

Quick Start Guide



Equipment Check

Ensure the following equipment is available and in serviceable condition:

SES Digital Transceiver (with DAQ –Analogue to Digital Converter module)

Mains cable for transceiver

Transducer array and appropriate deployment mountings

Transducer cable

Laptop/PC with *MonitorPlus* or *SubBottom Monitor* and com ports

X-Over Ethernet cable or 2x Standard cables and Ethernet switch

Navigation data source e.g. DGPS

Connect Equipment

Before enabling system power connect the transducer array to the Transceiver using the Transducer cable. Then connect the Laptop/PC to the Transceiver using the Ethernet cable. Connect the serial port output of the Navigation data source to the correct com port input of the Laptop/PC. Finally connect the mains power cables to all units.

Note: The Digital Transceiver is capable of operating with a wide variety of transducer frequencies and configurations from 1 to 18 kHz. This includes separate and combined spaced arrays and external hydrophones. Ensure that the hydrophone is connected to the Hydrophone input Amphenol connector if present, and that the RX Source is set to Hydrophone under the Transceivers RX menu.

Configure Transceiver

Power up the Transceiver and ensure that the following configuration settings are adjusted as necessary:

Info Page:

Remote Source = ETH (allows the Laptop to control the Transceiver via Ethernet)

Trigger Page:

Trigger Source = EXT (disables the internal test trigger)

Ensure all other Transmit / Receive / TVG and filter options are set appropriately to match the transducer type in operation.

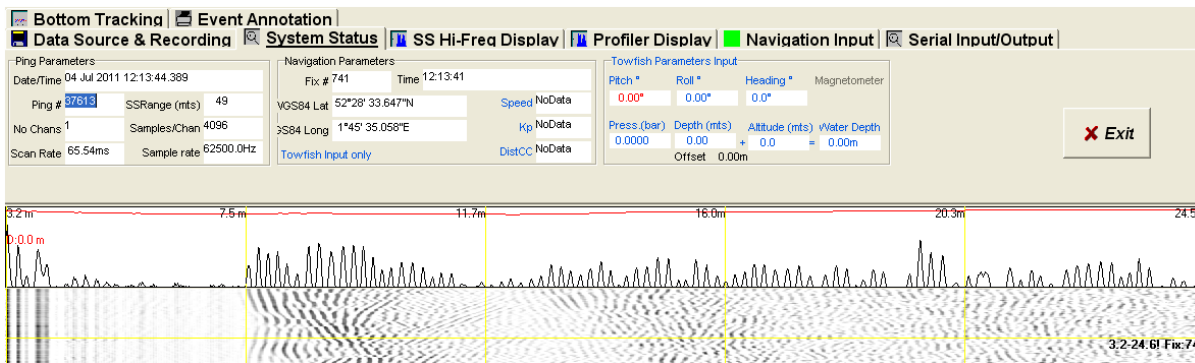
NB: It is recommended that at this stage all filters are turned off (low pass = 18kHz) to avoid the possibility of removing signals of interest.

Configure Software

Once the Transceiver has been configured to be controlled by the Laptop/PC via Ethernet, it is possible to power up the laptop and open the *MonitorPlus* or *SubBottom Monitor* software.

After a short period the *MonitorPlus* or *SubBottom Monitor* software should establish a connection to the DAQ module within the Transceiver. Following this connection the DAQ module will wake up and begin triggering the Transceiver and firing the transducers.

If no connection is established check the network connection and configuration between the laptop and Transceiver. N.B. It should be possible to ping the IP address of the DAQ module (155.155.155.1) within the Transceiver from the laptop (155.155.155.2).

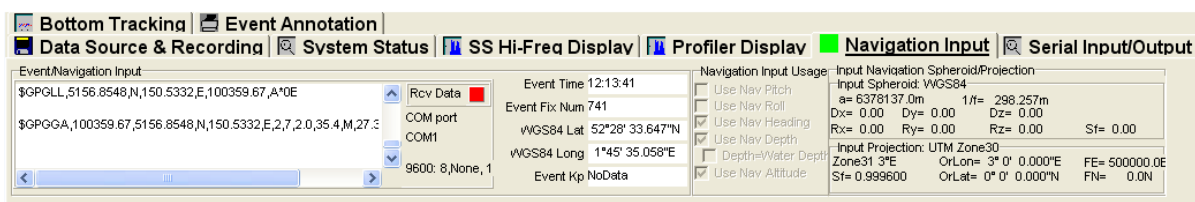


Once the Transceiver has begun firing, data should be displayed on screen and it should be possible to control all of the TX, RX, TVG and filtering functions. Using the “Profiler Tuning” tab, begin by pressing the “Read All Settings” button to download all settings from the Transceiver on to the software. N.B. Settings highlighted in blue have not yet been synchronised and therefore may not accurately represent the setting in use by the Transceiver. If it is not possible to download any of the “Profiler Tuning” parameters from the transceiver, ensure that on the info page of the Transceiver “Remote Source = ETH”.

