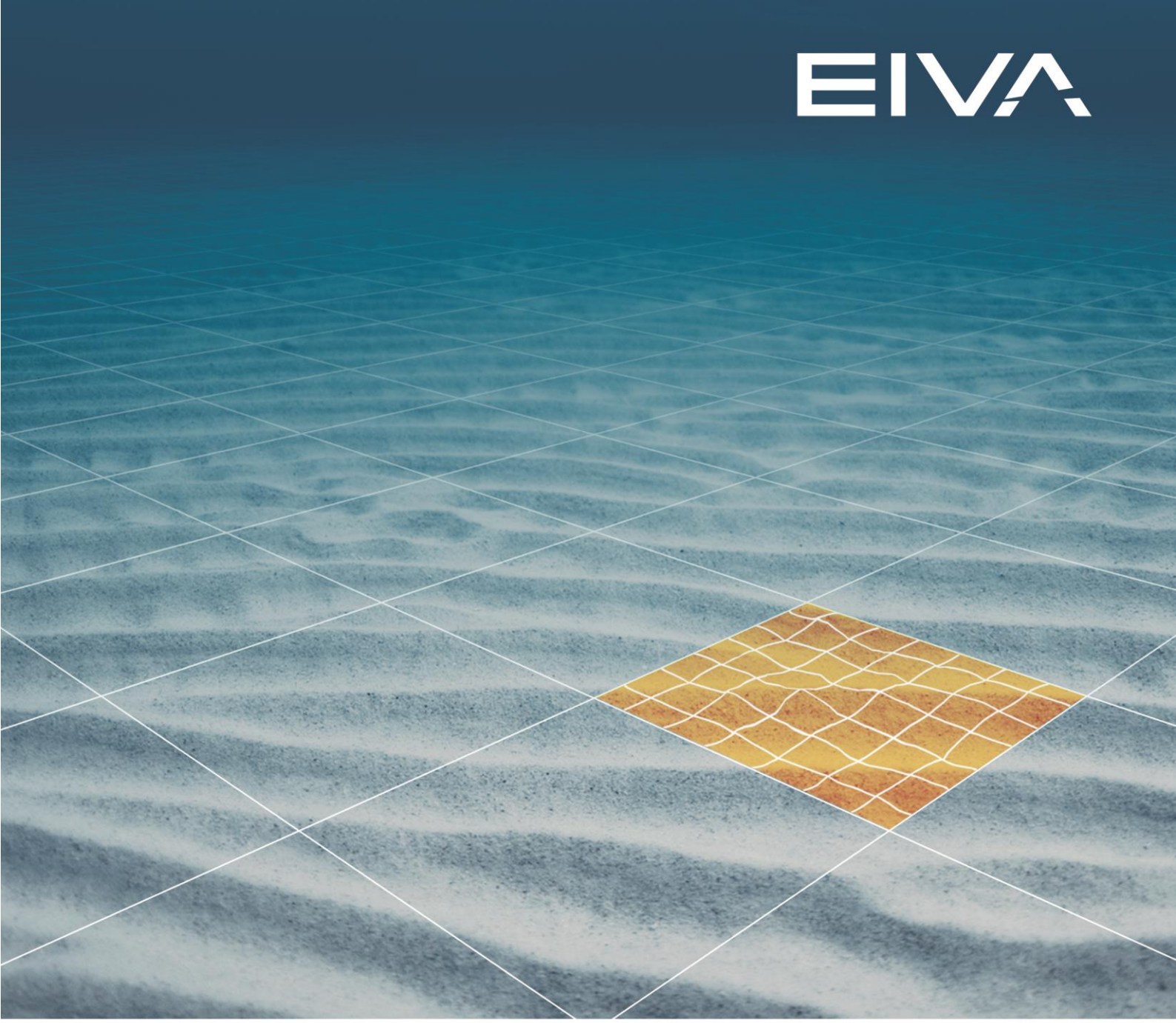

CABLE COUNTER TUNNEL INSPECTION

HOW TO USE THE TEMPLATE

Last update: 28/02/2023
Version: 1.1

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1 Tunnel inspection with NaviSuite

This tunnel inspection configuration template is designed to be used in DataMon together with NaviPac. The DataMon and NaviPac can be used either by having a NaviPac, NaviSuite Kuda Pro or NaviSuite Mobula licence.

