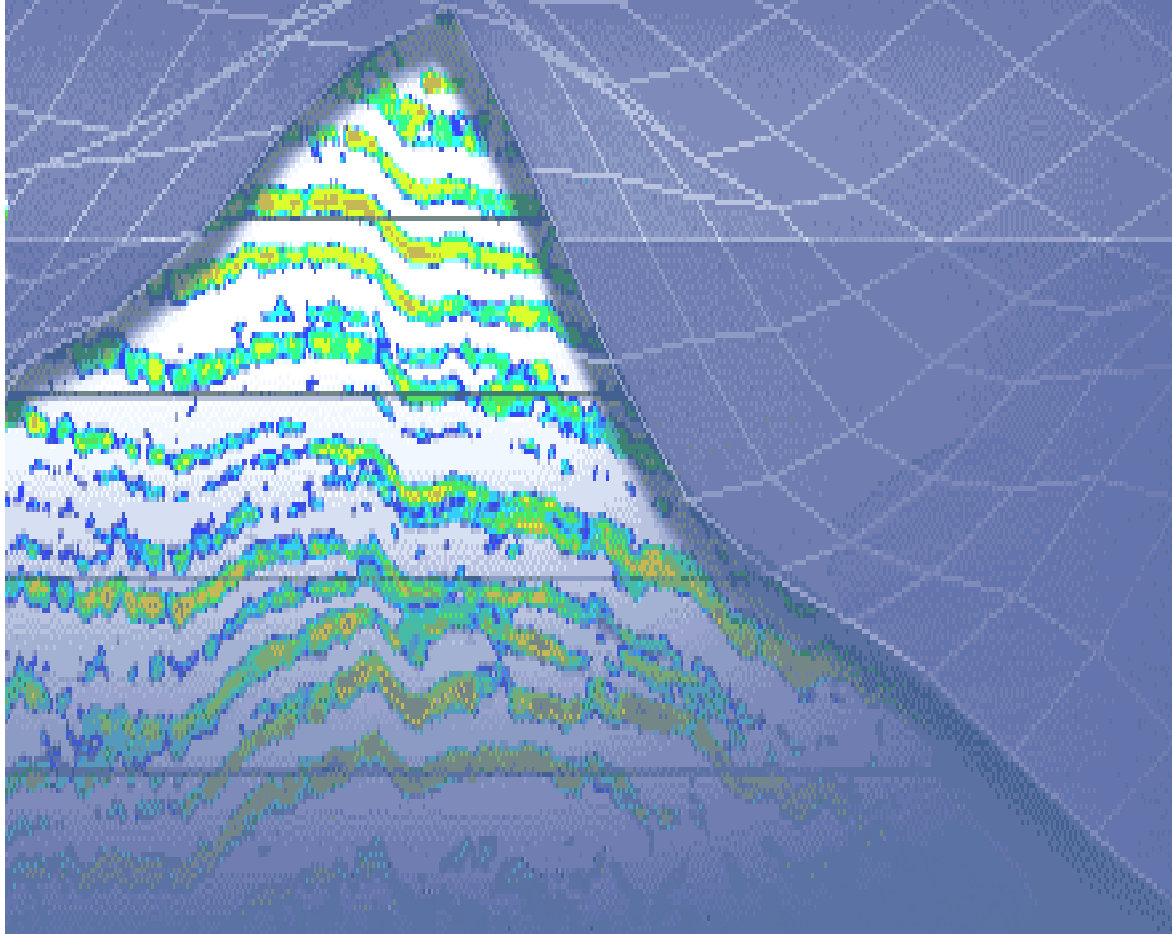


Innomar Technologie GmbH

SES-2000 *medium*

Narrow-Beam Parametric Sub-Bottom Profiler

Operator's Quick Start Manual



January 2010

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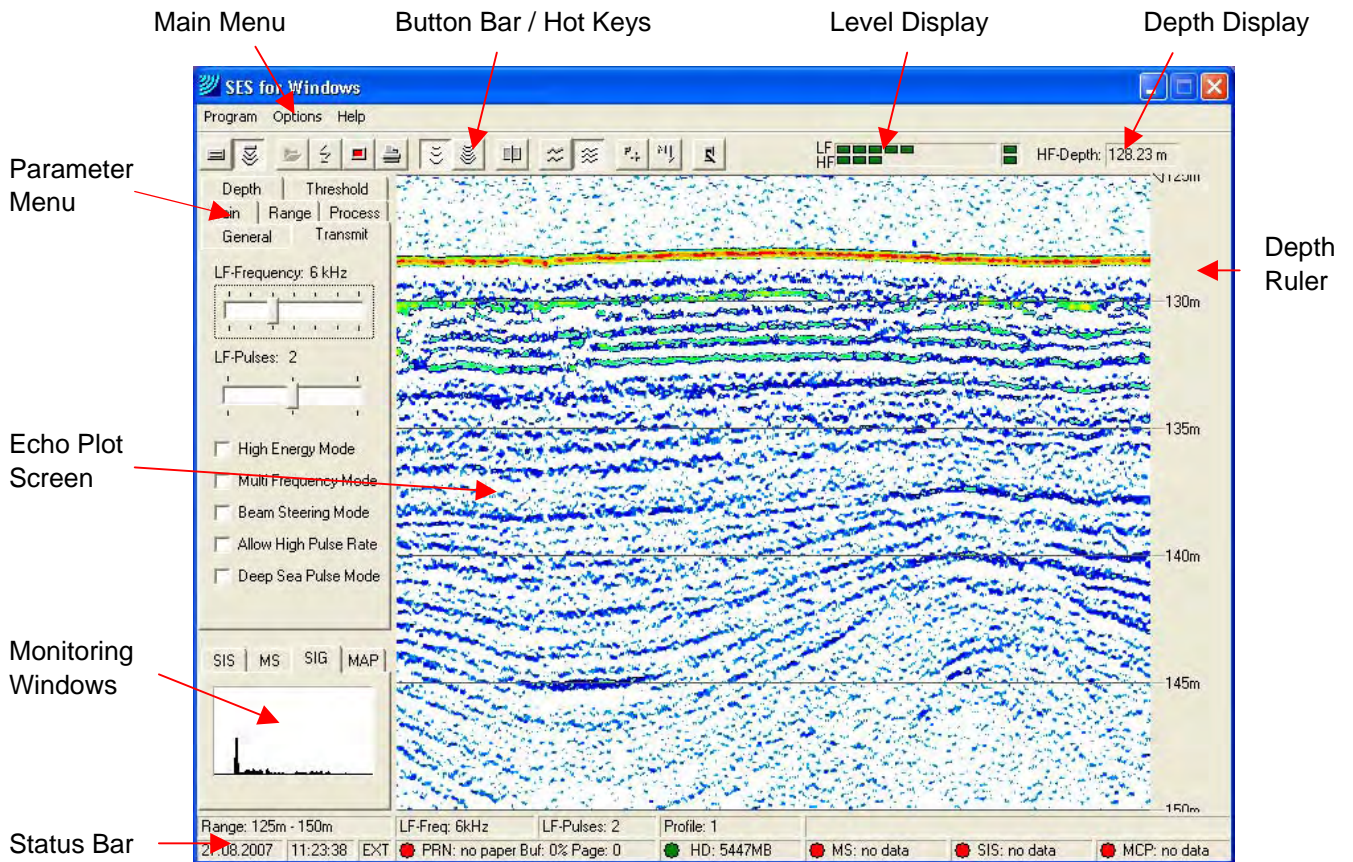
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This Quick Start Manual covers online operation (data acquisition) only. This manual is intended to give an overview of the system's software and guide the operator to get good results. Nevertheless you should read the full SES-2000 User's Manual to understand and use the full performance of the system.

For installation and maintenance please refer to the full SES-2000 User's Manual. For INNOMAR's post-processing and data converter software please see the ISE manual.