The “System Status” tab can be used to examine the DAQ card parameters, including number of channels (1 for Transceiver), actual Range, time & date in Transceiver and escalating ping number.

Check Navigation Data Input

Once Ping data is displayed on the screen ensure that the Serial Navigation data is being received by the software and is being correctly decoded. Please see full software manual for list of supported navigation types. N.B. When using NMEA0183 GGA/GLL ensure that the software’s .ini file is configured for either GGA or GLL.



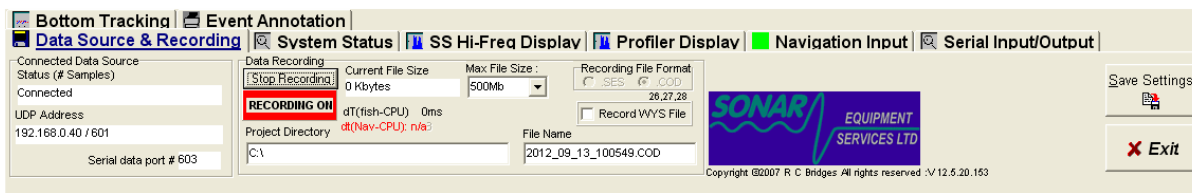
The raw RS232 Navigation data should be displayed in the Event/Navigation box, and providing the correct format data is available, will be decoded in the info boxes immediately to the right.

When using more advanced Navigation data formats such as CODA, the user will have the option of recording Pitch, Roll, Heading, Depth and Altitude in the sonar file providing the appropriate tick box is selected.

Ensure that the NAV/GPS time is correctly synchronising the Laptop/PC system clock and that all time zone and date settings are correct. N.B. Time synch will only occur if the NAV data date matches that of the PC clock.

Configure File Recording

Using the “Data Source and Recording” tab in the Monitor software, configure the recording directory, file break size and file format. N.B. .COD file format can be processed by more post processing systems than native .SES format.



Press the record button and begin recording a test data file. Ensure that an .ses/.cod file is being recorded in the chosen format.

Once file segments have been completed it will then be possible to copy these to a removable drive or server location. It is not recommended practice to live record data over the network to a server or NAS, as any interruption in the network may result in corrupted files.

Configure Transmit and Receive Parameters

All Transmit, Receive, TVG and Filtering settings can be adjusted from the front panel LCD control of the Transceiver and will automatically be adjusted in the *MonitorPlus* or *SubBottom Monitor* software. Conversely all parameters changed from within the *Monitor* software will be automatically updated on the Transceiver LCD panel.

Configuration of parameters using the LCD panel

The LCD panel is arranged into five menus:

Transmit Control Page

TRANSMIT – This page allows changes to be made to the Power level from 1-100%, Frequency in kHz from 1 to 18 in 100 to 250Hz steps, with pulse length selected in number of cycles from 1 to 10.

Receive Control Page

RECEIVE – This page allows adjustments to be made to the **Initial Gain** amplifier, which provides a fixed gain in dB from -10dB to +30dB. This allows the receive signal level to be increased to a suitable acquisition and processing level. Typically this setting should be set very low when TVG is in use as the TVG gain will be additional to this fixed initial gain. This will typically be -10 to 0 dB, dependent upon array size, type and TX power level.

The **Atten. Decay** parameter specifies the recovery rate of the auto attenuator module within the receiver and is specified in steps from 1 to 25 mS. This module compresses the signal level of extremely large signals, such as those seen during first returns in shallow water survey. This ensures that the receive signal from the transducer will be displayed sensibly even at very large amplitudes. This control does not affect the external Hydrophone input.

Separate or combined RX/TX **Transducer mode** can also be controlled in this menu. This allows the part of the transducer array to be used for receive only when in separate mode.

Log Ramp Delay – Adjustable from 0 to 25mS, this control allows the start of the TVG ramp to be delayed for a set period following a TX burst. This is useful to further minimise the effect of transducer resonance noise. This technique also allows the operator to effectively reduce the incoming signal level if too much signal is being generated from large transducer arrays.

Log Ramp Multiplier – Allows the operator to adjust the shape of the TVG curve from zero (basic transmitter with no TVG) up to 40LogR (where R is the range in meters). For normal TVG operation 20LogR would be the most appropriate setting.

Log Gain Limit – Adjusting this limit between 20 and 100% effectively cuts short any additional unwanted TVG gain, typically after the first sub-bottom returns and penetration. This can be used to limit the increase in background noise toward the end of the RX sweep. Setting this level to 100% allows a fully developed TVG curve and should be a good starting point default.

Receiver Source – This control is used to select between using the transducer or hydrophone as the signal source. When the hydrophone option is selected, 12V DC is enabled on the hydrophone connector to allow an external preamplifier to be used to boost signals over long cable lengths.

Hydrophone Gain – When the external hydrophone input is used, this control provides a fixed gain adjustment (-17dB to +17dB) in order to compensate for different types of preamplifier.

