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# RetroSign GR3 / GR1 Retroreflectometer

On site quality verification of road signs

## Software Manual



# RetroSign GR3/GR1 Software Program

Main Screen showing the different log data components.

- The Log Record Index is the record address in the main log storage.
- Date&Time is the time recorded when the measurement was taken.
- Results is the measured R' values for the 0.2°/0.33°, 0.5° and 1.0° channels, *the two last values will be shown as 0 from the GR1 instrument.*
- Status is the instrument status at the time of the measurement, values greater than zero indicates some problem, pointing to the status field displays the problem, see examples for code 23 and 2.
- Action shows what action generated the data; MES stand for normal measurement, ZER for zero measurement in full calibration and FCM for calibration measurement.
- Sequence ID is the given measurement ID for the measurement, ID\_Cnt is the number of measurement with the given ID.
- GPS data is the recorded GPS position and operation mode data at the time of the measurement.
- Mean is the calculated mean result of M\_Cnt measurements.
- Tag code is the recorded tag code from the RFID or Barcode reader, a value of 16xF indicates that no tag was read, the Reader function was disabled at the time of the measurement.
- ID Tabs, Click on TABS to display specific measurements.

## Log Record, Date&Time, Results&Status, Action, Sequence ID+Cnt, GPS data, Mean, Tag code

The screenshot displays the 'DATA LOG' window of the RetroSign GR3/GR1 software. The window title is 'RSC-GR3 - [C:\Development\Sensor\APPLICAT\ONS\RSC3\Ver1.0.8.4\Untitled.Rsc]'. It shows the following information:

- Firmware:** RS-GR3 Version: 3.06 DELTA(c) 29-06-2010
- Sensor ID:** 1-999
- Sensor Type:** ASTM
- Connected to:** DELTA Roadsensor

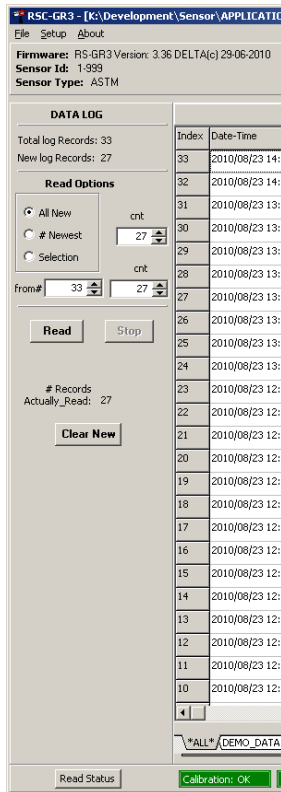
The main data table has the following columns: Index, Date-Time, R0.2, R0.5, R1.0, Status, Mode, Seq\_ID, ID\_Cnt, Lat, Long, #Sat, #Fix, HDOP, GPS\_Datum, GPS\_LUTC, M0.2, M0.5, M1.0, M\_Cnt, TAG. The table contains 31 records, with the first 25 visible. The status field in the first 25 records is 0, while the last 6 records (indices 20-25) show status 23, indicating a problem.

An 'Errors and Warnings' dialog box is open, showing the following errors:

- Calibration Error (Yellow icon)
- Signal Error (Red icon)
- Measurement Error (Red icon)

The dialog box also shows a 'Select Sequence Id' field with 'DEMO\_DATA' selected. At the bottom of the window, there are status indicators: Read Status, Calibration: OK, Lamp: OK, Battery: OK, Status: 0.

## Control Panel



### Firmware:

The Instrument firmware version and date.

### Sensor Id:

The instrument serial number.