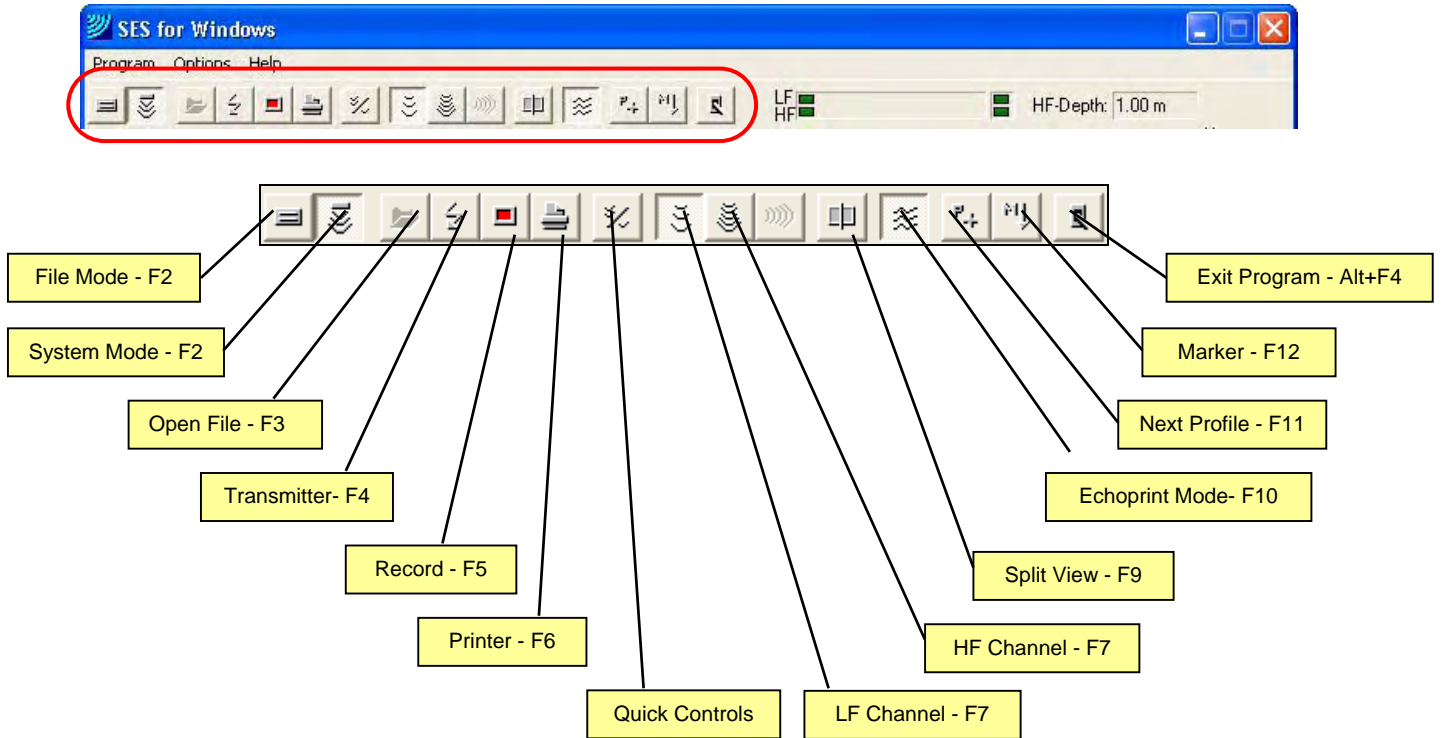
1 SES for Windows (SESWIN System Software)

1.1 The SESWIN screen



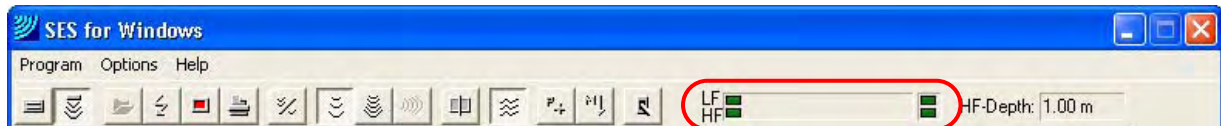
- Echo plot display** Online output of calculated echogram. Scrolling speed depends on the range settings, the resulting ping rate and process parameters.
- Depth display** Display of water depth measured by HF channel
- Monitoring Windows**
 - SIS: Display of navigation data
 - MS: Display of motion sensor data
 - Signal: Display of echo envelope
 - MAP: Display of track plot
- Level display** Displays signal amplitude of LF- and HF-channel
- Depth ruler** A depth scale is displayed. The depth values are calculated based on a given constant sound velocity.
- Parameter menu** Setting of hardware parameters (e.g. choosing frequency and pulse length, setting the amplifiers)
- Status bar** Display of essential system settings and status display for the system
- Main menu (pull down menus)** System configuration, interface configuration, help.
- Button bar / Hotkeys** Setting of most important features for system mode (e.g. switching on/off transmitting, data recording, printing)

1.2 Button Bar / Hot Keys



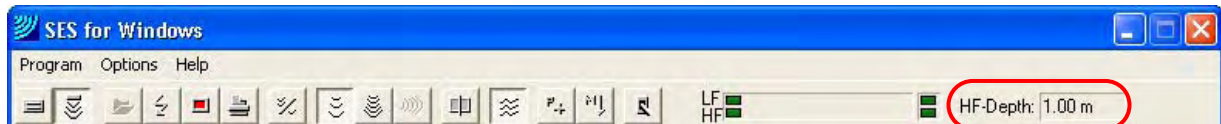
File Mode	[F2]	Displays files which have been recorded previously
System Mode	[F2]	Activation and control of the equipment during the survey
Open File	[F3]	Selects a file to open it (in File Mode)
Transmit	[F4]	Switch transmitters on/off (in System Mode) If the rear cover of the water protected case is closed, this button is disabled and the transmitter cannot be used!
Record	[F5]	Switch data record on/off (in System Mode)
Printer	[F6]	Switch printout of data actually displayed on the screen on a printer connected to the system on/off
Quick Controls		Toggles full and reduced Parameter Menu. Reduced menu ("Quick Controls") may be used during data acquisition.
LF-Channel	[F7]	Displays the signals of the low frequency (LF) channel
HF-Channel	[F7]	Displays the signals of the high frequency (HF) channel
Split View	[F9]	Displays data of HF- and LF-channel simultaneously
Echoprint Mode	[F10]	Toggles echoprint view: amplitude envelope or amplitude changes ("High Resolution") of the received signal
Next Profile	[F11]	Increment of profile number by 1, starts a new file if record is on, starts a new page if the printer is on
Marker	[F12]	Marks the echogram at the actual position and increases mark counter by 1
Exit	[ALT]+[F4]	Quits program

1.3 Level and Depth Display



These level meters can be used to adjust the amplifier settings (Parameter Menu – Gain). The chosen gain is okay if the red LEDs of the HF- and LF-channel flash only occasionally.

The two single LEDs on the right side are indicating the amplification of the raw and unfiltered signal and are used to indicate an amplifier overload. Red colour should be avoided for these LEDs.



The online calculated water depth from the HF channel is displayed in the upper right corner of the SESWIN window.

The depth calculation is based on the transducer depth and sound velocity and can be adjusted to the actual conditions of the measurement via “Parameter Menu – Depth”.

