VIKING SOFTWARE

Quick Guide Version 2.0

CT SYSTEMS

WARNING

An experienced and careful navigator would never trust on just one expedient when determining his position, because the accuracy of the position, which is plotted on the chart, depends on the navigation device.

The Viking software is a precision instrument, which is linked to a receiver. When there are interferences in the radio signals, the position on the chart may not match with the real position. With the CT Systems software you can make corrections regarding position, if there is a point from which the coordinates are known.

WARNING

In case of a loss of the USB HASP security key the replacement of this key requires a full re-purchase of the licensed software!

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Chapter 2: General

Cursor Mode:

By clicking on the main navigation screen in Viking you will enter the cursor mode. To exit the Cursor mode simply click the right mouse button, or escape key on your keyboard. While in the cursor mode you can pan by moving the mouse, and zoom in/out with either +/-, F7/F8 or mouse scroll wheel.

← Zoom in

← Zoom out

← Selection Zoom

← Show track

← Measure

← Follow ship / target

← Rotate with Target

← Rotate clockwise

← Rotate Counter Clockwise

← North up

← Make Profile

Function Keys:

F4 - Follow ship

F5 - Online/offline mode

F6 - Online/pause mode

F7 - Zoom in

F8 - Zoom out

F9 - Bottom bar visual/hide

F10 - Side bar visual/hide

F11 - Full screen mode

F12 – Background Sea chart (Navionics) on/off

Ctrl + M - Instant marker at ship position

Ctrl + N - Change intensity display

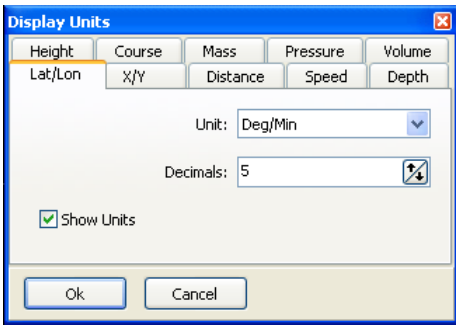
Display Units:

Settings → Display units. Change value for the selected function.

Distance - Unit change to CM, DM, KM, etc.

Speed - Unit change to M/S,K/H, Knots

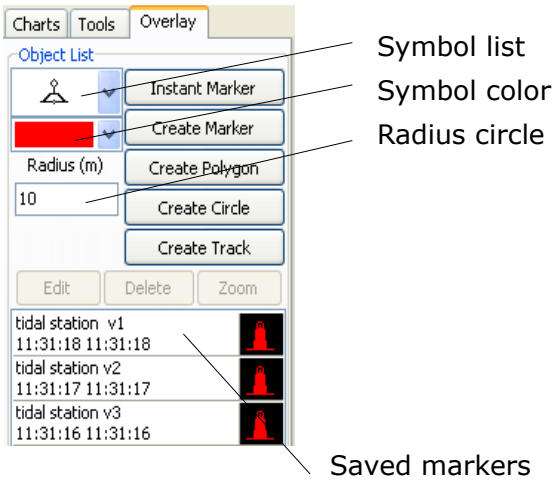
Depth - Unit change to CM, DM, M, etc.



Overlay:

Press F10 to open side bar and select the tab *Overlay*

Instant Marker	-	Sets marker at ship position
Create Marker	-	Sets marker at cursor position
Create Polygon	-	Draws multiple lines
Create Circle	-	Circle at the cursor position
Create Track	-	Starts a track
Stop Track	-	Stop and saved the track



Edit Marker:

Select saved marker → edit →

Change name → Change Track colour → OK.

Chapter 3: Data Import

Charts:

Press F10, mouse click on the far right of the Viking Window, or select Side Bar from the View menu, and select the Files tab (in older versions it is called Charts). Here you can see the active index of charts. By right clicking on a chart you can choose to remove them from the index with Delete, temporarily hide the by choosing Hide, and edit them by choosing Edit.