### Sensor Type:

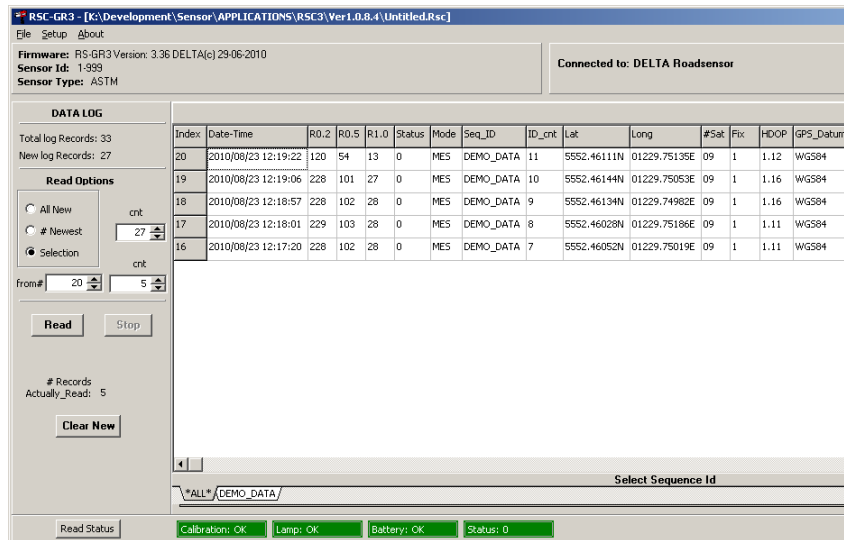
The instrument configuration.

### Data Log:

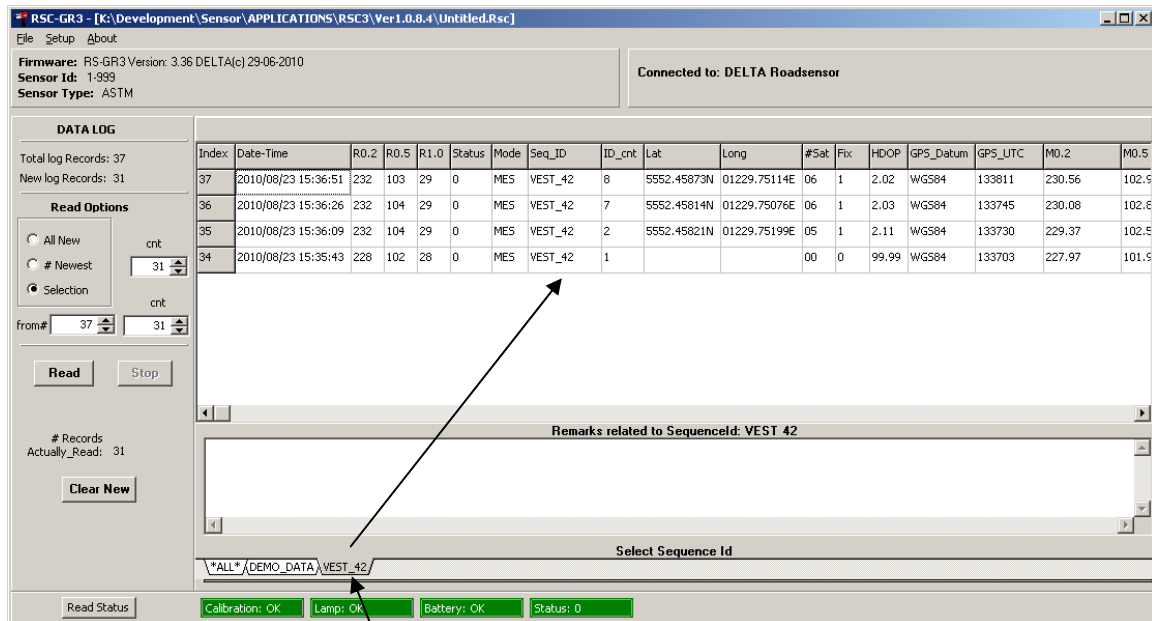
- **Total Log Records** shows the number of measurement records stored in the non volatile data memory, this number counts up for every measurement action and represents the total number of measurement actions since the instrument was produced.
- **New log Records** shows the number of measurement actions since the last “**Clear New**” action, this could typically be the number of measurements in a measurement campaign.

### Read Options:

- **All New** reads all the new log records indicated by the New Log Records number.
- **# Newest** reads a subset of the newest records, **cnt** specifies how many records to read from the top (newest).
- **Selection** reads a number of consecutive records starting with any record index, **from** specifies the starting record index and **cnt** gives the number of records to read, this option allows for reading older data records again.
- **Stop** terminates the read process, the records read until stop will be displayed. The read process takes some time so the **Stop** can be useful if the specified number of records is very high. A progress bar shows how far the reading process has come.
- **Clear New** marks all records as read, this has the effect that the number of new records will show 0, but no data is actually erased; use **Selection** to read the data again if necessary. **Clear New** is intended to be used when all data from a measurement campaign has been read and stored to a file.



