1. Arado Plow Device

Revision History			
Revision	Date	Author	Comments
01A	Jul 24, 2023	G Wright	Initial release

1.1 Overview

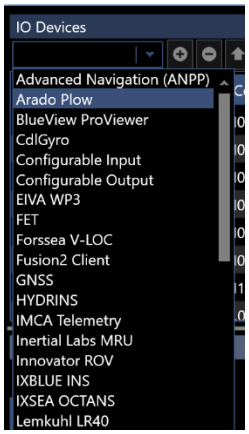
The Arado Plow device supports input from and output to the Arado plow.

1.2 Message Validation

The input message is tested for valid ASCII alpha and numeric characters.

1.3 Configuration

1. From the Explorer view or Setup ribbon, select Devices to display the IO Devices
2. From the dropdown list, select Arado Plow and click the **+** button



3. Configure the Device IO parameters and apply them accordingly (refer to the Devices section of the User Guide)
4. Access the Configure Arado Plow view by either right mouse clicking on the Arado Plow device in the list and selecting Device Settings or selecting it in the list and clicking the Configure device icon ( ) in the Device view tool bar

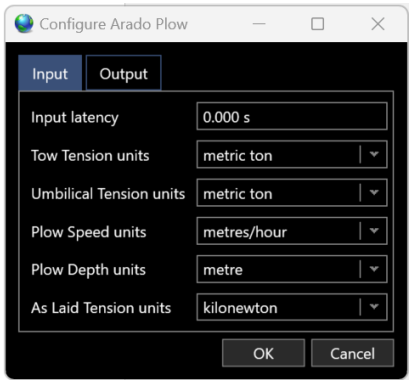


Figure 1 Arado Plow Input Configuration

5. The configuration of the input and output are addressed on separate tabs
6. Input
    a. Input latency:
        i. If the latency of the input message is known, enter it here, otherwise leave this at 0
    b. The units used for select outputs are configured on the plow system by the plow operator, NavView supports configuring this device to match the following data accordingly
        i. Tow Tension
        ii. Umbilical Tension
        iii. Plow Speed
        iv. Plow Depth
        v. As Laid Tension
    c. From the respective dropdown list, select the units
    d. Figure 1 is an example of the settings that match the interface document provided
7. Output
    a. NavView supports the selection of the data source for each output item to provide the greatest flexibility
    b. For each output type, the respective dropdown list presents all available data sources of that type
    c. Figure 2 is an example of appropriate data source selections using the surface vessel's CRP position
    d. If the option None is selected for a data source, the respective field in the output message is empty
        i. The exception to this is the Ship and Plow position, selecting None for either of these results in the position N32° 48" W117° 7" as per the interface document provided

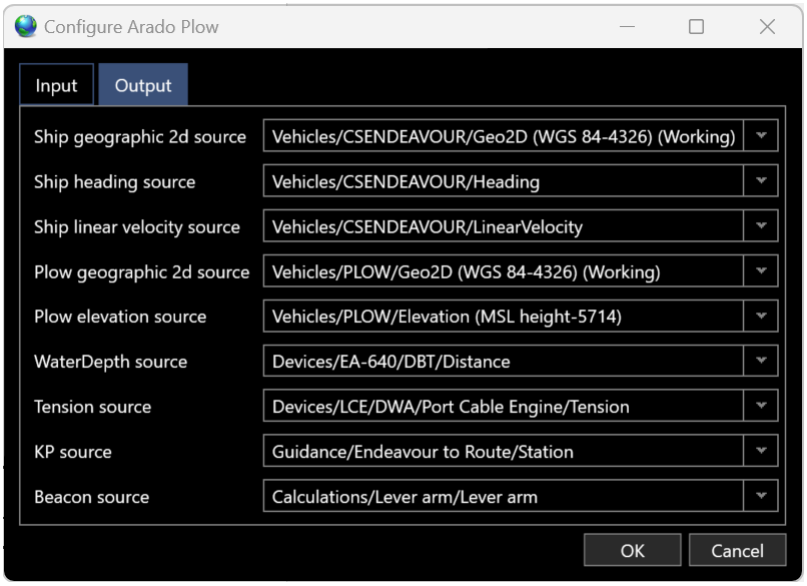


Figure 2 Arado Plow Output Configuration

e. The output message is terminated with <CR><LF> followed by a comma, as per the interface document provided

