

LRF Test software - User's Guide

This software is available for demonstration and testing of Noptel Laser Range finders based on cumulative measurement principle. Normally, the device is used by sending a single "Measure Range" command for each measurement.



First install "LRF Test" application and start the application by clicking the "LRF" shortcut icon on the desktop. LRF Test software version 2.6 supports the following LRF-modules:

- LRF500-M1/M2/M3
- LRF421-M2
- LRF200-M2
- LRF221-M2
- LRF241-M2
- LRF301-M2

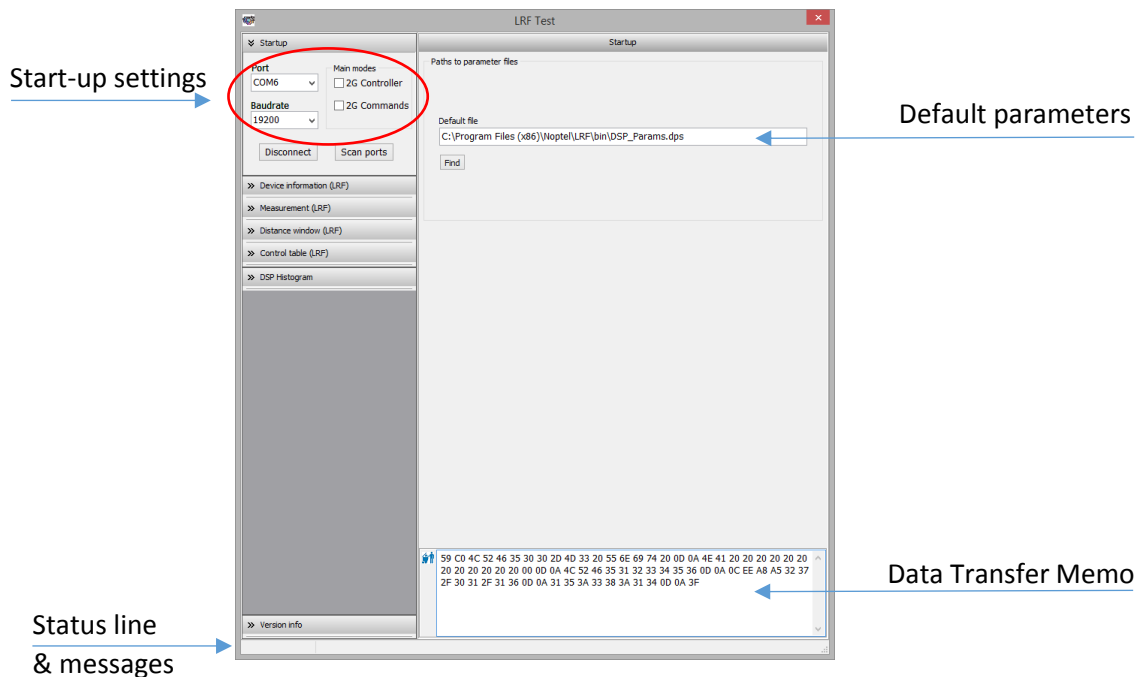
User interface changes slightly when different modules are used. The first chapter covers features of the LRF500 modules and the second chapter all the other modules.

1. LRF500-M1/M2/M3 and LRF421-M2

First select serial port from the **Port** drop down list and set the baud rate to be **19200**. Then check both **2G** options **OFF**. The software stores all start-up settings so these have to be given once only.

Press **Connect** to find LRF modules. If you do not know the serial port number and are not sure of what is the correct baud rate setting, you can try to press **Scan ports** to find LRF modules automatically. Please note that scanning ports feature might not work in some computers.

However, this is what you should see:



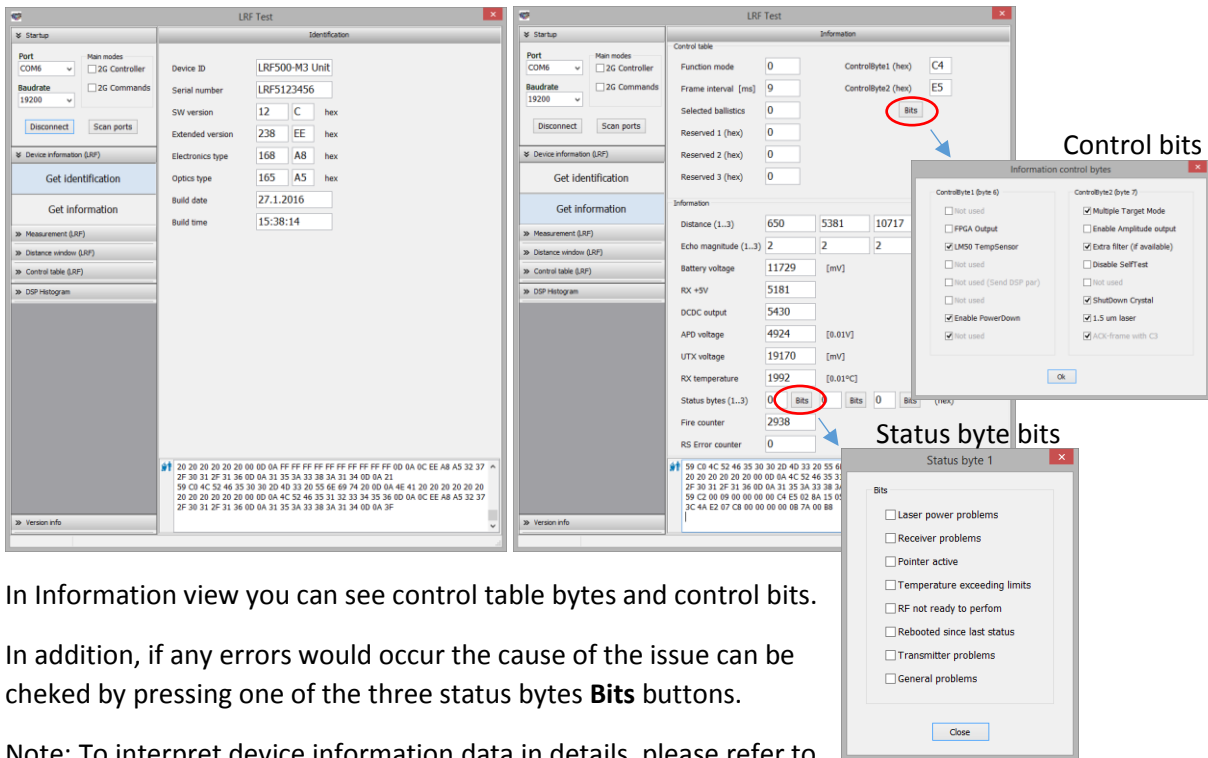
In the Data Transfer Memo can transferred data bytes be seen in hexadecimal mode.

Note: To interpret data transfer frames, please refer to Noptel's technical document: OS42562: "LRF Interface Control Document".

Device Information

Open the **Device Information** tab and press **Get identification** button to view the name and serial number of the LRF500/LRF421 module and some product traceability data.

Press **Get Information** to view the control table in the upper group and general information about last range measurement and some diagnostics measures, such as battery (supply) voltage, temperature inside the device and status bytes and counters. The voltage information of the battery is updated after each measurement that reveals the battery voltage under load.



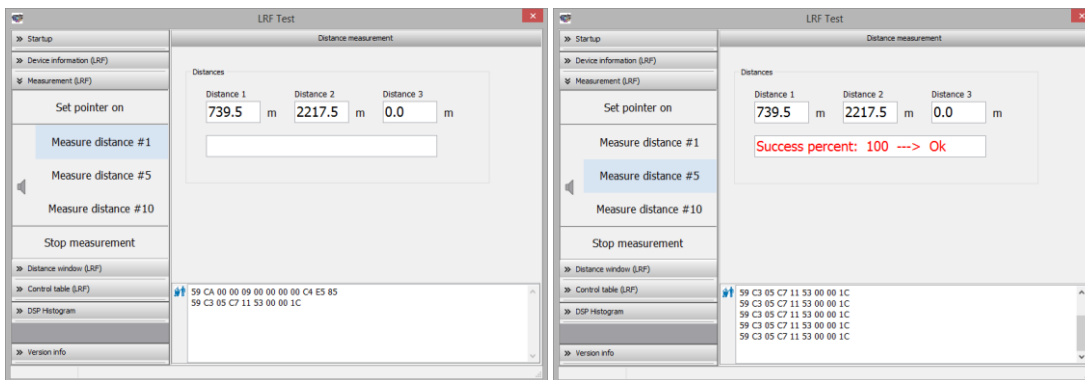
In Information view you can see control table bytes and control bits.

In addition, if any errors would occur the cause of the issue can be checked by pressing one of the three status bytes **Bits** buttons.

Note: To interpret device information data in details, please refer to Noptel’s technical document: OS42562: “LRF Interface Control Document”.