It consists of one .NPP file to be used in NaviPac, a NaviScan.BIN file and 3 files for DataMon. In DataMon, the user should input the last position of the ROV.

TestLibrary should be used to replay a heading string for the tunnel direction. The cable counter payout will be used to position the ROV along the tunnel heading.

2 Set up the tunnel direction

The tunnel heading is input using a replayed gyro string. There is software in NaviPac that can replay strings called TestLibrary (C:\EIVA\NaviPac\Bin\TestLibrary.EXE).

1. Select **NaviPac** > **Try some Socket things** (1)
2. Type the sample gyro string **$HEHDT,090.0,T**
3. Replace 090.0 with the *actual tunnel heading value*
4. Set the UDP port on which to send the heading. The template is set to receive it on 127.0.0.1:9009 (3).
5. Click **Write** to start publishing to the port (4)

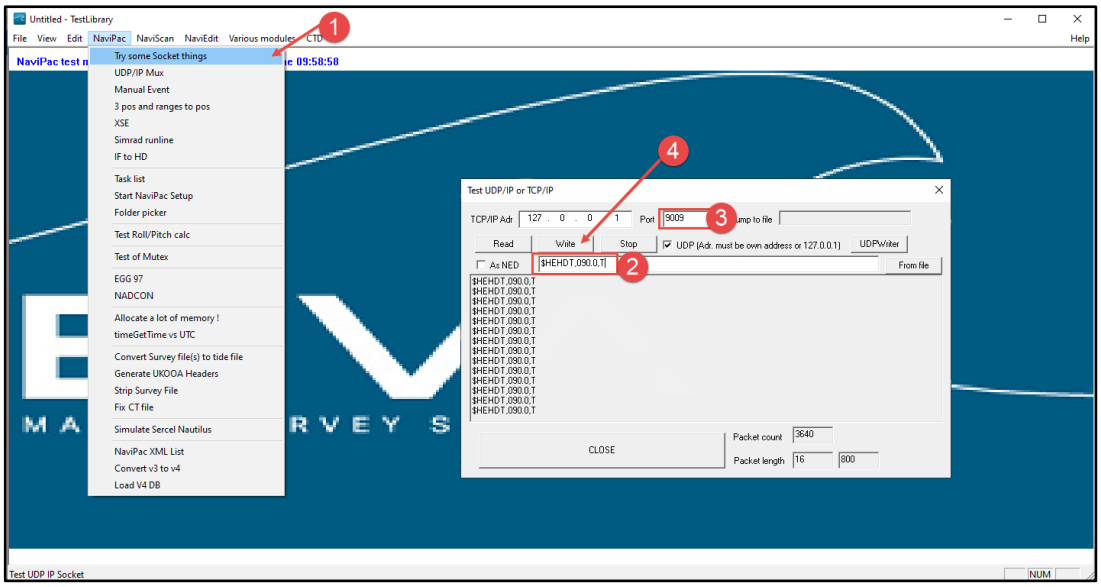

Figure 1 What to set up in TestLibrary

3 The NaviPac configuration

Open NaviPac and select **File** > **Open** to browse for the .NPP file shared with this guide.

The template has 2 vehicles, a simulated vessel (1) and an active ROV (2). NaviPac by default asks for a base surface vessel (**Object ID 0**) to work, so the template simulates one. This vessel should not interfere with the ROV in any way.