Charts Import:

DXF:

File → Chart → Import DXF → Select the DXF file you want to import → Open.

Viking will load the DXF file, after importing you will get a preview of the DXF file.

Than press OK, Viking will show the DXF be sure that it's projection is correct. On the left side Viking shows you some options to edit the DXF. Press save if you are sure everything is correct.

Viking Charts (.VCT)

File → Chart → Load From.. → Select the .VCT file you want to import → Open.

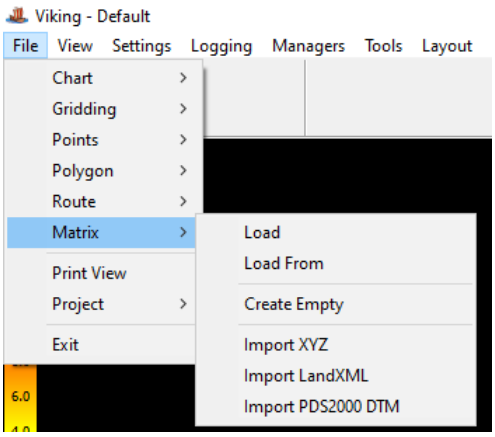
Matrix Data

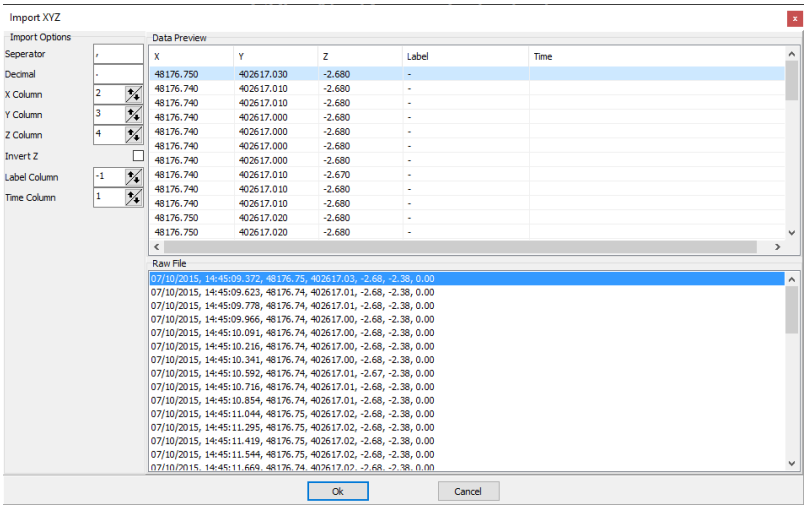
Importing Of New Survey Or DTM Data:

The following extensions can be used:
.XYZ/.PTS/.CSV/.ASC/.TXT/.XML/.DXF

NOTE: Before adding new data, make sure the system is in the proper Projection!

To load the new matrix files, go to:
File → Matrix → Import XYZ *or* Import LandXML





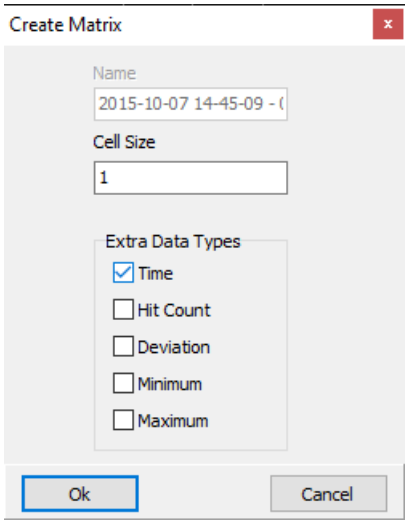
There is also the option to import Third-party binary files from Hypack MTX and PDS2000 DTM. This option is only possible under:
Managers -> Matrix Managers