Screen dump showing a Selection Read, start in index = 20, read 5 records down.



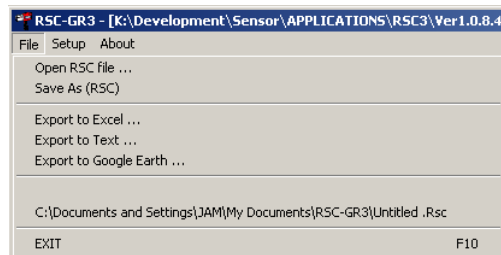
Data can be sorted by Sequence ID by simply clicking on one of the Sequence ID tabs, this allows for displaying and exporting specific measurement series.

All measurements with the same Sequence ID's are displayed and can be exported as a single file.

**Read Status** updates the instrument status shown in the bottom line, if nothing is wrong (Status=0) all status fields will be green, if status > 0 then the Status field will change colour to Orange for minor problems or Red for severe errors, Hold the pointer over the Status field to see the actual source of the problem. Hold the pointer over the Battery field to get information on the battery condition.

## Data Save or Open:

From the File pull down menu select one of the save or open options



- **Open RSC file...**
- **Save As (RSC)**

Save As (RSC) will write **all** downloaded data to a file with the default name set to the instrument serial number combined with an incrementing file number and with the extension RSC e.g. **1-999 0001.RSC**.

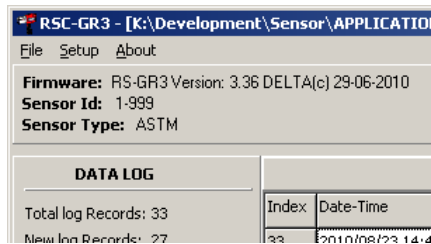
Open As (RSC) will import a \*.RSC file and display it in the RSC3 program

The data is output in a special format that allows the RSC3 program to import and display the data again at a later time as if they were input from the instrument.

The Save option will be greyed out until new measurement data has been read from the instrument or imported with Open menu.

## Data Export:

From the File pull down menu select one of the export options.



- Export in a Microsoft Excel format \*.xls
- Export in a simple text format \*.txt
- Export in a Google Earth format \*.kml

**Naming conventions:** Export files in Excel or Text format will default be given a name consisting of the Instrument Serial number followed by the selected sequence ID and a number, if the file is saved to the default My Document folder this number will automatically be incremented every time the data is saved.

e.g. saving data in EXCEL format:

Instrument Serial Number: GR3 1-999

Selected Sequence ID: VEST\_42

Filename will be: "GR3 1-999 VEST\_42 0001 .XLS"

If the same data is saved again the filename will be changed to:

"GR3 1-999 VEST\_42 0002.XLS"

And so on

The file name for \*.kml files does not follow the convention.

**Export to Excel** does just that, the displayed records will be converted and saved as an \*.xls file, ready to be opened in e.g. Microsoft EXCEL or Open Office

**Export to Text** generates a tabulated text file with the extension \*.txt

Text file example:

