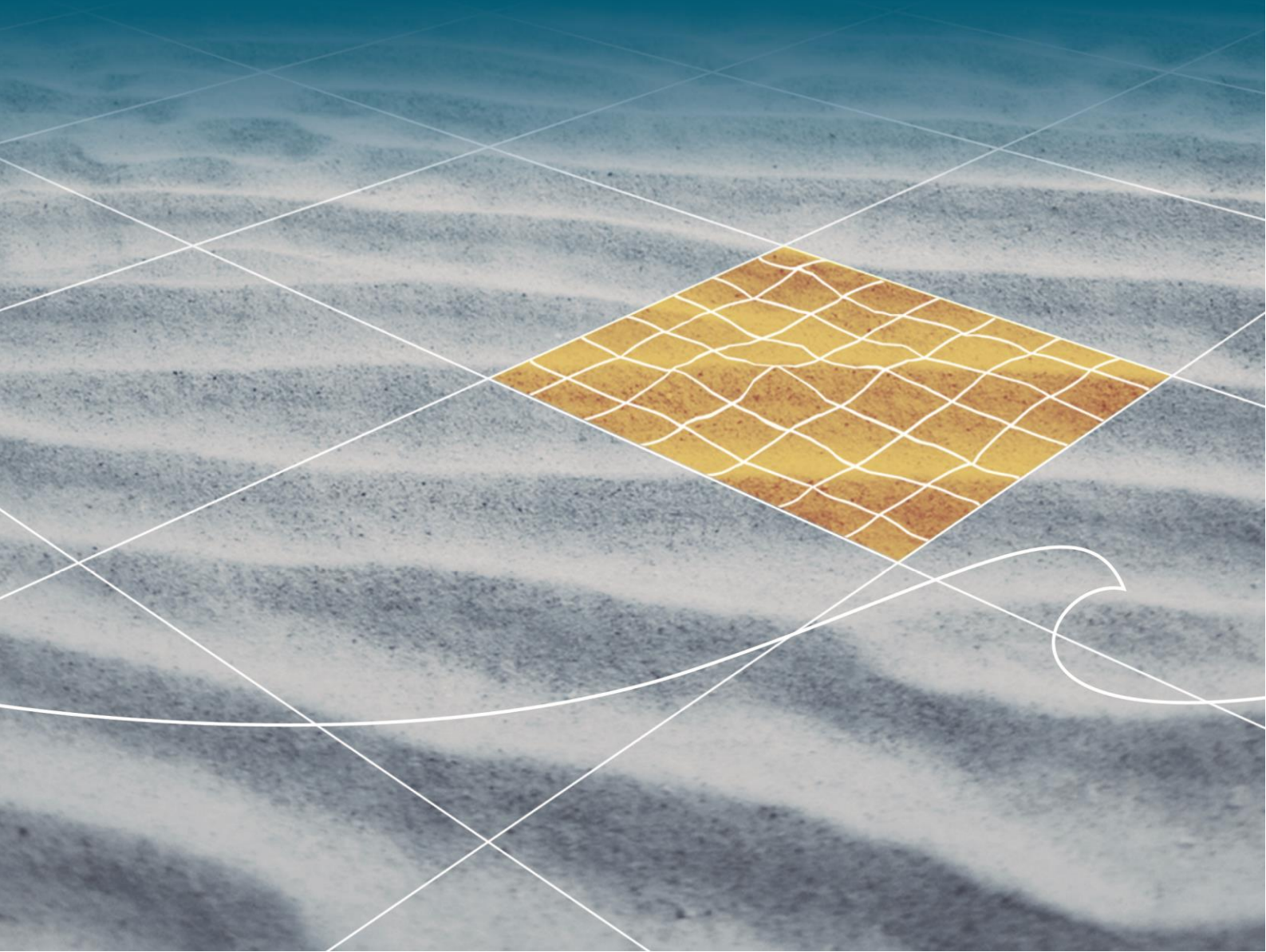# NAVIPAC/NAVISCAN

WITH EDGETECH 6205

NAVIPAC/NAVISCAN

WITH EDGETECH 6205

Author: AFI
Last update: 17/06/2019
Software version: 3.10

Contents

1 Introduction

This document includes information on the configuration of NaviPac / NaviScan in a combined solution in support of acquisition of multi-beam and sidescan data from an EdgeTech 6205 swath bathymetry (multi-beam) and dual frequency side scan sonar system. Information about settings in the EdgeTech soft- and hardware are not included, please consult EdgeTech (6205: Combined Bathymetry & Side Scan Sonar) for further information.

2 NaviScan configuration

The NaviScan/NaviPac configuration to support acquisition of multi-beam and sidescan data from an EdgeTech 6205 system is slightly different from what we normally see.

Normally the attitude and navigation based sensors are interfaced into NaviPac and distributed to NaviScan. In this configuration, it is the other way around: The instruments coming from the EdgeTech system are interfaced with NaviScan, from which data is distributed to NaviPac.

The following sections describe the configuration in detail.

2.1 Configuring the instruments from EdgeTech

The sonar data flow between the EdgeTech hardware and software and third party software (NaviPac/NaviScan) is depicted below in Figure 1 (taken from the EdgeTech 6205 Hardware User Manual). Data available for the third party software is output from the Discover software, all time-tagged in accordance with the **Time** input into the sonar interface box:

- Range/angle data (raw multi-beam datagrams)
- Auxiliary data
    - Position data
    - Heading data
    - Motion data
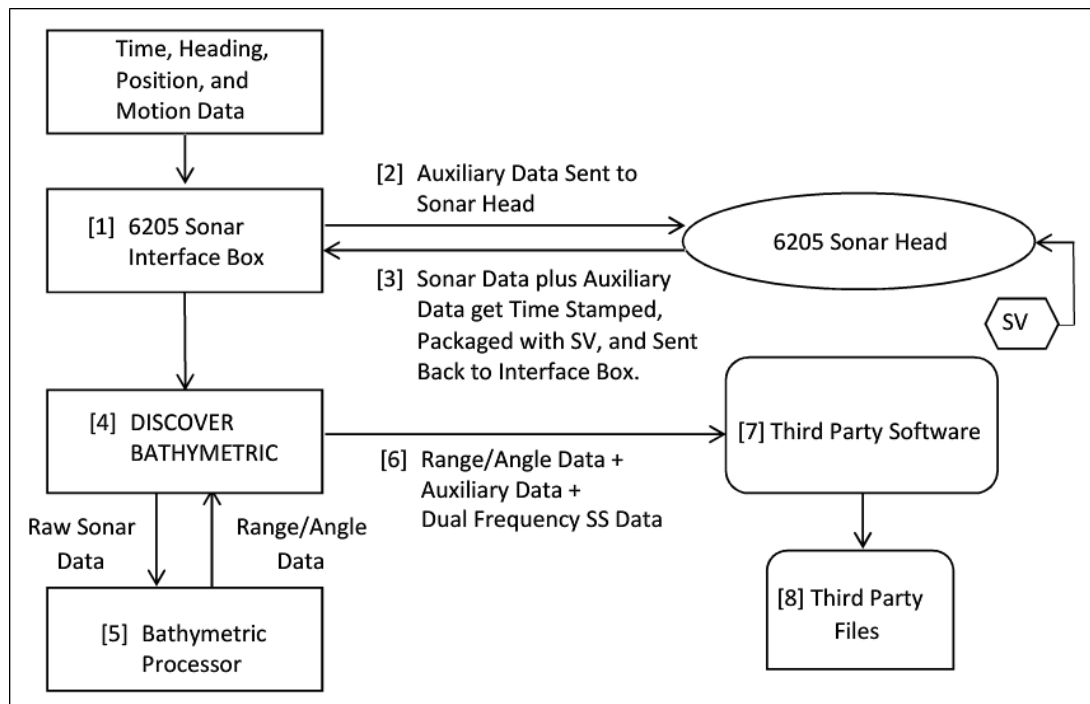- Dual-frequency sidescan data