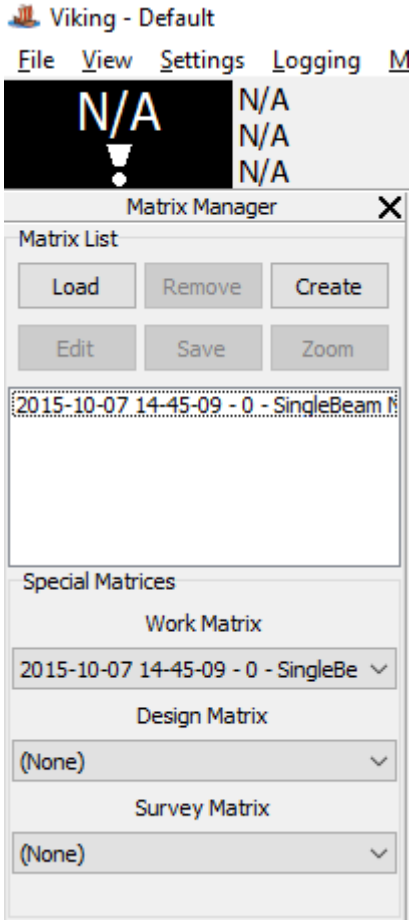
After the file is loaded into the system, an importer will show the data in a preview. Here it is possible to change the X,Y,Z columns, invert Z, add time stamp to the data. Then the option to save the file, also there is the option to select or created a directory.

After the file is saved, the cell size can be edited. This option is in metres. Smaller then a metre is also possible for example up to 0.10 meters.

If for an XYZ file the wrong size of cell size is chosen, by a cell size bigger then the data in the file, data will be merged in the matrix. If the cell size is too small, gaps within the matrix will be shown.

For a LandXML or a DXF file, the cell size can be variable and is not limited by the provided data.





When the data is loaded into the system, go to Managers → Matrix Managers.

The left side bar will be shown. At the bottom of the this bar is it possible to select the new imported file.

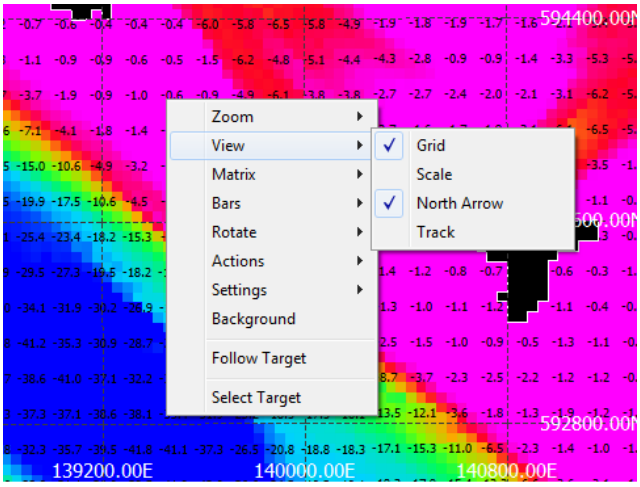
Work is used to be updated and edit by the equipment

Design is used for theoretic / designed terrain models

Survey can be used for updates from single beam / multi-beam equipment

Chapter 4: Data Export

Screen Grab



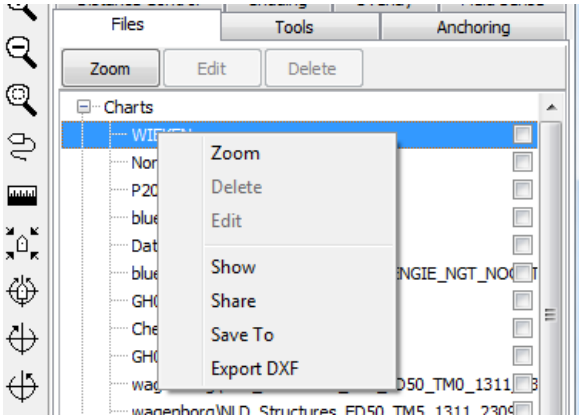
The easiest and most basic way to export data in Viking is to make a screen grab of the active Map View. This can be done by going to: *Menu Bar → File → Print View.* By doing so a left hand side bar will open with a few options.

