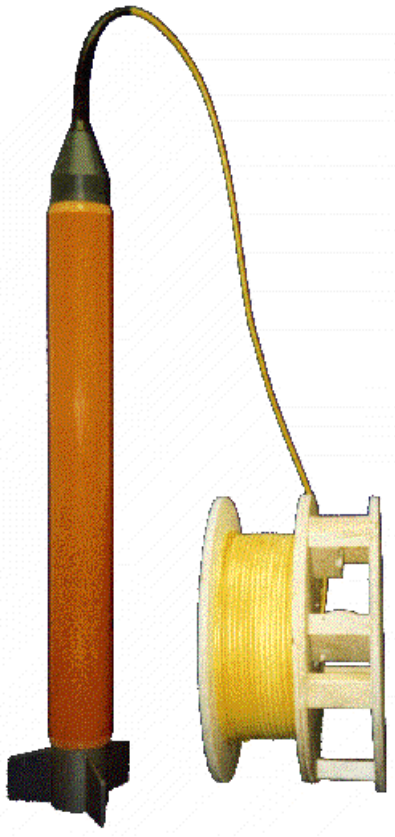
WinFrog Device Group:	**Magnetometer**
Device Name/Model:	**SEASPY**
Device Manufacturer:	**MARINE MAGNETICS CORPORATION** (Formerly GEM Systems Inc.) 52 West Beaver Creek Road #16, Richmond Hill, Ontario, L4B 1L9 Tel: (905) 709-3135 Fax: (905) 709-0805 EMAIL:info@gemsys.on.ca,web: www.gemsys.on.ca www.marinemagnetics.com
Device Data String(s) Output to WinFrog:	Field Strength, Signal Strength, Depth (of fish), Quality
WinFrog Data String(s) Output to Device:	N/A
WinFrog Data Item(s) and their RAW record:	MAGNETOMETER 800 BOTTOMDEPTH 411 or 911

DEVICE DESCRIPTION:

A magnetometer is an instrument that measures Magnetic Flux Density (in Tesla's). The Earth generates a relatively strong magnetic field, which produces flux densities, in air or water. The values of the earth's magnetics range from a low of about 18 microTesla (μT) near South America, to a high of over 60 microTesla in the Arctic Circle.



The SeaSPY is a Proton Magnetometer that operates via the Overhauser effect. This effect allows the sensor to be polarized with a low power, high frequency magnetic field (as opposed to a high power DC magnetic field).

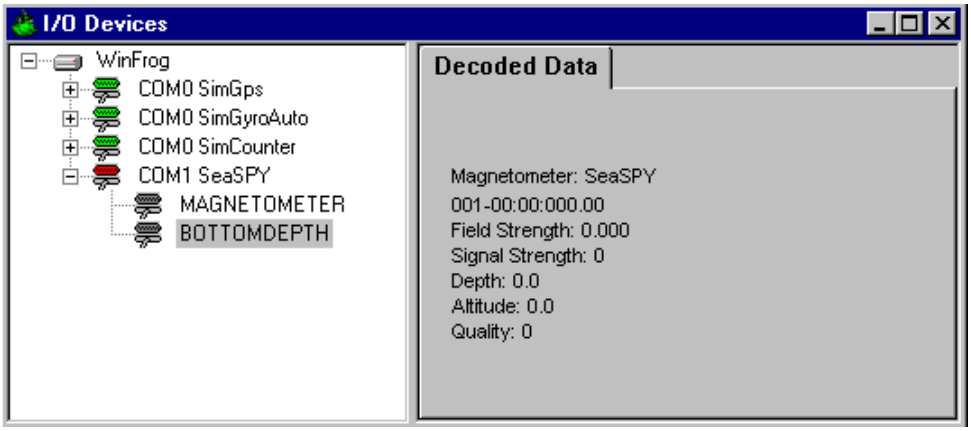
The SeaSPY can be configured to operate as a gradiometer (detects changes in magnetic field) by adding at least one extra fish. Standard SeaSPY fish are pressurized for 300m while the deep tow option is available for depths up to 6000m.

Standard configuration includes SeaLINK software, a communication transceiver unit, an AC power supply, and battery clips for DC battery power. The standard tow cable is 200m while the longest cable currently in operation is 7000m. An echo sounder is available as an option.

