WinFrog Device Group:	**LBL ACOUSTIC**
Device Name/Model:	**ROVNAV MINI** **Type 7860 (EHF), 7842 (MF)**
Device Manufacturer:	Sonardyne International Limited Blackbushe Business Park Yateley, Hampshire GU46 6GD United Kingdom
Device Data String(s) Output to WinFrog:	PAN command responses See manual OM7145-V7
WinFrog Data String(s) Output to Device:	PAN commands See manual OM7145-V7
WinFrog Data Item(s) and their RAW record:	Transceiver (LBL TRANCEIVER) 420 Transponder (XPONDER) 421 Transponder (FIXED XPONDER) 426 Elevation (ELEVATION) 372 Attitude (ATTITUDE) 413

DEVICE DESCRIPTION:
Long base line acoustic equipment. Used to position underwater vehicles or structures and surface vehicles. Uses fixed transponders placed upon the bottom and other transponders placed on vehicles; relay or sequential only. See also chapter 5, "WORKING TRANSPONDERS (.XPT) FILE", chapter 17 "LBL ACOUSTICS" and chapter 20 "ACOUSTIC CALIBRATIONS".

There are two data items: LBL TRANCEIVER and XPONDER.

DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:

Baud Rate: 9600
Stop Bits: 2
Parity: None
Data bits: 8

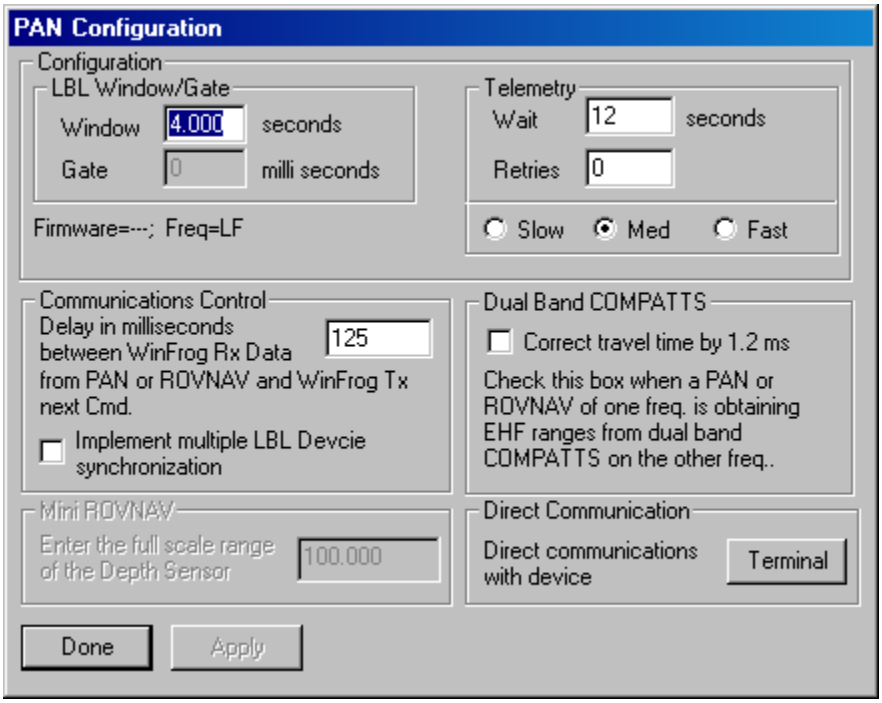
WinFrog is interfaced to the RovNav unit via the Surface Control Unit (SCU). The serial interface cable comes with the system. It is a standard 9 pin serial interface cable. Power is applied to the system via a power cable connected to the SCU. **See the RovNav manual for complete details.**

WinFrog interfaces to the Mini RovNav using a set of DLLs provided by Sonardyne. When the device is added, the DLLs are loaded and communications with the Mini RovNav attempted. If problems are encountered, this process is repeated every 30 seconds. The status is displayed in the IO Devices window.

WINFROG I/O DEVICES > CONFIGURE DEVICE:

This dialog provides access to a terminal for communications with the RovNav as well as options to set some RovNav parameters.

The first group, LB Window/Gate, allows you to set the long base line window in the RovNav. See the PAN manual for details on the LW command. The second group, Telemetry, allows you to set the telemetry wait window in the RovNav. See the PAN manual for details on the TW command. The “retries” value indicates the maximum number of times WinFrog will attempt to obtain telemetry from a transponder. This applies to both baseline measurements and manually entered commands described below. After the initial command attempt, if “No Reply” or “?” is received, WinFrog will resend the same command up to the amount entered in this field or until it gets a reply to this command.



The Slow, Medium and Fast radio buttons set the telemetry baud rate through the water. See PAN manual for details on the BN and BF and BS commands.
When the ROVNAV device is first selected for use it automatically send the commands mentioned above to initialize the RovNav.

The RovNav firmware version and frequency of the RovNav is displayed if it has been received from the RovNav. After the initialization commands, this command is sent to the RovNav every few seconds until navigation interrogation commences or if navigation interrogation ceases.

Normally, WinFrog reads the frequency from the RovNav. However, navigation interrogation doesn't read the frequency. The drop down list box is provided to ensure the frequency is correct, as the Dual Band COMPATT correction requires knowledge of the RovNav's frequency.