Figure 1 Dataflow in the EdgeTech 6205 system (from 6205 Hardware User Manual)

Five different instruments originating from the EdgeTech system must consequently be configured in NaviScan:

- Navigation
- Gyro
- Motion
- Multi-beam
- Sidescan

A few other instruments might be relevant to define in NaviScan. It all depends on the characteristics of the project in question. The most important ones are also described here:

- Bathymetry sensor (from NaviPac)
- Runline control (from NaviPac)
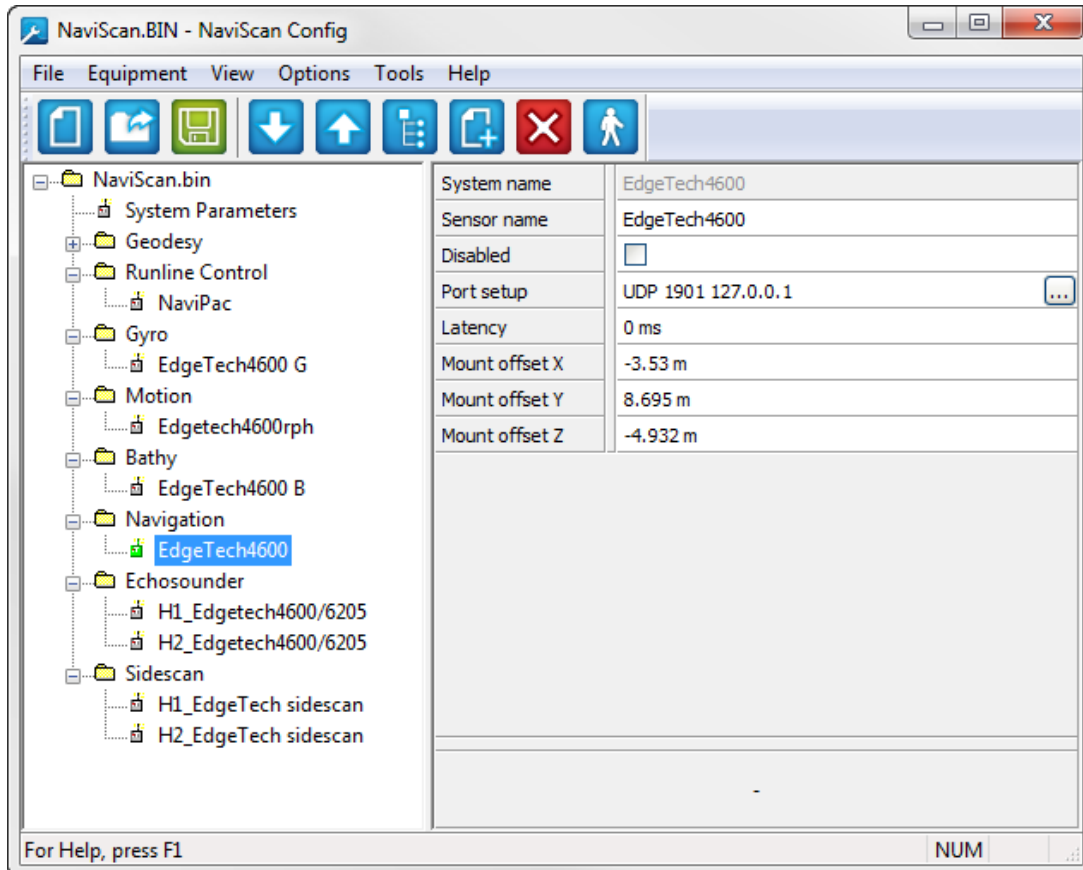
2.1.1 Navigation

Figure 2 Configuring the EdgeTech4600 navigation instrument

To configure the navigation information arriving from the Discover software, the following settings must be applied:

- Driver (System Name): EdgeTech4600
- Port setup: TCP/IP 1901 (port) and IP address 127.0.0.1 (IP address of computer where Discover is executed)
- Offsets: related to the antenna offsets determined in the local coordinate system defined in NaviPac/NaviScan
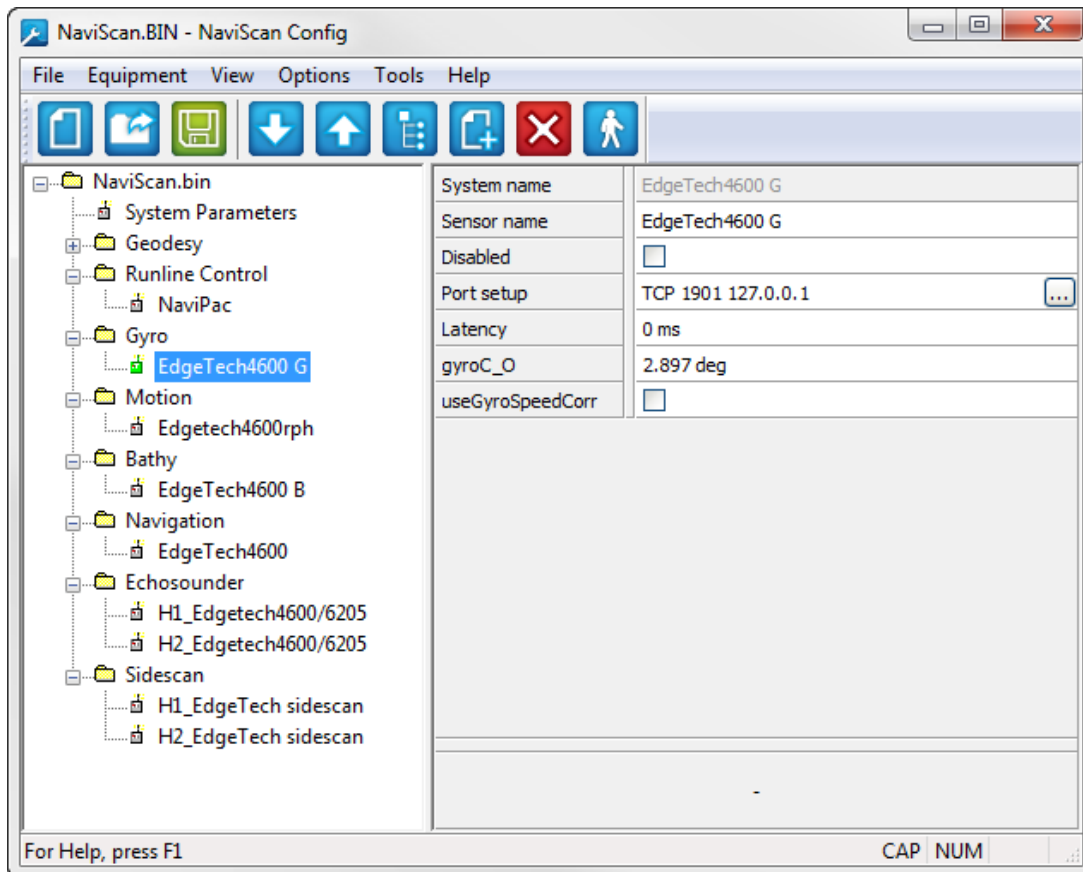
2.1.2 Gyro

Figure 3 Configuring the EdgeTech4600 gyro instrument

To configure the gyro information arriving from the Discover software, the following settings must be applied:

- Driver (System Name): EdgeTech4600 G
- Port setup: TCP/IP 1901 (port) and IP address 127.0.0.1 (IP address of computer where Discover is executed)
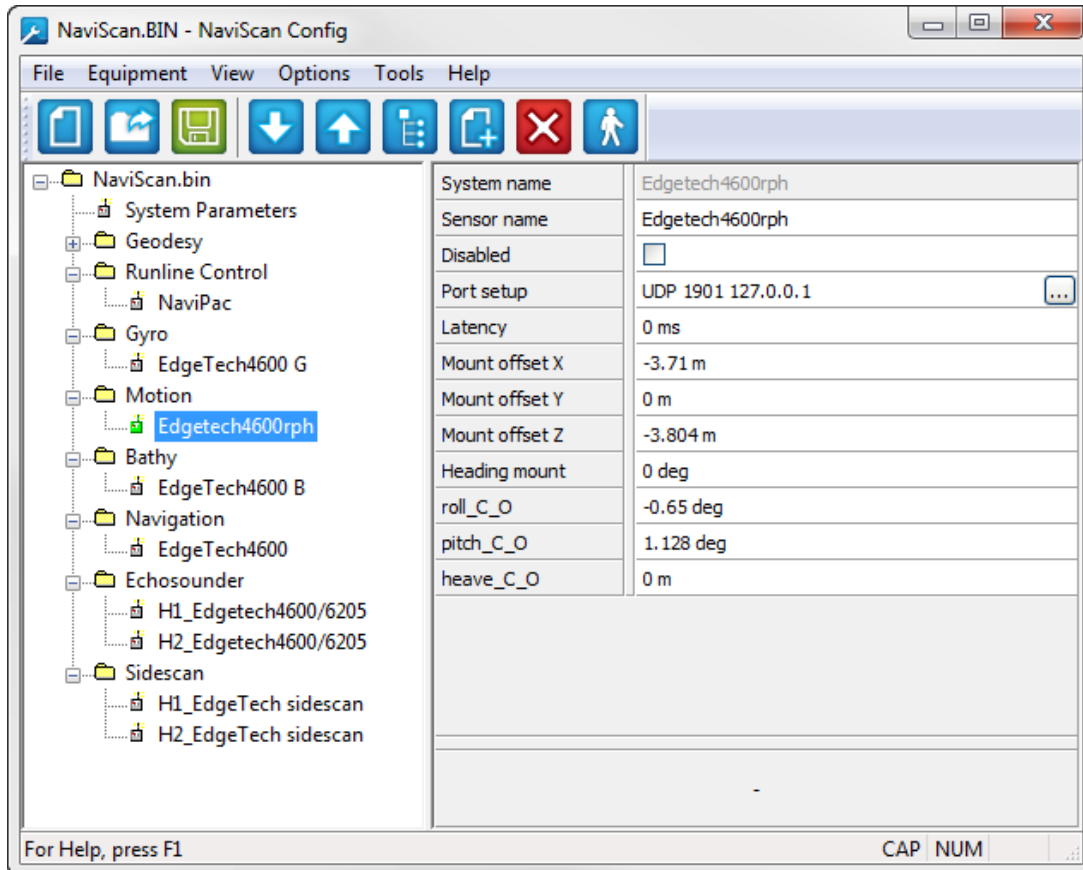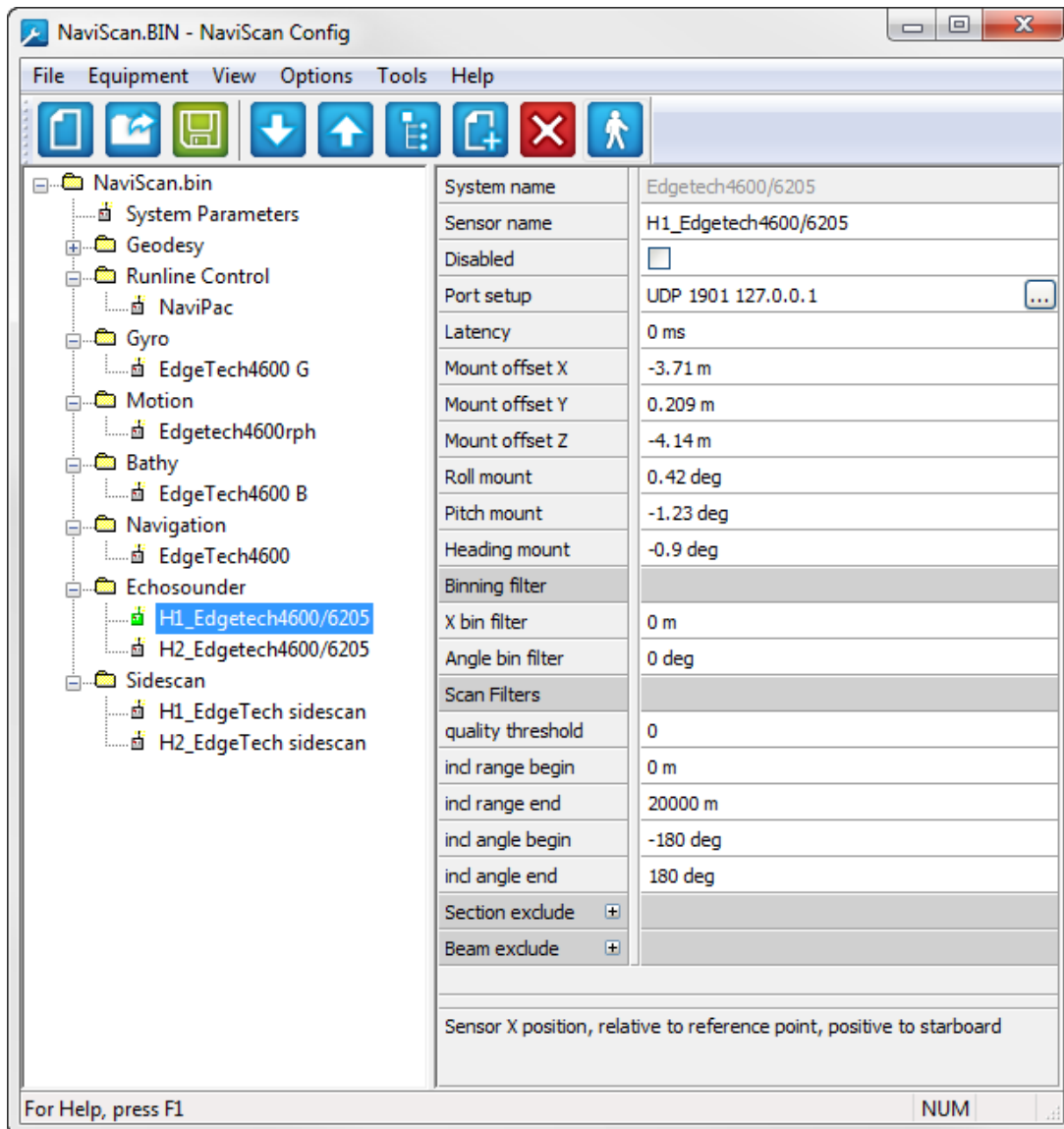
2.1.3 Motion

Figure 4 Configuring the EdgeTech4600 motion instrument

The motion information arriving from the Discover software requires the following settings to be applied:

- Driver (System Name): EdgeTech4600rph
- Port setup: TCP/IP 1901 (port) and IP address 127.0.0.1 (IP address of computer where Discover is executed)
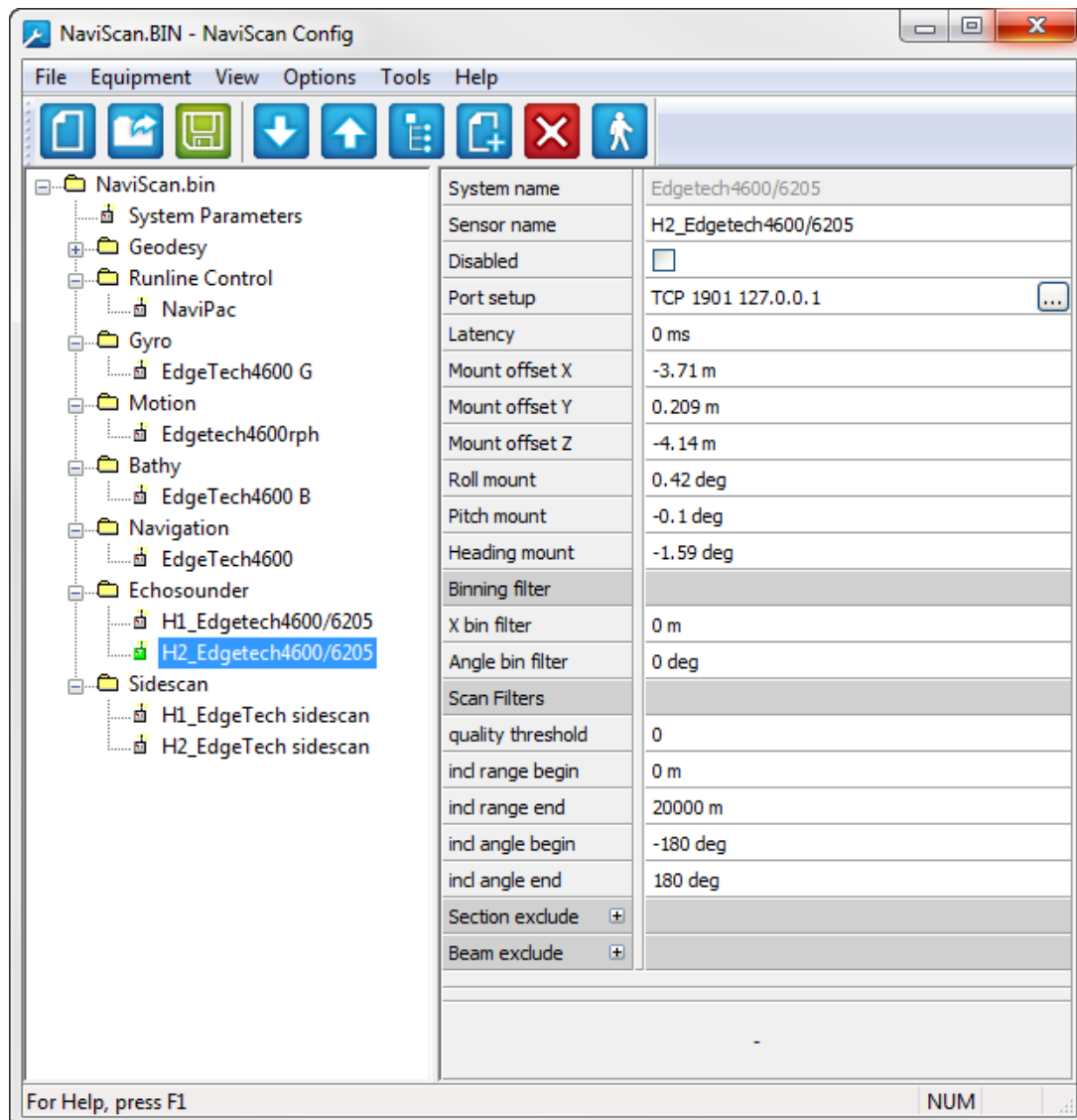
2.1.4 Multi-beam

Figure 5 Configuring the EdgeTech4600 multi-beam instrument (port: top, starboard: bottom)

To configure the multibeam information arriving from the Discover software the following settings must be applied:

- Driver (System Name): EdgeTech4600/6205.
- Port setup for both heads: TCP/IP 1901 (port) and IP address 127.0.0.1 (IP address of computer where Discover is executed).
- Offsets for both heads: related to the acoustic center determined in the local coordinate system defined in NaviPac/NaviScan. Note that the two individual

acoustic centers converge at a single point (EdgeTech 6205 Hardware User Manual). The offsets are consequently identical for the two heads.

- Mount angles: result of a dual head patch test calibration,that will result in different (though similar) pitch, roll and heading values for the two heads.
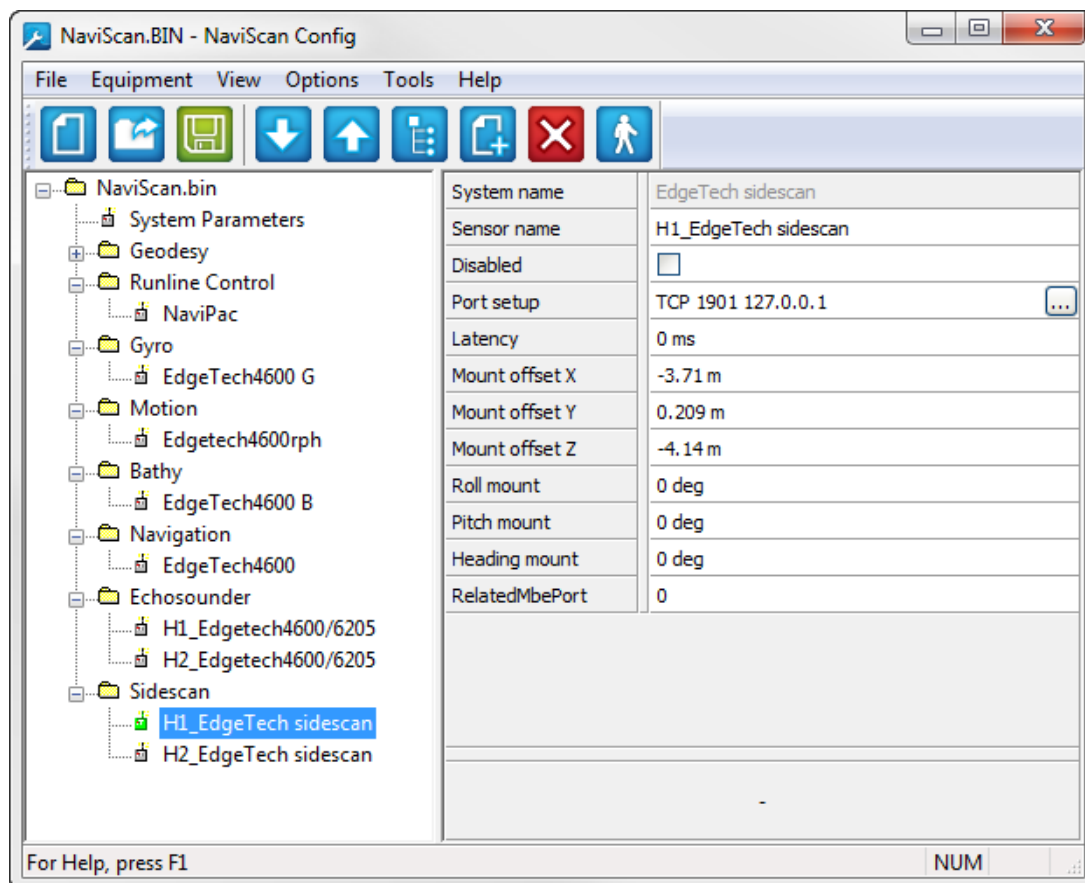

Figure 6 Configuring the EdgeTech4600 sidescan instrument

To configure the sidescan information arriving from the Discover software the following settings must be applied:

- Driver (**System Name**): EdgeTech sidescan.
- **Port setup**: TCP/IP 1901 (port) and IP address 127.0.0.1 (IP address of computer where Discover is executed).
- **Offset**(s): related to the acoustic centre determined in the local coordinate system defined in NaviPac/NaviScan.
- Mount angles (**Roll**, **Pitch**, and **Heading mount**): not relevant.
- **RelatedMbePort**: only relevant in cases where more than one multi-beam system is defined in NaviScan.