RSC-GR3 Log Report

Firmware: RS-GR3 Version: 3.36 DELTA(c) 29-06-2010

Sensor Id: 1-999

RetroSign Date/Time: 2010/08/23 15:37:49

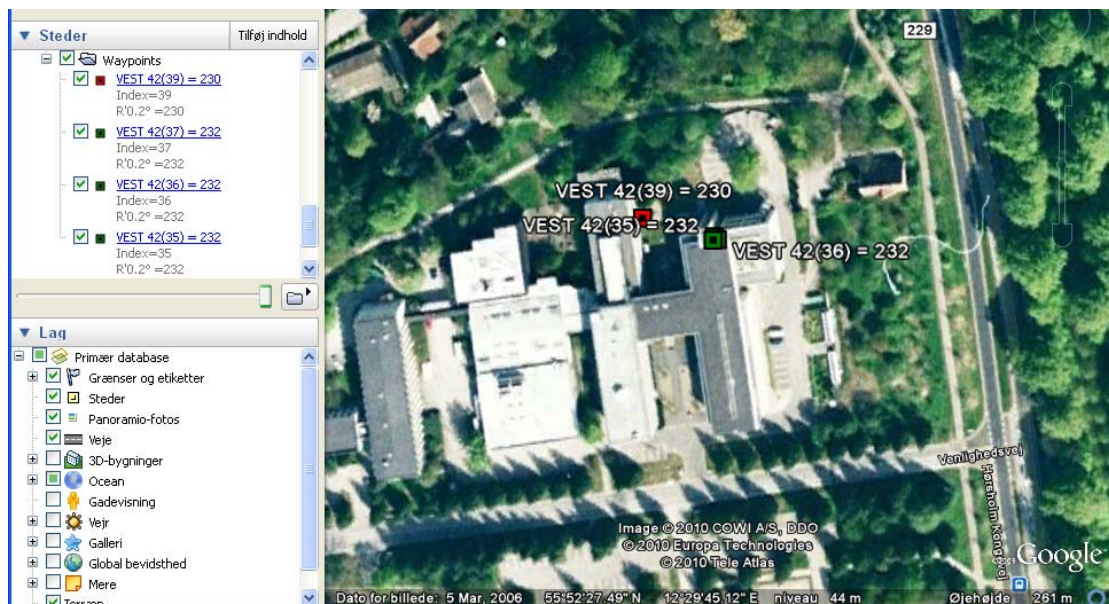
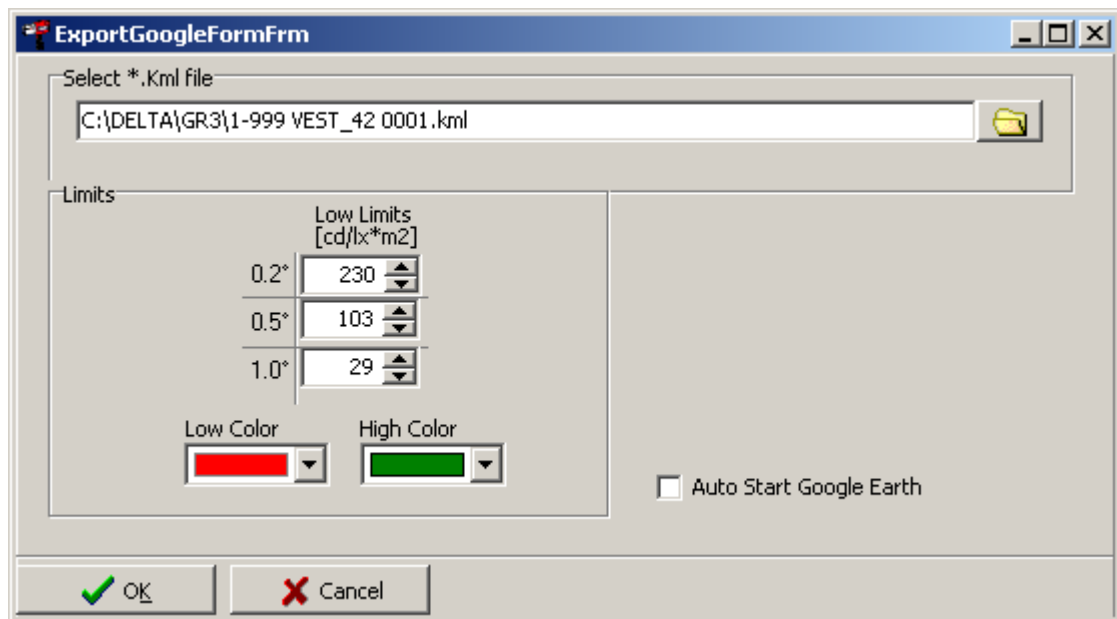
Index	Date-Time	R0.2	R0.5	R1.0	...
37	2010/08/23 15:36:51	232	103	29	...
36	2010/08/23 15:36:26	232	104	29	...

