

RTmap31 *New Version 2* data logging & mapping system

for MS Windows 10/7 based tablets & laptops

The **RTmap** system for Geonics EM31 consists of two programs: field data acquisition program **RTmap31** for MS Windows 10 or 7 based field tablets and laptops and data processing software **RTM31**.

The **RTmap31** system will provide unmatched real time QA/QC and speed in the field. Viewing the displayed real time spatial color image on a relatively large screen will allow the user to adjust the survey speed and coverage density according to where anomalies are seen. The **RTmap31** will allow you to perform surveys faster by covering sites with uniformly spaced lines while avoiding skipping areas, and preventing the potential unnecessary overlap of survey lines. And with above features also comes the simultaneous full control of the EM31 data quality and settings, as well as GPS receiver parameters and GPS warning mask.

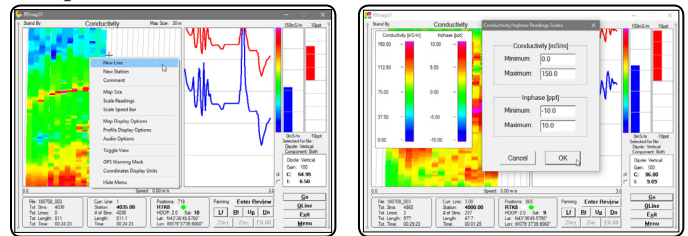
A new option for appending data files also provides a view of any previously collected data set will assists the operator to return to previously collected stations.

The **RTmap31** program works with virtually any GPS receiver by supporting NMEA messages: GGA, POS, GLL, LLQ, LLK, GGK, and selected Robotics Total Stations, and collects EM31 and GPS data into one file simultaneously, while providing a graphical view of amplitude (pseudo-grid) in real time.



In the event of any field obstruction you can resume your survey line at a precise location, without using conventional methods of positioning (tapes, stakes, etc.). You can complete your survey even with low visibility or darkness and still maintain full control over the area of coverage and the quality of electromagnetic instrument readings.

In addition to acquiring EM31 data the **RTmap** system will convert any Field PC to a stand-alone logger for GPS/DGPS/RTK data collection, taking away the need to purchase additional more expensive GPS components.

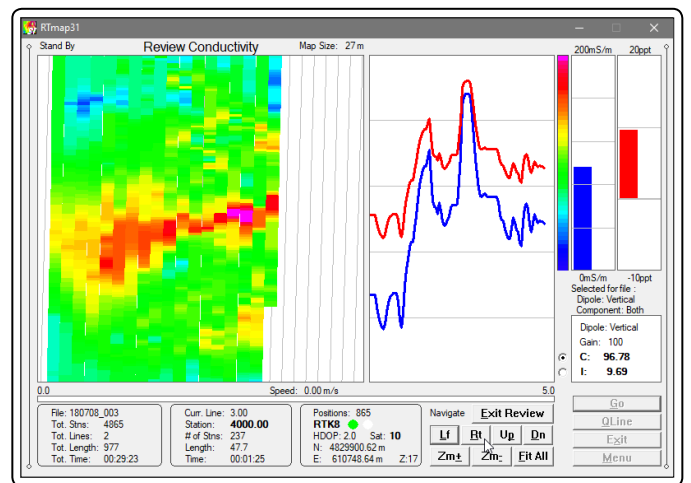
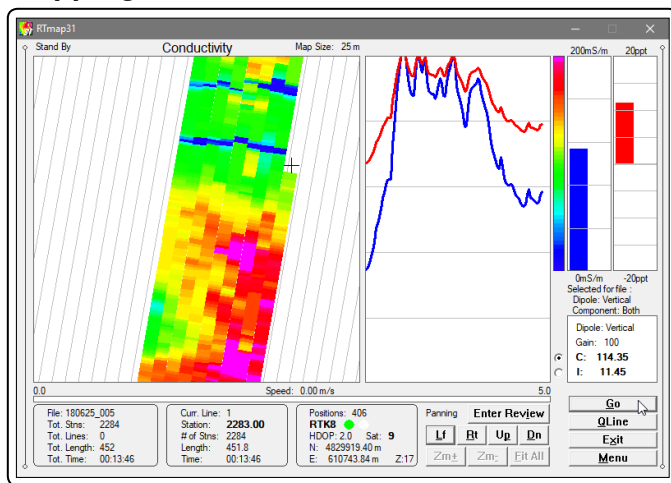


Numerous options for survey procedure and display parameters are available

Mapping Mode

View from RTmap31 program running on the Mesa2 Tablet

Review Mode



GEOMAR SOFTWARE INC.
Tel: 905.306.9215

Tools for the Field Geophysicist

E-mail: geomar@geomar.com

www.geomar.com



RTmap31 Features (data acquisition program)

New in Version 2.00 and later:

