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RSC2 Manual

Road Sensor Control Software for Retrometer LTL-X



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Revision June 2012

RSC2-program

The Road Sensor Control program, RSC2, is intended for managing your work with the LTL-X.

RSC2 provides the following features:

- Setting up user profiles
- Project Planning
- Log management

Requirements

The program will run on computers with Windows XP or higher installed. Connection to the PC is via USB.

Installation

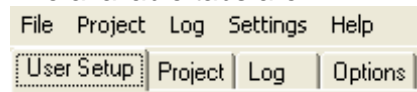
Insert the RSC2 CD-ROM into your CDROM drive and the installation will start automatic. If the AutoRun feature is disabled on your computer run /SETUP.EXE directly from the CDROM.

Setup installs RSC2 in the specified location and creates an RSC2 icon on the desktop and a shortcut in the start menu.

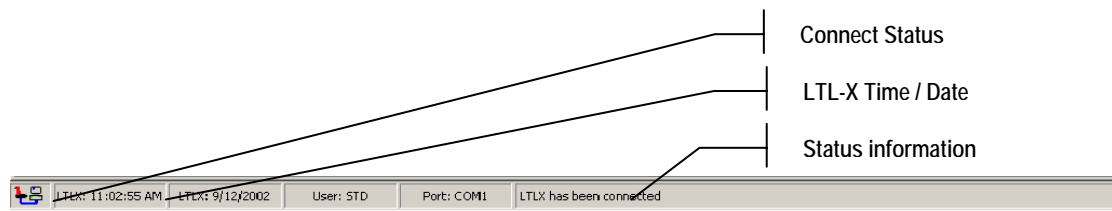
RSC2 layout

In RSC2 you can select among multiple pages, by selecting the tabs below the menu bar.

The available tabs are:



On all tabbed screens you have a status bar, which holds information about the LTL-X and RSC2 setup.



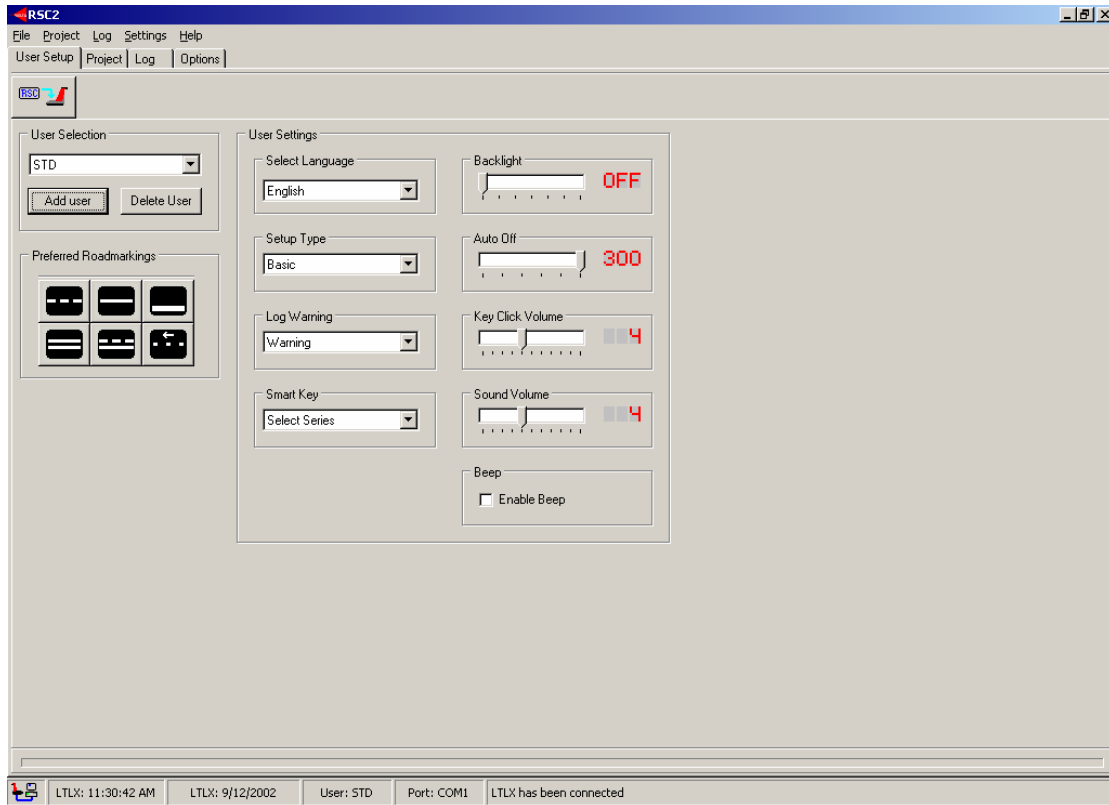
The Connect Status Icon shows if a LTL-X is connected or not. When no LTL-X is connected, this icon will be gray.

