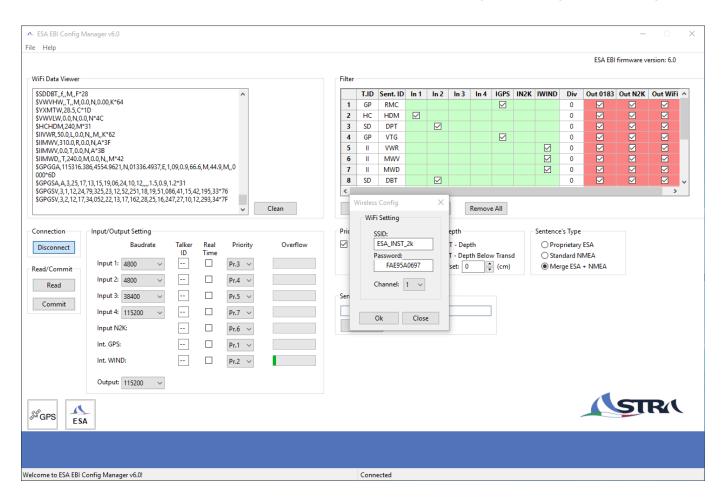
Configuration EIB 2000.

The Setup program is connected to the control unit EIB 2000 via Wi-Fi.
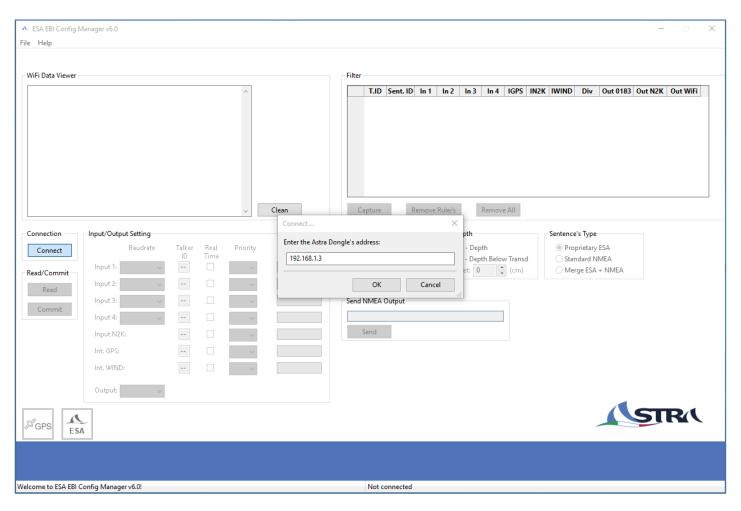The first step is, therefore connect your PC to the Wi-Fi network **ESA_INST_2k**;
This is a secure network so you'll have to enter the network password: **fae95a0697**;
After the first Connection, network name and password can be changed through the configurator itself.
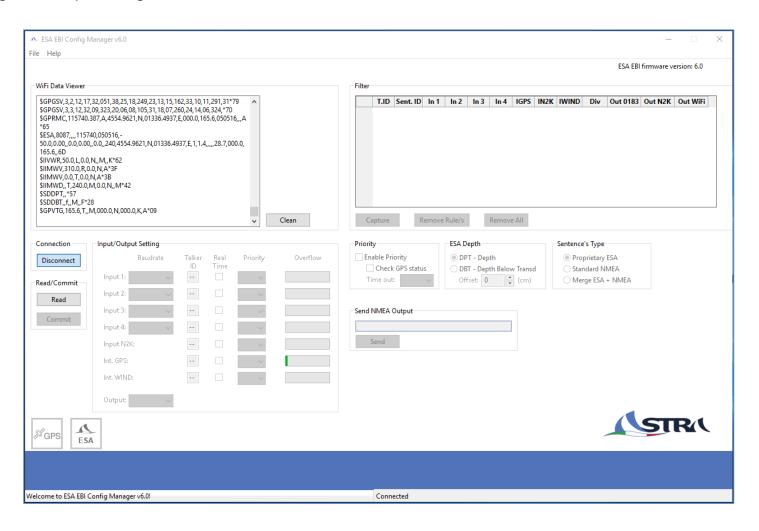
Configuration EIB 2000.