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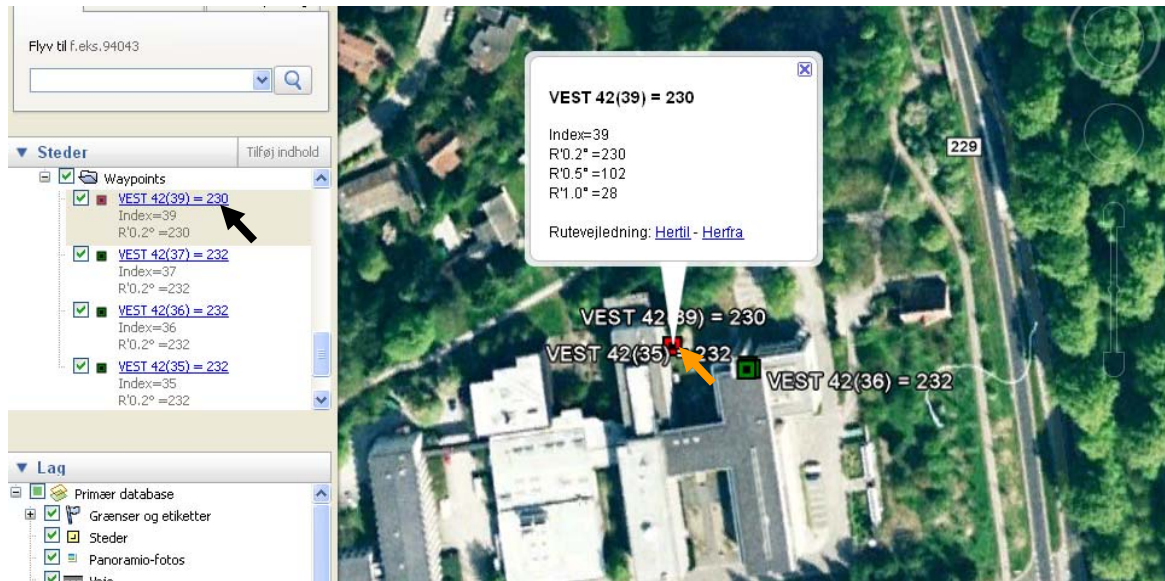
**Export to Google Earth:** It is possible to export the data in a format that can be input directly into the Google Earth program, if Google Earth is installed on the PC, check the **Auto Start Google Earth** checkbox to start and show the measured data directly on a map of the earth.

It is possible to mark the R' measurement for each observation angle with a colour according to a limit value, measurement with a measured value equal to or less than the limit value will be shown with the selected low colour, values greater than the limit will be shown with the selected high colour.



The result could look like this; the measurements are marked with the selected colours, both on the map and in the waypoints list to the left.

Point and click on a waypoint or the measurement box on the map to open the detailed information on the measurement.