The time and date field is continuously updated from the LTL-X. If the LTL-X is disconnected or turned off, the time and date will disappear. The time will be shown in the format corresponding to your current regional Windows settings.

The selected user name and active communication port is also shown in the status bar and finally, status information, informing you about the status of your actions.

User profiles

RSC2 provides a range of individual user-settings; these settings may be saved as a *User profile* in RSC2. The user profiles may be prepared and stored in the RSC2 program for later upload to LTL-X.



User Setup

In RSC2 you can change the following LTL-X user settings:

Language selection:

Select a Language in LTL-X. This setting only affects the language in LTL-X.

Setup Type:

Basic or Advanced setup-type may be selected. By selecting Basic, several settings will not be displayed in LTL-X (see the LTL-X manual for details).

Log Warning:

The Log can hold more than 1500 measurements. By selecting "Warning" a warning will be displayed, when the log is full. When "Overwrite" is selected, the oldest measurement will be overwritten, without a warning (see the LTL-X manual for details).

Smart Key Function:

Smart Key lets you assign a dedicated function to the LTL-X smart-key.

Backlight:

Backlight timer that controls the LCD Backlight turn on time, max time is 30 seconds.

Auto Off:

Auto Off timer determines how long the LTL-X stays on if no user activity is detected. Available Auto Off values are: OFF, 60, 120, 180, 240 or 300 seconds.

Key Click Volume:

Key Click Volume sets the key-click sound.

Sound Volume:

Sound Volume sets the systems sound volume.

Beep:

Enable the Beep sound after completing a measurement by selecting Beep Enable.

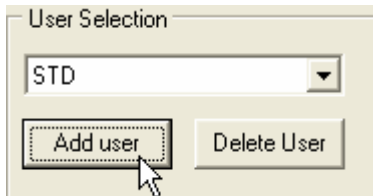
Preferred road-markings:

Preferred Project Road Markings displays the selected predefined road markings used when a new Series ID is added to a project (in the project pane). The markings are uploaded to LTL-X together with the project Series ID.

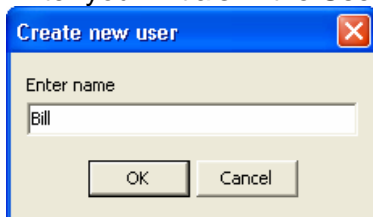
By double clicking the marking a window is displayed allowing you to select your preferred markings from a list.

Preparing a profile:

1. Select the "User-setup"-pane in the RSC2-program
2. Press "Add User" button.



3. Enter your initials in the User-selection box.



4. Customize your profile, by selecting the different settings.

Removing a user profile:

1. Select the user you want to remove
2. Press "Delete User"

Storing user-profiles

User-profiles are automatically saved in an Ini file, when the RSC2 program is closed.

