



ABEM

by Guideline Geo

Technical Specification



ABEM GroundTEM Trek

ABEM GroundTEM Trek maps subsurface geology for applications in hydrogeology, geotechnical surveys, and mining. Its lightweight backpack-mounted transmitter and receiver allow efficient surveying even in remote terrain.

With a depth range of 50–100 m, the system records continuous data with onboard GNSS and altitude tracking. When Premium features are enabled, real-time processing and inversion reveal geological structures instantly in the companion mobile app.

General

Overview

1 A / 10 A Dual-Moment Transmitter
0.65 m Tx & Rx Coils
Onboard GNSS (SBAS)
Li-ion RRC-type batteries* (1 in Rx, 1 in Tx)

Transmitter (Tx) Coil

Dimension	0.65 m x 0.65 m
Number of turns	4
Effective area	1.7 m ²
Wire thickness	4 mm ²
Weight	2.5 kg
IP rating	ABS, IP67

Receiver (Rx) Coil

Dimensions	0.65 m x 0.65 m
Type	Air core, shielded
Number of turns	53
Effective area	22 m ²
Bandwidth	~350 kHz
Amplification	21
Weight	3.5 kg
IP rating	ABS, IP67

Battery Charging Suitcase

Item	Rx battery	Tx battery
Charging capacity	10.8 V battery	14.4 V battery
Time to charge	2.5 hrs	2.5 hrs
Weight	2.0 kg	

Backpack Carrier System

Item	Rx	Tx
Size	40 x 60 cm	40 x 60 cm
Carrier system	Professional, light weight	
Weight	5.5 kg each	
Total weight of carriers including coils and instruments	10 kg	15 kg

The entire system ships in two cases

For Tx/Rx coils
Soft shell, 10 kg (22.0 lb)
77 x 75 x 27 cm
(~30.3 x 29.5 x 10.6 in)

For instrument etc.
Hard case, 32 kg (70.5 lbs)
60 x 80 x 45 cm
(23.6 x 31.5 x 17.7 in)

* Run-time:

For Tx – approx. 80 mins per battery (system comes with 3 batteries)

For Rx – approx. 8 hrs per battery (system comes with 1 battery)



Transmitter platform

Output current	Dual-moment
LM current	1 Amp
HM current	10 Amp
Nominal LM repetition rate (transients per second), number of transients in one raw stack	2500 Hz, 500 transients
Nominal HM repetition rate	1250 Hz, 1000 transients
Real-time processing and inversion	Yes
Onboard computer	Intel NUC or Industrial SBC
Internal RAM	8 GB or more
Storage capacity	SSD or eMMC 128 GB or more
Operating system	Linux (>6.8)
I/O interface	Mesh Wi-Fi
GNSS receiver	Built-in GNSS with SBAS
GNSS antenna	On pole
Internal damping resistor	70 Ohm
Waveform recording	Pre recorded
Control app	Android
Pulse on / off times	Pre-defined
LM On-time/Off-time	50%/50%
HM On-time/Off-time	40%/60%
Cooling	Passive
Service and upgrades	Via internet
IP rating	ABS, IP67
Power	Li Ion battery 14.4 V, 99.8 Wh
Dimensions	36 x 16 x 27 cm
Operating temperature	-20 °C to +50 °C

Receiver platform

Sample rate	4 MHz
Dynamic range	>24 bit
Onboard computer	ARM processor integrated with FPGA
Internal RAM	1 GB or more
Storage capacity	eMMC 8 GB
Operating system	Linux (>5.15)
I/O interface	Mesh Wi-Fi
GNSS receiver	Built-in GNSS with SBAS
GNSS antenna	On pole
Service and upgrades	Via internet
Bandwidth	~1 MHz
Nominal number of gates	20
Logarithmic sampled number of gates per decade	10
Nominal first and last gate center time	5.5 us –350 us
Max number of raw gates	1024
Tapered gating	Yes
Nominal sounding distance	10 m
Number of receiver channels	1
Accumulated station stack	Yes
Distance measurement between Rx & Tx	UWB accuracy 20cm
IP rating	ABS, IP67
Power	Li Ion battery 10.8 V 36.2 Wh
Dimensions	13 x 13 x 37 cm
Operating temperature	-20 °C to +50 °C