Filter Control Page

Notch Filter (n) – When enabled, this circuit provides a narrow band-stop type filter, adjustable between 450Hz and 16kHz. This is typically used to eliminate a fixed frequency in-band noise source prior to digital acquisition. This technique reduces post processing requirements and distortion caused by recording excessively noisy data. When selecting the frequency, adjust up or down using the knob, pausing momentarily for the filters to update automatically. A good default starting point for a survey would ideally be with these filters turned off.

High Pass Filter – When enabled this invokes a 9kHz (-3dB point) high pass filter. This heavily attenuates signal low and medium frequency bands, and is typically used for high frequency sub-bottom profiling, e.g. 10-15kHz band.

LF Reject – Enabling the LF reject circuit provides excellent rejection of unwanted noise signals below 2kHz. It is recommended that this filter is turned off when operating with the 2kHz XLF transducer.

Low Pass Freq – This control allows the user a finely adjustable low pass filter from 3.5 to 18kHz. When selecting the frequency, adjust up or down using the knob, pausing momentarily for the filters to update. This filter can be used to filter out unwanted noise signals when operating with XLF or LF transducers.

Envelope – This function is particularly useful when operating the transceiver in HF mode (greater than 10kHz). When enabled, the signal output of the receive processor will change from the normal un-rectified AC signal to a full-wave rectified and filtered output. This is highly recommended for HF sub-bottom profiling, as the signal output will effectively become a measure of reflectivity, giving a similar appearance to chirped data, whilst maintaining resolution and best penetration. This process also reduces the frequency of the transmitted data to the acquisition system, resulting in lower distortion of recorded data files, and much improved on-screen display.

Trigger Control Page

TRIG – The trigger page allows the selection of either internal or external trigger modes. Internal trigger can be set from 200mS to 2.5S but should be used for analogue operation only and is not compatible when the system is operated using the *Monitor* software. The transceiver will source its External trigger from the DAQ module within, which is controlled by the *Monitor* Software

The pulse length of the trigger output can be selected as either 1mS or 10mS to ensure that a wide variety of printers and acquisition systems can be successfully triggered, e.g. if a slave analogue acquisition system is also used, such as CODA.

Info Page

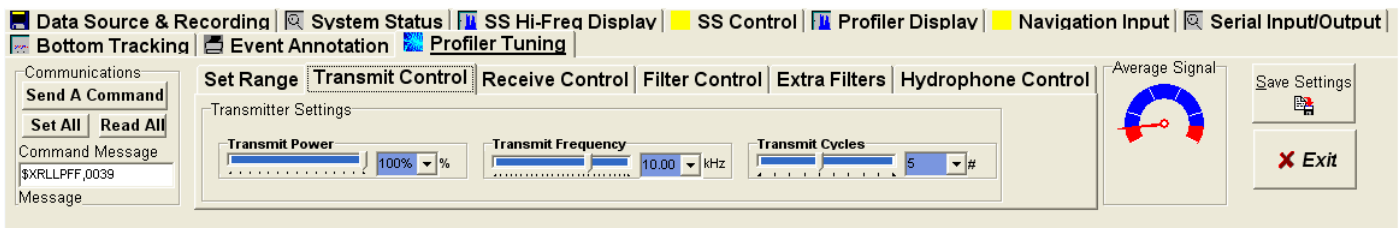
INFO – This page displays the SES Logo and contact details and configuration details for the optional Heave Compensator module. This page also is used for loading default settings. The unit will normally power up with settings last used with exception of transmit power as 1% power will always be selected at start up for safety.

Remote Source – This menu allows the user to enable remote control of the transceiver via the Internal DAQ module (select **Remote Source = ETH**) which relays all commands and data to the *Monitor* Software. Alternatively if the unit is to be operated in analogue only mode and connected to an external acquisition system such as CODA select (**Remote Source = 232**). In this mode it is possible to control the Transceiver parameters via an RS232 Serial Port.

Heave Comp – This menu option will only appear if a Heave Compensation module is installed within the unit. When turned off, the trigger output and transmit burst will be in synch with the trigger input. If this option is turned on, the trigger input will be delayed by 4ms, and advanced or retarded according to the heave compensation value received on the Heave Input RS232 connector on the rear panel. When enabled the LCD panel will also display the current heave baud rate set on the internal module. E.g. 9600/19200 baud. See Heave compensation section of the manual for further info.

Configuration of parameters using the *MonitorPlus / SubBottom Monitor* Software

The *Monitor* Software replicates many of the controls available via the Transceivers LCD panel. These are located in the “Profiler Tuning” tab which is arranged in a similar page manner to the LCD, using sub-tabs.



All functions in “Profiler Tuning” have the same effect as those in the LCD control panel. The main difference is that once a setting has been adjusted in the software the command must be sent to the Transceiver using the “Send A Command” button before the transceiver accepts the parameter change.

It is also possible to use the “Read All” button to download all parameters from the Transceiver into the software. Settings highlighted in Blue are not confirmed as synchronised. The sliders will turn grey once the parameter has been accepted and confirmed.

Conversely the “Set All” button can be used to load all parameters from the “Profiler Tuning” tab onto the Transceiver. This allows the operator to commit many adjustments to the transceiver in one operation.