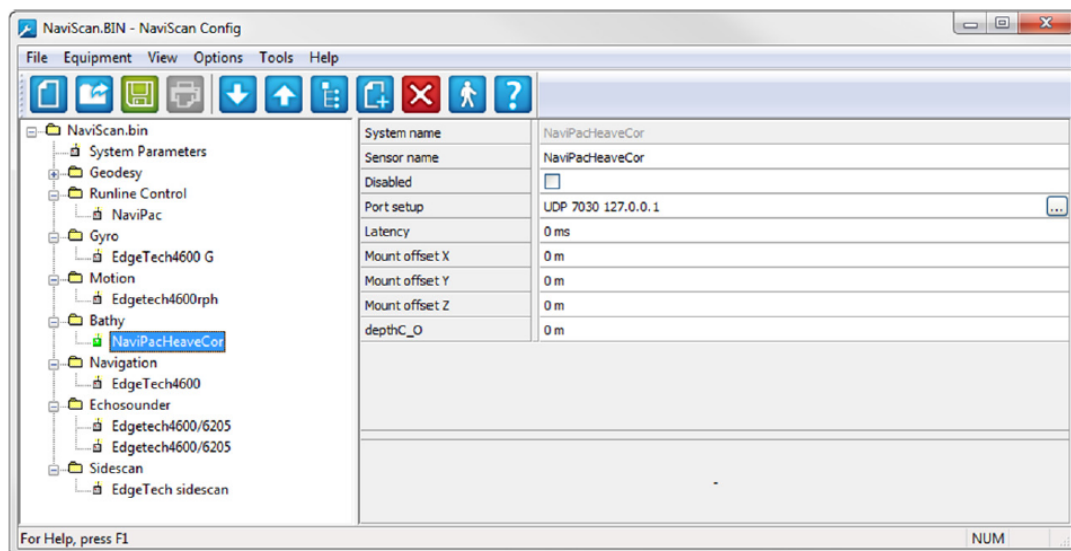## 2.2 Configuring additional instruments

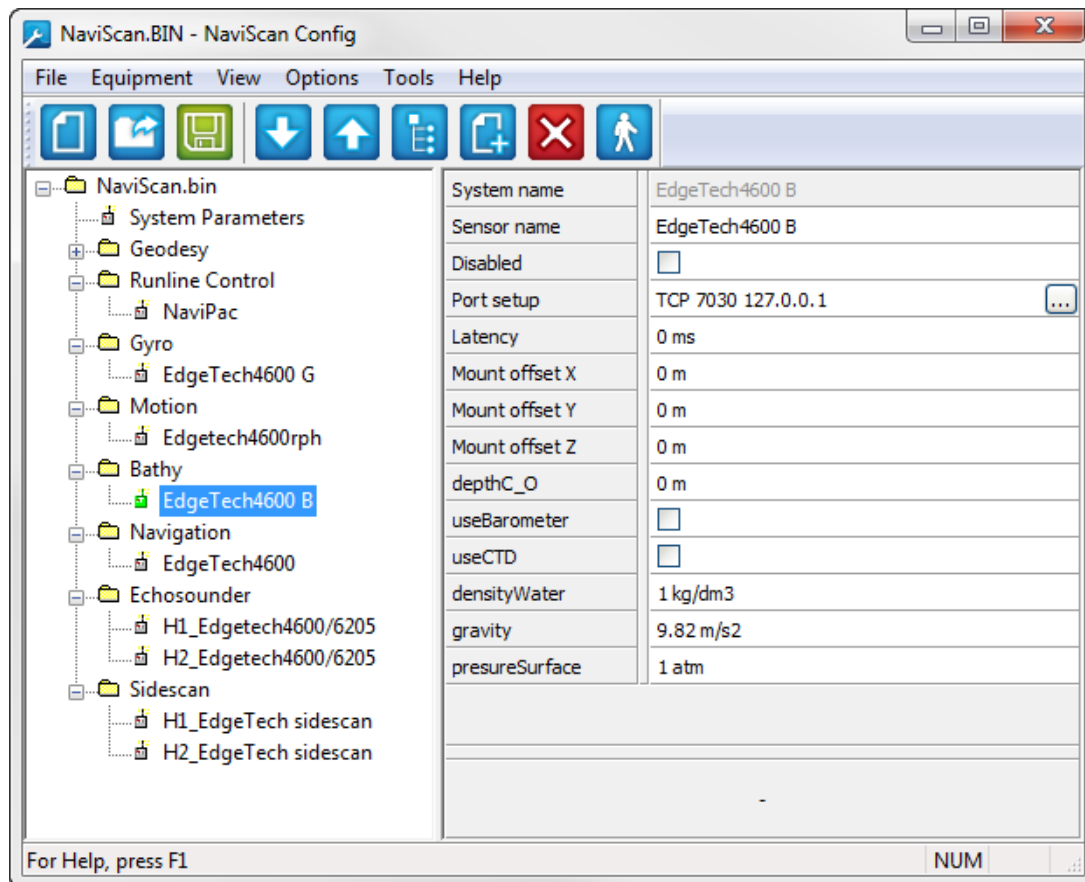### 2.2.1 Bathymetry

Figure 7 Delete

Figure 8 Configuring the bathy instrument

A bathymetry instrument is only relevant when an RTK solution (or another solution that supplies adequately accurate height information) is available for the navigation. At present, NaviScan cannot use the navigation information arriving from the Discover to extract the vertical component. Instead this information must be defined as an output in NaviPac. In NaviScan the following settings must be applied:

- Driver (System Name): NaviPacHeaveCor.
- Port setup: UDP/IP 7030 (port) and IP address 127.0.0.1 (IP address of computer where NaviPac is executed).
  Note: the port number could be any port available.
- Offsets: NaviPac will calculate the value associated with the CRP position, by default. Therefore values of 0,0,0 are used in NaviScan.
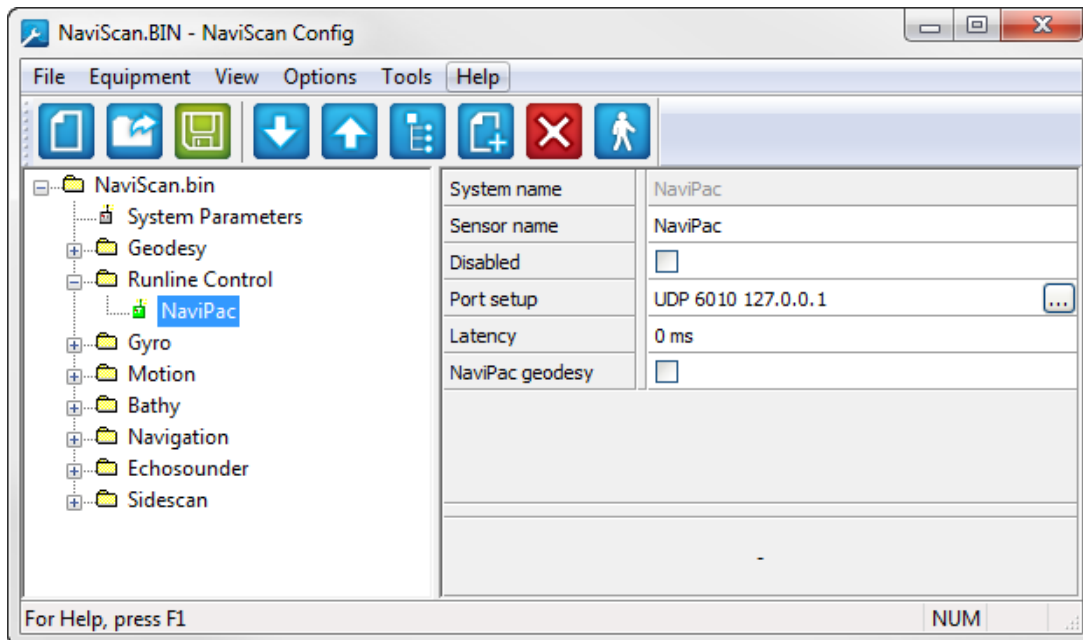
2.2.2 Runline Control

Figure 9 Configuring the runline control instrument

A runline control instrument is used to convey relevant information from NaviPac to NaviScan. This includes:

- A trigger to start and stop logging. Using this functionality makes it possible to synchronize logging in NaviPac and NaviScan.
- Runline information.
- Geodesy information.