Once connected to the network ESA_INST_2k, launch the Configuration EIB_2000_v6_0.exe.
Connect and then press OK on the window with the IP address of the unit, which is already set up properly with the IP address: 192.168.1.3.
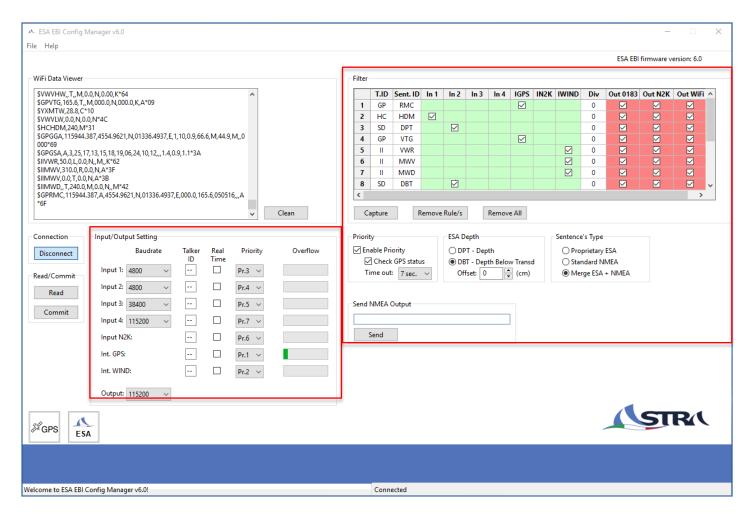
Configuration EIB 2000.

Once started the connection, on the window in the upper left you will see the flow of the input data.
In order to change the settings for the controller EIB 2000 you must first take a reading of the current values
of Configuration, pressing **Read**.

Configuration EIB 2000.

After pressing Read all the setting stored in the EIB 2000 memory will be loaded and displayed in the appropriate widgets. In the Input/Output Settings the NMEA0183 port speeds and priority can be changed. There are also setting for filters, priority and sentence type.
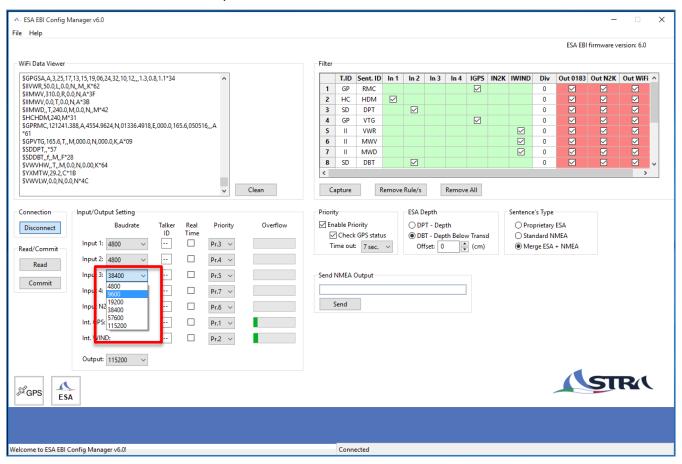
Configuration EIB 2000. SELECTION OF BAUD RATE PORT IN/OUT

Setting the speed transmission respect to the specification of the connected device.
A LOG or WIND sensor will have most probably a Baud rate of 4800, an AIS transmitter a 38400 baud rate.
Compass and GPS depend on the model and the manufacturer.
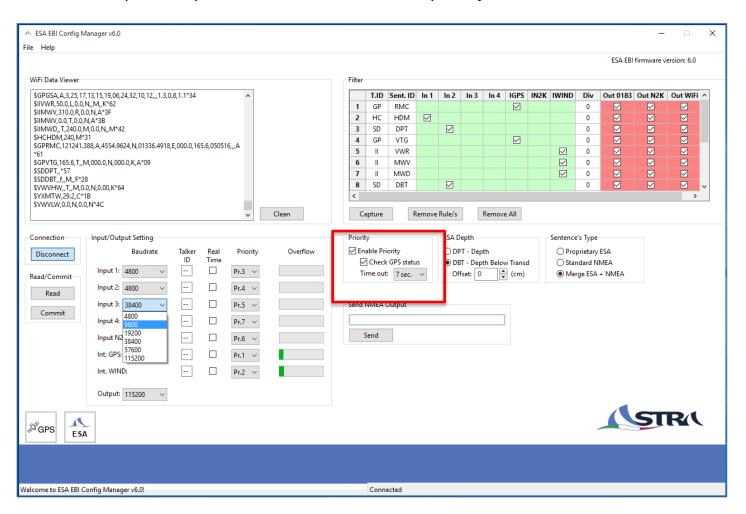Read carefully the manual for setting the exact speed of the port.
The speed of the virtual ports cannot be changed (Int. Wind – Raymarine wind analog input; Input N2K - NMEA 2000 to NMEA 0183 converter).