The four fields where you can enter project data will be printed along with the screen grab if "*To Printer*" or if "*To BMP File*" is selected. When "*To DXF File*" is selected only the raw DXF is exported with Viking Chart data.

To get the view you want printed you must centre and zoom the chart in the map view, this map view is literally what will be printed. For example you can also right click in the Map View and enable a Grid or Scale Bar in the View menu that appears after right clicking in the map view.

For printing directly to a PDF file we can recommend to install the free software Bullzip printer.

Charts



Viking Charts can easily be exported in either Vikings proprietary format or to a DXF file. To export a Chart in either format simply open the right hand side bar (F10) and open the *Files* tab. There you can right click on a chart and select *Save To* for saving a Viking Chart to an external location, or select *Export DXF* to create a DXF file.

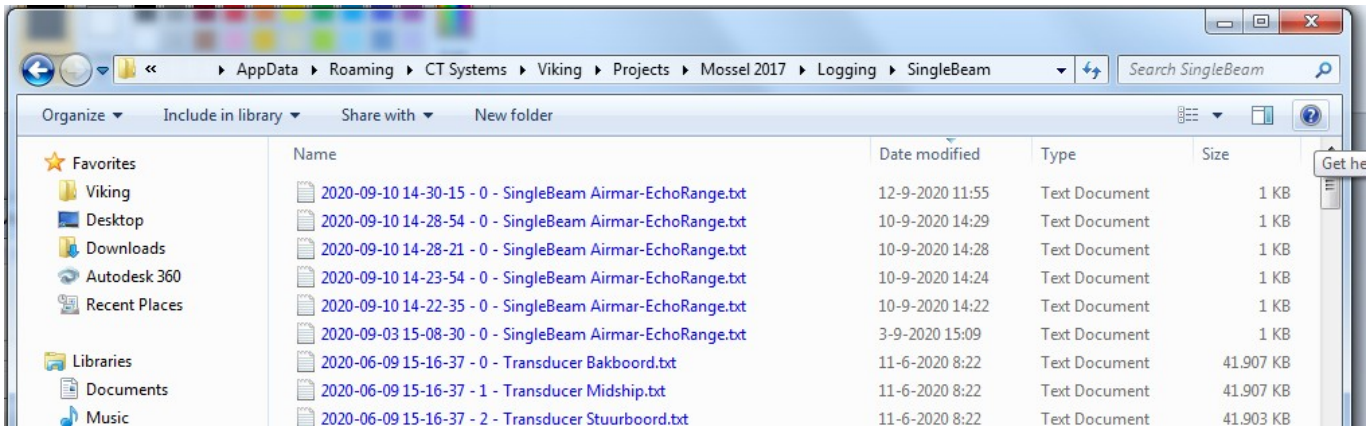
Please note that Viking Charts will always have the main Chart Datum as coordinate system and DXF files will be in the coordinate system of the active projection.

Matrix Data

Matrix files in Viking work in the exact same way as Viking Charts. In the right hand side bar you can right click on a matrix file and either select *Save To* or *Export XYZ*. Save To will create a Viking Matrix file in our proprietary format and *Export XYZ* will create an industry standard XYZ ASCII file in your active coordinate system.

Log Data

Where applicable Viking will save raw ASCII log files of configured equipment, such as for example the raw location of the dredging depth and location, or single beam survey data. Each time Viking is put in online mode it will start a new file with the date and time as filename.



This data can be found by going to: *Menu Bar → Help → Viking Files → Projects → <current project name> → Logging*. There you will find subdirectories for your configured equipment containing the log data.