DEVICE CONFIGURATION INSTRUCTIONS

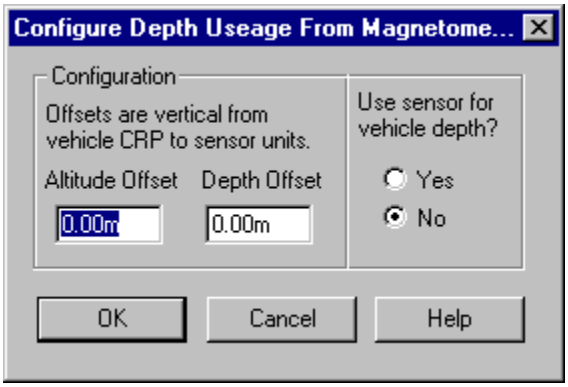
WINFROG I/O DEVICES > EDIT I/O:
Baud Rate: 9600
Data Bits: 8
Stop Bits: 1
Parity: None

WINFROG I/O DEVICES > CONFIGURE DEVICE:
The SeaSPY is added to WinFrog from the Magnetometer device group. The MAGNETOMETER and BOTTOMDEPTH data items are added along with the SeaSPY device. The I/O Device window, once the SeaSPY is added, is shown below. No configuration options are available or required at the I/O device level.



WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:
As mentioned above, adding the SeaSPY device to WinFrog creates two separate data items: the MAGNETOMETER, SeaSPY, MAGNETOMETER and the MAGNETOMETER, SeaSPY, BOTTOMDEPTH. These two data items must be added to a vehicle for data recording. After the data items are attached to a vehicle, the type 800 and type 411 or 911 Raw Data Records are saved for post processing options if raw data recording is occuring.

MAGNETOMETER Data Item
Once the MAGNETOMETER data item has been added to vehicle device list it must be edited to suit the application.



It should be noted that both of the offset options are vertical offsets measured from the CRP of the vehicle to the respective sensors with up being positive.

The “Use sensor for vehicle depth?” option allows you to display the vehicle depth (depth sensor measured + offset) in the Vehicle Text window by selecting “yes”. If “no” is selected and no other depth sensor devices are added to this vehicle, the depth will be displayed as zero in the Vehicle Text window.

Raw Data String:
800,name,time,magnetic field,signal strength,depth,quality,leakage,tuning, voltage,altitude

BOTTOMDEPTH Data Item:
The configuration for the BOTTOMDEPTH data item, after it is added to a vehicle, is the same as for the NMEA BOTTOMDEPTH device. Refer to documentation on this device for utilizing the bottom depth information. Bottom depth is determined by adding the vehicle depth, altimeter and offsets as follows:
Bottom depth = vehicle depth + depth offset+ altitude – altimeter offset.

Depth is stored in the 411 and 911 records in the *.RAW files.

INSTRUMENT CONFIGURATION DETAILS:
SeaSPY Overhauser systems are fully digital collecting data at up to 4 samples per second and incorporating an omni-directional sensor that eliminates heading error. All systems include integrated pressure and temperature transducers, as well as a leak detector that notifies you if the housing becomes damaged. An echo sounder is available as an option.

A standard configuration includes SeaLINK software, a communication transceiver unit, an AC power supply, and battery clips to run directly off DC battery power if desired. 200m/650ft. of lightweight tow cable is standard. Longer cables available upon request. The longest cable currently in operation is 7000m/23000ft.

Performance:

Resolution:	0.001nT
Sensitivity:	0.015nT
Dead Zone:	None
Heading Error:	None
Temperature Drift:	None
Timebase Stability:	1ppm
Absolute Accuracy:	0.2nT
Range:	18,000 to 120,000 nt
Gradient Tolerance:	Over 10,000nT/m
Sampling Rates:	0.1Hz to 4Hz
External Trigger:	via RS-232C

Operating Parameters:

Power Consumption:	1W stdby. 3Wman
Operating Temp:	-45^{o}C to 60^{o}C
Power Supply:	15VDc to 35VDc or 100 to 240 Vac

Other Sensors:

Pressure Sensor:	300m max, 0.1m step
Temp Sensor:	-45^{o}C to 60^{o}C, 0.1^{o}C step
Depth Sensor:	500m max, 0.25m step (optional)

Sealink Software:

SeaLINKis a 32bit application which runs under Windows 95/98/NT and is supplied as standard equipment with all Marine Magnetics' magnetometer systems.

SeaLINK provides an interactive text interface as well as a real-time plot view of data that is being collected from the magnetometer.

The SeaLINK Array is an enhanced version of SeaLINK for use with systems in gradiometer configurationsw.

Magnetometer Units:

1 gamma = 1nT where T stands for Tesla.
1000 gammas = 1μT = 1 Killogamma