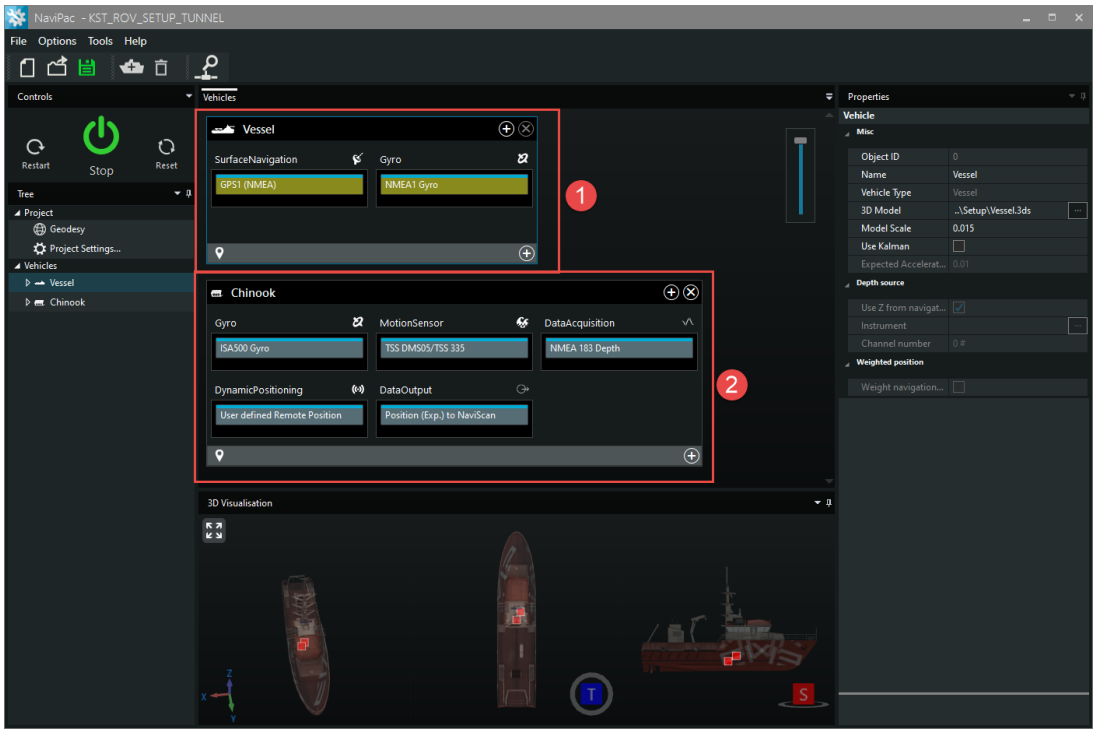

Figure 2 The NaviPac template showing simulated vessel (1) and active ROV (2)

- The ROV is positioned by the **User-defined Remote Position** that is calculated in DataMon on UDP port 127.0.0.1:9010.
- Interface the sensors available on the ROV depending on the configuration. The template comes with a NMEA1 Gyro, a TSS motion sensor and NMEA Depth sensors.
- Under the **Project** tab in the left-hand menu, adjust the **Geodesy** according to the project specifications.

Additionally, the template exports a position to NaviScan, where you interface it together with the sensor and sonar data. The sensor data is set to be shared with NaviScan in case you want to run NaviScan on the same computer. It will be forwarded to local UDP ports with numbers having 16 000 added. For example, the motion data on port 9001 will be received in NaviScan on port 25 001 (9001 + 16 000).