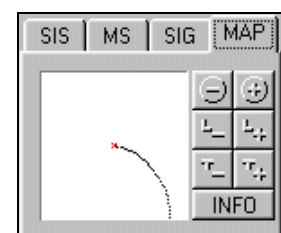
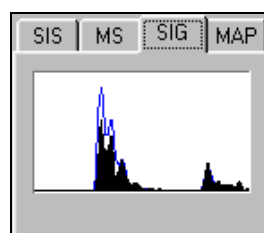
1.4 Monitoring Windows

There are four windows displaying different data:

- **SIS** displays the first 6 (of 8) values imported from the navigation (GPS) data as defined via “Options – System Interfaces – SIS”. SIS values 7 and 8 are displayed if the mouse cursor rests on SIS value number 6.
- **MS** displays data received from a motion sensor. Motion sensor data import is defined via “Options – System Interfaces – Motion Sensor”.
- **SIG** displays the envelope (amplitude) of the received echo signal. *This window can be used to adjust the amplifier settings.*
- **MAP** displays a map with track information and optionally defined profile lines and target positions. Settings are made via “Options – System Settings – Map”. It is possible to zoom into the map and to highlight run lines and targets.

SIS	MS	SIG	MAP
SIS1: 583737.993			
SIS2: 10172.830			
SIS3: 179.946			
SIS4: 111738			
SIS5: 4.2			
SIS6: 5			

SIS	MS	SIG	MAP
Heave: 5 cm			
Roll: -1.3°			
Pitch: 0.1°			
Yaw: -143.8°			
Heading: -143.9°			



1.5 Status Bar

Range: 3030m - 3050m	LF-Freq: 2kHz	LF-Pulses: 1	Profile: 1	
30.01.2007	14:01:00	EXT	PRN: no paper Buf: 0% Page: 0	HD: 7287MB
			MS: no data	SIS: no data
				MCP: no data

The upper line of the Status Bar shows information about:

- the chosen range which is displayed on the monitor or printer and recorded to file,
- the selected LF-frequency and LF-pulse length,
- the actual profile number and
- the actual file size (System Mode) or the replay position in the data file (File Mode). This is not shown in the figure above. If raw (full waveform) data is acquired, file size of both files is displayed.

The lower line of the Status Bar shows:

- the system date and time
- trigger source (INTernal / EXTernal synchronization)
- the status of the built in (or remote) HD and the status of the connected external devices, such as printer (PRN), motion sensor (MS) and navigation system (SIS).

The coloured LEDs in the status bar are used to monitor the status of the connections to peripherals. The colours are **Green = OK**, **Yellow = Warning** and **Red = Not Working**.

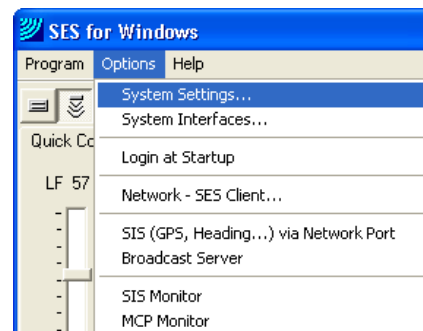
1.6 SESWIN System and Interfaces Settings

Several system parameters need setting up before the survey starts. These parameters are accessible via the main menu **Options – System Settings ...**. This menu item is disabled once data logging has started.

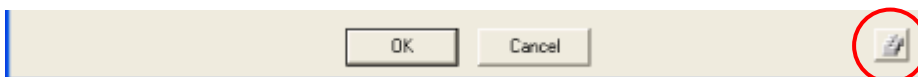
For a detailed description please refer to the SES-2000 User's Manual.

There are some interfaces to get data from external sensors (e.g., GPS position, motion sensor) or to send information to other systems. These interfaces have to be set up before the survey starts via the main menu **Options – System Interfaces ...** dialog. This menu item is disabled once data logging has started.

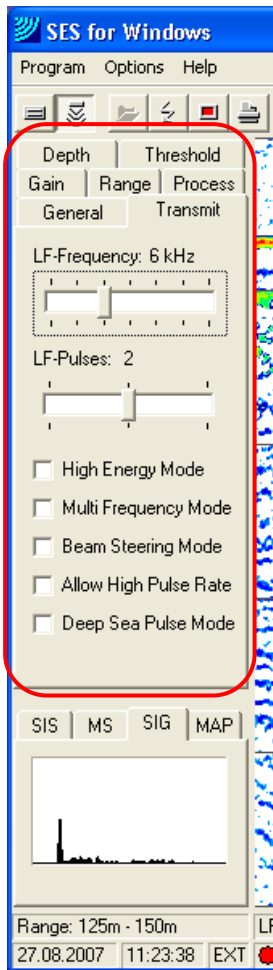
For a detailed description please refer to the SES-2000 User's Manual.



Screen dumps of all tabs of one setting dialog can be made by clicking the button in the lower right corner if the dialog. Screen dumps are stored as bitmaps (*.bmp) at a user defined location.



2 Control Parameters during Data Acquisition



Options, parameters and values selected in the parameter menu directly control the quality of the data collected and displayed. A changed parameter is sent to the hardware system and takes effect at once.

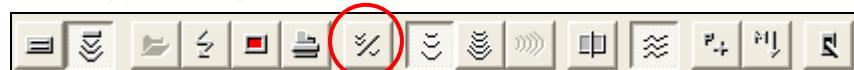
Since some parameters depend on each other, limits for the available ranges are sometimes not static but set by the software to ensure a reliable operation of the SES-2000 system.

To change the parameters a mouse or trackball can be used or you can use the following keys on the keyboard:

- The focus can be set from one tab to the other by [Ctrl]+[TAB] or [Shift]+[Ctrl]+[TAB].
- The focus of the items within one tab of the parameter menu can be changed by the [TAB] key or [Shift]+[TAB].
- Values can be changed using the [up/down] arrow keys (small steps) or the [page up/down] keys (large steps). In the following description the large steps are given in parentheses if any.
You may also use the wheel of a wheel-mouse to change the selected parameter.

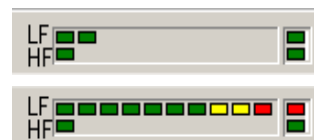
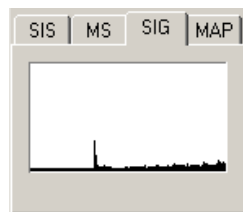
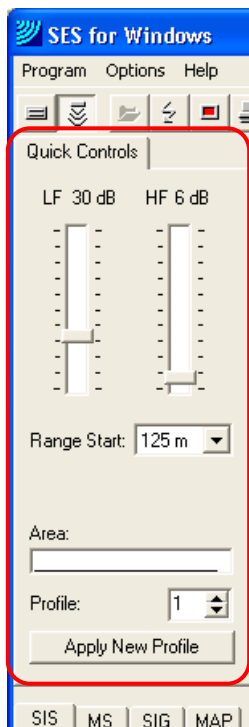
During data collection emphasis should be placed on acquiring good data by adjusting **range**, **frequency**, **pulse length** and **gains** properly.

If the “Quick Controls” button in the button bar is pressed, a reduced menu appears in place of the “Parameter Menu”.



The “Quick Controls” give access to parameters that have to be changed frequently during data acquisition:

LF Gain / HF Gain has to be adjusted according to survey conditions. Gain settings are final and directly affect data quality. Two displays can assist you to find the best gain settings: the “Signal Monitoring Window” and the “Level Display”:



Range Start defines the start depth of the displayed echoprint and the recorded data. This can be changed at any time. Range changes are final and directly affect recorded data.

In this section the most important settings are explained. For a detailed description of all parameters please refer to the SES-2000 User's Manual.

2.1 General

Range	Process
Depth	Threshold
General	Transmit Gain

Ship:

Travel:

Area:

Profile:

The first boxes are used to enter header information for a survey, i.e. vessel name (**Ship**), survey area (**Travel**) and run-line (**Area**). Each string has a maximum length of 20 chars. This information is stored within the data files, displayed on playback and also on the printed record. The Area name may be used as file name prefix.

On entering new information, the **Apply New Profile** button flashes, and the new information becomes valid after pressing this button. The next run-line can therefore be entered during a present survey line and then applied just before the start of the new line.