Chapter 5: Configuration

New Viking Installation

Below is a basic overview of installing and setting up a new Viking software installation. This

Installing New Viking

- Install newest Viking Setup FULL, followed by LATEST (if applicable)
- Run Viking and go to Settings → Equipment Manager
- Click Add → GPS → NMEA and Add, repeat this for:
  - Heading → NMEA
  - Output → Viking

Setting Ship Control

- Settings → Ship → Ship Control, and select:
  - Differential
  - No Height
  - No Draft
  - GPS Device: GPS NMEA
  - Heading Device: Heading NMEA
  - No Motion
- In the backup tab you could for example have the same as above but for GPS set to Normal. In backup mode there is no logging or DTM update, just a position and a big warning on the screen

Configuring Equipment

- GPS NMEA:
  - Settings → Equipment Manager → Click on GPS NMEA → Click Setup (or double click on GPS NMEA)
  - Click Change Connection and select the appropriate COM, TCP or UDP and configure (use the Add button in bottom left to add TCP/UDP)
  - Using Calibrate set the correct Datum for each GNSS fix mode (important)
  - Select the appropriate Fix Point under Change Position (important)
- Heading NMEA
  - Settings → Equipment → Heading NMEA
  - Configure connection and optionally set a heading offset in Advanced
- Output Viking
  - Settings → Equipment → Output Viking
  - Configure connection

After installing a new Viking installation follow the instructions in the Mobilisation chapter above.

Configuring Viking

Assuming Viking is still configured correctly and has all equipment already configured, and connected in the Equipment Manager the following steps are necessary for every new mobilisation:

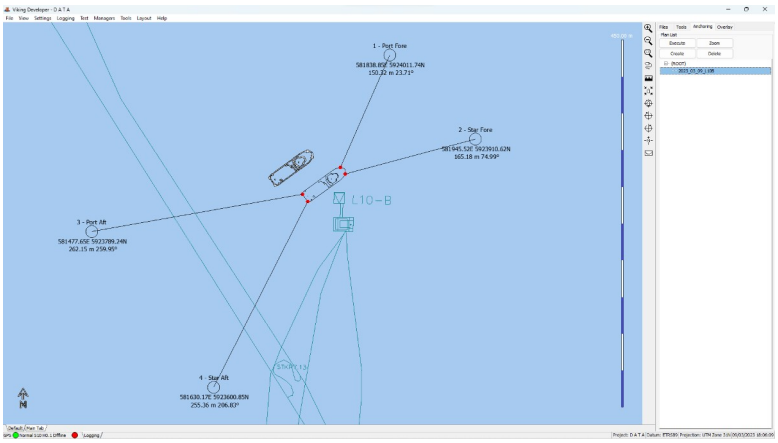
- Set Viking to the Chart Datum and Projection used in your project with *Settings → Coordinate System → Change* and selecting the appropriate system. The active system is always shown in the bottom right of the Viking Screen.
- Using *Settings → Ship → Ship Layout* and by pressing *Create* a new vessel layout can be either drawn directly in Viking, or be imported from a DXF (in metres, front pointing to the right, close to local coordinates 0,0).
- Once the layout is imported or drawn the most important step is to enter the exact Fix Points for the GNSS antennas. Near the bottom left of the Ship Layout Editor click on the Fix Points tab and click on *Create Point* to create a new Fix Point in the drawing. Using the mouse you can place it on the exact location of each antenna, optionally using the X, Y & Z coordinates in the table below they can be fine tuned. Recommended to rename the Fix Points to the names of each GNSS antenna.
- Save the vessel layout with a unique name and make sure that name is selected on the left before pressing OK.
- Go to *Settings → Equipment Manager* and make sure that the Fix Point for the GPS is the fix point of the primary antenna. This can be changed by clicking on GPS and clicking Setup, then choose *Change Position* and select the correct fix point. Also check under Advanced in the GPS setup window that the correct Chart Datums are selected for each type of GPS fix.