In NaviScan the following settings must be applied:

- Driver (System Name): NaviPac
- Port setup: UDP/IP 6010 (port) and IP address 127.0.0.1 (IP address of computer where NaviPac is executed). Note that the port number could be any port available.

2.3 The output to NaviPac

In order to facilitate the distribution of the EdgeTech auxiliary data from NaviScan to NaviPac, the following must be configured. In NaviScan Config, activate the Global Parameters dialogue (Options – Global Parameters), go to the **MBE/SS** tab and define the settings under the **EdgeTech4600** headline:
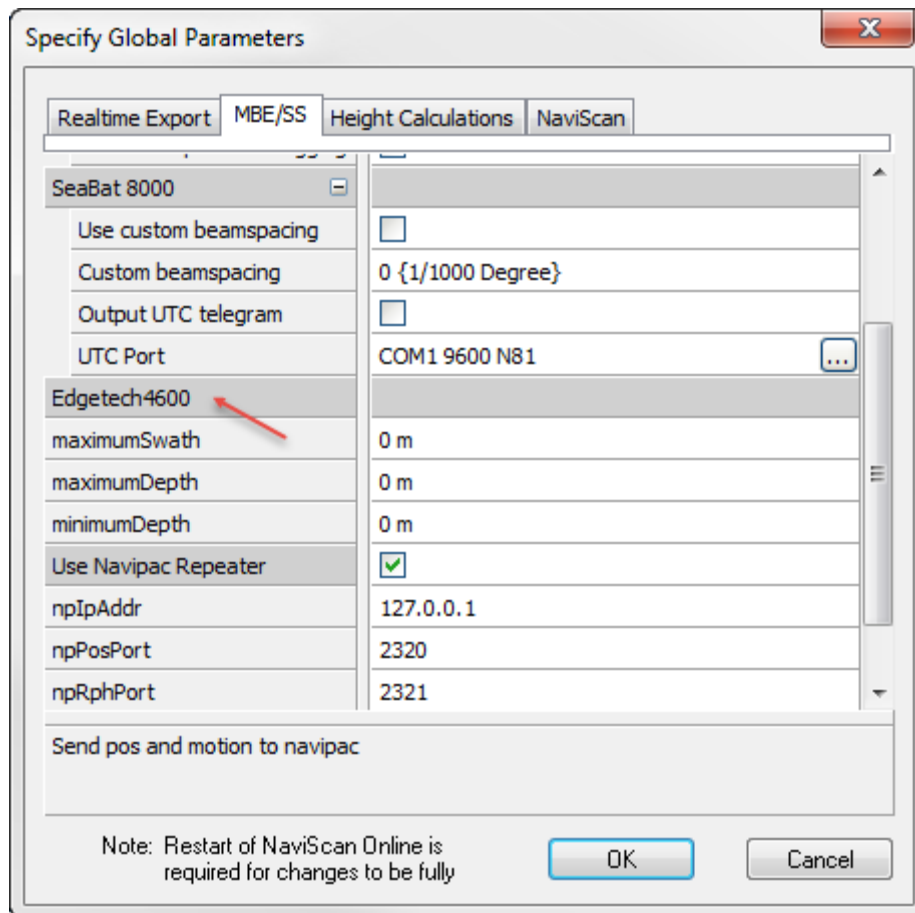
Figure 10 Configuring the EdgeTech4600 repeater

The settings are:

- Use NaviPac Repeater: Enable this option to facilitate the distribution to NaviPac
- npIpAddr: here the IP address of the NaviPac computer must be specified
- npPosPort: The position output port is specified here (2320 is default, but any available number could be used)
- npRphPort: The motion and gyro output port is specified here (2321 is default, but any available number could be used)

3 NaviPac Configuration

In NaviPac, the NaviScan configuration is reflected. Only the instruments relevant for the EdgeTech 6205 based NaviPac/NaviScan relationship are described here:

- Navigation
- Gyro
- Motion
- Bathy output
- Runline Control

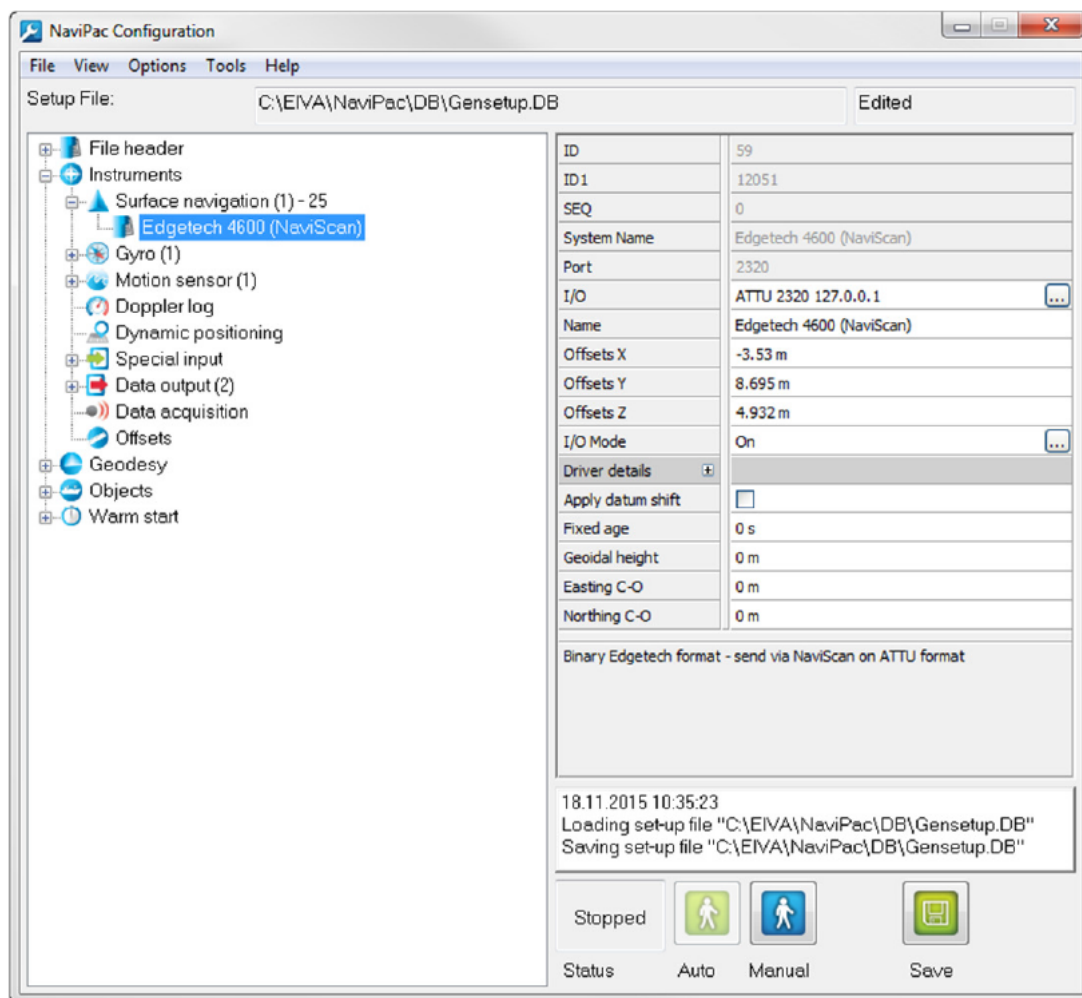## 3.1 Configuring the navigation instrument