The **Profile** box can be changed with each survey line, this may be useful during a grid survey. (Range: 1 – 999)

The **Reset Manual Marker** button will reset the number of a manual marker back to zero. The manual marker numbers automatically increment with each new marker.

2.2 Transmit

Range	Process
Depth	Threshold
General	Transmit Gain

LF-Frequency: 10 kHz

LF-Pulses: 2

High Energy Mode

Multi Frequency Mode

Dual Range Mode

Beam Steering Mode

Allow High Pulse Rate

Deep Sea Pulse Mode

Burst Mode

Chirp Mode

This tab sheet is used to set the frequency and pulse length of the LF channel and to activate special transmit modes. Frequency and pulse length chosen during data acquisition are final, they affect the recorded data directly!

The HF frequency is fixed to 100kHz. The HF pulse length is same as set in this menu for the LF pulse length.

The **LF Frequency** (range: 4–15kHz) has to be chosen depending on the survey task. Lower frequencies will achieve greater penetration than higher frequencies, but with reduced resolution. Higher frequencies will achieve better resolution, but with reduced penetration. Usually higher frequencies are used due to better efficiency and better signal to noise ratio and better resolution.

A good starting point for usual survey work is in the middle of the range given.

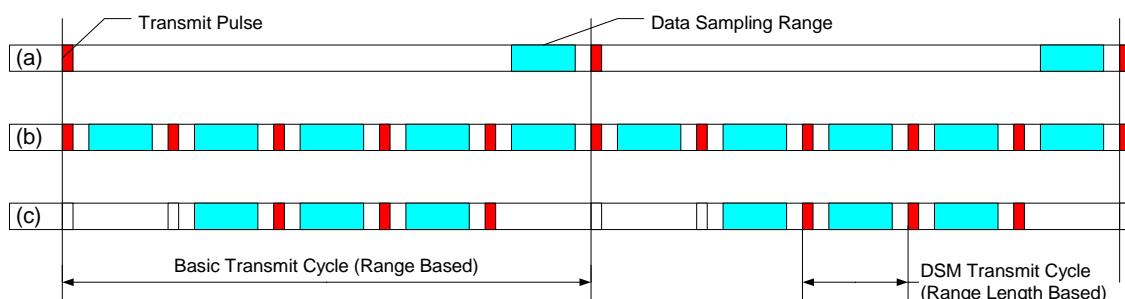
LF-Pulses represent the number of cycles of the LF frequency that are transmitted. The energy of the transmitted signal is increased if the number of pulses is increased. That improves the signal-to-noise ratio but decreases the resolution. The available range depends on the chosen frequency. The number of pulses should be as small as possible, if the detection of small reflectors or the resolution near the sediment surface are of high priority, but the higher bandwidth will be more prone to noise. A good starting point is in the middle of the range.

The actual pulse width PW in Milliseconds can be calculated from the number of LF pulses N and the frequency F in kHz: $PW = N/F$.

Special Transmit Modes

For some systems there are several special transmit regimes/modes available:

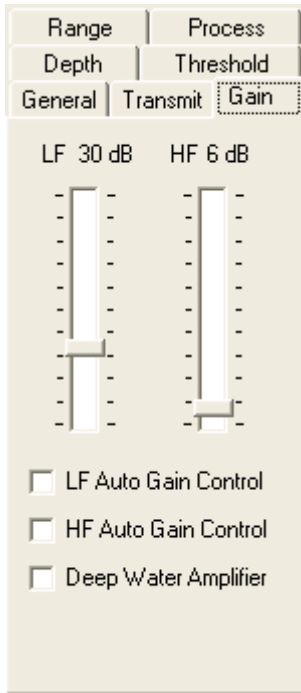
- **High Energy Mode:** used for deeper water (range start >50m) to enable extra-long transmit signals. Cannot be combined with “Multi Frequency Mode” and “High Pulse Rate Mode”. The “High Energy Mode” is disabled at pulse repetition rates higher than 15 pulses per second.
- **Multi Frequency Mode:** used to transmit consecutive pings with different centre frequencies and/or pulse lengths. The settings for this mode have to be made in “Main Menu – Options – System Settings – Multi Frequency”. This Mode can only be combined with “Allow High Pulse Rate” option.
- **Dual Range Mode:** used to collect data for an extended range. The settings for this mode have to be made in “Main Menu – Options – System Settings – Dual Range”. This Mode can only be combined with “High Energy Mode”.
- **Beam Steering Mode:** Toggles beam steering on/off. The settings for this have to be made in “Main Menu – Options – System Settings – Beam Steering”. Can only be combined with “High Energy Mode” and “Allow High Pulse Rate” option.
- **Allow High Pulse Rate:** At shallow waters and in small ranges the pulse repetition rate can be increased. Pulse Length is limited in this mode. This mode can be combined with “Multi Frequency” and “Beam Steering” modes only.
- **Deep Sea Pulse Mode:** This allows high ping rates even at deep-water areas. The mode is often used for deep-water survey (range start > 50m), since the increased ping rate will give much higher data quality and resolution. Can be combined with “High Energy Mode” and “Burst Mode”. “Deep Sea Mode” is possible with internal trigger only. It will not work correctly if the system is triggered externally.
- **Burst Mode:** This is a special Deep Sea Pulse Mode, intended for reducing interference if SES-2000 sub-bottom profilers are operated with other acoustic equipment simultaneously. The duty cycle has to be set up in “SESWIN main menu – Options – System Settings – Synchronisation”. Can be combined with “High Energy Mode”. “Burst Mode” is possible with internal trigger only. It will not work correctly if the system is triggered externally.
- **Chirp Mode:** allows the transmission of a fixed Chirp (LFM) signal over the complete range of centre frequencies. Can be combined only with “Deep Sea Pulse Mode” and “Burst Mode”. The ping rate is limited due to the longer transmit signals of the Chirp Mode.



Principle of “Deep Sea Pulse Mode” and “Burst Pulse Mode”:

Transmit pulses for “normal” echo sounding, ping rate depends on range end respective water depth (a), “Deep Sea Pulse Mode”, ping rate depends mainly on range length (b) and burst mode (c). In this example burst mode duty cycle was set to 70% active time. Omitted pings are placed at the beginning of basic transmit cycle.

2.3 Gain



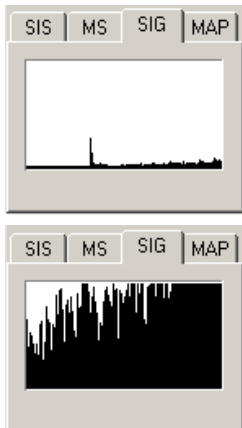
This is to manually set or adjust the gains on the LF and HF channels (range: 0 – 90 dB, steps: 1(9)dB). Gains employed during data acquisition are final. They are set by the hardware and cannot be changed during playback. For some SES-2000 systems there are other gain ranges or steps!

The necessary amplification depends on the water depth. For the LF Channel it also depends on the frequency used.

If **Auto Gain Control** is checked, the amplifiers are controlled automatically and the settings which have been made before manually are not valid any longer. Usually the automatic gain controls should not be used, the system then adjusts for changing sediment properties. Usually you want to see those changes.

The (optional) **Deep Water Amplifier** increases die gain by 12dB.

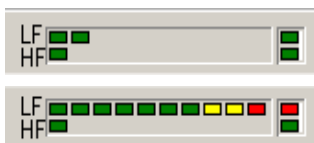
Two displays can assist you to find the best gain settings: the “Signal Monitoring Window” and the “Level Display”.



The **Signal Monitoring Window** displays the envelope of the received signal.


The aim is to use the entire range available, so that the strongest returns may just occasionally reach the maximum range and touch the top of the window. An over-amplified signal will result in returns consistently touching the top of the window, often out of range and getting cut off.

If the Echo Screen Plot is in *Split View* the Monitoring Window will display the signal from the channel displayed in the right side.



