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 EGERSUND 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:	Nill
WinFrog Data String(s) Output to Device:	dNorth, dEast values in centimetres Where: dNorth = (shipY- desired Y)*100 and, dEast= (shipX-desiredX)*100. Note signs 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:

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. The driver may be configured to track to a waypoint or to another vehicle.

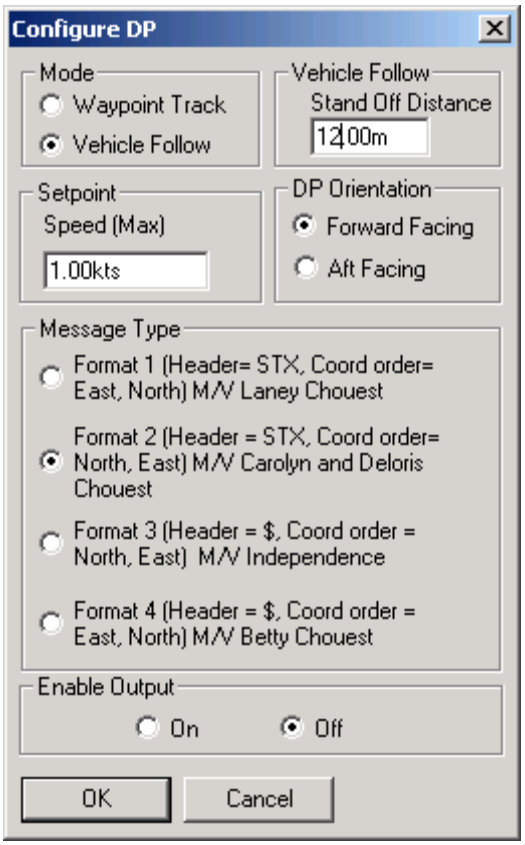
Kongsberg Simrad purchased and now administers Robertson Dynamic Positioning Systems. Dynamic Positioning Systems integrate control of the vessel's propulsion systems via inputs from positioning systems, gyrocompasses, wind speed and direction

monitoring equipment, and any other sensors, which can assist with the automatic positioning of the vessel.

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 group. There are two data items associated with this device DP OUTPUT and DP TARGET.

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.



Note that every time the above dialog box is exited via the OK button, the Setpoint will be reset to the Vessel's 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.

Mode:
These two radio buttons allow you to select either a fixed point (Waypoint Track) or moving vehicle (Vehicle Follow) to have the ship with the DP to move to.

Stand Off Distance:
If Waypoint Track above is selected then this is disabled. If Vehicle Follow is selected then this becomes active and a value can be entered. The target point will be this distance from the target vehicle, in the direction towards the DP vessel. This value must be positive.

Setpoint:
This speed is the maximum speed that the target point (rabbit) travels from the Position Source location (see WINFROG VEHICLE TEXT WINDOW > CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS below), to the Tracked Waypoint or tracked vehicle.

Orientation:
This is the orientation of the Robertson DP System on the vessel. If the Robertson DP system is configured so that the vessel's bow is positive or ahead, then this item should be set to Forward Facing. I.e. If the joystick is moved away from the operator the vessel moves forward.

If the Robertson DP system is configured so that the vessel's bow is negative or astern, then this item should be set to Forward Aft. I.e. If the joystick is moved away from the operator the vessel moves 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

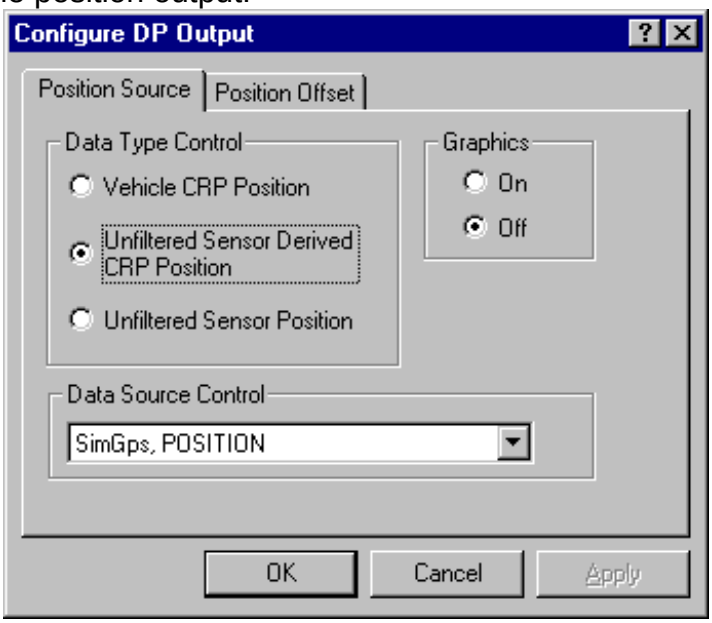
The output formats are discussed in the Configuration Details section of this document.
These message types change the order of the values (delta north and delta east) sent to the DP and change the header value.

Enable Output:
This enables/disables the dE/dN output from WinFrog.

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) or a vehicle. If tracking a waypoint, WinFrog must be setup for waypoint tracking prior to enabling the output. 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.