Uploading a profile

Press the “Upload User settings” button

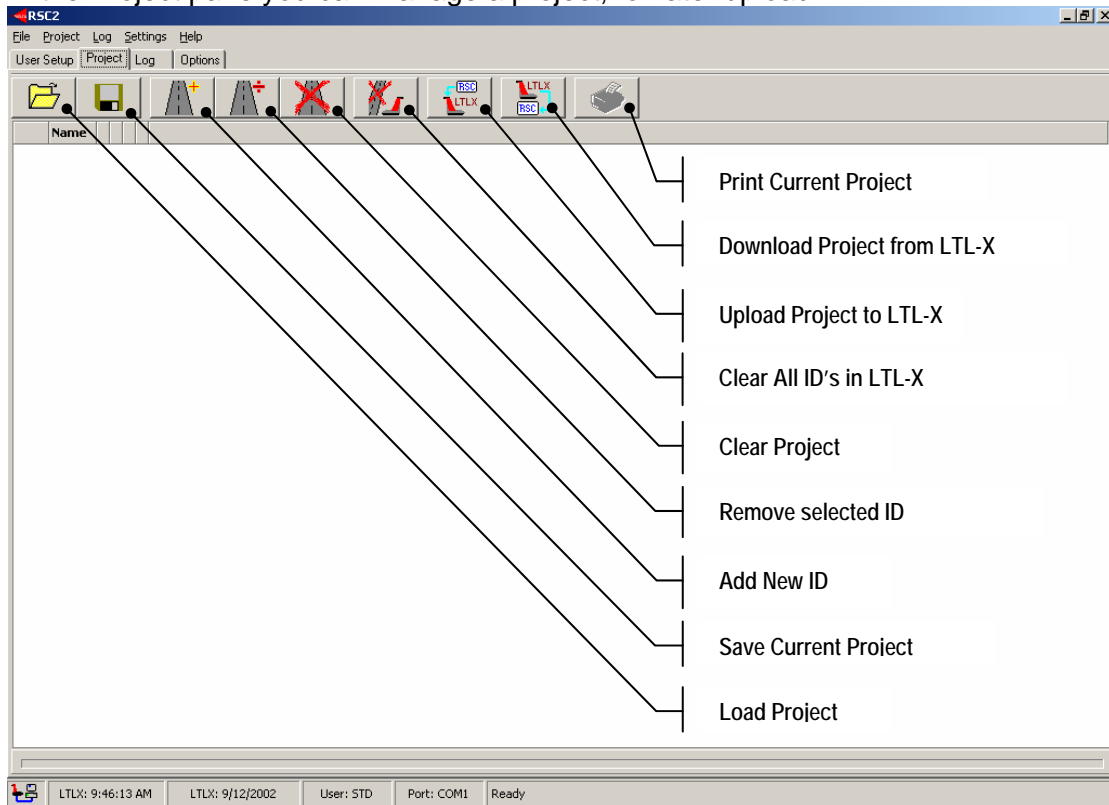


When you upload a user profile to the LTL-X, RSC2 searches the list of users currently in the instrument, if the new username already exist in the LTL-X, the user settings for that username will be updated. RSC2 treats the list of user names as a history list. If the upper six users in this list also exist in the LTL-X, RSC2 will replace the names from the bottom to the top, of this list, i.e. the username at the bottom of the username list in RSC will be the first to be replaced in LTL-X.


RSC2 can't replace username 7 or 8 in the LTL-X by other usernames. However RSC2 is able to update the settings of these users, if the same username is created in RSC2. The names of user 7 and 8 must therefore be changed manually in LTL-X.

Project pane:


In the Project pane you can manage a project, for later upload.



Create a new project:

1. Press the Add New ID button 
2. Enter a name for the ID
3. Press Enter

When you add an ID, six Road Markings will be displayed. These markings are identical to the preferred markings setup for the current RSC2 user. However, the markings can be changed by double clicking on them individually and then select a new marking from the list.

To append an ID between two existing ID's press the CTRL while clicking the 

Double click on the Series ID name to change it.

If an ID containing more than 19 letters is entered, the ID will be truncated after prompting the user.

The purpose of a series ID


The Series ID is a label. For example, it could be the name of the road.

Although measurements can be performed without selecting a Series ID, it is convenient to group (name) the measurements for each geographical spot, road or part of a road for easier recognition of each measurement.

The Series ID for such a group of measurements will be saved in the log together with the measuring results. The ID must be selected prior to the measurement.

Uploading a project to LTL-X

To upload a project to the LTL-X, just press the Upload button.

When uploaded, you can select the Series ID on LTL-X by clicking on the  icon in the top row of the LTL-X measure window.

Downloading a project to RSC

To append the ID's from the LTLX to your current project, press the Download button. If you want your project to contain the ID's in LTL-X, you should clear the project page before you download the project to RSC.

Saving a project:

If you want to save the project on the pc for later use, press the Save button.

Loading a project

To open a project file, press the Load Project button.

The project files are text files that can be edited in a normal text editor. Each line in the text file represents a Series ID, normally the ID is followed by 6 comma separated numbers, representing the 6 road markings. If only an ID is provided, the Preferred Marking, from the user setup will be used. If a line in the project file contains between 1 and 5 markings, an error message is displayed.

If an ID contains more than 19 letters, the ID will be truncated after prompting the user.

Printing a project

Press the Print Project button. The print button will be disabled, if the ID list is empty.

Clearing a Project

If you want to delete your project, press the Clear Project button.