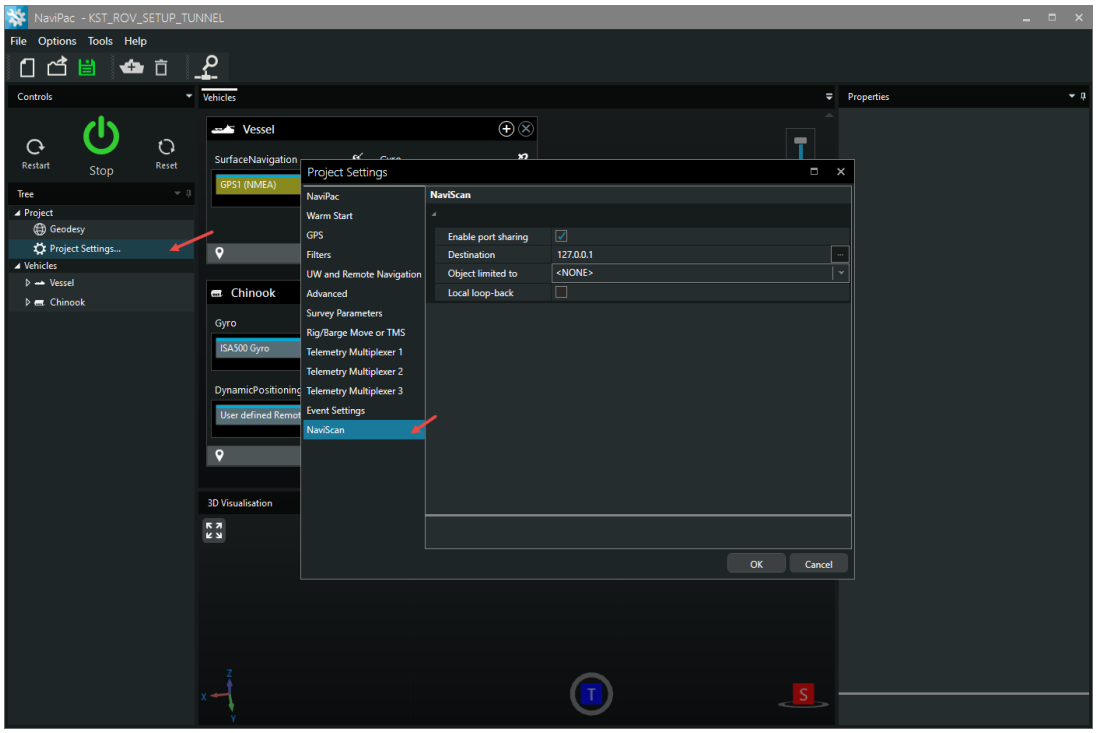

Figure 3 Forwarding data to NaviScan

The time sync should be done either in NaviScan or set up in NaviPac.

Note: If running on the same PC, only one software (either NaviPac or NaviScan) should control the timing, but not both as this will lead to conflicts between them.

4 The NaviScan or NaviSuite Mobula configuration

Replace the NaviScan.BIN file with the NaviScan template file which comes after installing NaviScan. NaviScan reads this file by default when going online.

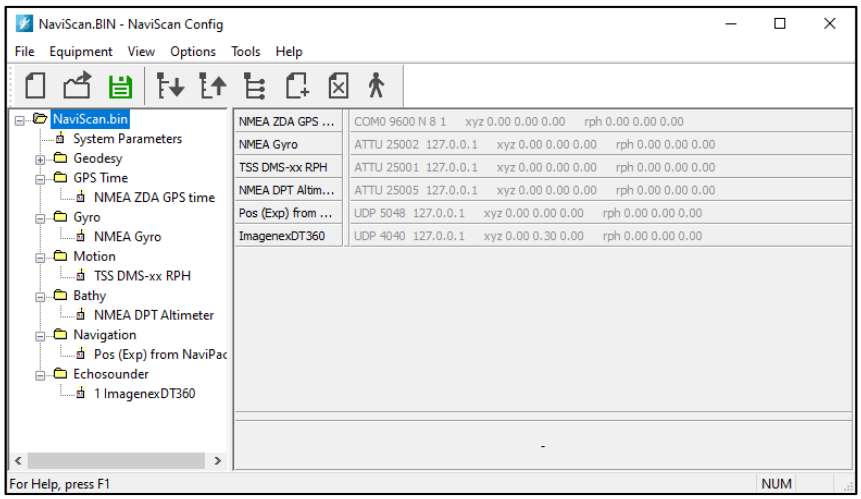

Figure 4 The NaviScan template

If using NaviSuite Mobula, use the .NSP configuration file, as seen below.