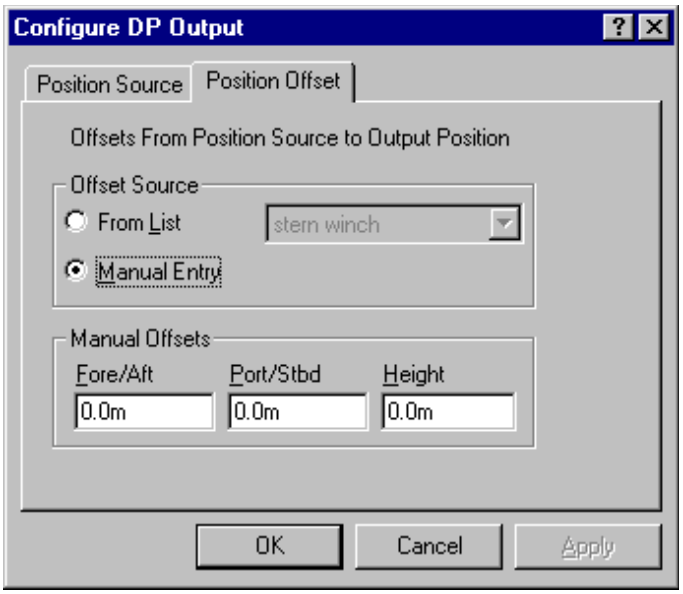
The *Unfiltered Sensor Derived CRP Position* is the same as the above only unfiltered data is output. With this option, filtering may (or may not) be performed within the DP unit.

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.

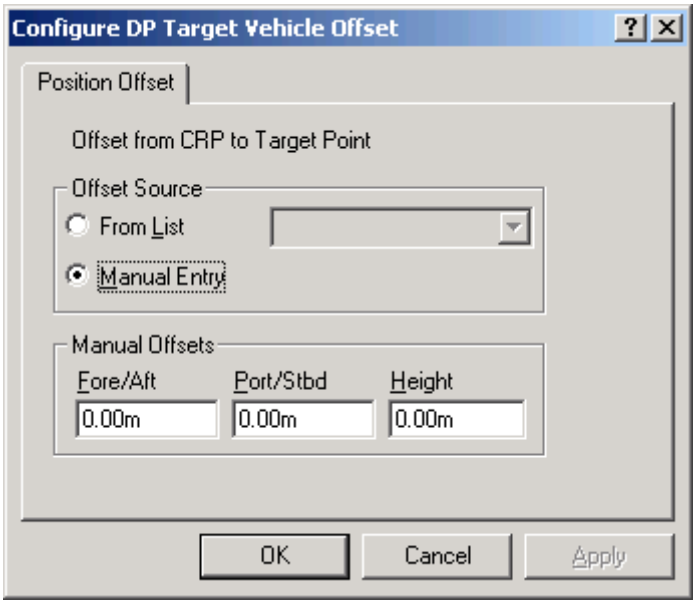


Offset Source:
The Offset Source can be chosen from the list of offsets for the vehicle; or the Manual Entry can be used.

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

WINFROG VEHICLE TEXT WINDOW > CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS:
The Robertson DP, DP TARGET data item is added to the vehicle that is to be followed or tracked (e.g. an ROV). Note that WinFrog allows this data item to be added more than one vehicle. However, it is critical to the operation of this feature that it is only added to one vehicle.

When the **OUTPUT, Robertson, DP TARGET** 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 Offset:

The Offset From the CRP Source to the Target Point is configured here. This allows the operator to select a point away from the CRP as the target point that the DP will be instructed to move to. The Vessel will then be moved over the point selected here rather than right over the CRP of the say ROV. If a non-zero Stand Off distance has also been set then the stand off distance will be applied to the offset point.

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:

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.

STX-00569-01197-00569-01197 -00616-01291-00616-01291ETX

Where:

STX is a single numeric value (2) indicating start of text
-00569 is the difference in easting (cm) ship to the next point to move to
-01197 is the difference in northing (cm) ship to the next point to move to
-00569 delta easting repeated
-01197 delta northing repeated
ETX is a single numeric value (3) indicating end of text

The sign of the values depends upon the relative location of the target point with respect to the DP vessel. Selecting between Forward Facing and Aft Facing DPS will reverse the sign of each number.

Output Format 2:

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

STX-01483-00723ETX

Where:

STX is a single numeric value (2) indicating start of text

-01483 is the difference in northing(cm) ship to the next point to move to
-00723 is the difference in easting (cm) ship to the next point to move to
ETX is a single numeric value (3) indicating end of text

The sign of the values depends upon the relative location of the target point with respect to the DP vessel. Selecting between Forward Facing and Aft Facing DPS will reverse the sign of each number.

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<LF>

Where:
$ Header
the zeros are place holders
-001071 is the difference in northing (cm) ship to the next point to move to
-000512 is the difference in easting (cm) ship to the next point to move to
<LF> line feed

The sign of the values depends upon the relative location of the target point with respect to the DP vessel. Selecting between Forward Facing and Aft Facing DPS will reverse the sign of each number.

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+000000000000000<LF>

Where:
$ Header the zeros are place holders
-000142 is the difference in easting (cm) ship to the next point to move to
-000302 is the difference in northing (cm) ship to the next point to move to
<LF> line feed

The sign of the values depends upon the relative location of the target point with respect to the DP vessel. Selecting between Forward Facing and Aft Facing DPS will reverse the sign of each number.