

TrackMaker38 data logging system

The **TrackMaker38** system for Geonics EM38 consists of two programs: field data acquisition component (NAV38) and the Windows (98/2K/XP) based data processing software (TrackMaker38).

TrackMaker38 software works with virtually any GPS receiver by supporting NMEA messages: GGA, POS, GLL, LLQ, LLK, GGK, and Leica Robotics Total Station TPS1100, and collects EM38 and GPS data into one file simultaneously, while providing a graphical view of the collected GPS positions to better control the survey line direction. A profile view of the collected EM38 data is provided for the improvement of field data quality analysis.

It also provides a view of any previously collected data files with a Geonics instrument that is supported by



the **TrackMaker** software and will assist the operator to return to previously collected stations.

In addition to acquiring EM data the **TrackMaker38** system will convert any Field PC to a stand-alone logger for GPS/DGPS data collection,

taking away the need to purchase additional more expensive GPS components.



The **TrackMaker** system will allow you to perform surveys faster by covering sites with uniformly spaced lines while avoiding skipping areas, and preventing the potential overlap of survey lines. And with these features also comes the simultaneous full control of the electromagnetic instrument output, data quality, current settings, as well as GPS receiver parameters.

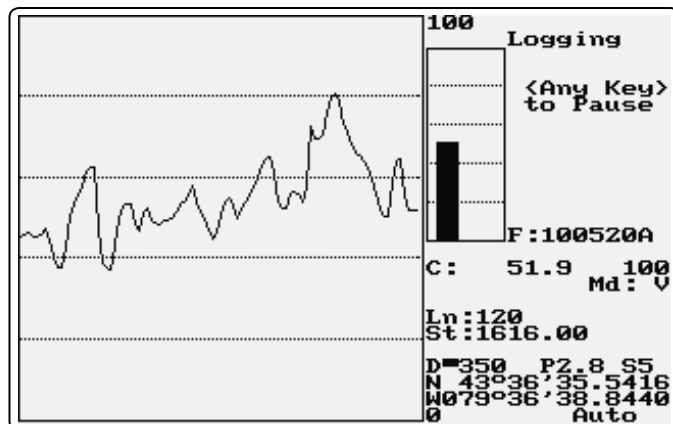
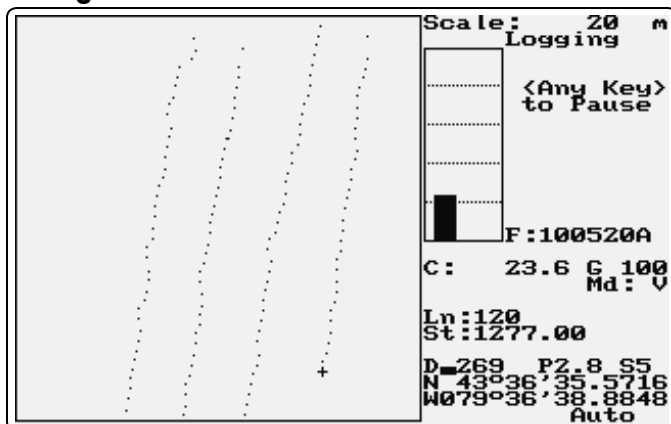
In the event of any field obstruction you can resume your survey line at a precise location, without using conventional methods of positioning (tapes, stakes, etc.). You can complete your survey even with low visibility or darkness and still maintain full control over the area of coverage and the quality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

also available for Geonics EM38DD and EM38-B

Navigation Mode

View from NAV38 program running on the Allegro Field PC

Profile Mode



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NAV38 Features (data acquisition program)

Display functions:

- Displays locations of logged GPS positions and current location of an operator in real time while in Navigation mode
- Scale of map is user specified (meters or feet) and it scrolls automatically once the end of the screen is reached
- EM38 conductivity or Inphase data is displayed with moving graphic bars and in numeric form, EM38 dipole mode, component and instrument range also monitored
- Current GPS antenna position in Latitude/Longitude, type of differential corrections (DGPS, RTK, Phase), PDOP or other equivalent parameter (depends on NMEA used), number of satellites, and number of GPS positions in the file
- Display of stations from other TrackMaker files (for any supported instrument) which are entered as an external file allow you to repeat survey layout (i.e. with another instrument), fill in new survey lines, or to re-start survey at proper location
- Positions of interpreted anomalies which are entered as an ASCII file allow you to navigate to points of interest

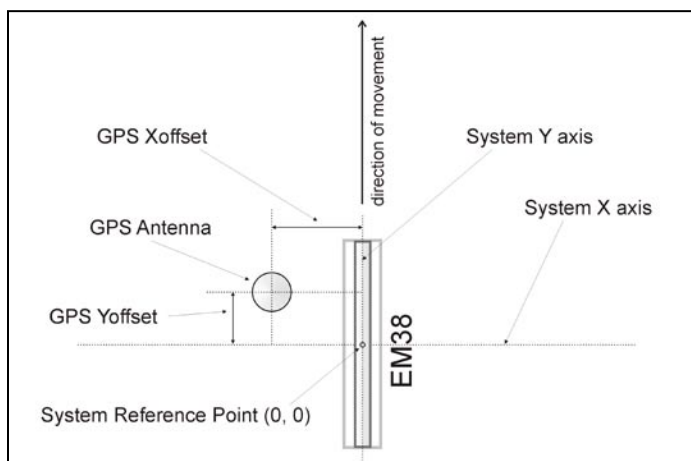
Survey parameters:

- Survey modes supported (Auto, Wheel, or Manual)
- Integration of readings available in Manual mode (up to 100 readings per station)
- Maximum rate of data acquisition is 10 Hz (assuming 1 Hz GPS output)
- New Line, New Station, Comment entry
- Change of scale in Navigation and Profile modes at any time

GPS functions:

- Configuration of logger serial port to accommodate any GPS settings
- GPS output monitoring
- Support for NMEA messages: GGA, GGA/GSA, GLL, POS, LLQ, LLK, GGK, and stream from Leica Robotics Total Station TPS1100
- Offset for GPS antenna in any direction, applies to any type of survey (instrument carried by the operator or towed by vehicle)
- Option to act as a stand-alone GPS logger (includes fast auto mode as well as more precise positions averaging), which allows data to be collected in GXY file format (compatible with any TrackMaker or Multi program)

Add navigation capabilities to your EM38 surveys



Example of specifying system geometry for EM38 and GPS antenna

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TrackMaker38 Features (data processing program)

Position EM38 readings and create XYZ file based on standalone TrackMaker38 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 enhancement of the collected EM38 readings position 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)

The screenshot shows the 'Position EM38 Readings Using NAV38 File' dialog box. The 'Input EM File' is set to 'C:\Programs\Geomar\Navxy\Data38\122715A.H38' and the 'Output XYZ File' is 'C:\Programs\Geomar\Navxy\Data38\122715A.xyz'. The 'Type of Output File' is set to 'Generic'. The 'Dipole Mode Indication' is 'Disable Automatic Dipole Mode Indication'. The 'Output Coordinates (WGS84)' are set to 'Geodetic' with a format of 'DDD.DDDDDDDD' and units of 'Meters'. The 'GPS Time Gap' is 3 seconds and the 'GPS Minimum Interval' is 0.12 meters. The 'GSA Message' is 'Disable'. The 'Position Mode' is '3D'. The 'Proceed' button is highlighted.

Position EM38 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 NAV38 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 EM38 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 TrackMaker38 files to Geonics DAT38W format
- Convert TrackMaker38 files to general format ASCII file
- Convert GXY file to ASCII file containing positions
- Retrieve and position field comments from TrackMaker38 file
- Apply System Time Constant delay (lag) in generated XYZ file
- Transfer data file from field computer to PC
- View TrackMaker38 file contents