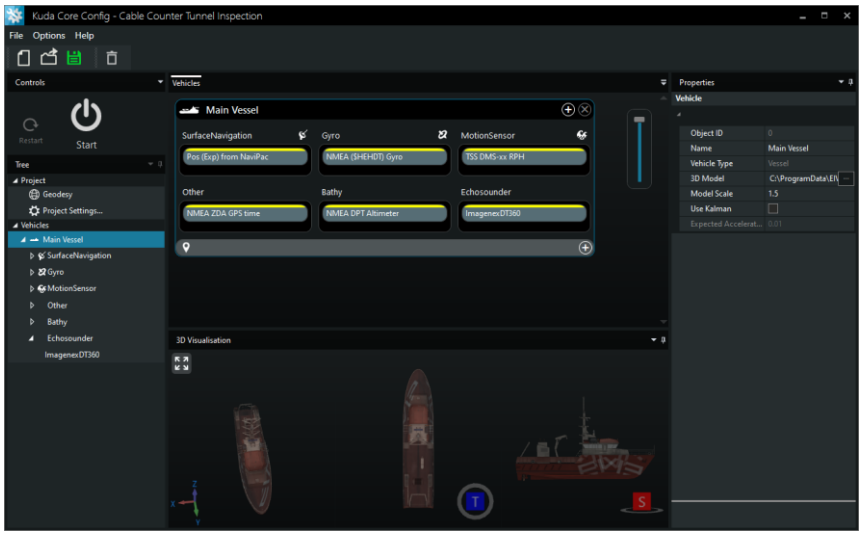

Figure 5 The .NSP configuration

The template comes with the sensors forwarded from NaviPac (ie motion, gyro and depth), the ZDA + PPS time sync and an Imagenex DT360 multibeam.

5 The DataMon configuration

6. Open DataMon (C:\EIVA\NaviPac\Bin\DataMon.exe)
7. Right-click and select **Open Configuration**, then browse to the .CFG file shared with this template.
8. Right-click DataMon (1) and select **Visualise Configuration** (2).