The **Level Display** shows the amplitude of the signal of both channels. A correctly amplified signal should use the entire range available, just occasionally reaching the upper range. (Red flickering occasionally) The “Overload” LED on the right should not turn red.

2.4 Range

Depth	Threshold
General	Transmit
Gain	Process
Range	
Start:	125 m
Length:	25 m
<input type="checkbox"/> Auto Range Start	
<input type="checkbox"/> use LF-Waterdepth	
Adjust Ping Rate: 100 %	
	
Ping Rate:	0.00 pps
Foot Print [-3dB]:	0.0 m
Foot Print [-6dB]:	0.0 m

This defines the starting point and length of data to be recorded and strongly affects the recorded data: Any data outside of the specified window will not be recorded. The *Start* point and *Length* will vary depending on specific requirements of a survey.

Start defines the start depth of the displayed echoprint and the recorded data. This can be changed at any time (steps: 1(10)m).

Length sets the (depth) range of the shown and recorded data. This cannot be changed while recording data.

If for any reason the water depth is not known, then initially a shallow starting point (*Start*) with large range (*Length*) should be employed to determine the water depth. This will ensure that the true seabed (and not a multiple) will be recorded. Once the seabed has been determined, the range should be reduced so that only the area of interest is recorded.

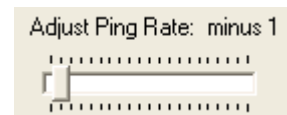
Take care not to follow a multiple, especially when using “Deep Sea Pulse Mode”

The **Auto Range Start** function controls the automatic sample start depending on the water depth. It should not generally be used. Be aware if the system loses the seabed while using the “auto range start” function, the continued seabed searching can result in data gaps. This may happen at steep slopes or while crossing the screw water while manoeuvring. If the seabed is known to be relatively flat, the auto-range function can be used. The auto range performance can be increased by feeding external water depth values (e.g. from Multi-Beam-Echosounder) using the MCP-Port.

The actually achieved **Ping Rate** is shown in this menu window (pings per second). If the system is being triggered internally the ping rate will be set automatically on the basis of water depth and operating range, otherwise the ping rate depends on the external trigger events. An optionally available “Deep Sea Pulse Mode” can be activated within the “Transmit” menu to increase the ping rate at deep-water surveys.

The **Adjust Ping Rate** slider can be used to reduce the ping rate. This can be useful to shift multiples coming from previous pings or to reduce reverberation in very shallow water.

Please note that this slider has a slightly different behaviour when “Deep Sea Pulse Mode” is used.



An estimation of the **Foot Print** size is also given in this tab.

If a water depth value from a multi-beam system is obtained using the multi-purpose input, that value is shown at the bottom of this dialog.

2.5 Process

Depth	Threshold
General	Transmit Gain
Range	Process
Stacking: 2	
Smoothing: 3	
Soft TVG [dB/m]: 0.2	
<input type="checkbox"/> LF Depth for TVG	
<input type="checkbox"/> Normalize Gain	
<input type="checkbox"/> Reduce Noise	
<input checked="" type="checkbox"/> Median Filter	
<input type="checkbox"/> Swell Filter 10	

All processing carried out from this menu is by software only and does not affect the recorded data. Changes will only affect the data display and the printed record.

Stacking is used to improve the signal to noise ratio and to reduce the amount of data to be displayed and printed (range: 1-16, steps: 1(2)). A good starting point would be a rate of 2 to 3.

Smoothing calculates a moving average of consecutive pings to improve the signal to noise ratio (range: 1-16, steps: 1(2)). A disadvantage is that if a high smoothing value is used, the old pings have a blurring effect on the data. Usually values of 2 or 3 are appropriate.

Soft TVG (time-variant gain) amplifies the digitized signal starting at the calculated water depth with an adjustable gain (range: 0-10dB/m, steps: 0.1(0.5)dB/m). It should generally be kept low, typically 0.2 or 0.4 dB/m.

LF Depth for TVG: If no reliable water depth values from the HF channel data can be obtained, e.g. in deep water areas, it is possible to use the water depth values from the LF channel for TVG.

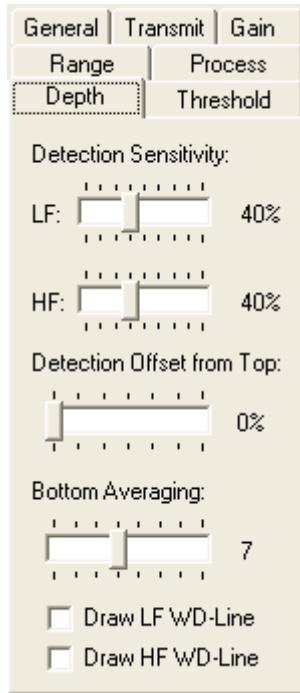
Normalize Gain: If checked the signal attenuation caused by absorption and diffraction of the sound beam will be compensated according to the water depth.

Reduce Noise: If checked a digital filter is used to remove noise. This is a very strong filter and weak layer signals may also be removed, so this filter should be used with care.

Median Filter: If checked a digital filter is used to remove peak noise from the echo data. This should be the preferred filter for a noise reduction, especially when the noise is not uniform, but consists of spikes. This filter will also help to remove noise caused by other acoustical systems, resulting in stripes or regular patterns due to their pinging regime.

Swell Filter: Can be used for Vessel-based work if no motion sensor for heave correction is available. It is generally preferable not to use this filter at all because any genuine features such as mega-ripples or sand-waves will be smoothed. If you know that the seabed is flat, and that any apparent ripple-marks displayed are due to heave, then this filter can be used. The filter performance can be adjusted by the parameter in the drop-down-box.

2.6 Depth



This affects the on-line depth calculation. Usually the default settings can be used: LF/HF Detection Sensitivity: 40% / 40%
 LF/HF Bottom Averaging: 5 – 7

This menu would be used if, for example, the system was detecting a false seabed due to extensive marine growth. The sensitivity could be increased to 60% to get a true seabed. The increase in sensitivity means that the system will not detect the lower signal return from the marine growth, and will detect the true seabed.

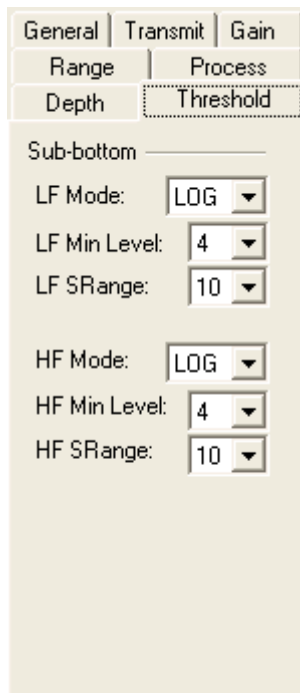
Bottom **Detection Sensitivity** (range: 10-90%, steps: 1%) is used to set a threshold for the water depth calculation.

Bottom Averaging (range 1-32, steps: 1) gives a value for smoothing the water depth values.

Detection Offset from the Top presets a minimum depth for the WD algorithm to start calculation. A triangle within the depth ruler (right-hand of the SESWIN screen) indicates which level has been chosen. It is the operator's responsibility to ensure that this level is always above the true bottom line!

Draw LF WD-Line, Draw HF-WD Line: When these items are activated, the calculated water depth is plotted in the echogram.

2.7 Threshold



The threshold settings affect the colours of the echogram; the recorded data will not be affected. Based on the parameters defined by the user, the colour table for displaying the echogram is computed automatically

LF / HF Mode: defines if linear or logarithmic spaced thresholds are used to calculate the echo print. Should usually be set to logarithmic scale (*Log*). Linear can be very rarely used if there is a particularly small dynamic range or poor signal to noise ratio.

