

FastSnap TEM/TDEM



FastSnap is a multichannel automatically-controlled telemetry complex that ensures TEM/TDEM, frequency sounding, induced polarization and direct current techniques. The system is by far the most advanced in its class offering the highest technical specifications and most comprehensive software package along with an affordable cost. The software streamlines all aspects of advanced automated ground TEM survey.

FastSnap allows advanced users to produce results at the highest professional level. The system is truly new benchmark for ground based TEM instruments.

The application areas of FastSnap:

- Search and exploration of solid minerals
- Search for underground water
- Study of permafrost
- Environmental studies
- Oil and gas exploration

The main advantages of the complex:

- Process speed: the measurement takes only 4–5 minutes to perform observations to depths of 500–600 m
- Depth: up to 1.5–2 km (with a loop 300×300 m)
- Support of multichannel measurements – multiple productivity gain, estimation and accounting for induced polarization, magnetic viscosity and lateral inhomogeneity of the medium
- Ability to perform scanning measurements in motion (3–5 km/h) with a depth of 30–40 m
- Ability to perform automatic measurements, processing and interpretation allowing to obtain a quick result directly in the field
- A complete set of software – design of the network with uploading of GPS coordinates into personal GPS navigators, advanced modeling, field measurements, standard and in-depth processing of initial (raw) signals, inversion and construction of sections

Features of receiver:

- Full waveform data collection with each individual trace recorded separately for unparalleled quality control and post processing
- Each receiver has dual ADC's – 14 bit (fast) and 24 bit (standard) for best possible resolution at both early and late times
- Receivers can operate with regular wire loops or with active sensors
- Data is stored directly to a laptop during acquisition along with all relevant positioning information

Features of transmitter:

- Rated current 30 Amp
- Very FastShut-off time (1–2 μ s for 25 m loop, 2.5–4.5 μ s for 100 m loop)
- PC controlled Current Selecto
- PC controlled Damping Resistance
- GPS or Cable Synchronized
- On / off time: 20, 40, 100, 200, 500, 1000 ms
- Can vary ratio of on and off times between: 1:1 3:1 and continuous on
- Weight: 5 kg (without battery)
- Dimensions: 300×225×132 mm approx.

The FastSnap Software set is some of the most powerful TEM software ever offered. The optimal method for all elements of ground TEM surveys is built into the software package.

Project Manager combines advanced GIS survey planning and database management in an easy-to-use package. With this software, surveys are no

longer restricted to straight parallel lines, allowing survey flexibility in difficult terrain with limited access.

Project Manager 3.0 allows users to input parameters such as transmitter and receiver loop size and separation between stations. The software then generates a survey template with coordinate information for each loop corner. This information can be exported in GPX format for handheld GPS's for flagging survey lines and corner locations. The template can then be viewed in the field whilst acquisition is taking place.

FastEM registration registration uses preset acquisition sequences to automatically record multiple recordings at each location using a range of different current, gain and stack combinations.

This advanced technique optimises data quality at all the different stages of the transient decay as follows:

- Measurements are collected using extremely fast sampling frequency (40MHz fast ADC) with low current and low gain in order to enhance early time response
- Measurements are collected using fast sampling frequencies, medium current and medium gain settings are used in order to optimise the mid time response
- Measurements are collected using slower sampling frequency, high current, high gain and standard ADC 24 bit resolution in order to optimise late time response

Unlike many systems restricted by small internal memory full waveform data is recorded for each individual stack. This means that data is sampled at the maximum resolution that the instrument is capable of and allows unparalleled control of processing and rejection of bad data.

TEM Processing is used to automatically filter and combine the best sections of the data collected using different current, gain, sampling frequency etc. into one final curve for each sounding location. The result after processing is the data of the highest possible quality and the retention of both the shallowest and deepest information possible.

Model 3 is a complete layered Earth Modelling package for ground based TEM data. Modelling is the final stage of TEM data manipulation and is of particular use where the depth and electrical resistivity of layers are instrumental for interpretation. Plug-ins available for advanced functions such as accounting for IP effects and data collection using grounded lines.

Specifications of FastSnap RXU-V3 receiver unit	
Receiver input / ADC	two inputs: - standard ADC: $\Delta\Sigma$ 24 bit; - fast ADC: direct sampling, 14 bit.
Time sampling rate and range (bits are in parentheses)	fast ADC: 25 ns (14 bit), 100 ns (16 bit), 800 ns (18 bit); 6.4 μ s (22 bit); standard ADC: 25.6 μ s, 204.8 μ s (24 bit).
Bandwidth	0.33 Hz to 20 MHz
Number of digitized counts per realization (pulse/signal)	14500
Recording time range	fast ADC: 25 ns – 92.8 ms standard ADC: 25.6 μ s – 2.96 s
Maximum input voltage	fast ADC: ± 1 V; standard ADC: ± 4 V.
Input signal gain	fast ADC: gain from 1 to 140; max. gain $\times 280$ (specified separately). standard ADC: gain factors: 1, 2, 4, 8, 16, 32, 64.
Input impedance	fast ADC: - 5 KOhm (loop); - 2 MOhm (grounded line); standard ADC: - 2 MOhm (universal).
Synchronization system	GPS or external
Positioning	internal GPS, 12 channels
Power and charge	power supply: one internal off-hand AGM battery, 6 V / 7.2 Ah (CSB GP-672 or compatible); internal battery recharge: - built-in 110/220 V charger; - 12 V external power supply, through external power cable (e.g. from a car battery).
Data transmission	digital lines of field two-wire cable (twisted pair), 1 to 400 m.
Size	235×181×104 mm

Weight	3.6 kg (with battery)
Humidity	80%
Temperature	-40 ÷ +50°C
Specifications of FastSnap CTU-20 transmitter unit	
Output voltage	6 to 250 V DC voltage (one or several serial batteries)
Output current (transmitter loop)	0.05 - 10 A (optional 20 A with TX power upgrade)
Maximum output power	250 W (optional 500 W with TX power upgrade)
Time of positive and negative pulses (on-off time)	On-Off time: 20, 40, 100, 200, 500, 1000 ms On-Off time ratio: 1:1, 3:1, no pause
Support of current periods multiple to industrial noise frequency	yes, periods multiple to 50 Hz
Synchronization system	GPS or external
Positioning	internal GPS, 12 channels
Time of small current (0.5 A) turn-off (ramp speed) in loops of different sizes	loops: - 25x25 m: 1 – 2 µs; - 100x100 m: 4 - 10 µs;
Power and charge	power supply: internal off-hand AGM battery, 6 V / 7.2 Ah (CSB GP-672 or compatible); internal battery recharge: - built-in 110/220 V charger; - 12 V external power supply / recharge, through external power cable (e.g. from a car battery).
Management	PC (software) via DLA TX CONTROL port or RS232 interface (COM port). Control cable can reach 100 m long. Built-in control panel with OLED display and keypad.
Size	37.1 × 25.8 × 15.2 cm
Weight	7.2 kg (with battery)

























