

WinFrog Device Group:	GYRO
Device Name/Model:	LEHMKUHL LR22
Device Manufacturer:	Scandinavian Micro Systems PO Box 155 N-1411 Kolbotn Norway Tel: +47 66 81 27 40 Fax: +47 66 80 80 95 E-mail: scansys@sn.no
Device Data String(s) Output to WinFrog:	Serial Output: RS232/RS422 (2 Ports) Unit outputs proprietary binary data to WinFrog. WinFrog reads in the last 4 digits of the sentence for heading.
WinFrog Data String(s) Output to Device:	Nil
WinFrog .raw Data Record Type(s):	Type 910

DEVICE DESCRIPTION:

The Lehmkuhl LR22 is a gyro repeater that accepts inputs from a variety of survey and navigation gyros (including voltage stepper input), then converts and outputs the heading data in a user selectable serial RS232 format.

The LR22 can be connected to most types of gyrocompasses (including various older models) without any special interface circuits.

The LR22 has an LED display that numerically indicates the ship's heading to four digits. This display also has a turning indicator - a ring of thirty solid state lamps. Five of these lamps are lit at the same time. When the ship turns to starboard, all five lights rotate in a clockwise direction and when the ship turns to port, they rotate in an counter-clockwise direction.

The LR22 outputs data only in the Lehmkuhl proprietary binary data string format.



Lehmkuhl LR22

DEVICE CONFIGURATION INSTRUCTIONS (configurable):

Baud Rate: 9600

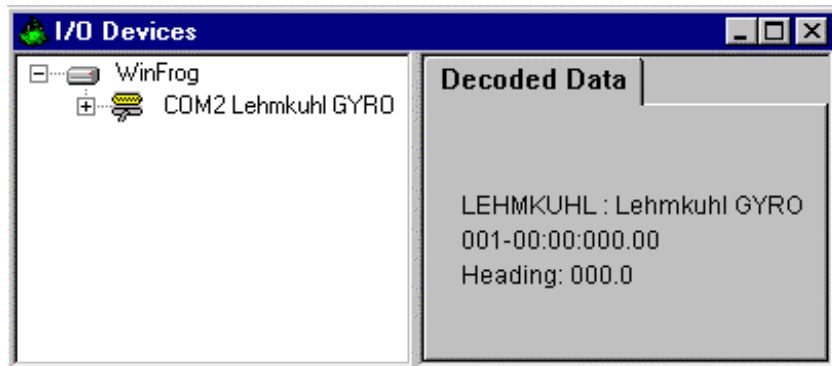
Data Bits: 7

Stop Bits: 2

Parity: Odd

WINFROG I/O DEVICES > CONFIG OPTIONS:

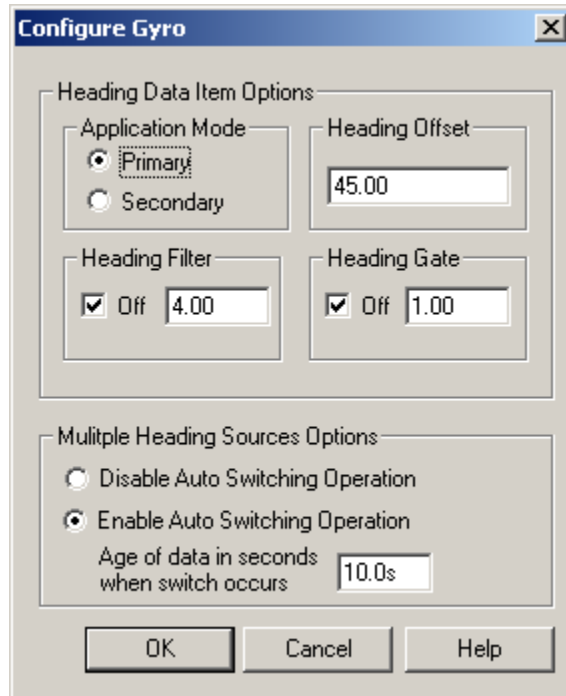
The Lehmkuhl LR22 is added to WinFrog from the Gyro device category. Adding a Lehmkuhl LR22 device creates a Heading data item, as seen in the I/O Devices window below.



No device configuration is required or available at the I/O device level.

WINFROG VEHICLE - DEVICE > EDIT OPTIONS:

After adding the LEHMKUHL LR22 Gyro device to the vehicle's device list, you must edit the device to suit the application. In the Vehicle's device list, highlight the Lehmkuhl, then click the Edit button. The Configure Gyro dialog box appears as seen below.



Heading Data Item Options:

Application Mode (Primary/Secondary):

Set the type of calculation to Primary or Secondary by selecting the appropriate radio button. Devices set to Primary are used to provide the vehicle heading information. Devices set to Secondary are simply monitored, and are not used in the vehicle's calculations.

Note that WinFrog supports automatic switching from a designated Primary to a Secondary in the case that data from the Primary fails (see Multiple Heading Sources Options).

Heading Offset:

A correction value (as determined from a gyro calibration) can be input in the Heading Offset Box. This value is added to the heading value from the Lehmkuhl LR22 to provide a corrected heading for the vehicle. Note that positive or negative values can be entered.

