

WinFrog Device Group:	Output
Device Name/Model:	Robertson DP
Device Manufacturer:	KONGSBERG SIMRAD AS DYRMYRGATA 35, P.O. BOX 483 3601 KONGSBERG NORWAY Phone: 47 32 28 50 00; Fax: 47 32 73 59 87 E-mail: WebOffice@kongsberg.simrad.com http://www.kongsberg-simrad.com/ SIMRAD ROBERTSON AS NYÅSKAIEN P.O. BOX 55 4371 EGRSUND NORWAY Telephone: 47 51 46 20 00 Telefax: 47 51 46 20 01 jan.arild.mikalsen@kongsberg-simrad.com KONGSBERG SIMRAD INC. 7250 LANGTRY STREET HOUSTON TX 77040-6625, U.S.A. Phone: 1 713 934 8885; Fax: 1 713 934 8886
Device Data String(s) Output to WinFrog:	Nil
WinFrog Data String(s) Output to Device:	dNorth, dEast values Where: dNorth=(shipY- desired Y)*100, and, dEast=(shipX-desiredX)*100. Note that signage can be inverted using Forward/Aft option. See Configuration Details section for a description of sign notation and output formats.
WinFrog .raw Data Record Type(s):	Type: 450

DEVICE DESCRIPTION:

Kongsberg Simrad purchased and now administers Robertson Dynamic Positioning Systems. Dynamic Positioning Systems integrate control of the vessel's propulsion systems via inputs from positioning systems, gyrocompasses, wind speed and direction monitoring equipment, and any other sensors, which can assist with the automatic positioning of the vessel.

The Robertson DP (output) driver is specific to Chouest Vessels including the Laney Chouest, Deloris Chouest and Betty Chouest. The driver can also be configured for use

on the M/V Independence. If the output formats are compatible, the driver can be used with other Robertson DP Systems.

DEVICE CONFIGURATION INSTRUCTIONS (WinFrog Suggested):

Baud Rate: 9600

Data Bits: 8

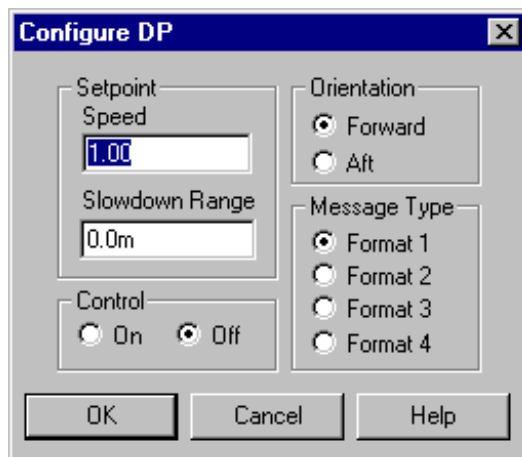
Stop Bits: 1

Parity: None

WINFROG I/O DEVICES > CONFIG OPTIONS:

The Robertson DP device is added to WinFrog from the OUTPUT device types. The only data item that is added along with this device is DP OUTPUT.

The following dialog box appears for configuring data output. This dialog box is accessed via the *Configure > I/O Devices > Configuration* command. It can also be accessed by choosing the *Configure Device* command that appears when you right-click in the I/O Devices Window, with the Robertson DP device highlighted.



The four items that are configurable from the I/O Device level are the Setpoint (also named Tracking Point or Rabbit), Orientation, Control and Message Type.

Note that every time the above dialog box is exited via the OK button, the Setpoint will be reset to the Vessels' Position Source. When the dialog box is exited via the Cancel button, the Setpoint is unchanged, as well as all items in the dialog box.

Setpoint:

The Speed and Slowdown Range for the Setpoint are controlled from this box.

Speed is in meters/second and refers to the speed that the Setpoint travels from the Position Source location (see WINFROG VEHICLE TEXT WINDOW > CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS below), to the Tracked Waypoint.

The Slowdown Range is in meters. When the distance between the Setpoint and the Tracked Waypoint is less than this value, the DP System will start slowing down the vessel. This calculation is based on the Setpoint Speed and Distance to the Tracked Waypoint.

Control:

Control is either On or Off. This enables/disables the dX/dY output from WinFrog. Note that this driver outputs only the dX and dY values (Setpoint – Position Source).

Orientation:

This is the orientation of the Robertson DP System on the Vessel, i.e. if the Robertson DP system is configured so that the vessels' bow is positive or ahead, then this item should be set to Forward.

For some DP installations, the console is installed facing the stern of the vessel. Hence the DP System is configured so the DP Joystick is moved 'upward' on the console to transit the vessel astern. In this case the setting in WinFrog would be Aft.