Chapter 6: Anchoring Module

About

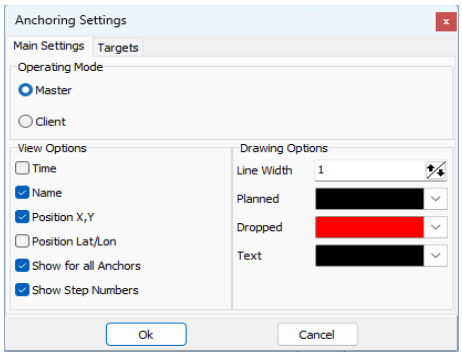
The Anchoring Module is a dedicated module for multi point mooring vessels, making it possible to easily create and execute an anchoring plan.

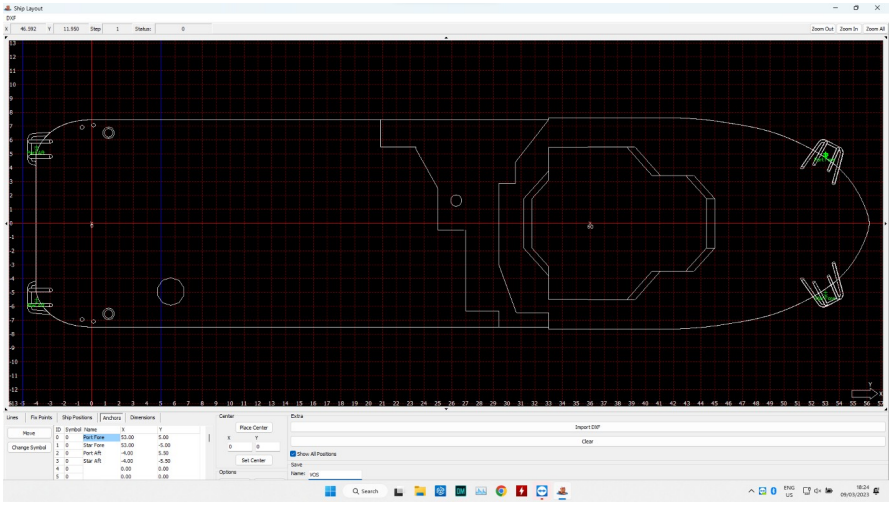
In combination with the Networking Module the active anchor plan will also be shared over a UHF or TCP network in real time, alongside all vessels and other data in the Viking network.



Settings

The main settings for anchoring can be found in *Setting → Anchoring Settings*. Here the system can be set as Master or Client, where Master is the main and default mode, Client will be covered below in the Networking section.





The View Options: Name, Position XY, Position Lat/Lon and Show Step Numbers will control if these options will be shown in the main navigation screen. In the Drawing Options section line width and colours can be set.

A second, but very important, part of the initial configuration is to configure each anchor in the Ship Layout. This is done by going to *Settings → Ship → Ship Layout → (Select Vessel) Edit → Anchor (Tab).* Here a name for each anchor must be given in the empty cells, followed by clicking on Move to set the actual position of each anchor on the vessel.

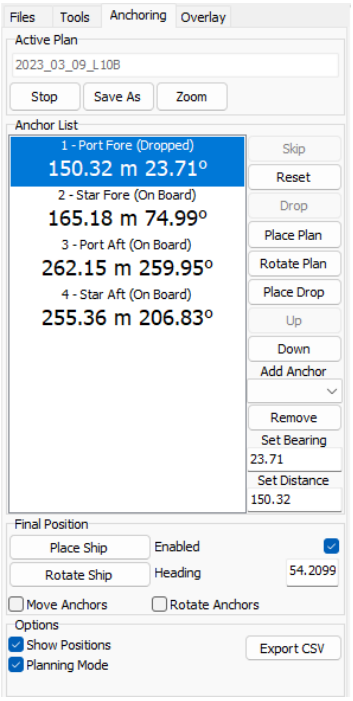
Creating A Plan

After the system and the anchors are configured properly a new anchor plan can be made by opening the Right Hand Sidebar and selecting the Anchoring tab. After clicking on Create a name and/or directory for the new plan must be entered. The option “Planning Mode” at the bottom of the Anchoring Tab will hide the data from the live position of the vessel and only show the plan.