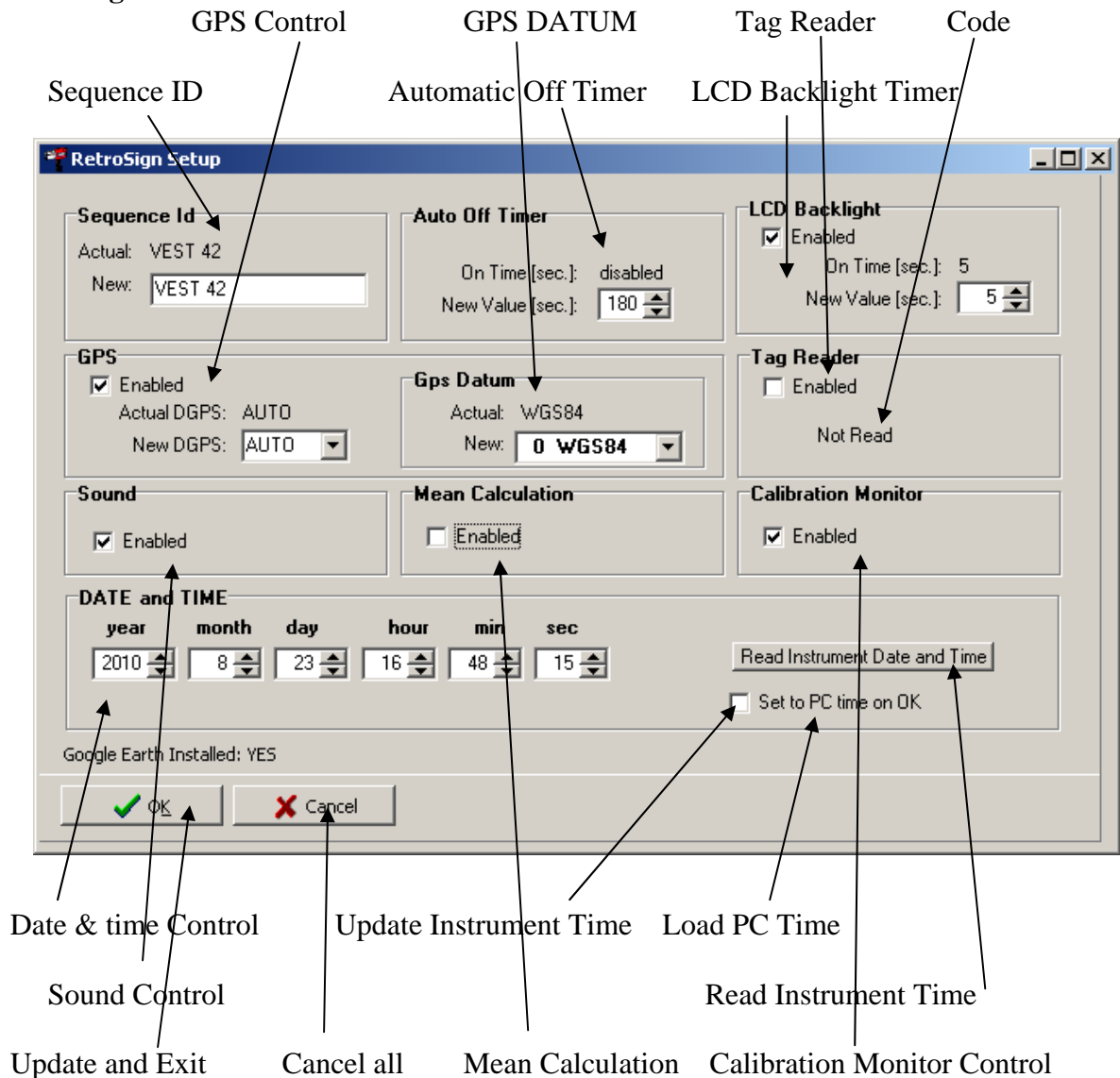


Use the Google pan and zoom functions to see more details.



**Setup:** pull down menu

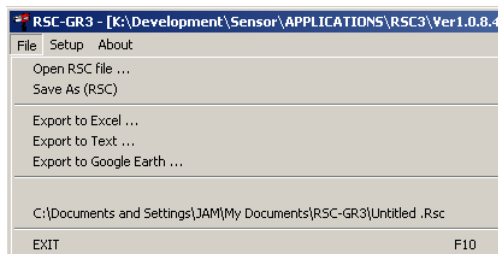
**RetroSign:**



- **Sequence ID:** Up to 12 Upper case Alpha Numeric characters defining the Measurements ID
- **Automatic Off Timer:** Controls how long the instrument stays on when not in use, values < 60 seconds disables the function.
- **LCD Backlight:** Controls how long the LCD Backlight stays on when operating the keyboard.
- **GPS DGPS:** Controls how the GPS unit uses position correction signals.
- **GPS DATUM:** Selects the GPS MAP DATUM to use in the GPS unit
- **TAG Reader:** Controls the tag reader option, enable to activate the reader unit
- **Code:** Displays the last read tag code
- **Sound:** Controls how the Instrument uses sound to signal actions
- **Mean Calculation:** Enable calculation of mean values, influences on how the Tag Reader operates, see manual for details.
- **Calibration Monitor Control:** Disable if using one of the Aperture reducers to disable calibration warnings, **remember to recalibrate if changed!**

- **Date & Time:** Edit Date and time settings
- **Load PC Time:** Insert PC Date & Time in edit fields
- **Read Instrument Time:** Inspect the Instrument Date & Time
- **Set to PC time on OK:** Write Date & Time info from edit fields to Instrument
- **Update and Exit:** Write all changes to instrument and close the setup window, (*update does not set the instrument Date & Time!*)
- **Cancel All:** Exit and leave setup without changing instrument settings.

## Ending the RSC3 Program



Select **Exit** from the file menu or use the normal windows close option to end the RSC3 program.

**Important! Remember to save any data before closing the program.**