Figure 11 EdgeTech 4600 navigation in NaviPac

The following settings are of significance for the navigation sensor:

- Driver (System name): EdgeTech 4600 (NaviScan)
- I/O: format is ATTU (data is time tagged in the EdgeTech system. NaviScan is taking this time tagging into account and supplying NaviPac with similar information

via the ATTU format. Timing in NaviPac and NaviScan are consequently identical for all instruments arriving via the distribution from NaviScan), port (2320) is as defined as part of the EdgeTech 4600 repeater settings in NaviScan

- Offsets: similar to the ones defined in NaviScan
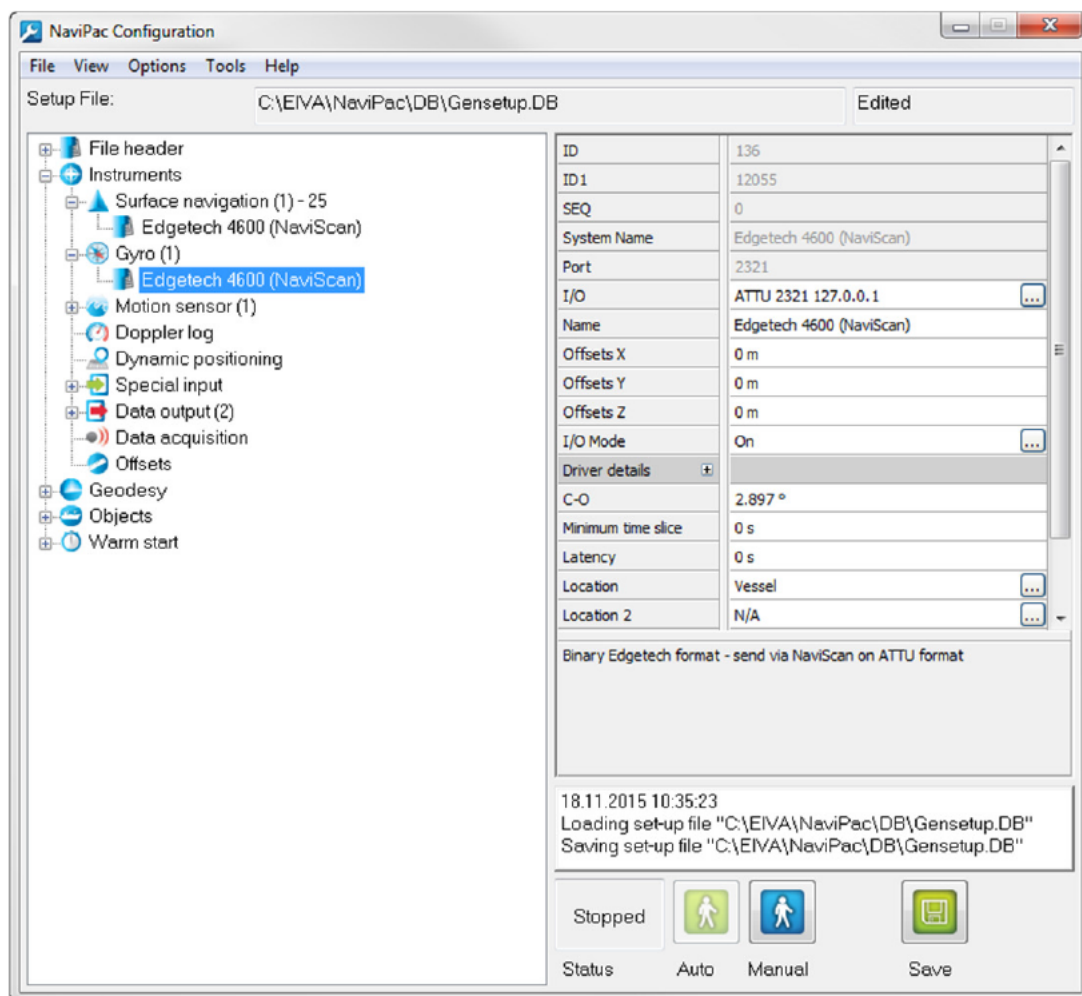
3.2 Gyro

Figure 12 EdgeTech 4600 gyro in NaviPac

The following settings are of significance for the gyro instrument:

- Driver (System name): EdgeTech 4600 (NaviScan)
- I/O: format is ATTU (see above under 'Navigation instrument' for details), port (2321) is as defined as part of the EdgeTech 4600 repeater settings in NaviScan
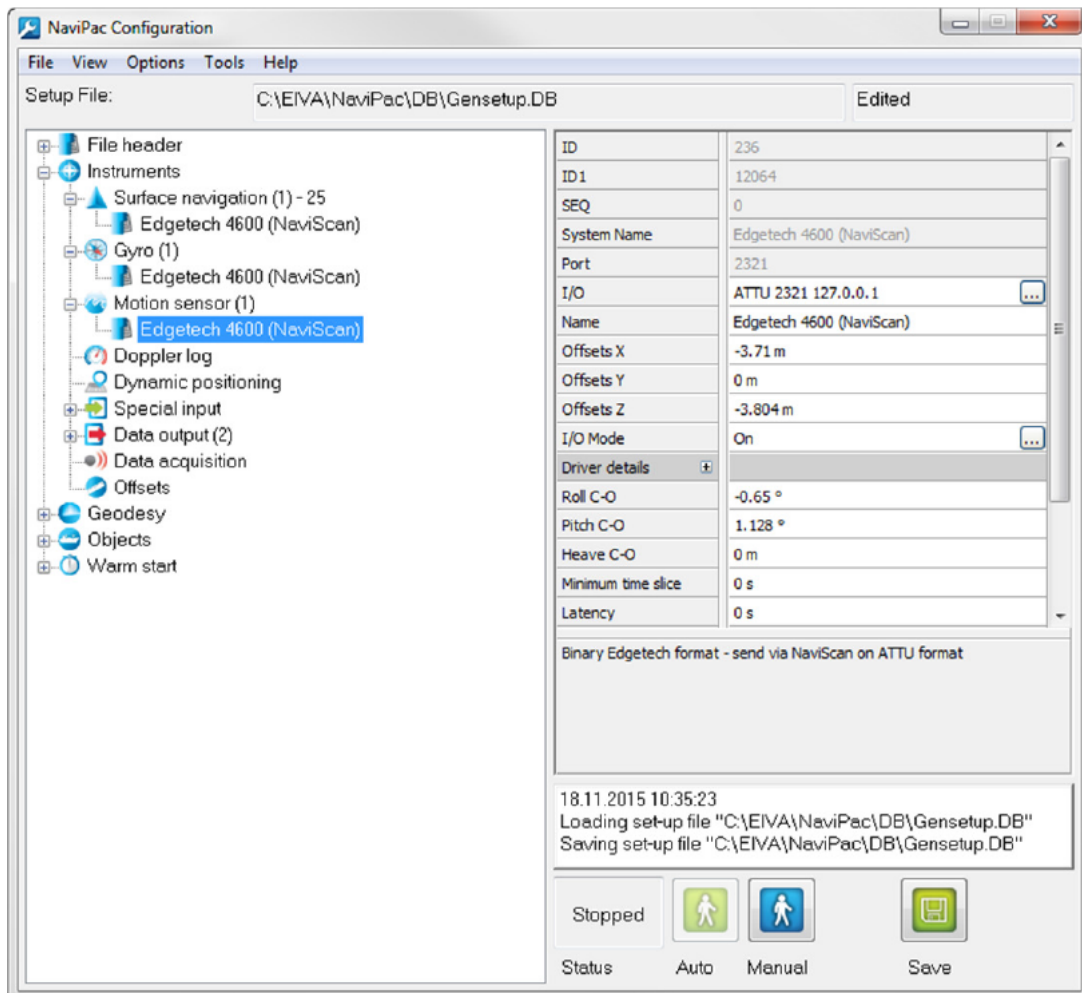- C-O: similar to the value used in NaviScan