Note also that the Lehmkuhl LR22 is a 'programmable' repeater, which allows for an initial heading to be entered. The repeater then notes the gyrocompass' steps to increase or decrease the heading displayed and output.

Heading Filter/Heading Gate:

The Heading Filter is used to "smooth" heading values used by the vehicle. The value entered in the Heading Filter indicates the number of headings that will be used to predict the next heading value. The larger the value entered, the "heavier" the filter will be – i.e. the slower the vehicle's heading will respond to changes.

The Heading Gate defines a tolerance value to limit the use of anomalies in gyro readings. If the next observed gyro value received falls outside the specified range of predicted values (i.e. plus or minus the entered value), the value will not be used.

Multiple Heading Sources Options:

WinFrog supports automatic switching from a designated Primary source to an alternate Secondary source in the event that the Primary fails. The first Secondary source to receive data after the Primary has failed becomes the alternate Primary providing the heading for the vehicle. When the designated Primary is detected as active again, the alternate Primary source reverts to Secondary and the designated Primary provides the heading data to the vehicle.

If an alternate Secondary fails and there are additional Secondary sources, it in turn is detected by the first of the remaining operational Secondary sources to receive data after the failure at which time this Secondary becomes the alternate Primary.

Note that this option is only available if more than 1 HEADING source is associated with the respective vehicle. Changes made to the Auto Switching options for any one of the HEADING data items are automatically assigned to the others upon exiting this dialog with OK. If the Auto Switching option is enabled and the respective HEADING source has been set to Primary, all others are automatically set to Secondary. The exception to this is when configuring a WinFrog Controlled Remote (WinFrog with a Remote module) from a Controller. In this case, changes made to one HEADING source are not automatically made to other HEADING sources. The operator must explicitly make them for each HEADING source.

This option is not available in the WinFrog Remote package.

Disable/Enable Auto Switching Operation:

Select the mode you wish to operate WinFrog.

Age of data in seconds when switch occurs:

Enter the age of data that is permitted before the source is considered to have failed.

CONFIGURATION DETAILS:

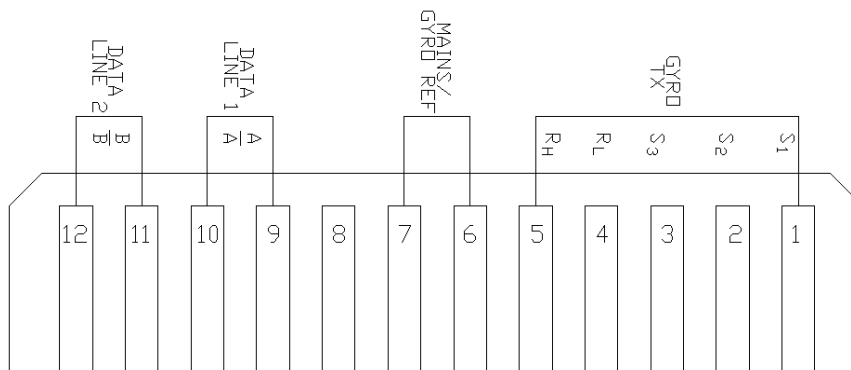
The LR22 Master Repeater requires power from the ship's mains: 110/220V AC 50/60Hz or the reference voltage of a synchro transmission system: 50/60/96/115V AC 50/60Hz. The Master Repeater decodes the gyro transmission signals and controls the Slave Repeaters, if installed. It is possible to connect up to 10 (2x5) Slave Repeaters to each Master Repeater.

The Heading Indicator on the Master Repeater can be adjusted manually to read the same as the gyrocompass. The heading indicator shows the gyro reading in degrees and decimal degrees. The Slave Repeaters receive the digital heading information in

serial form from the Master Repeater. The Heading Indicator and the Turning Indicator of the Slave Repeater align automatically and are identical to those of the Master Repeater.

When power is turned on, the display will flash with a frequency of approximately 1 Hz and will show 000.0 degrees. This alarm is also activated after a temporary power failure or loss of gyro information. The alarm is cancelled by pressing the toggle switch toward + or -. Always check the displayed course (to ensure it matches up with the corrected gyro heading) after canceling the alarm.

RIBBON CONNECTOR PIN CONFIGURATION:



SPECIFICATIONS:

- Mains: 55/110/220V AC \pm 10%, 50/60Hz
- Power: Master max 8 W – Slave max 7 W
- Accuracy: Within 0.2 degrees of gyro. Max turning rate 720 degrees/min
- Gyro transmission signals: These repeaters are designed for both Step-by-Step and Synchro type gyro transmission signals, where the gear ratio of the transmission system is 1:360.
The loading of the gyro transmission signals (S1, S2 and S3) is approximately 20mA rms., independent of the number of Slave Repeaters.
- Compass safe distance: 0.3m for Master Repeater.
0.3m for Slave Repeater.
- Weight / Dimensions: Weight: 3kg
Width: 288mm
Height: 144mm
Depth: 136mm