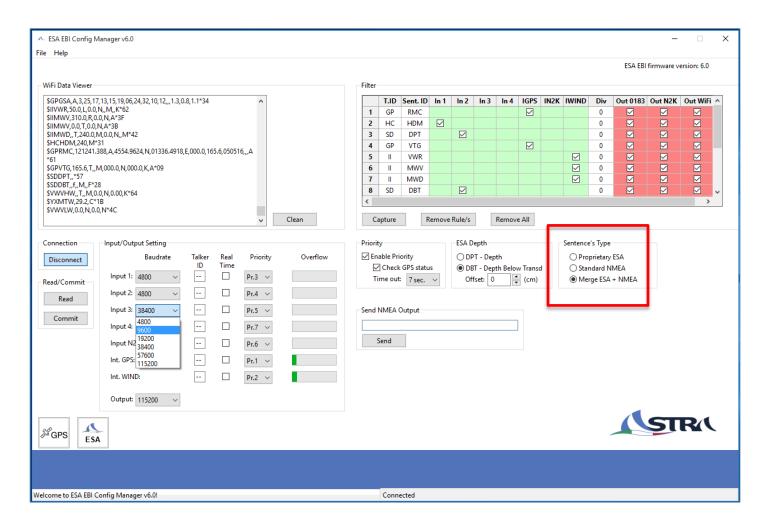# Configuration EIB 2000. SETTING PRIORITY INPUT

Use this option to manage duplicate data coming from multiple inputs.
If connected another GPS device you want to use as the main, you'll have to give it a higher priority than the internal GPS. If after a period of time out programmed, does not arrive from the entrance to a given higher priority, the same will be picked up from the entrance to lower priority.

If you want to use applications or hardware devices that require the standard protocol NMEA0183, you can enable the transfer of that information, selecting **Sentence's Type** in the window.
You can send only judgments OUT ESA, only NMEA sentences, or both (Merge).

Configuration EIB 2000. SENTECES' FILTERING.

The EIB 2000 allows you to filter the input NMEA 0183 sentences in such a way as to display and multiplexed together only what is needed. NMEA 2000 messages (PGN's) are translated into NMEA 0183 sentences and vice versa. Therefore the filter feature of the multiplexer still works on NMEA 2000 messages.