Measurement

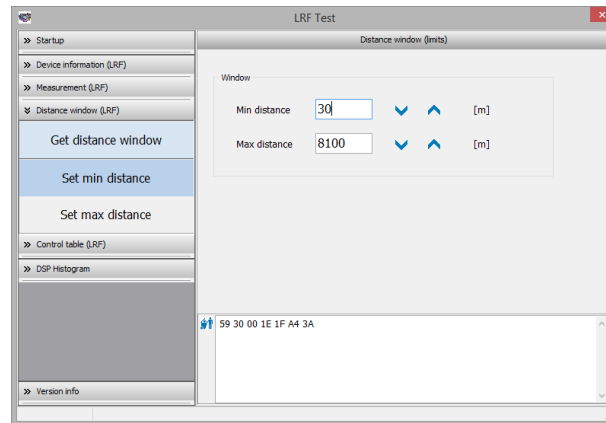
Open Measurement tab and press **Measure distance #1** button to measure range once. If you wish, you can repeat measurements 5 or 10 times by pressing **Measure distance #5/#10** buttons. In this case when all measurements are done, a success percent of the measurements is displayed as well. When measuring is repeated you can cancel it by pressing **Stop measurement** button.



In addition, you can control an optional pointer by pressing **Set pointer on/off** and set echo sound on/off by pressing the speaker icon.

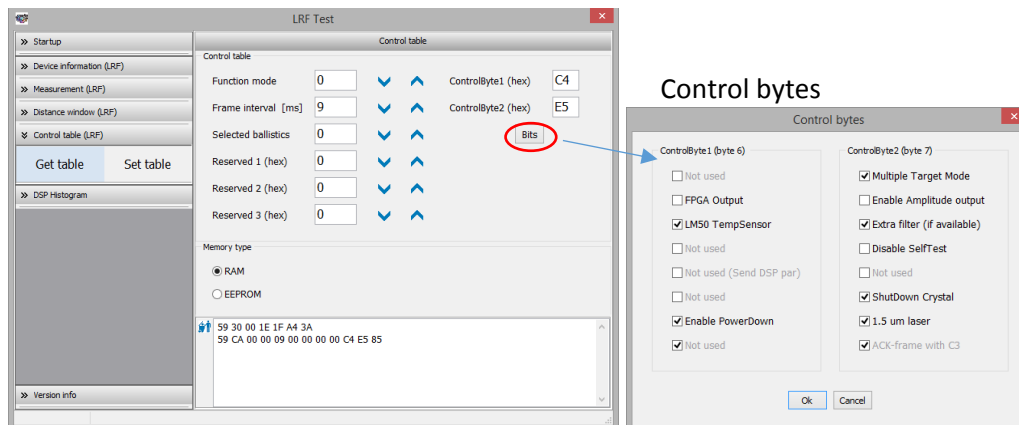
Distance window

Measurement results can be limited to desired window, where lowest possible distance value and highest distance value can be set using the **Set min distance** and **Set max distance** buttons. Press **Get distance** windows to read current settings from the LRF module. Enter the desired distance or use arrow up/down buttons to change settings.



Control table

Control table is used for e.g. to set function mode of the module. Press **Get table** to read control table from LRF module and press **Bits** button to view more information about two main control bytes.



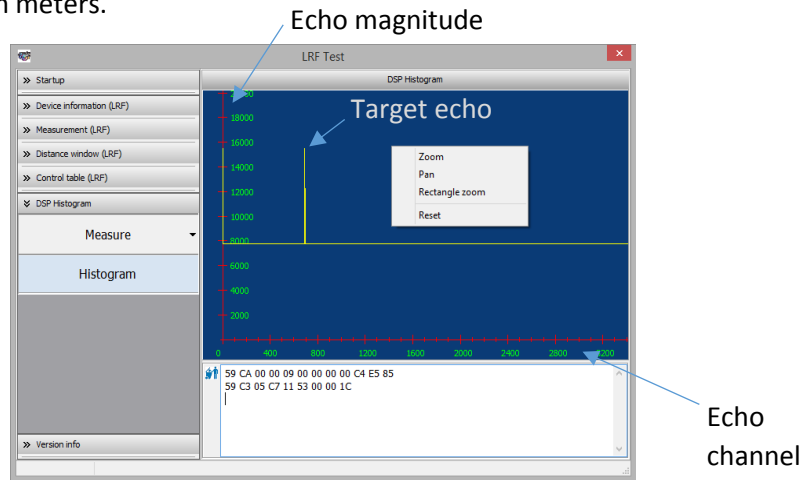
To set control table into temporal memory first select **Memory type** to be **RAM** and then press **Set table** button. If you want control settings to be permanent instead, first select Memory type **EEPROM** and after that press **Set table** button. This will store control setting to non-volatile memory of the LRF module.