After the new plan is created an empty template is presented on the right. From here a new plan can be started by placing the final positing of the vessel using the Place Ship button. After the vessel is placed it can be rotated separately with the Rotate Ship button. The check boxes Move Anchors and Rotate Anchors make it possible to not only move or rotate the planned position of the vessel but to also move/rotate the entire plan once it is created.

Planned positions for the anchors are created by selecting each anchor from the “Add Anchor” drop down menu and then selecting a position for it on the map. When all positions are set just press “Stop” to save the plan for later.

Executing A Plan



Once a plan is made it is also instantly ready to start anchoring, no extra step is needed. If you want to execute a different plan or have exited the planning mode a plan can be executed by selecting it in the Righthand Sidebar and press “Execute”.

When an anchor is selected from the list it has several options:

- Skip – Will disable the anchor
- Reset – Reset the position of the anchor back to the plan
- Drop – Drops the anchor based on its live position
- Place – Create a newly planned position (Esc to cancel)
- Rotate – Same as above but only change direction
- Place Drop – Manually place a dropped anchor on the map
- Up / Down – Change the position in the planning list
- Remove – Delete
- Set Bearing / Distance – Change by directly typing bearing distance data

Networking / Tug Management

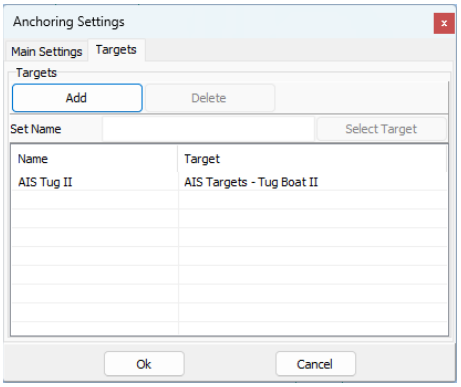
If Viking is used in a wireless network with one or more tugs one vessel must be set as Master in *Settings → Anchoring*. All tugs should be set to Client in the same menu but on their own Viking system. The Master will see the full plan, while the tug(s) will only see the anchor that is selected for them.

The drop position on each tug must be set at *Settings → Ship → Ship Layout → (Select Vessel) Edit → Ship Positions (Tab).* Here an X and Y offset can be given for the drop point of the anchor in the “Attach” cell.

While anchoring each tug must select the master vessel from the dropdown menu, and the master vessel can select the tug that has the anchor from the Tugs dropdown menu directly below the Anchor list. Once the master and tug is set, an anchor can be assigned to a tug by selecting it from the list and pressing “Take” from either the master vessel or directly on the Viking system on the tug.

Targets

An extra option is to use targets instead of having a Viking system on a tug. If for example the tug only has a GPS installed and the master is receiving the NMEA data, or if the master is receiving the tug through AIS and the tug is set up in Viking as an AIS target, this target can then be set in the Anchoring Settings in the “Targets” tab. A new target is created by pressing “Add”, changing the name from “New” to a logical name, and by then pressing “Select Target” to choose a target.



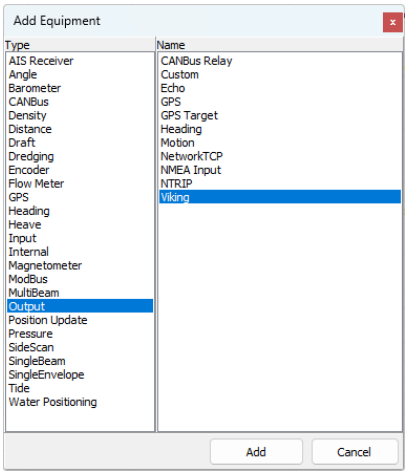
Export

All data in the plan can be exported to a CSV file using the “Export CSV” button and selecting a location and file to save the data to.