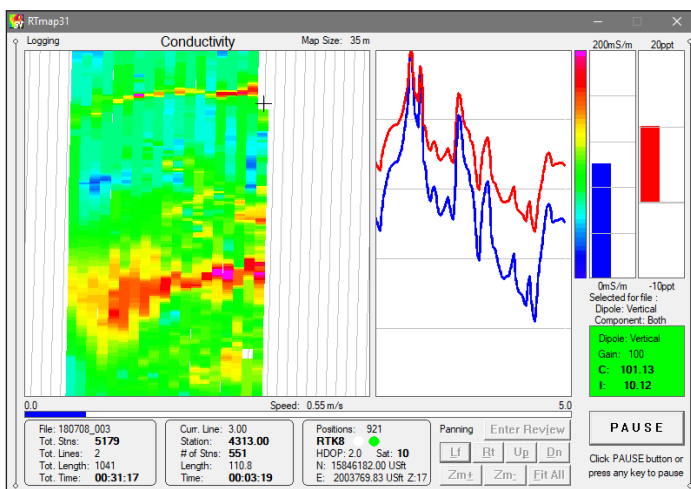
- New enhanced real time colour imaging for recorded amplitudes of EM31 Conductivity or Inphase at user specified range of colour scale
- Completely new graphic engine that makes program smoother during screen scrolls and faster map re-draw during re-scaling. Also, faster graphic operation will provide more uniform data
- Instrument offset from GPS antenna calculated and displayed on the map in real time
- Append data files option
- Guiding lines with user specified separation and tilt angle
- Grid setup (alternative to Guide Lines) - unlimited number of cells
- New Audio functions: Tik-Tak during indicating data recording, Alarm Ring for any hardware (EM31-MK2 or GPS) disconnection, Alarm (more gentle than Alarm Ring) for GPS Warning Mask setting
- Improved interface for Windows 10/7 based tablets are employed. Most fonts and dialogs are enlarged to make easier touch screen operation, and dialogs are positioned for easy soft keyboard entry
- Increased max. of positions in one data file, (no limit for EM data)

Main display functions:

- Real time color mapping and navigation, current location indicator shown as cursor, recorded EM31-MK2 readings displayed as color image - color corresponds to amplitude of selected component
- User specified map scale (meters or feet), guide (or grid) lines intervals and tilt angle, and cursor band; screen scrolls once the cursor band limit is reached
- EM31 conductivity and Inphase data is displayed as moving graphic bars and in numeric form, dipole mode and range also monitored
- GPS antenna position in Latitude/Longitude or UTM m/ft, type of differential corrections (DGPS, various RTK), PDOP or equivalent, number of satellites, and number of GPS or RTS positions in the file
- Monitoring of GPS signal and user specified GPS Warning Mask
- Continuous display of the actual speed of the system
- Review mode: collected data can be reviewed in form of pseudo-grid using Zoom In and Out, and Pan function in any direction, step for Zoom and Pan, and selection of viewed EM31 component

GPS functions:

- Configuration of logger serial port to accommodate any GPS settings
- GPS output monitoring, GPS Warning Mask, disconnection alarm
- Support for NMEA messages: GGA, GGA/GSA, GLL, POS, LLQ, LLK, GSK, and stream from Trimble or Leica Robotics Total Station
- Offset for GPS antenna in any direction
- Option to act as a stand-alone GPS logger



Example of RTmap31 screen - Logging mode, green numeric window confirms recording

RTM31 Features (data processing program)

Position EM31 readings and create XYZ file based on stand-alone RTmap31 file:

- Apply GPS antenna offset in any direction (as entered in the field with option of correcting this parameter during data processing)
- Include elevation data with correction for antenna height
- Filters the quality of positioned data based on GPS parameters as PDOP (or equivalent) and the degree of differential corrections
- Further filtering of the collected EM31 readings positions is obtained by specifying the GPS Time Gap and GPS Minimum Interval.
- Choice of coordinates in generated XYZ file: Geodetic coordinates (Latitude/Longitude in degrees) or in UTM coordinates (meters, feet or US Survey Feet, WGS1984 datum)

Position EM31 readings and create XYZ file based on external GPS file (This function is used when real time GPS differential corrections are not available, or when further post processing of GPS data may improve positioning accuracy. It is assumed that GPS positions are logged in RTmap31 and in GPS logger simultaneously.)

- Apply GPS antenna offset in any direction (as entered in the field with option of correcting this parameter during data processing)
- Further enhancement of the collected EM31 readings position is obtained by specifying the GPS Time Gap and GPS Minimum Interval
- Coordinates system, units and GPS positioning accuracy is determined by a content of an external GPS file

Miscellaneous:

- Field QC parameters (Quality Indicator, number of Satellites and PDOP) are written into the generated XYZ file
- Convert RTmap31 files to Geonics DAT31 format
- Convert RTmap31 files to general format ASCII file
- Convert GXY file to ASCII file containing positions and elevations
- Retrieve and position field comments from RTmap31 file
- Apply System Time Constant delay (lag) in generated XYZ file
- Edit, view, and save RTmap31 file contents

Add real time mapping capabilities to your EM31 surveys

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