Message Type:

Four Message Type outputs are available for interfacing to Robertson DP Systems. Each one relates to a different vessel.

- Format 1 is for the M/V Laney Chouest
- Format 2 is for the M/V Deloris Chouest
- Format 3 is for the M/V Independence
- Format 4 is for the M/V Betty Chouest

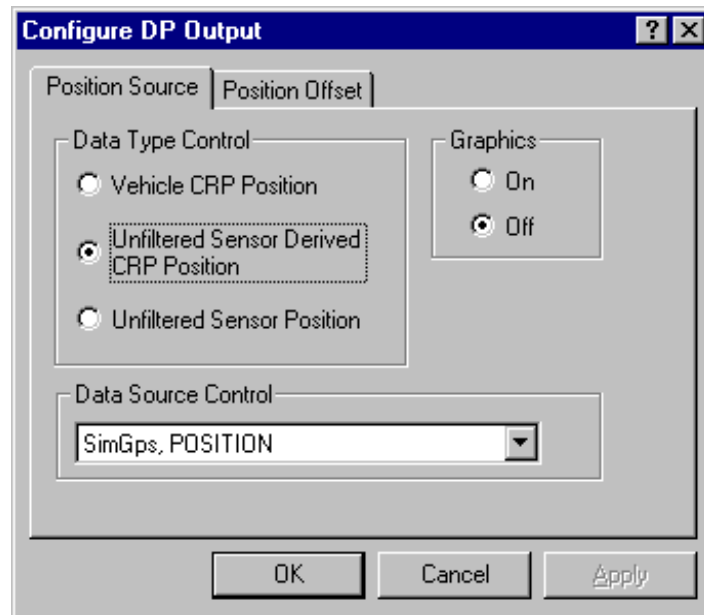
The output formats are discussed in the Configuration Details section of this document.

WINFROG VEHICLE TEXT WINDOW > CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS:

The Robertson DP, DP OUTPUT data item is added to the vehicle with the Robertson Dynamic Positioning System installed. Most of the real time operation of this device is accessed from the I/O Devices Window. The position source and offsets are configured here.

The Robertson DP driver can only track waypoints (not lines). WinFrog must be setup for tracking a waypoint so that the data can be output to the Robertson DP System. No warning window appears if a waypoint is not enabled for tracking.

When the OUTPUT, Robertson, DP OUTPUT item is edited from the Configure Vehicle Devices dialog box, the Configure DP Output dialog box appears. The *Position Source* and the *Position Offset* folders must be configured from this dialog box. These items configure the vehicle position output.



Position Source:

Three items need to be configured from the Position Source folder: Data Type Control, Graphics, and Data Source Control.

Data Type Control:

In Data Type Control, there are three options to choose from: Vehicle CRP Position, Unfiltered Sensor Derived CRP Position, and Unfiltered Sensor Position.

Choose the *Vehicle CRP Position* for filtered position updates referenced to the vehicles' Central Reference Point (CRP). The offset input under the Position Offset Folder is added to the CRP position.

The *Unfiltered Sensor Derived CRP Position* is the same as the above only unfiltered data is output. With this option, filtering may (or may not) be performed within the DP unit.

The *Unfiltered Sensor Position* outputs unfiltered positions from the positioning sensors' location. The offset input under the Position Offset Folder is added to the sensors raw position.

Data Source Control:

The data source depends on the Data Type Control that was previously selected. If the *Vehicle CRP Position* is chosen the Data Source Control will automatically be set to VEHICLE, CRP POSITION, and data from the primary positioning sensor will be used. If either the *Unfiltered Sensor Derived CRP Position* or the *Unfiltered Sensor Position* is chosen, then any positioning sensor can be selected from the dropdown list under Data Source Control. A primary or secondary positioning sensor can be chosen here. It is important to note that the

Unfiltered Sensor Derived CRP Position is based on the chosen sensor, however the data is related to the CRP. Note that the SimGps, POSITION (device) is used as an example only.

Graphics:

Once the Robertson DP output device is added to the vehicle, a Robertson DP Graphics 'square' is automatically displayed in the Graphics Window, at the Setpoint location. The Graphics option in the Configure DP Output dialog box has no effect.

Position Offset:

The Offsets From Position Source to Output Position are configured in the Position Offset folder. This means that any offset input here will be applied to the position output, as dictated in the Position Source folder options listed above.