For more details about control table parameters please refer to Noptel's technical document: OS42562: "LRF Interface Control Document".

Please, do not modify control table in the non-volatile EEPROM memory if you are not sure of what you are doing. If you want to experiment, please use temporal RAM memory always. Then, in the case of errors in status bytes or other unknown issues, you can easily go back to default control settings by resetting the LRF module (by switching battery/supply power off and back on).

Histogram

Histogram output is available for debugging and analysis. The histogram of the previous measurement can be seen by opening **DSP Histogram** tab and pressing the **Histogram** button. Please notice that the horizontal scale is not in meters.



If you wish, you can make a new measurement by pressing **Measure** button without opening the Measurement tab.

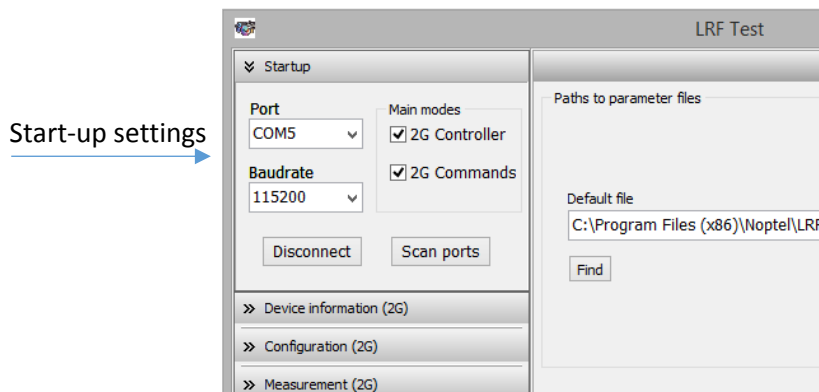


By pressing the right button of the mouse on the histogram graph view you can have more controls to display histogram details (zooming & panning).

2. LRF200-M2, LRF221-M2, LRF241-M2 and LRF301-M2 (2G-commands)

Most of the features described in chapter 1 are the same with these modules as well. However, there are slight differences and new 2nd generation features, which are covered in this chapter. The latest LRF500-M2/M3 and LRF421-M2 firmware includes some of these features (like continuous measurement mode). Please contact Noptel for further instructions if you plan to use these features with the LRF500 or LRF421 units.

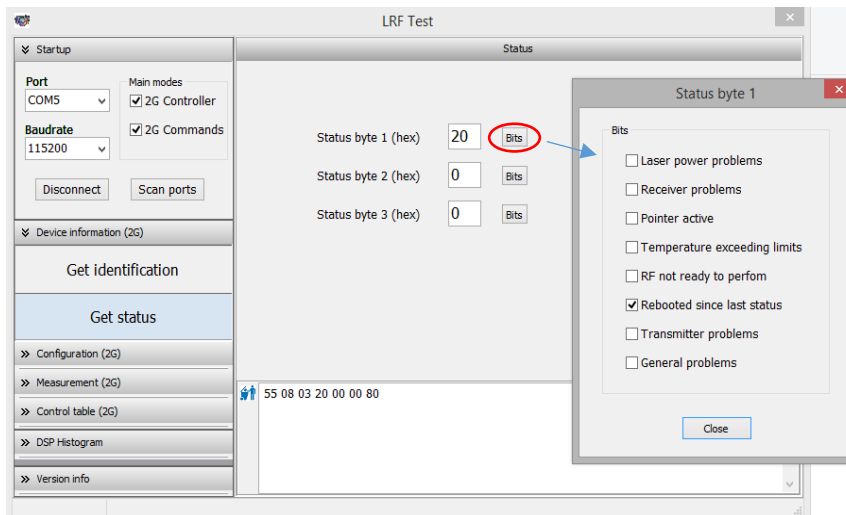
First start the software and select serial port from the **Port** drop down list and set the baud rate to be **115200**. Then check both **2G** options **ON** to view the latest commands and parameters sets. Press **Connect** (or Scan ports) and this is what you should see:



Device Information

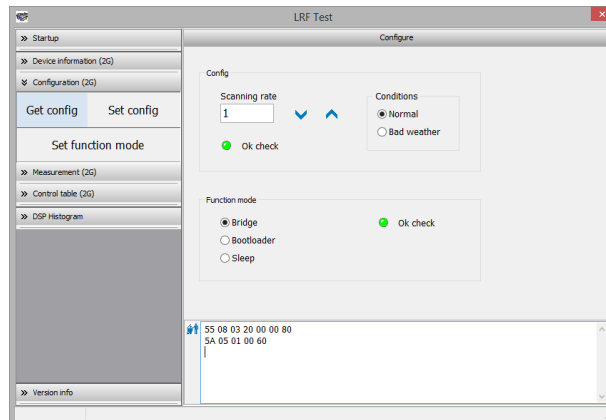
Open the **Status** tab and press **Get identification** button to view the name and serial number of the LRF module and some product traceability data.

Press **Get status** to view the control table status bytes and review status byte bits.



Configuration

Get current configure by pressing **Get config** button. Continuous measurement mode can be used to measure more quickly, but with reduced ranges. Set “Scanning” rate [1..10] and press **Set config** button and change configuration to continuous measurement mode by pressing **Set config** button.



Theoretical performance (percentage from full capability) in continuous measurement mode is the following:

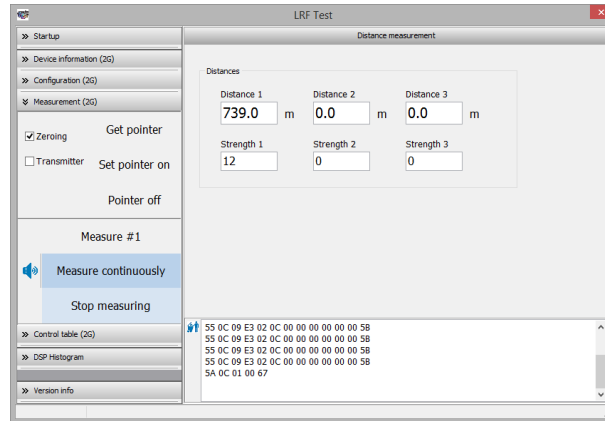
Rate value	Rate [Hz] *	Theoretical Range
8/9/10	18.5	35 %
7	10.7	42 %
6	5.8	50 %
5	3.0	59 %
4	1.6	71 %
2	0.8	84 %
1	0.8	84%

* Note: Actual measuring rates may vary depending on version of the LRF module.

Alignment pointer(s)

Open Measurement tab to **Set** the alignment pointer (zeroing) on/off. To get current pointer status press **Get pointer** button.

Note: The transmitter laser (1.5 μm) can be also set **On** in a low power mode. This feature is designed for factory alignment purposes.



Measurement

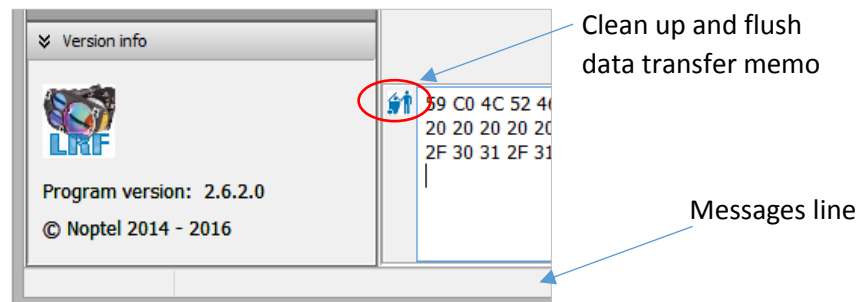
One time measuring is started by pressing **Measure #1** button. If you want to track the target all the time press **Measure continuously** when selected rate value defines the output tracking rate. Target echo magnitude can be seen in **Strength** fields. Press **Stop measuring** to cancel.

Control table and Histogram

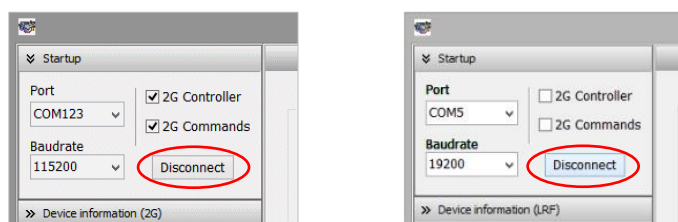
These features are the same with LRF500/LRF421.

3. Additional information

To view LRF Test software version number open the **Version info** tab at the lower left corner.



When you finish using the software, first press **Disconnect** to close the serial port and then quit the software by using the **X** button (Exit to operating system) in the upper right corner.



NOTE! Specifications and features subject to change without notice due to continuous research and development.