LF / HF Min Level: (range: 1-10, steps: 1) defines the threshold minimum level, higher values can be used to remove noise from the echo print. The optimum setting is where most of the noise is removed, but with a small amount remaining. This will ensure that no genuine data is removed from the screen.

LF / HF SRange: (range: 1-10, steps: 1) defines the most upper threshold for echo print calculation, it limits the dynamic range.

Since these settings are not permanent and can be changed during playback, emphasis should be placed on acquiring good data by adjusting frequency, pulse length and gains before experimenting with the threshold values.

3 Record / Replay Data

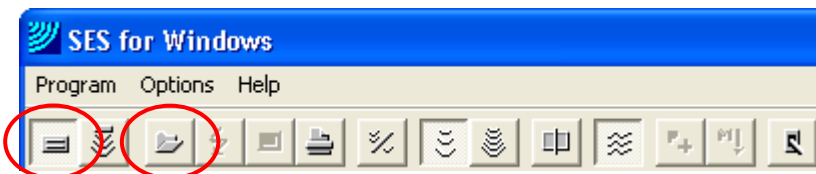
3.1 How to record echo data



- Activate the button “System Mode”. The SES-2000 hardware is ready to record echoes.
 - Switch on transmitter. Please note that the transmitter is not switched on/off automatically when recording is switched on/off. The transmitter has to be switched on separately before starting data logging.
 - Find the seabed and adjust range settings.
 - Adjust transmitter and gain settings.
 - Adjust online processing settings.
 - Start data logging with the “Record” button. The received echoes are stored in a file. The destination directory for that file can be chosen by the main menu item “Options – System Settings – Files” as well as a pattern for the file name. The filename is created automatically using the time and date when the “Record” button is pressed.
 - Adjust range and gain settings according to changes of water depth and signal strength.
 - To finish data recording, depress the “Record” button.
- To ensure best performance and data security data should be recorded on a local hard disk. Do not use network locations or external (USB) hard drives for direct data recording. Copy or move data after recording to a remote location if necessary.

3.2 How to display previously recorded data

In general the ISE post processing should be used for displaying recorded SES data, but it is possible to use the SESWIN software as well.



- Click at the “File Mode” button.
- Press the “Open File” button or use the main menu “Program – File Browser”.
- Select a SES data file to be displayed.

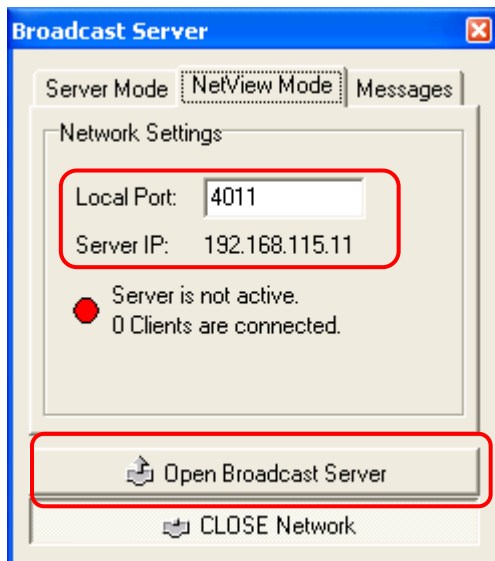
Some settings of the main menu and parameter menu cannot be modified in file mode. They are set according to the system parameters stored in the displayed file. You can change data processing parameters only.

Scrolling speed can be changed in the “Options – System Settings – Files” dialog. It is also possible to have the data file displayed again and again (“loop files”).

4 Using SES NetView to display echo data on remote computer

Sometimes it is useful to have echoprint data and main system settings available on another (remote) screen(s) in order to give a second operator or supervisor the possibility to QC the online data acquisition. For this the SESWIN Broadcast Server can be utilized. This feature can be used to display echoprint data and SESWIN status information on different remote computers. It is not possible to remote-control the SES-2000 system by this connection.

To start the SES Broadcast Server, open the corresponding dialog via “SESWIN main menu – Options – Broadcast Server“:



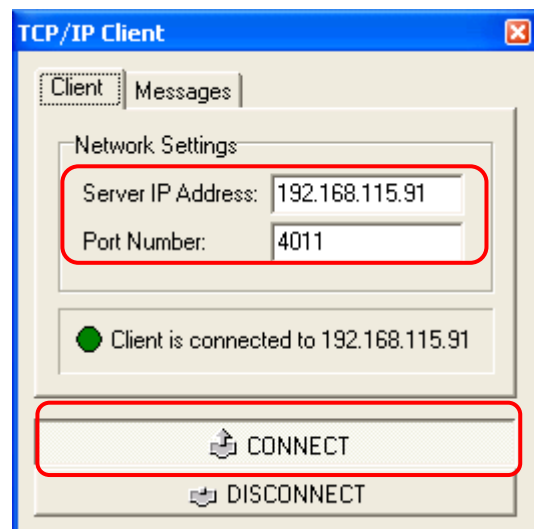
The broadcast server will send two data streams on two different ports if activated. For display echo data on remote computers the NetView Mode is used. The server IP address is shown because it has to be set on the client. The port number can be changed if necessary, default is 4011. Pressing the button „Open Broadcast Server“ activates the Broadcast Server. **The dialog must not be closed while the server is running.**

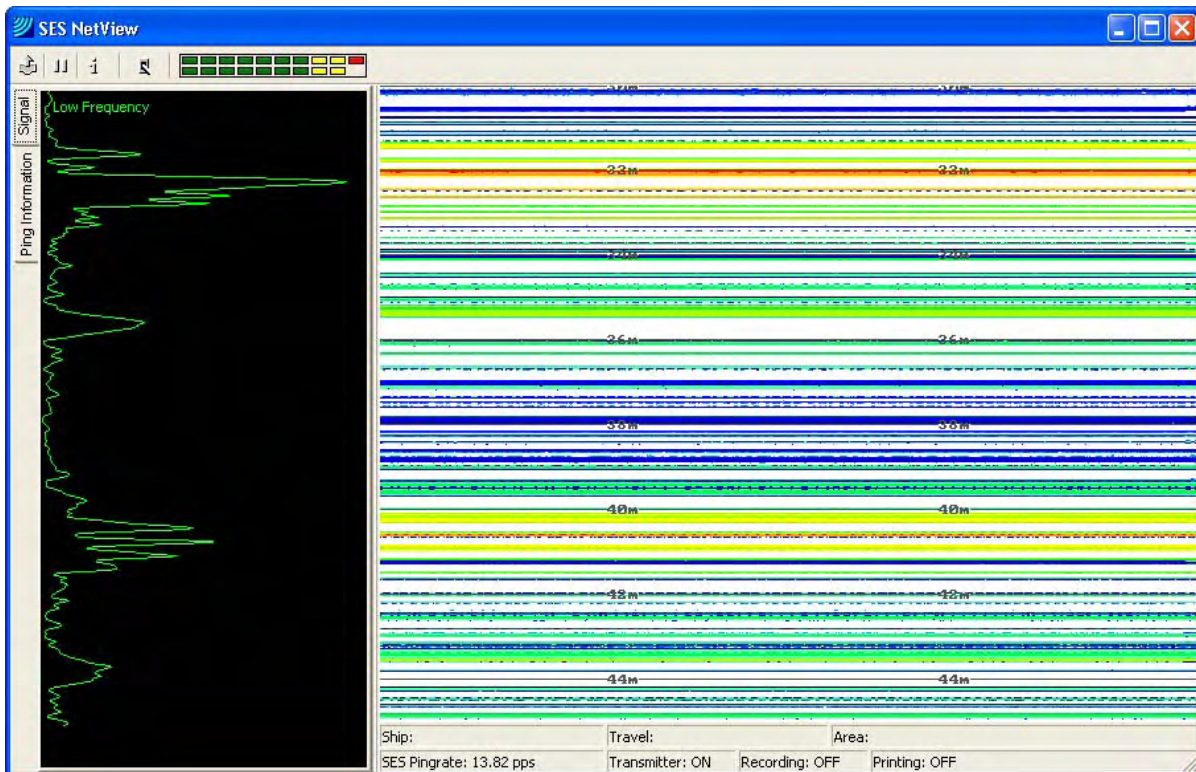
On the remote computer you have to start the “SES NetView” application (sesnetview.exe). This program is located in the SESWIN folder on the SES-2000 system and can be copied to any other computer. No installation is required.