Clear LTL-X ID's

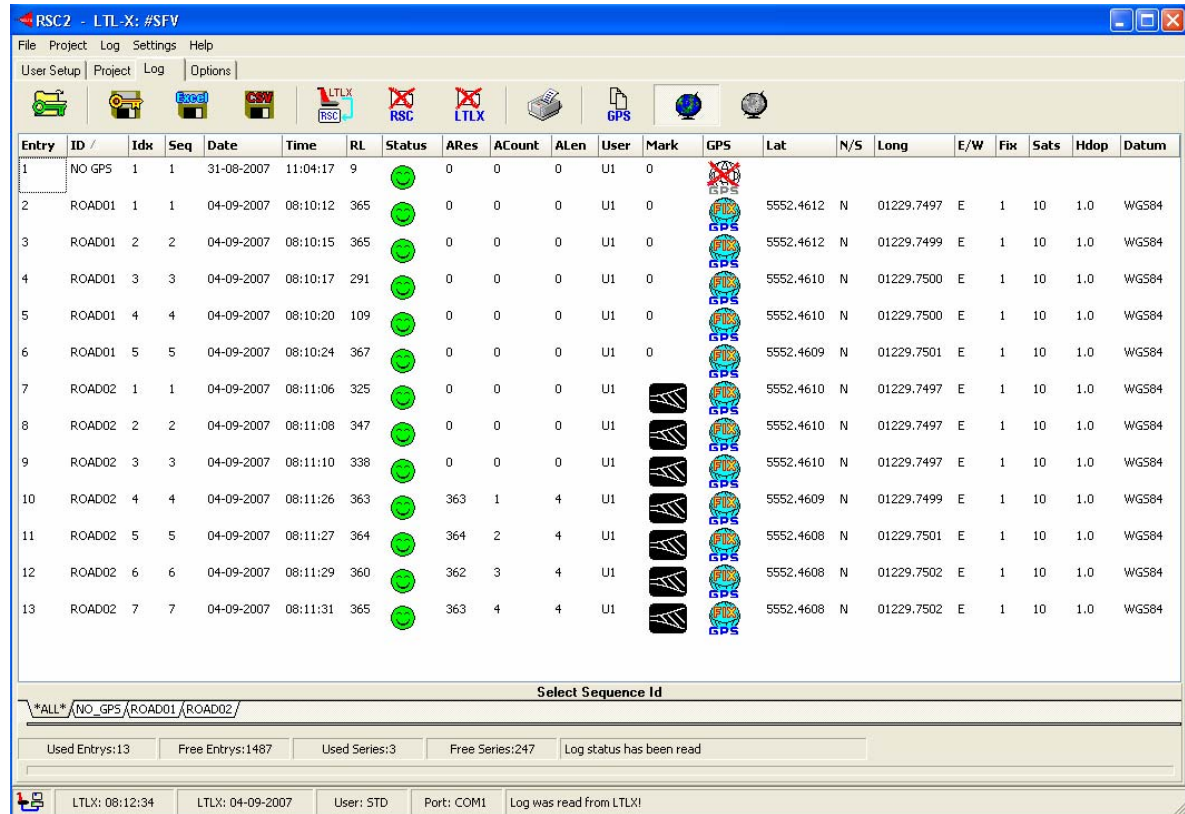
If you want to delete **all** Series ID's stored in the LTL-X, press the Clear LTL-X ID's.

Note: All log data with Series ID will be deleted!

Log pane

In the Log pane you can read the data stored in the LTL-X Log.

By selecting the Read Log button  the whole log content will be downloaded from the LTL-X.



Entry	ID /	Idx	Seq	Date	Time	RL	Status	ARes	ACount	ALen	User	Mark	GPS	Lat	N/S	Long	E/W	Fix	Sats	Hdop	Datum	
1	NO GPS	1	1	31-08-2007	11:04:17	9		0	0	0	U1	0										
2	ROAD01	1	1	04-09-2007	08:10:12	365		0	0	0	U1	0		5552.4612	N	01229.7497	E	1	10	1.0	WGS84	
3	ROAD01	2	2	04-09-2007	08:10:15	365		0	0	0	U1	0		5552.4612	N	01229.7499	E	1	10	1.0	WGS84	
4	ROAD01	3	3	04-09-2007	08:10:17	291		0	0	0	U1	0		5552.4610	N	01229.7500	E	1	10	1.0	WGS84	
5	ROAD01	4	4	04-09-2007	08:10:20	109		0	0	0	U1	0		5552.4610	N	01229.7500	E	1	10	1.0	WGS84	
6	ROAD01	5	5	04-09-2007	08:10:24	367		0	0	0	U1	0		5552.4609	N	01229.7501	E	1	10	1.0	WGS84	
7	ROAD02	1	1	04-09-2007	08:11:06	325		0	0	0	U1			5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
8	ROAD02	2	2	04-09-2007	08:11:08	347		0	0	0	U1			5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
9	ROAD02	3	3	04-09-2007	08:11:10	338		0	0	0	U1			5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
10	ROAD02	4	4	04-09-2007	08:11:26	363		363	1	4	U1			5552.4609	N	01229.7499	E	1	10	1.0	WGS84	
11	ROAD02	5	5	04-09-2007	08:11:27	364		364	2	4	U1			5552.4608	N	01229.7501	E	1	10	1.0	WGS84	
12	ROAD02	6	6	04-09-2007	08:11:29	360		362	3	4	U1			5552.4608	N	01229.7502	E	1	10	1.0	WGS84	
13	ROAD02	7	7	04-09-2007	08:11:31	365		363	4	4	U1			5552.4608	N	01229.7502	E	1	10	1.0	WGS84	