Chapter 7: Network Module

About

The Viking Network Module is designed to share live vessel positions and data between multiple Viking Systems. A network can be made either over a (low speed) UHF telemetry network, high speed TCP connections, or via a Viking system that is set up as a server where all other systems connect to.



Connection Set Up UHF

To configure a network using UHF connected over a serial port add go to *Settings → Equipment → Add → Output* and click Add. Then select the equipment in the list and press “Setup”. Here you can set the serial connection using “Change Connection”, and using “Advanced” you can tweak data rates and timing.

Connection Set Up TCP

For a TCP network, using for example an industrial WiFi connection, go to the Equipment Manager and in the Output menu select the NetworkTCP and click on “Add”.

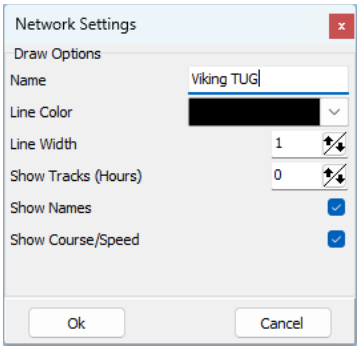
After this the new NetworkTCP equipment has to be configured by setting the correct connection. In a vessel to vessel(s) configuration the Operating Mode can be set to “Auto”. It is strongly recommended to set the broadcast address to the subnet on which the Viking systems are working (for example 192.168.0.255 or 10.0.0.255), Port must be the same on all systems.

Connection Set Up – Viking Server

A Viking Server configuration is the same procedure as setting up a NetworkTCP equipment with the difference that one machine is set as Server, and all other machine are set to Client. Where each client will need the IP address of the server in the Broadcast Address field.

General Settings

The Network Module has some general settings which can be found in *Settings → Network*. Here a name can be giving for each system (recommended) and general display options for network vessels or machines can be set.



Network Manager & Status

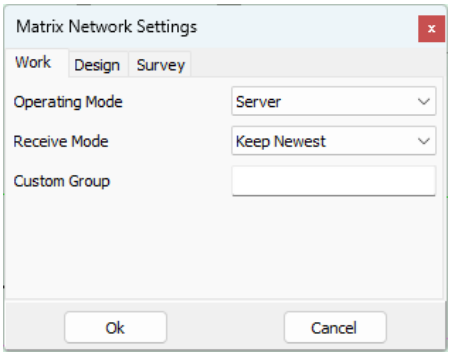
For more status info and information per network vessel or machine the Network Manager can be used, which is a left hand sidebar accessible via *Managers → Network Manager,* please note this list does not automatically refresh! In the network list a machine can be chosen and by pressing “Edit” parameters can be set for this single machine.

Via *Tools → Status Viewer* you can also open the tree with the Viking Network equipment to see the data throughput and the number of connections.

Sharing

When the Viking Network is up and running it will not only share live vessel or machine positions and tracks, but it is now also possible to share files from the Files tab in the righthand sidebar by clicking a file with a right mouse click and selecting “Share”. The file will then show up on all systems, and will also show in their File tab in a tree view with the corresponding name.

Matrix sharing is the only odd one out where it can't be shared directly from the Files tab. To share and optionally remotely update matrices, go to *Settings → Matrix → Network Sharing*. Here and for each set matrix type (work/design/survey) a sharing mode can be set.



Operating Mode

- Disabled – Nothing is sent nor received
- Server – t.b.d.
- Client – t.b.d.
- Slave – t.d.b.

Receive Mode

- Disabled – Your own matrix will not receive updates from the network, you will only transmit your data
- Keep Lowest – Whatever data comes from the network, keep the lowest per cell
- Keep Newest – Same as above, but keep newest per cell (time must be enabled for the matrix)
- Overwrite – You matrix will always be overruled by the network

Custom Group

T.b.d.