The Communications Control value is the time difference between receipt of a telegram from the RovNav and the time that WinFrog will issue a new command. A delay is required to allow the reverberation, caused from the last acoustic energy to reach the RovNav, to attenuate around the transducer.

If more then one Sonardyne LBL device is in use, e.g. a PAN and a ROVNAV, they must be synchronized, otherwise they will interfere with each other.

Dual band COMPATTS (EHF and MF) can range on one frequency and telemeter data on the other. The problem with this is that the unit receiving the telemetry applies the total turn around time which is comprised of the turn-around-time (TAT) at the COMPATT replying to the range interrogation plus the signal detection time at both the interrogating and responding COMPATT. The latter is frequency dependent, the signal detection time for EHF is 0.6ms quicker than that for MF. For example, a Dual Band COMPATT on an ROV, configured to telemeter on MF but execute measurements using EHF, is instructed by a RovNav on MF to execute an SI command. It then ranges on the EHF band to fixed transponders. The two-way-travel-time (TWTT) for each transponder that replied is telemetered using MF back to the RovNav. The RovNav removes the COMPATT turn around time and two MF detection times for each transponder that replied. But it should remove two EHF detection times. The result in this scenario is that 1.2ms too much was removed from the observation and needs to be re-applied. If the telemetry were EHF and the ranges were MF then too little would be removed and 1.2ms would have to be subtracted. WinFrog decides whether to add or subtract this value according to the frequency above. The commands affected are SI, FS and CI. If this checkbox is selected, a1.2ms correction will be applied to all SI, FS and CI data as it comes into WinFrog and the result will be treated as the raw data. There is an option on the calibration dialog to apply this value as well, in case it was neglected when the calibration data was collected.

WinFrog does not currently support the depth interrogation of the Mini RovNav, so no full scale range value for the depth sensor is required.

The terminal button provides access to a terminal window where you may enter RovNav commands. The command is sent to the RovNav when you hit the <Enter> key and any currently pending command, if any, has completed.

When clicked, the Apply button immediately accepts the settings displayed and WinFrog will begin to use them.

WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:

Data item: LBL,ROVNAV-MINI,LBL TRANCEIVER

See chapter 17 for details on setting these parameters. They are the same across all LBL TRANCEIVERS except for the **Transmit Code**. The “transmit codes” for a Sonardyne RovNav are provided in a dropdown list. They are:

None	No interrogations for this data item are transmitted. Also halts any current interrogation.
CIF	Interrogate on CIF i.e. use the LB command (same as LB below).
LB	Interrogate LB command. Same as using CIF above.
LI	Interrogate using the immediate LB command.

See the PAN manual for details on these commands.

The accuracy described in chapter 17 depends upon frequency. The published accuracies for the different frequencies are:

Frequency band	Standard Deviation
MF	0.15m
HF	0.04m
EHF	0.02m

These should be considered nominal values as they do not take into account sound velocity errors and ray path bending. Unless the transducer is on an ROV (e.g. flower pot) which is operating near the same depth as the transponders, larger values should be used.

It is not necessary to attach the TRANCEIVER to the ship if positioning with it is not required. It is required for collecting surface ranges for calibration or with relay operations.

Data type: LBL,ROVNAV-MINI,XPONDER

See **chapter 17** for details on setting these parameters. They are the same across all transponders (XPONDERS).

Simultaneous Transponder
It is not necessary to attach the TRANCEIVER to the ship for simultaneous transponder operations. However it may be attached and None selected as the Transmit code. Attach the XPONDER device to the vehicle it is on. Edit the XPONDER data type as described in chapter 17 and from the dropdown list box select the simultaneous transponder. For details on the settings, see chapter 17. The accuracy described in

chapter 17 depends upon frequency. The published accuracies for the different frequencies are:

Frequency band	Standard Deviation
MF	0.15m
HF	0.04m
EHF	0.02m

These should be considered nominal values as they do not take into account sound velocity errors and ray path bending. If the simultaneous transponder is working near the same depth as the fixed transponders and the sound velocity is considered accurate, these values may be correct, otherwise sound velocity and other errors should be included.

Relay Transponder
Currently WinFrog uses an observed range from the transceiver to a fixed transponder to reduce the observed relay transponder's range (which includes the ranges: vessel to relay, relay to fixed transponder and transponder to transceiver, sometimes called sing-around range). Consequently the LBL TRANCEIVER must be setup to interrogate, i.e. CIF, LB or LI must be selected. For details on the settings, see chapter 17. The accuracy described in chapter 17 depends upon frequency. The published accuracies for the different frequencies are:

Frequency band	Standard Deviation
MF	0.15m
HF	0.04m
EHF	0.02m

These should be considered nominal values, as they do not take into account sound velocity errors, ray path bending and the reduction of the sing-around range to the direct range. If the relay transponder is working near the same depth as the fixed transponders and the sound velocity is considered accurate, one should only need to account for the sing-around range reduction, otherwise sound velocity and other errors should be included.

Responder Transponder
This is not currently supported for the RovNav MINI.

Data type: LBL,ROVNAV-MINI,FIXED XPONDER

See **chapter 17** for details on setting these parameters.

Data type: LBL,ROVNAV-MINI,ELEVATION

See **chapter 17** for details on setting these parameters.

Data type: LBL,ROVNAV-MINI,ATTITUDE

See **chapter 17** for details on setting these parameters.