In the log pane you see a row of tool buttons:



From left to right, the toolbar holds the following buttons:

- Open protected file
- Save protected file
- Save Excel file
- Save CSV file
- Download Log from LTL-X into Log page
- Clear RSC2 Log page
- Clear LTL-X Log
- Print Log page
- Copy the GPS position of the selected row to clipboard.
- Show GPS positions
- Export to Google Earth

A Log page:

Entry	ID /	Idx	Seq	Date	Time	RL	Status	ARes	ACount	ALen	User	Mark	GPS	Lat	N/S	Long	E/W	Fix	Sats	Hdop	Datum
2	ROAD01	1	1	04-09-2007	08:10:12	365		0	0	0	U1	0		5552.4612	N	01229.7497	E	1	10	1.0	WGS84

And an extra Log status bar:

Used Entries:13	Free Entries:1487	Used Series:3	Free Series:247	Log status has been read
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When the LTL-X is connected, the log status bar holds information about log usage. The number of used and free entries and series is displayed.

If Series ID's are used during measuring the log page will contain several tabs

***ALL* / NO_GPS / ROAD01 / ROAD02** named with the Series ID plus one showing all the data. The tabs will act like a filter showing only the respective data. The selected tab will become the active log page.

All selected:

Entry	ID /	Idx	Seq	Date	Time	RL	Status	ARes	ACount	ALen	User	Mark	GPS	Lat	N/S	Long	E/W	Fix	Sats	Hdop	Datum	
1	NO GPS	1	1	31-08-2007	11:04:17	9	●	0	0	0	U1	0	NO GPS									
2	ROAD01	1	1	04-09-2007	08:10:12	365	●	0	0	0	U1	0	GPS	5552.4612	N	01229.7497	E	1	10	1.0	WGS84	
3	ROAD01	2	2	04-09-2007	08:10:15	365	●	0	0	0	U1	0	GPS	5552.4612	N	01229.7499	E	1	10	1.0	WGS84	
4	ROAD01	3	3	04-09-2007	08:10:17	291	●	0	0	0	U1	0	GPS	5552.4610	N	01229.7500	E	1	10	1.0	WGS84	
5	ROAD01	4	4	04-09-2007	08:10:20	109	●	0	0	0	U1	0	GPS	5552.4610	N	01229.7500	E	1	10	1.0	WGS84	
6	ROAD01	5	5	04-09-2007	08:10:24	367	●	0	0	0	U1	0	GPS	5552.4609	N	01229.7501	E	1	10	1.0	WGS84	
7	ROAD02	1	1	04-09-2007	08:11:06	325	●	0	0	0	U1	0	GPS	5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
8	ROAD02	2	2	04-09-2007	08:11:08	347	●	0	0	0	U1	0	GPS	5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
9	ROAD02	3	3	04-09-2007	08:11:10	338	●	0	0	0	U1	0	GPS	5552.4610	N	01229.7497	E	1	10	1.0	WGS84	
10	ROAD02	4	4	04-09-2007	08:11:26	363	●	363	1	4	U1	0	GPS	5552.4609	N	01229.7499	E	1	10	1.0	WGS84	
11	ROAD02	5	5	04-09-2007	08:11:27	364	●	364	2	4	U1	0	GPS	5552.4608	N	01229.7501	E	1	10	1.0	WGS84	
12	ROAD02	6	6	04-09-2007	08:11:29	360	●	362	3	4	U1	0	GPS	5552.4608	N	01229.7502	E	1	10	1.0	WGS84	
13	ROAD02	7	7	04-09-2007	08:11:31	365	●	363	4	4	U1	0	GPS	5552.4608	N	01229.7502	E	1	10	1.0	WGS84	

Select Sequence Id

ALL / NO_GPS / ROAD01 / ROAD02

Used Entries:13	Free Entries:1487	Used Series:3	Free Series:247	Log status has been read
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LTLX: 08:44:14 LTLX: 04-09-2007 User: STD Port: COM1 Ready

Road01 selected:

Entry	ID /	Idx	Seq	Date	Time	RL	Status	ARes	ACount	ALen	User	Mark	GPS	Lat	N/S	Long	E/W	Fix	Sats	Hdop	Datum
2	ROAD01	1	1	04-09-2007	08:10:12	365	●	0	0	0	U1	0		5552.4612	N	01229.7497	E	1	10	1.0	WGS84
3	ROAD01	2	2	04-09-2007	08:10:15	365	●	0	0	0	U1	0		5552.4612	N	01229.7499	E	1	10	1.0	WGS84
4	ROAD01	3	3	04-09-2007	08:10:17	291	●	0	0	0	U1	0		5552.4610	N	01229.7500	E	1	10	1.0	WGS84
5	ROAD01	4	4	04-09-2007	08:10:20	109	●	0	0	0	U1	0		5552.4610	N	01229.7500	E	1	10	1.0	WGS84
6	ROAD01	5	5	04-09-2007	08:10:24	367	●	0	0	0	U1	0		5552.4609	N	01229.7501	E	1	10	1.0	WGS84