3.3 Motion

Figure 13 EdgeTech 4600 motion in NaviPac

The following settings are of significance for the motion sensor instrument:

- Driver (**System name**): EdgeTech 4600 (NaviScan)
- **I/O**: format is ATTU (see above under 'Navigation instrument' for details), port (2321) is as defined as part of the EdgeTech 4600 repeater settings in NaviScan
- Offsets: similar to the ones given in NaviScan
- **C-O** values for roll and pitch: similar to the values used in NaviScan
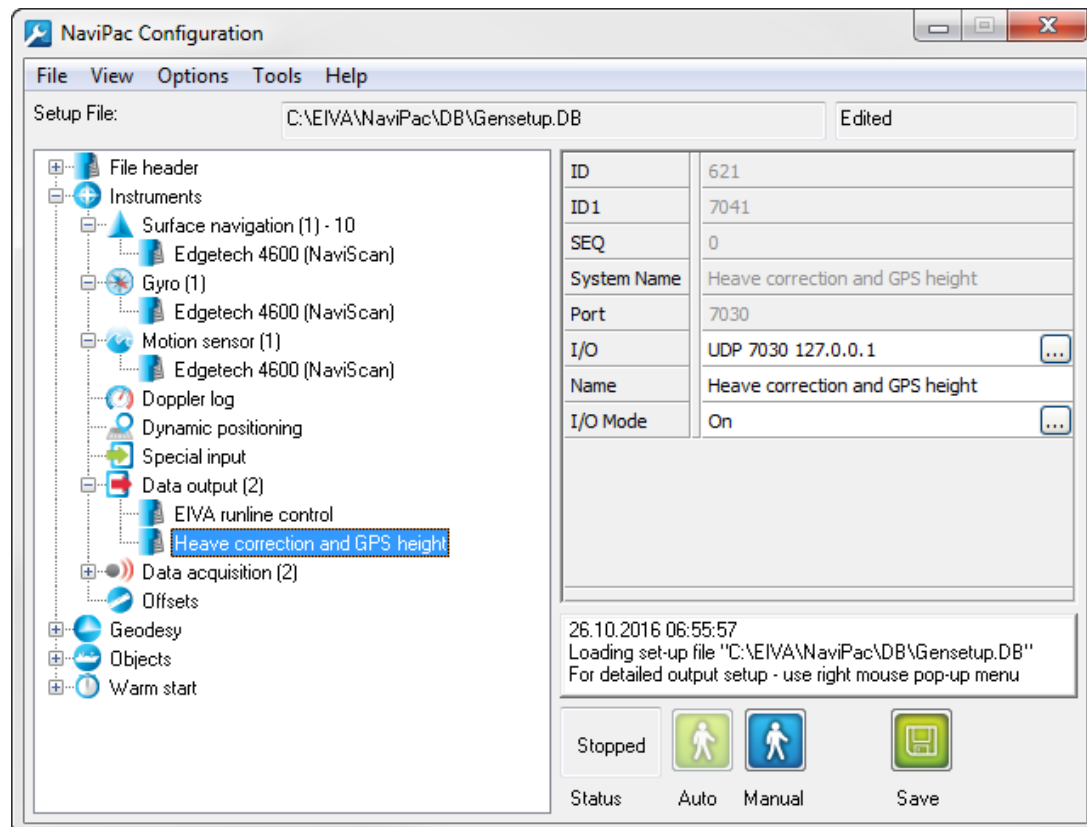
3.4 Bathymetry output

Figure 14 Bathymetry sensor in NaviPac

The following settings are of significance for the navigation sensor (remember that this instrument is only relevant in case of a surface-based system with a significant (accurate (RTK based)) height component):

- Driver (**System name**): Heave correction and GPS height
- **I/O**: protocol is UDP/IP, IP address is local (NaviPac and NaviScan are executed on the same computer), port is similar to the one given in NaviScan
- No offsets, since NaviPac per definition is calculating the values to the CRP position
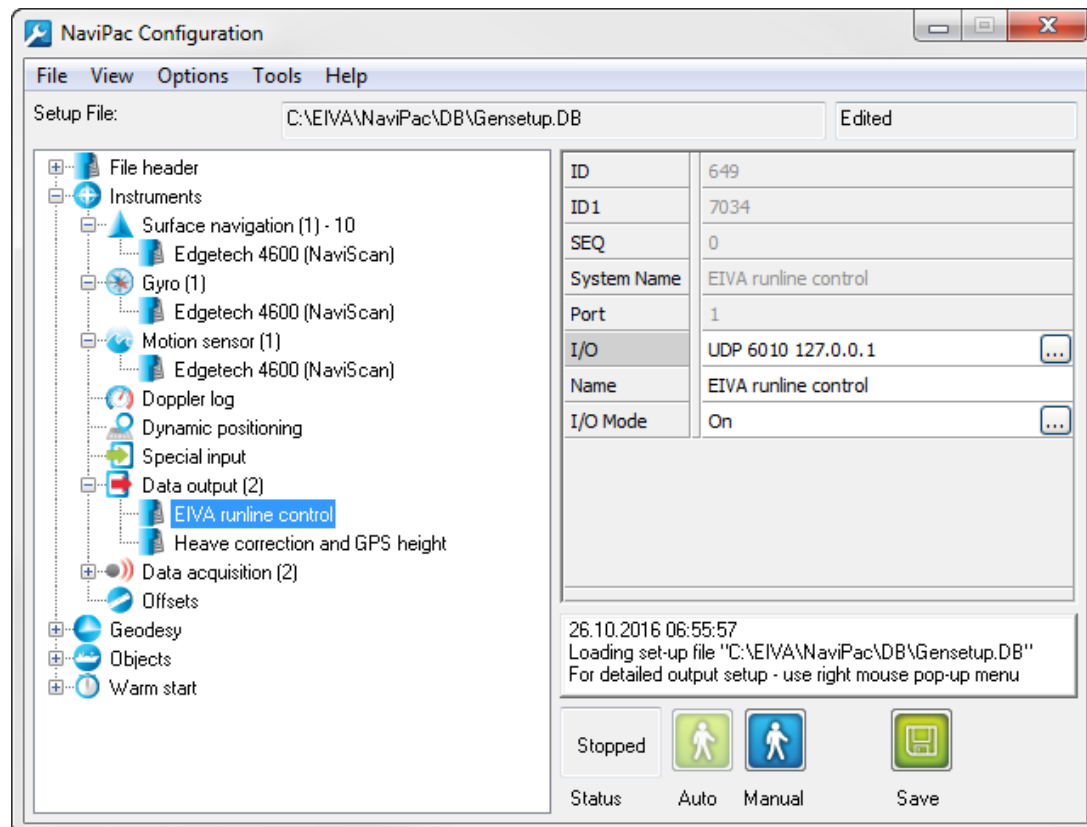
3.5 Runline control

Figure 15 EIVA runline control instrument in NaviPac

The following settings are of significance for the Runline Control instrument:

- **Driver/system name**: EIVA runline control
- **I/O**: protocol is UDP/IP, IP address is local (NaviPac and NaviScan are executed on the same computer), port is similar to the one given in NaviScan

4 Version descriptions

Version	Date	Author	Description
0.9	18.11.2015	AFI	Initial document
0.10	10.04.2016	ANS	Transferred to EIVA template
0.2	14.05.2019	ANS	Updated NaviScan screenshots