After starting the “SES NetView” application you get the main screen as shown below.



Pressing the “Connect” button opens the TCP/IP client dialog as shown on the right. Here you have to key in the IP address of the activated broadcast server and the NetView port number as shown in the SESWIN dialog above. The connection will be established after the “Connect” button is pressed. **The connect dialog has to be kept open; closing the dialog will disconnect the client.**





Displayed Channel: Low Frequency
 SES FileName:
 ProfileNumber: 1
 Signal/Trigger Source: -internal/internal-
 Stacking Rate: 1
 BeamSteeringMode: -off-
 MultiFrequencyMode: -off-
 SideScanMode: -off-
 HighEnergyMode: -off-
 ChirpMode: -off-
 DeepSeaPulseMode: -off-
 SES-PC Date/Time: 06.05.2009 14:42:11
 SIS String1:
 SIS String2:
 SIS String3:
 SIS String4:
 SIS String5:
 SIS String6:
 SIS String7:
 SIS String8:
 Measure Start/Length[m]: 30/15
 Depth CH1/CH2[cm]: 3200/3140
 TransducerDepth[cm]: 0
 Frequency CH1/CH2[Hz]: 10000/100000
 TXPulseLength[μs]: 100
 LFSinusPulses: 1
 Gain CH1/CH2[dB]: 8/0
 SoundVelocity[m/sec]: 1500
 MSHeadingAngle[1/10°]: 0
 MSRollAngle[1/10°]: 0
 MSPitchAngle[1/10°]: 0
 MSHeaveValue[cm]: 0
 HeaveCompensation: -on-

The SES NetView window shows the echoprint of the SESWIN master channel as displayed on the SESWIN screen together with some status information. All important SES-2000 system settings are listed in the “Ping Information” tab.

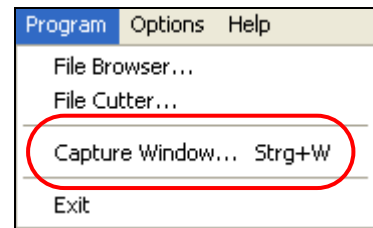
Client Messages
 Try to connect to Broadcast Server
 Connected to Broadcast Server 192.168.
 Disconnected from Broadcast Server 192
 Client disconnected.

The “Messages” tab of the TCP/IP Client window shows all client activity. This information might be useful for troubleshooting.

5 SESWIN's documentation and report tools

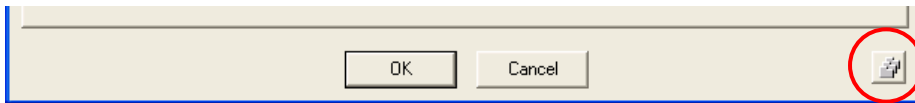
5.1 Capture SESWIN window

The "Capture Window" item creates a screen shot of the SESWIN window and stores the picture in BMP or GIF format. The file name and location is retrieved via the standard Windows file dialog.

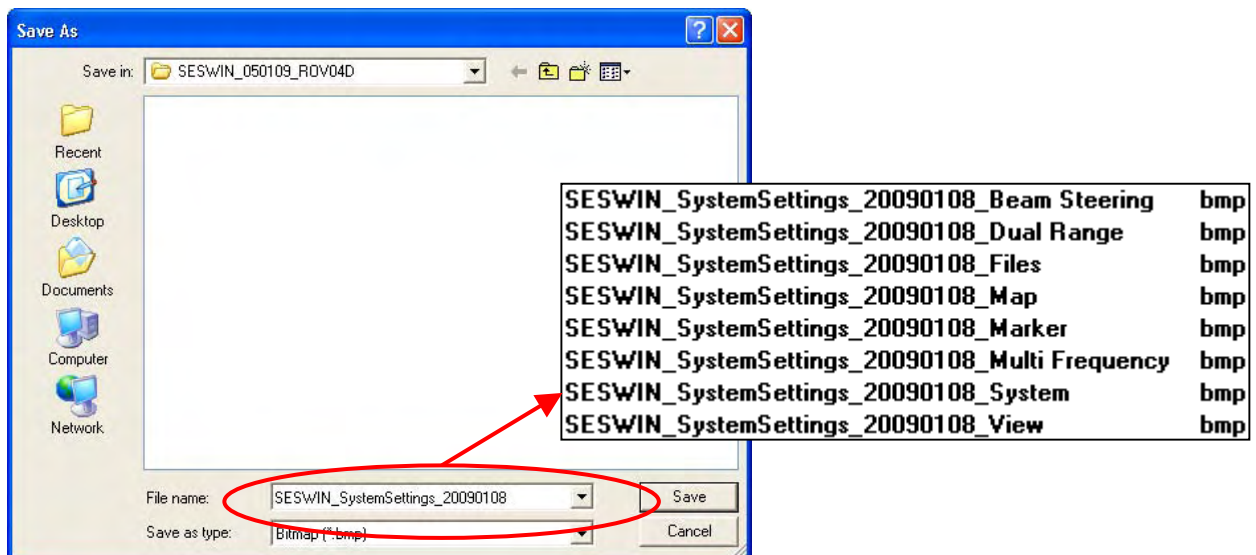


5.2 Document SESWIN system and interface settings

There is a button placed in the lower right corner of both, the System Settings and Interface Settings windows.



Pressing this button will generate screenshots of all tabs within the window (not only the visible one). File names are set automatically from the window and tab name as well as the date, see figure below. Folder can be changed; default is set to the SESWIN folder.



Using this feature you need just two clicks to document all system settings for future reference. The SES system and SESWIN versions and options available can be obtained and saved as well using the System Information window.

5.3 Log files for work reports / profile lists

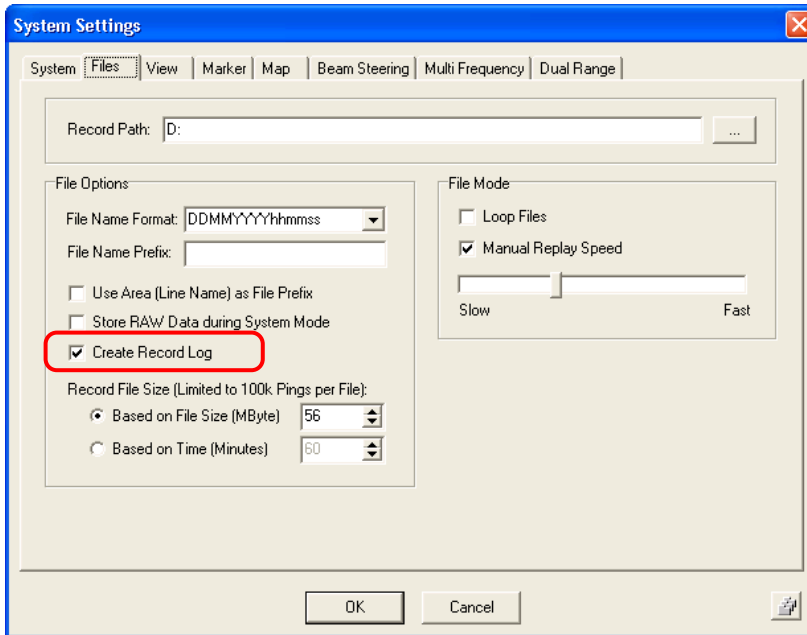
It is possible to automatically log all data records within a log file called "sesrec.log" that is placed within the SESWIN folder. The generated log file will show the file name (incl. path) and date, time, profile number, area, SIS values, transmitter and range parameters for both, start (SOL) and end (EOL) of line/record.

```

C:\SES_Applications\Data\20081221203621.ses
SOL 21.12.2008 20:36:21 Profile 1 Area
SIS 442609.45 7002052.64 21.12.2008 20:36:21 0.30615, 309.18 0.48, -8.62
SET 15kHz 1pulses RStart 14m RLength 15m
EOL 21.12.2008 20:50:58 Profile 1 Area
SIS 442751.24 7002269.42 21.12.2008 20:50:58 0.14174, 309.52 0.67, -1.07
SET 15kHz 1pulses RStart 14m RLength 15m

C:\SES_Applications\Data\20081221205304.ses
SOL 21.12.2008 20:53:04 Profile 1 Area
SIS 442756.71 7002270.39 21.12.2008 20:53:04 0.00000, 309.71 0.14, -4.52
SET 5kHz 2pulses RStart 14m RLength 15m
EOL 21.12.2008 21:05:25 Profile 1 Area
SIS 442619.53 7002348.31 21.12.2008 21:05:25 0.00000, 309.71 0.88, -0.61
SET 5kHz 2pulses RStart 14m RLength 15m
    
```