Select Sequence Id
 ALL/NO_GPS/ROAD01/ROAD02/

Used Entries:13 Free Entries:1487 Used Series:3 Free Series:247 Log status has been read

LTLX: 08:43:07 LTLX: 04-09-2007 User: STD Port: COM1 Ready

Note: the user can change uploaded log data at any time by double clicking the cell where data is going to be changed. These changes are reflected in both Excel and CSV files; however, the protected file will always contain the original data.

Loading a Protected file

You can open a Protected file by pressing this button.

A Protected file is an encrypted log file, having the extension RSC. The purpose of the Protected file is to secure your work. By saving or forwarding a Protected file, you can document that your work has not been manipulated. Encrypted Protected files can only be loaded and used in the RSC2 program.

Saving a Protected file

When the log has been read, you may want to save it in a Protected file-format.

Even if you edit the Log page, and manipulate the data, the original data is retained, and you can save it at any time.

Saving an Excel file

The active log page may be saved as an Excel file at any time. The Excel file will, however not contain any graphical presentation, i.e. Road Markings. Graphical information's will be shown as a number.

Saving a CSV file

You may save the active log page as a Comma Separated file. This ensures that you can export log data to almost any other application.

Clear RSC2 Log

The Clear Page button lets you clear the Log page on your computer.

Clear LTL-X Log

The Clear Log button lets you clear the Log in the LTL-X. When this is done, **all log data in the LTL-X will be lost.**

Print Log

The Print Log button lets you print the contents of active log page.

Show GPS Position

When you press this button, the GPS information will be displayed in the Log page. If you choose to save the Log page, the information will be preserved, even if the GPS position is hidden.

Export GPS data to Google Earth


You can export log data containing GPS positions to Google Earth.

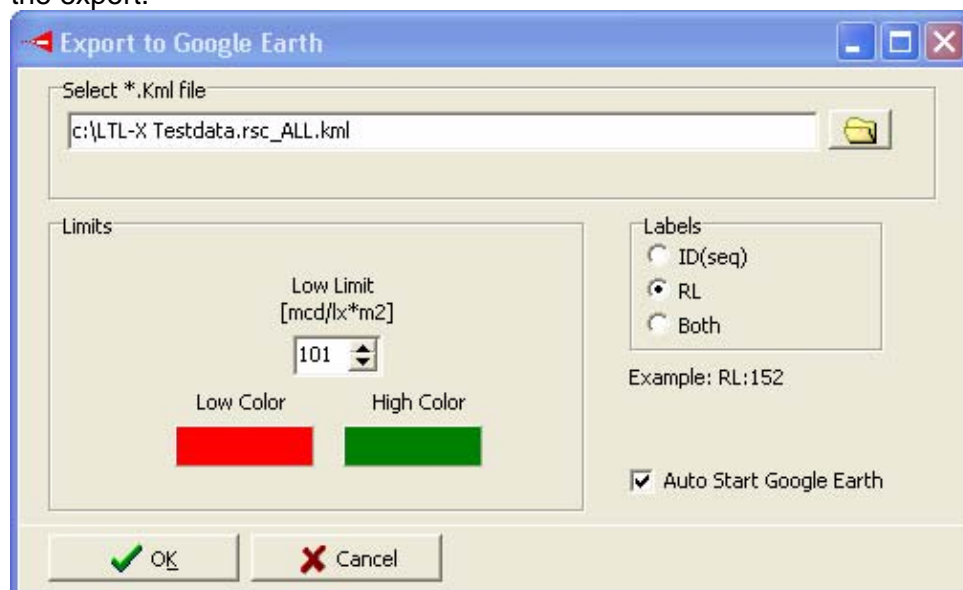
Before exporting data you must select the data lines to be shown. If no data are selected the program will automatically select all data lines.

Data can be selected by using the regular windows way:

shift + left mouse click selects a group.

ctrl + left mouse click selects / deselects single entries.

When you press this button  , a new window will open to setup the parameters for the export.