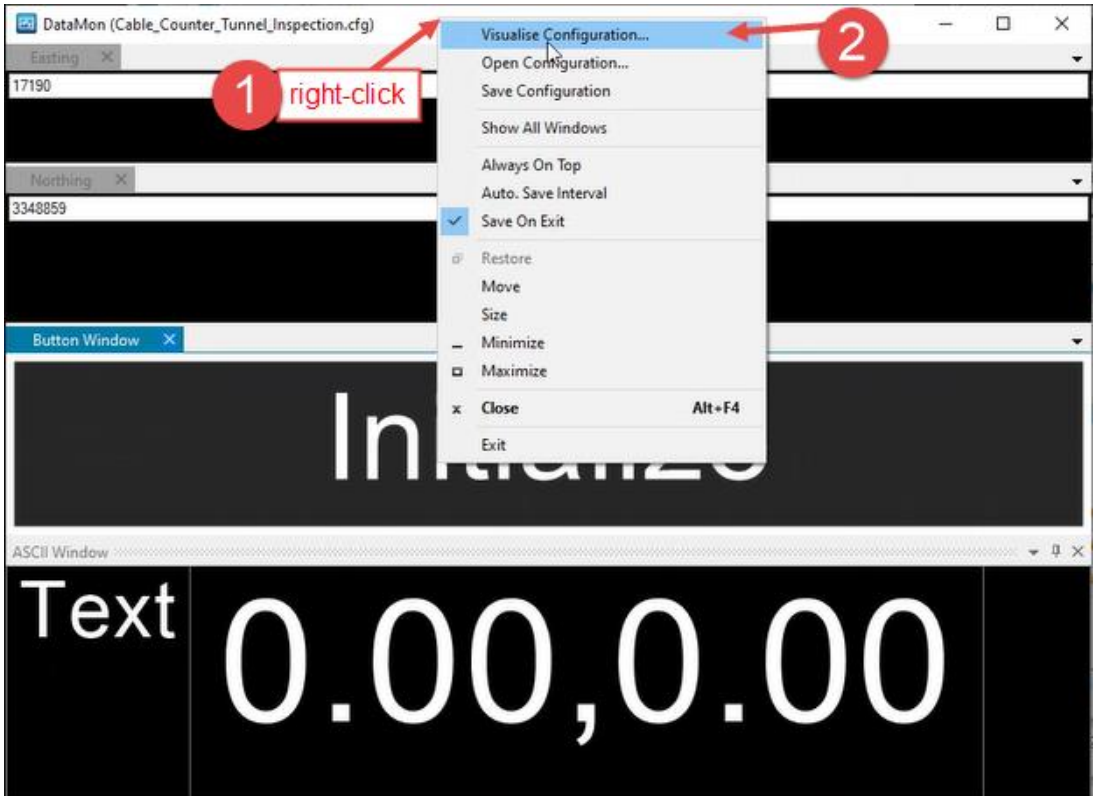

Figure 6 The DataMon window

Figure 7 below shows how the configuration window should look.

The inputs are the gyro heading from Test Library (1), the cable counter payout (2) and the coordinates of the Base Position of the initial dive (3).

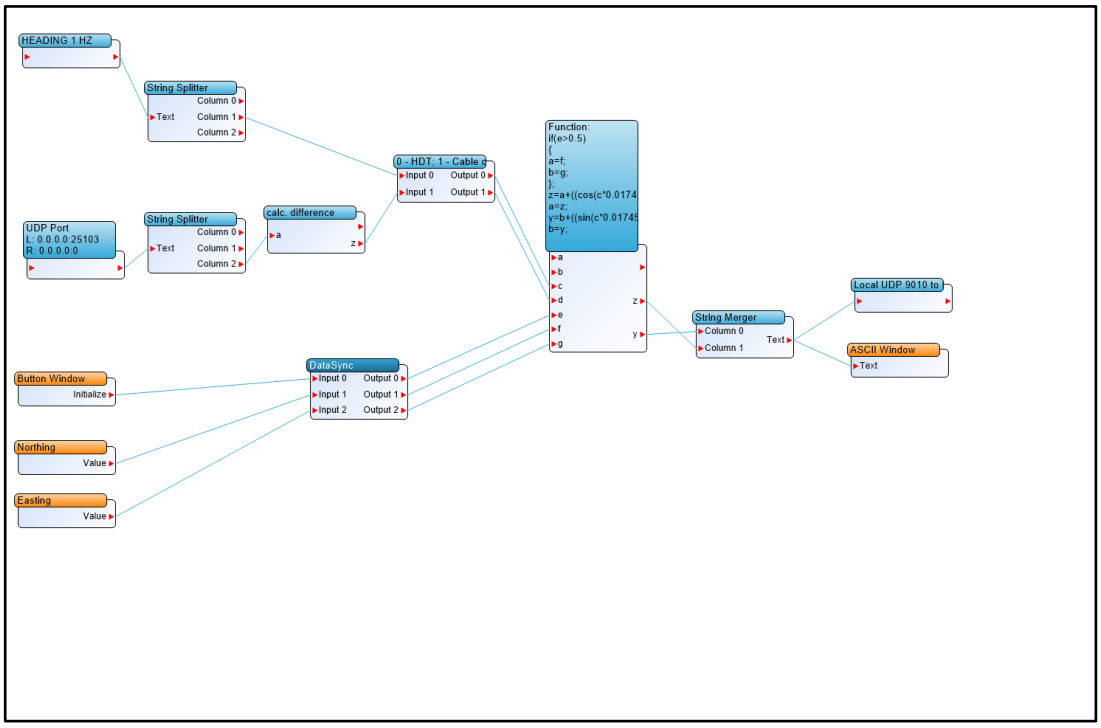

Figure 7 The DataMon configuration

The tunnel gyro heading is already set to come on UDP port 127.0.0.1:9009 from the TestLibrary.