The screenshot shows the 'Configure DP Output' dialog box with the 'Position Offset' tab selected. The dialog has two tabs: 'Position Source' and 'Position Offset'. The 'Position Offset' tab contains the following elements:

- A title bar with a question mark icon and a close button.
- Two tabs: 'Position Source' and 'Position Offset'.
- A section titled 'Offsets From Position Source to Output Position'.
- An 'Offset Source' section with two radio buttons: 'From List' (unselected) and 'Manual Entry' (selected). A dropdown menu next to 'From List' shows 'stern winch'.
- A 'Manual Offsets' section with three input fields: 'Fore/Aft' (0.0m), 'Port/Stbd' (0.0m), and 'Height' (0.0m).
- Buttons for 'OK', 'Cancel', and 'Apply' at the bottom.

Offset Source:

The Offset Source can be chosen from the list of offsets for the vehicle; or the Manual Entry can be used.

Manual Offsets:

If Manual Entry is chosen under the Offset Source, the offsets must be input here.

CONFIGURATION DETAILS:

In vessel configurations where WinFrog controls the DP System, extensive sea trials should be performed when new components are introduced to the system. The Surveyor and DP Operator should be knowledgeable about vessel reactions resulting from the interfacing of WinFrog to the Robertson DP System.

Raw Data (Type 450 record):

When the DP OUTPUT data item is attached to a vehicle the type 450 raw record is logged to file. This record is described in the WinFrog User's Guide (Appendix B) and is as follows for the Robertson DP Output Driver:

In WinFrog:

```
sprintf(rawStr, "450,%s,%0.2f,%0.8f,%0.8f,%0.8f,%0.3f,%0.3f,%0.3f,%0.8f,%0.8f\n",name,
            fixTime,centreLat,centreLon,
            waypointX,waypointY,desiredBrg,desiredSpeed,desiredRange,
            currentX,currentY);
```

For this record the currentX,currentY position refers to the position of the 'Setpoint'

Raw 450 Record:

```
450,Robertson DP,985709283.76,46.24005405,-63.19988094,
484583.46421576,5121194.05387046,0.000,0.000,0.000,
484583.46421576,5121194.05387046
```

Where:

985709283.76, is the time of the last position.
46.24005405, -63.19988094, is the latitude and longitude of the vessel position.
484583.46421576, 5121194.05387046, is the position (Grid) of the current or last Waypoint Tracked under Waypoint Tracking.
484585.76658209, 5120587.91492565, is the position of the Setpoint, Tracking Point or Rabbit.

Output Formats:

The following four output formats are available for use with this driver.

Output Format 1:

This Format is used on the Laney Chouest. The following represents two output strings. Note that there is not carriage return.

```
^ -00569-01197-00569-01197~ ^ -00616-01291-00616-01291~
```

Where:

-00569 is the Ship Easting (in cm) minus the Setpoint Easting.
-01197 is the Ship Northing (in cm) minus the Setpoint Northing.
-00569 is the Ship Easting (in cm) minus the Setpoint Easting.
-01197 is the Ship Northing (in cm) minus the Setpoint Northing.

The above signage holds true when the 'Forward' radio button is 'on' in the Configure (Robertson) DP Output dialog box. When 'Aft' is on, signage is inverted.

Output Format 2:

This Format is used on the Deloris Chouest. The following represents two output strings. Note that there is not carriage return.

^ -01483-00723~ ^ -01575-00764~

Where:

-01483 is the Ship Northing (in cm) minus the Setpoint Northing.

-00723 is the Ship Easting (in cm) minus the Setpoint Easting.

The above signage holds true when the 'Forward' radio button is 'on' in the Configure (Robertson) DP Output dialog box. When 'Aft' is on, signage is inverted.

Output Format 3:

This Format is used on the MV Independence. The following represents two output strings. Note that there is a line feed, but no carriage return.

\$+000000+000000-001071-000512+000+000+000+000000
\$+000000+000000-
001166-000558+000+000+000+000000

Where:

-001071 is the Ship Northing (in cm) minus the Setpoint Northing.

-000512 is the Ship Easting (in cm) minus the Setpoint Easting.

The above signage holds true when the 'Forward' radio button is 'on' in the Configure (Robertson) DP Output dialog box. When 'Aft' is on, signage is inverted.

Output Format 4:

This Format is used on the Betty Chouest. The following represents two output strings. Note that there is a line feed and a carriage return.

\$+000000+000000-000142-000302+000+0000000000000000
\$+000000+000000-000184-000407+000+0000000000000000

Where:

-000142 is the Ship Easting (in cm) minus the Setpoint Easting.

-000302 is the Ship Northing (in cm) minus the Setpoint Northing.

The above signage holds true when the 'Forward' radio button is 'on' in the Configure (Robertson) DP Output dialog box. When 'Aft' is on, signage is inverted.