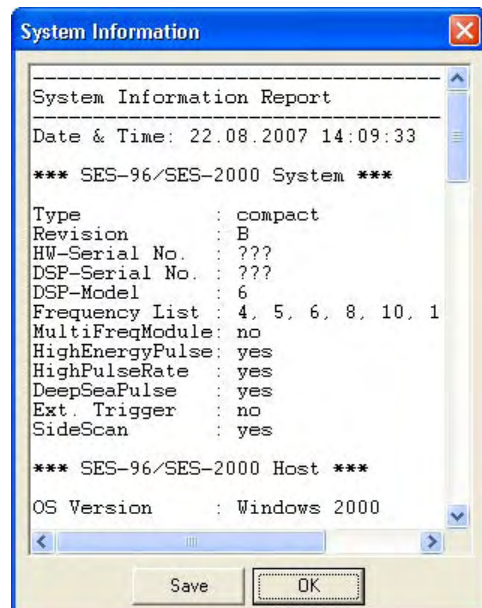
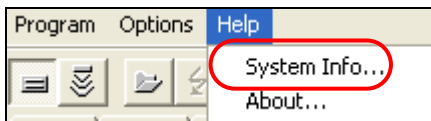
To get this log file you have to activate logging within the “Options – System settings” window:



Profile lists can also be generated in post-processing using INNOMAR’s ISE software.

There is a marker log file that is updated automatically each time an event marker is set manually.

5.4 System information and LOG files for troubleshooting



There is a System Information box about the hardware and software releases and serial numbers and about the implementation of special options as well as about the host software releases.

The actual status of the operating system is also listed.

This window is a valuable information source in case of any problems with the system.

The help menu is accessible in file mode only.

The information can be stored to a text file for future reference.

There is another log file generated automatically, the “sessys.log” located in the SESWIN folder. This file contains information of each SESWIN start together with all error messages and is mainly intended for use by INNOMAR’s technicians if you need assistance for troubleshooting.

6 Error Handling

6.1 System-Check

Before starting the survey you should check the equipment, especially if the system was not used for a longer period of time:

- **Check system power**

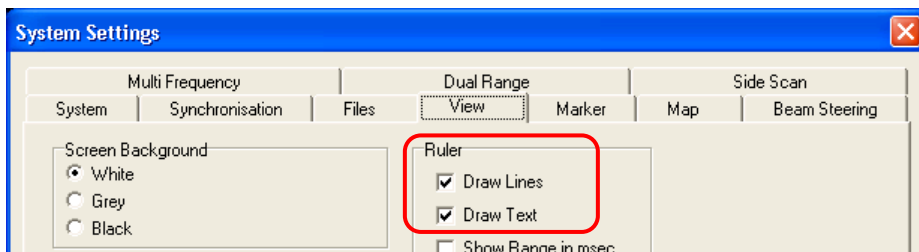
Connect the electronic unit to a suitable power supply (110–240 V AC / 50–60 Hz) and switch the system on. The power switch and the power control LEDs should flash.

- **Check receiver data transfer to SESWIN**

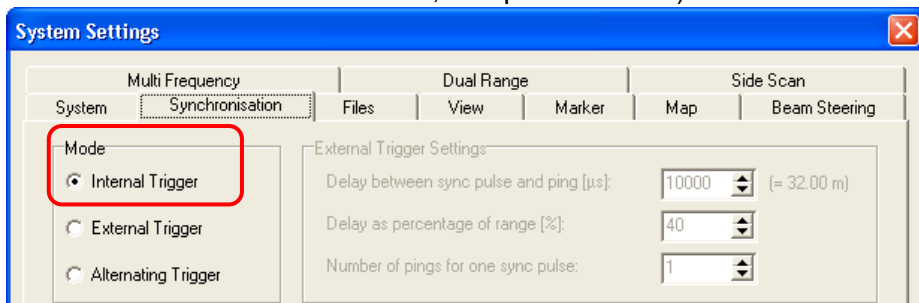
After booting WINDOWS and invoking the SESWIN software, SESWIN echoprint area should scroll from right to left. That is ruler lines appear and maybe noise is visible (depending on gain settings)

If no ruler lines are visible check at Main Menu – Options – System Settings – View:

”Draw Lines” and ”Draw Text” in the ”Ruler” section have to be ticked on (picture below).



If the screen is not scrolling, please check synchronisation settings (trigger mode should be set to ”Internal” in most cases, see picture below).



- **Check command data transfer from SESWIN**

Changing the ping rate (either by using the slider in the ”Range” menu or increasing the range) should affect the scrolling speed. This indicates that commands are properly recognised by the SES system.

- **Check data recording / printing**

Now you should test if data recording and printing works. It should be possible to replay the recorded data as well.

- **Check additional sensors**

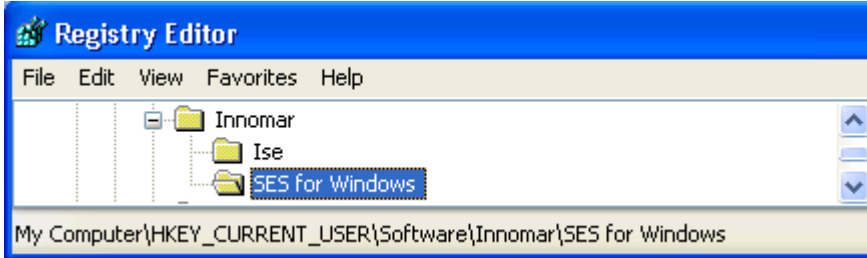
You should also check data transfer from external sensors (GPS, motion sensor).

Please refer to the regarding chapters of the full user manual for setup of these sensors.

6.2 Reset the SES-2000 System to Default Settings

Settings made in “Options -> System Settings” or “Option -> System Interfaces” can be restored easily using the screengrabs made during initial setup. These are usually stored within the SESWIN folder.

All SESWIN settings are stored within the Windows registry:
HKEY_CURRENT_USER\Software\Innomar\SES for Windows



There is an Key-Export stored within the SESWIN folder that might be loaded into the registry to restore the original settings.

6.3 Boot and Shutdown the SES-2000 medium

Boot Procedure

- Switch on transceiver unit (there are 3 power switches at the front!)
- Check power LEDs
- After Windows is started up you can start SESWIN.

Shutdown Procedure

- Stop recording and transmitting
- Close SESWIN application
- Shutdown Windows operating system
- Now you may switch-off power at the transceiver unit

6.4 SESWIN Error Messages

There are some error messages displayed if SESWIN detects a system fault. For these messages please refer to the full SES-2000 User's Manual.