The Cable Counter in the setup is set to send data on any UDP IP on port 25103.

The string is formatted to use the third field value as the cable payout. You can adjust which field to use from the **String Splitter** module, adding more fields if needed, and use the field which is relevant on your cable counter data string.

Figure 8 gives an example of how to change to the fifth field in a string.

1. Select the **String Splitter** module (1).
2. Change the **Outputs** from *3* to *5* (2).
3. Two new fields will appear. Move the connecting line from the third field to the fifth field (3).

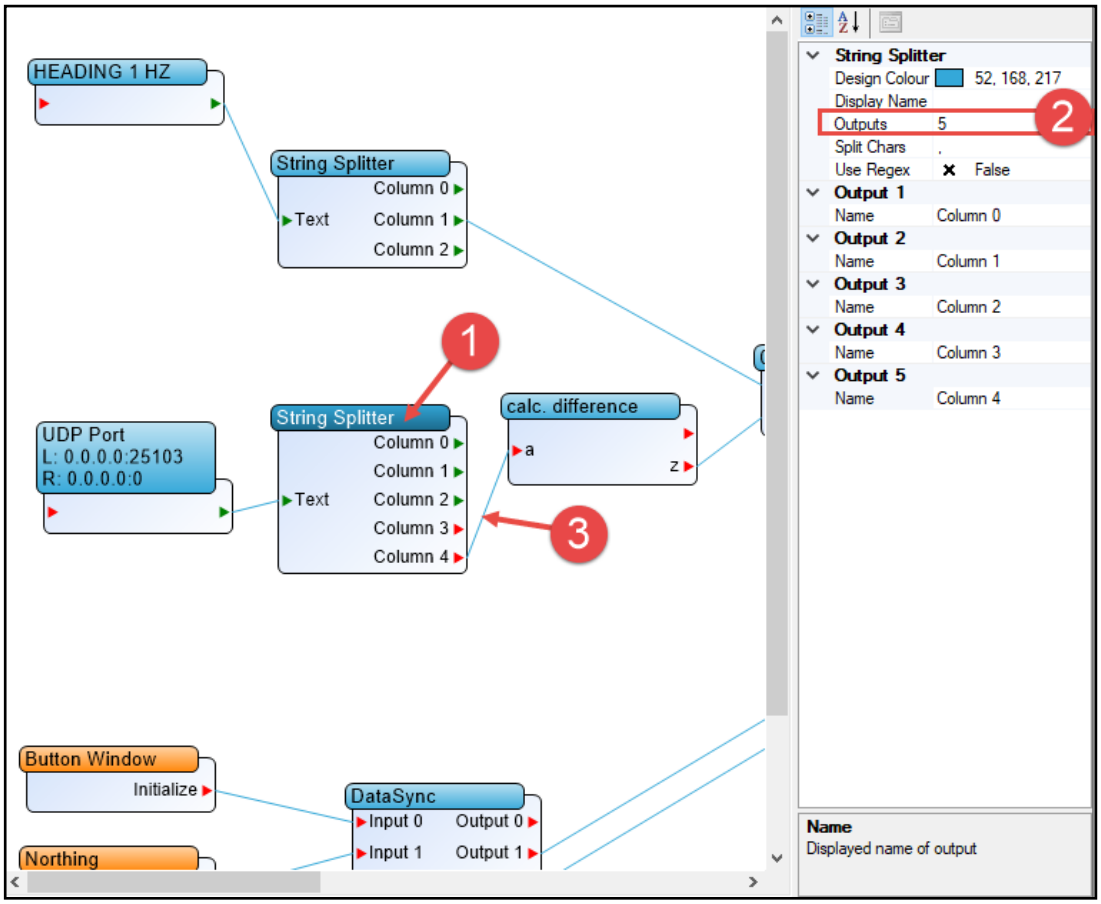

Figure 8 How to set up another field from the ASCII cable counter string for cable payout