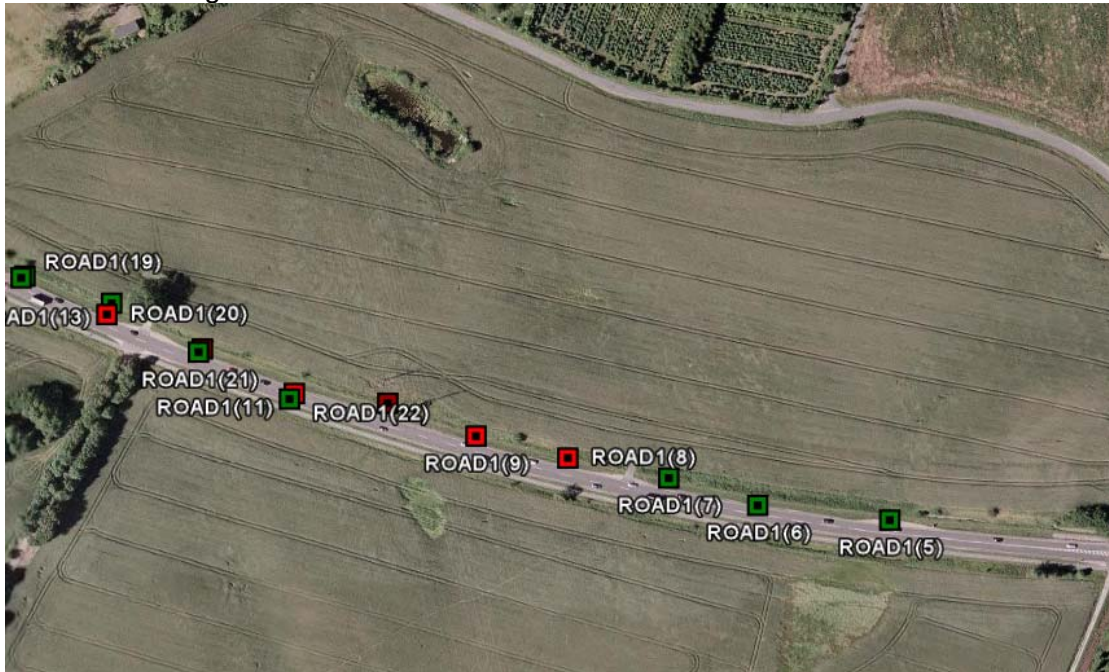
If log data represents downloaded data (not data from a protected file) the file name will be a combination of the instrument (LTL-X), the serial number (e.g. 515) and the selected Series ID. The extension must be .kml.

In the *Limits* section you can enter a value controlling the appearance of the data shown in Google Earth (GE). RI values less than the value in the low limit box will be shown with the low color. RI values higher will be shown with the high color.

In the *Labels* section you can decide the appearance of the text shown on the measurements shown on the screen. In the example below ID(seq) are shown

If *Auto start Google Earth* is checked GE will start automatic when OK is pressed and the position of the measurements (from the .kml file) will be shown.

If *Auto start Google Earth* is unchecked you can double click on the .kml file to start GE and showing the measurements.



The text shown with the data point in GE is the Series ID and sequence number for the RI measurement.

If you click on a data point in GE a box will pop up showing the further information about the measurement e.g. the RI value.



Note:

Google Earth must be installed on your pc to view the kml data file.

Using "Google Software" you agree to be bound by the following terms of service as well as the terms found on our Legal Notices page at http://www.google.com/intl/en_us/help/legalnotices_maps.html or existing "Gooble Terms of Service".

Understanding Log contents

A line in the Log page represents a single log entry. The selected Road Marking will be displayed as an icon that is identical to the one shown in the LTL-X display. Every measurement has a Status word associated. This status word is presented as a smilie. Three different smilies are possible:



The faces correspond to

- Green: Measurement is good, i.e. no errors or warnings.
- Yellow: A warning occurred, but the measurement is valid.
- Red: An error occurred, i.e. the measurement must be discarded.

A sad smilie may occur if multiple warnings were detected. In this case the result may still be useable (see the LTL-X manual for details).

If you double click on a smilie, a window will be displayed, specifying what particular error or warning occurred.

When you click on a smilie, the status code is copied into Status Code converter in the Options pane.

The following warnings and errors may occur:

Type	Text	Meaning
Error	Measurement error	Some error occurred during measurement.
Error	Xenon timeout error	The Xenon lamp did not flash.
Error	Stray light	Stray light was detected.
Error	More than 40 signal values were saturated	The signal gain is too high i.e. 40 or more samples were out of range.
Error	Calculation error	This might both be an arithmetic, or a instrument fault.
Warn	Low Xenon voltage	The voltage was low during measurement.
	More than 20 signal values were saturated	A high signal was detected, i.e. 20 or more measurements are out of range. This is still acceptable, but the accuracy of the measurement will be decreased.
	Low Signal or Reference offset voltage	The 0-level of the signal or the reference was low. The instrument should be serviced.
	Reference Peak low	The reference signal was low. The instrument should be serviced.
	Reference Peak high	The reference signal is too high, but not saturated. The instrument should be serviced.
	Variance > 3 %	This warning only occurs when doing a calibration. If some of the measurements in a calibration deviate more than 3% this warning will be displayed. Calibrations are not stored in the log.