First the sentence must be acquired in capture mode by pressing the Capture button. With this functionality the configurator starts listening for 20 seconds of incoming NMEA sentences on Wi-Fi. After the capture process is finish all the sentence are displayed in the filter table as shown in the following picture. Sentences could be removed by selecting the sentences and pressing the Remove Rule/s button. All rules could be removed by pressing the Remove All button.
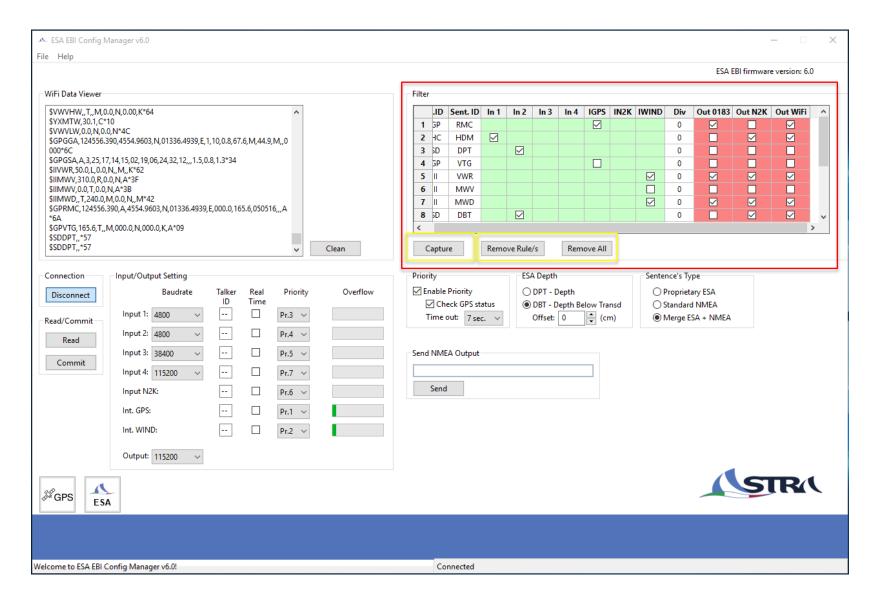
The first coloum T.ID in the filter field is the talker identifier the second field Sent.ID is the sentence identifier, follows the input ports, the division factor and the output ports.

Then check boxes in the green fileld show on wich input the sentence was acquired, where NMEA 0183 input ports are In1, In2, In3 and In4, the GPS port, the wind port and the NMEA 2000 translated messages virtual port N2K. If the input check box is selected the input will be processed by the dongle if not the sentence will be ignored.

The check box in the red field allows to select to wich sentences will be routed to the NMEA 0183 output (Out 0183), NMEA 2000 output (Out N2K) and WiFi output (Out WiFi).

The divisor factor Div is a configuration parameter that allows you to divide by the factor included the number of judgments that are sent in the outputs (NMEA 0183 – Out 0183, NMEA 2000 – Out N2K, WiFi- Out WiFi). For example, if a heading sensor send 10 data per second, putting a divisor factor of 5, it will send only 2, others will be discarded. This feature is used in the event that some tools have updates data too fast and not necessary, everything could create overflow.
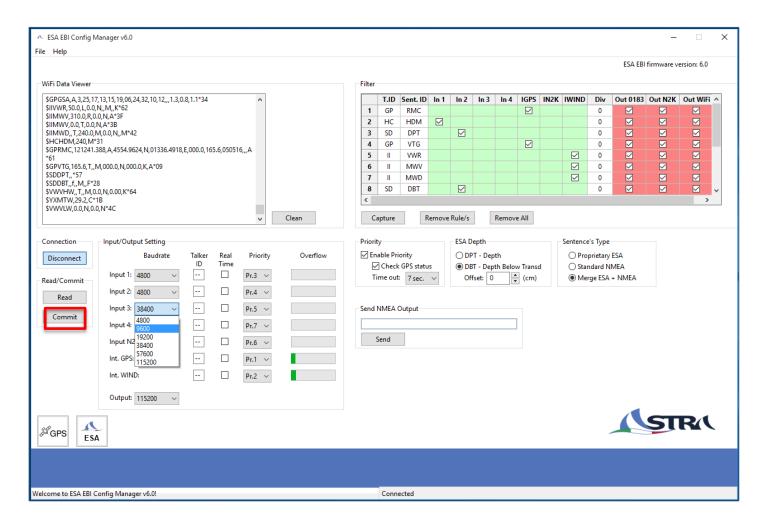
Configuration EIB.   Example sentence filtering.

Configuration EIB 2000. SETTING CONFIRMATION.

N.B. Implementing the modification is possible by pressing COMMIT button, which send dato to the EIB 2000 device.

EBI 2000. BASIC Configuration.

The Minimum esa Instruments configuration, involves the installation of the Wind Sensor to be connected directly to the EIB 2000 box.

Using data from the GPS, combined with the information of the apparent wind, EIB 2000 is able to obtain any information useful for navigation, such as boat speed, wind speed and angle of the real direction of the real wind, compass heading, etc.

For the calculation of the latter figure, EBI 2000 uses the value of the drift of the boat to correct the data of the COG departing from the GPS.

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