6 Operation

1. Start NaviPac and NaviScan
    - In the NaviPac template, DataMon is set to warm start so it will start up when you start NaviPac.
2. In DataMon, input the **Easting** (1) and **Northing** (2) coordinates of the Base Position (dive position, best if the cable counter can be set to *zero* there).
   Note: After you type them in, it is important to press **Enter**, otherwise the new inputs will not be considered.
3. Click **Initialize** (3). The DataMon will now use this position as the Base Position. You can see the result below (4).

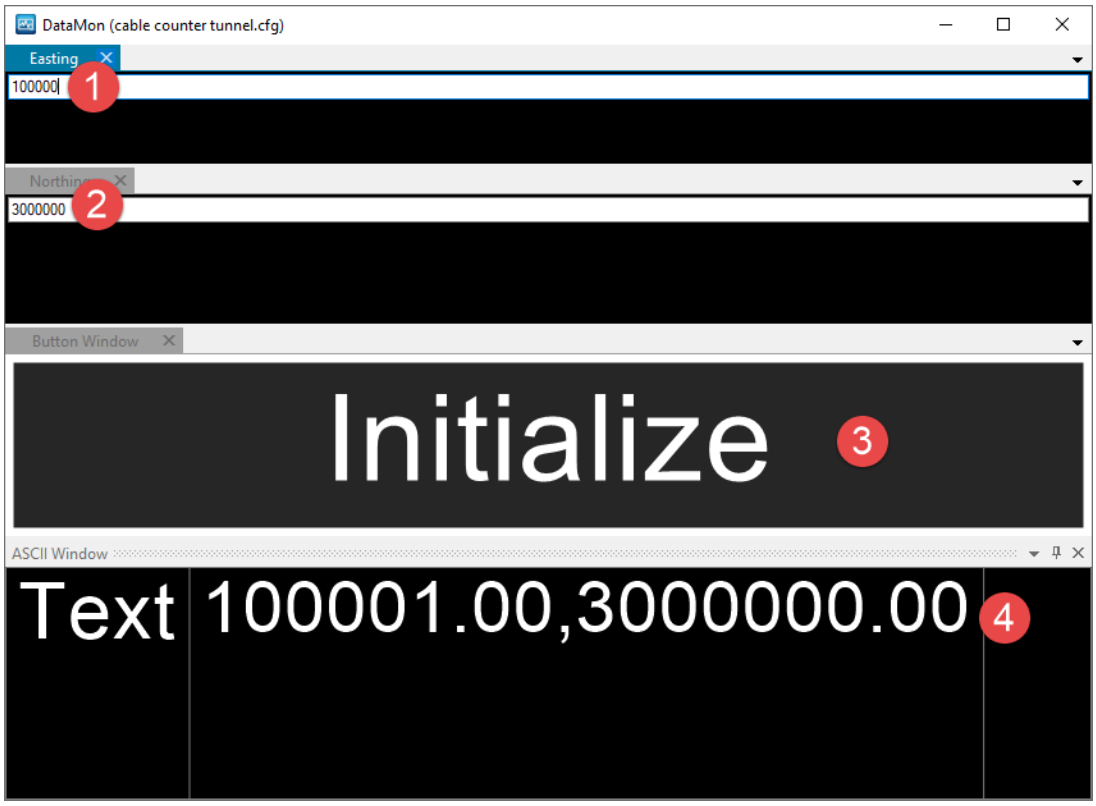

Figure 9 How to initialise in the Datamon window

After the initialisation, the calculated position will be sent to NaviPac and subsequently to NaviScan or NaviSuite Mobula.