An icon displaying information about the state of the GPS is displayed too. Three different icons indicate the different states of the GPS data:



FIX: A valid GPS position fix was associated to the measurement.

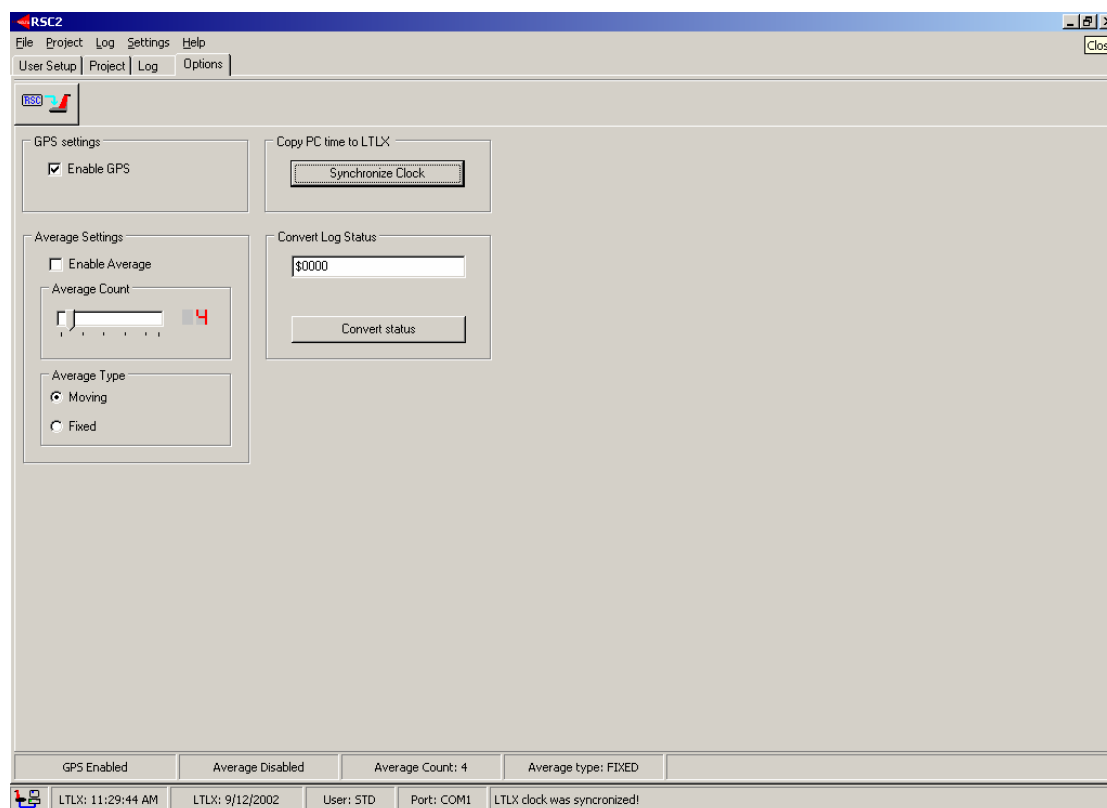
?: The GPS was turned on, but no fix was associated to the measurement.

X: The GPS was turned off when the measurement was made.

If you double click on the GPS-icon, a message box will display the position or the state of the GPS, i.e. not fixed or no GPS data present.

Options pane

In the Options pane you may setup settings that have influence on your measurements.



When a LTL-X is connected, the extra status bar at the bottom displays information about the current settings in the LTL-X. If the LTL-X is disconnected, or turned off, the Status bar will be cleared.

Enable GPS:

You may turn GPS on and off.

Copy PC Time to LTL-X:

Pressing the Synchronize Clock button will synchronize the LTL-X date- and time with your computer clock.

Average Settings:

You can setup the LTL-X to manage average measurements.

Selecting the Enable Average checkbox enables the build in average function.

Two kinds of averaging are supported:

Moving average and Fixed average (see LTL-X manual for details).

The number of measurements used for the average calculation is user defined and must be in the range from 2 to 25.

Convert Log Status:

You can convert a numerical instrument status from the log to a more readable form explaining in clear text exactly what conditions led to the status number. Numbers may be entered in both as decimal and hexadecimal.

When you click on a smileie in the log page, the status code is copied into this converter field.

Uploading options

After setting up the preferred settings for averaging and GPS, the user has to press Upload Options.

Settings menu

From the settings menu you can select the COM-port to use with the RSC2 program.