8. Once configuration is complete click OK

1.4 Monitoring

1. Open a Device Status view (see the Devices section in the User Guide)
2. ASCII Decode Tab

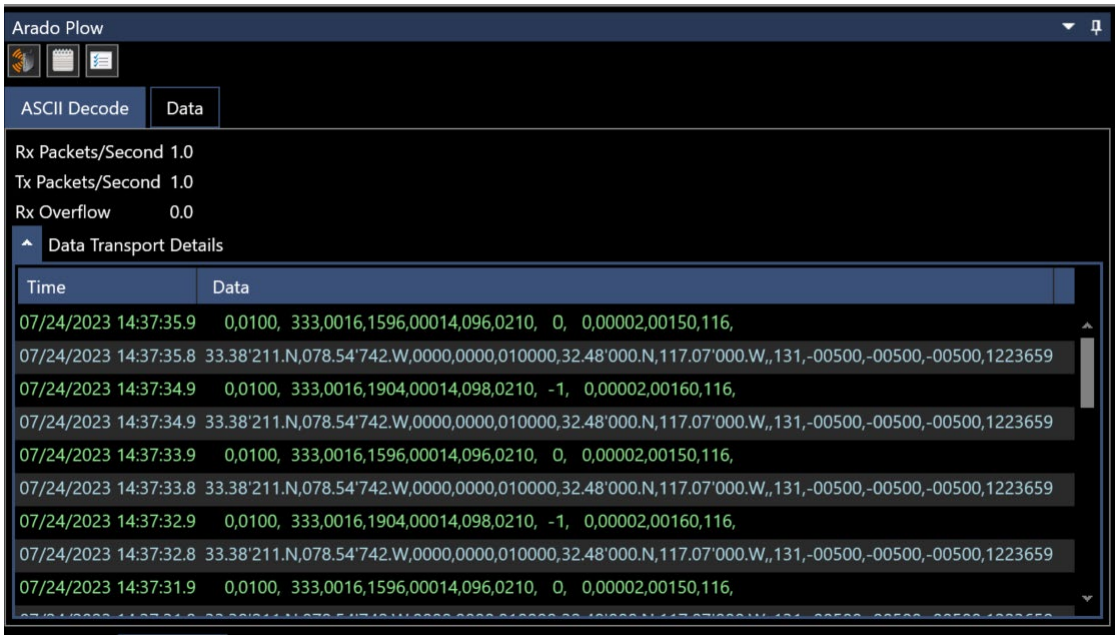


Figure 3 Arado Plow Device Status View - ASCII Decode Tab

a. Rx Packets/Second: Displays the input rate of the received messages
b. Tx Packets/Second: Displays the output rate of transmitted messages
c. Rx Overflow: Displays the number of bytes in the case of an input buffer flow
d. Scrolling list of received (green) and transmitted (blue) messages

3. Data Tab
   a. Displays the decoded and published data

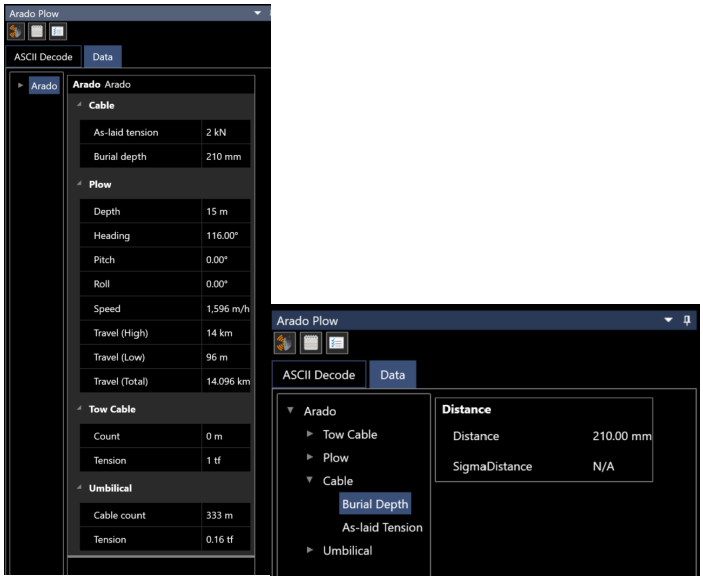


Figure 4 Arado Plow Device Status View – Decoded and Published Data

b. Selecting the top of the tree (e.g. Arado) displays the decoded data in the right panel in the units and number of decimal places expected based on the documentation provided
c. Expanding the branches in the tree (e.g., General, Vehicle, etc.) lists the respective observation that are published and available for use elsewhere in NavView such as Text views and Data Recording

1.5 Input

Arado Plow Message to NavView		
Field	**Format**	**Description**
1		Tow count (metres)
2		Tow tension at plow (plow configured units multiplied by 100)
3		Umbilical cable count (m)
4		Umbilical tension at plow (plow configured units multiplied by 100)
5		Plow speed (plow configured units)
6		Plow travel (kilometres)[1]
7		Plow travel (metres) [1]
8		Burial depth (millimetres)
9		Plow roll (degrees)
10		Plow pitch (degrees)
11		As laid tension (plow configured units)
12		Plow depth (plow configured units multiplied by 10)
13		Plow heading (degrees)
14	<CR><LF>	Carriage return Line feed

Notes:
1 Fields 6 and 7 are combined to provide the total plow travel value.

1.6 Output

NavView to Arado Plow Message		
Field	**Format**	**Description**

1		Ship latitude
2		Ship longitude
3		Ship speed (kilometres/hour multiplied by 100)
4		Ship Course Made Good (Grid degrees multiplied by 10)
5		Water Depth (metres multiplied by 10)
6		Plow latitude
7		Plow longitude
8		Plow depth (metres)
9		Ship heading (True degrees)
10		X (metres lever arm calculation result)
11		Y (metres lever arm calculation result)
12		Z (metres lever arm calculation result)
13		Cable tension at ship (metric tonnes multiplied by 1000)
14		Plow distance along line (metres)
15	<CR><LF>	Carriage Return Line Feed
16	,	Trailing comma, purpose unknown[1]

Notes:

1 Field 16 is included to strictly follow the interface documentation provided for this device. It may result in what appears to be an empty field at the start of messages received at the plow system.