WinFrog Device Group:	**PROFILER**
Device Name/Model:	**Simrad 900D (Mesotech Scanning Sonar)**
Device Manufacturer:	**KONGSBERG SIMRAD MESOTECH LTD.** 1598 KEBET WAY PORT COQUITLAM, B.C. V3C 5M5 CANADA Phone: 1 604 464 8144; Fax: 1 604 941 5423 hjg@simrad.ca **Kongsberg Simrad AS** P.O. Box 483 3601 Kongsberg, Norway Phone: 47 32 28 50 00; Fax: 47 32 73 59 87 **Underwater Instrumentation and Hydrography:** KONGSBERG SIMRAD AS STRANDPROMENADEN 50 P.O. BOX 111 3191 HORTEN, NORWAY Phone: 47 33 03 44 00; Fax: 47 33 04 44 24 horten.sales@kongsberg-simrad.com
Device Data String(s) Output to WinFrog:	Scan Direction ('L' or 'R'), Number of points observed/scan, Scanning angles and ranges (for each 'step'). Obtains Heave from TSSHEAVE device Obtains Attitude from MD900T device
WinFrog Data String(s) Output to Device:	Nil
WinFrog Data Item(s) and their RAW record:	PROFILE 916

DEVICE DESCRIPTION:

The Simrad – Mesotech 900D is an acoustic scanning system capable of interfacing to single-axis and/or dual-axis scanning heads. This 'underwater sonar' system can be used for ROV avoidance, or as a bathymetric scanning profiler.

The purpose of the WinFrog driver associated with this system is to collect profiling data points for bathymetric detailing. A dual-axis profiling head would normally be used for this procedure, however a single axis head can also perform the task.

The SimRad 900D WinFrog driver is designed to collect data from the Mesotech 900D, for subsequent processing, without controlling the Mesotech's operations. This device is designed for use with attitude corrections from the MD900T device, and heave

compensation using the TSSHeave device. Once the Profiling Head is installed, the unit requires calibration for offset values, attitude adjustment and speed of sound.

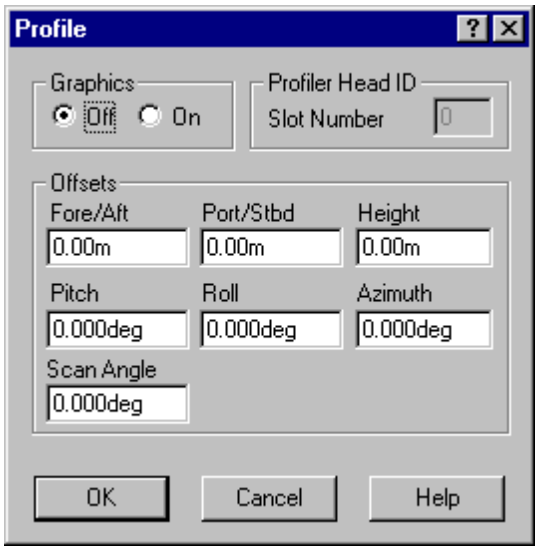
DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:
Baud Rate: 9600
Data Bits: 8
Stop Bits: 1
Parity : None
Sensor interfacing to WinFrog is via RS232.

WINFROG I/O DEVICES > CONFIGURE DEVICE:
No configuration is required or available at the I/O Device level.

WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:
The PROFILE data item is attached to the vehicle with the Sonar Head installation. This will initiate the logging of the type 916 record in the RAW data files. Information on the 916 record can be found in the WinFrog User's Guide. The PROFILE data is used for logging only, and is not applied in real-time.

Data item: PROFILER, Simrad 900D, PROFILE



Graphics:
Selecting the On radio button will display the device name and a square at the location of the Profiling Head, within the Graphics windows.

Profiler Head ID Slot Number: This option is not used for this device.

Offsets:
The X,Y,Z Offsets are applied from CRP to the Scanning Head Location. These values are set similar to values that would be applied to any device offset within WinFrog. Other items under the Offsets section are as follows:

Pitch: Enter the inclination of the fore/aft axis mounting error of the Scanning Head. Positive pitch is applied when the transducer end of the head is tilted up, or back in the case of a vertically mounted head. This value should be measured relative to the MD900T.

Roll: Enter the inclination of the port/starboard axis mounting error of the Scanning Head. Positive roll is applied when the left side of the head is tilted up, or back in the case of a vertically mounted head. This value should be measured relative to the MD900T.

Azimuth: Enter the observed scan angle relative to the bow of the vessel. This angle should be the same as entered in the Mesotech Controller, if the Profiling Head is oriented in line with the bow of the vessel. A positive azimuth is clockwise, with 0^o referenced to a mark on the Profiling Head.

Scan Angle: This is the sector angle of coverage centered on the perpendicular to the profiling head transducer. This angle should be equal to or less than the scan angle as entered into the Mesotech Controller.

CONFIGURATION DETAILS:
The Mesotech Head can be mounted on an ROV, Vessel (Hull or Transducer Pole), to a fixed structure, or in a tripod on the seafloor. The Mesotech Head should be carefully mounted, with the offsets described in this document, precisely measured.

The MS900 processor can be externally controlled using software commands, however the WinFrog driver does not support such operation. In short, the WinFrog SimRad 900D device driver, as it presently exists, is only a data collector. All configurations are performed from the Mesotech Console (or computer for internal systems). Some items to note are as follows:

Scan Data:

Step: Each Step is 0.225^{o}. The speed of the scanning head refers to the number of steps per observation.

Scan Direction: Left (or Forward) is when the transducer scans from right to left, when looking down on the transducer. If more than one scan is initiated, even numbered scans will go from left to right, after a change in Azimuth. The WinFrog driver only accepts one azimuth as stated under Offsets/Azimuth in this document.

Profile Output Data:
Profile range and bearing data is output when the Profiling feature and output are enabled. Profile data is output every shot, in the following format:

{D} {ang},{r1},{r2},{r3},…….,{rN}<CRLF>

where:

{D} Indicates scan direction,
{ang} Indicates heading of the acquired shot in 0.225^{o} units. Values range from 0 to 1599,
{rI} Is a 1 to 6 character integer range of the I^{th} return in microseconds. The number of returns (N) is equal to the setting in the Mesotech PROFILE MENU. The value is converted to a range using the speed of sound in water.

Cable:
The distance the signal can travel, from the scanning head to the Mesotech unit, is dependent upon the quality and size of the cable. It is advised to check with Simrad for the correct cable type, size and length for installations.

Refer to the Manuals for more information on the operation of this system.