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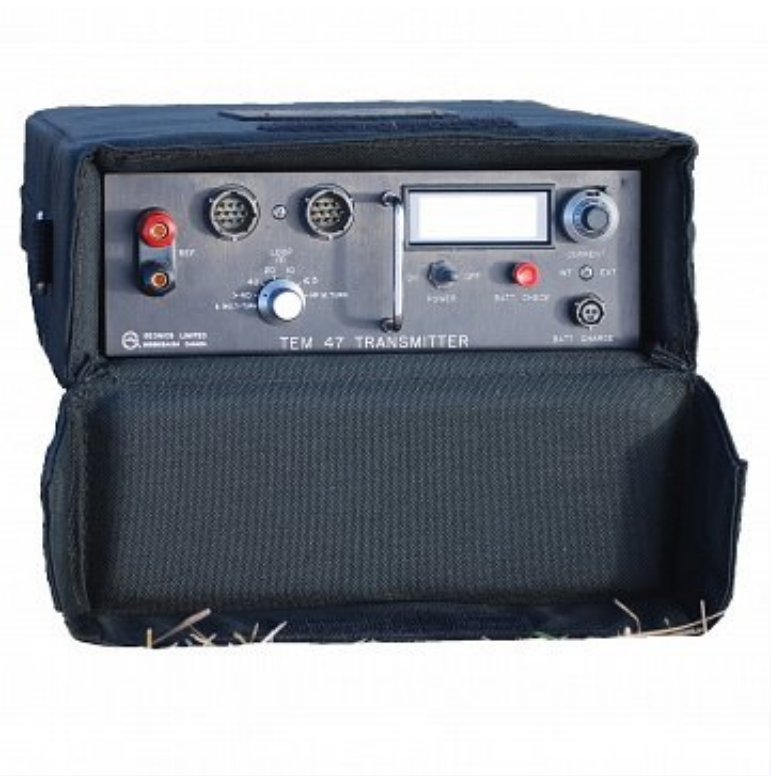
TEM47 & TEM47HP Data Sheet

The TEM47 is the smallest, lightest battery operated transmitter with a very fast turn-off time to enable the near surface response to be measured. The PROTEM 47 (PROTEM receiver and TEM47 transmitter) & G-TEM is most often used for shallow geoelectric sounding looking for conductive contaminant plumes, saline intrusion or general stratigraphy mapping. In this mode single turn transmitter loops from 5 m up to 100 m on a side with turn-off times as short as half a microsecond can be used to give maximum near surface resolution. The maximum transmitter output of 3 A into a 100 m x 100 m loop gives a good response and resolution to depths down to 150 m making this the ideal instrument for resistivity sounding over a large area.



TEM47 in carry case. Image courtesy of Geonics Limited.

The TEM47 uses a reference cable to achieve the high synchronisation accuracy required for shallow sounding. Regardless of application, the high frequency receiver coil is used in PROTEM 47 systems. This receiver coil has the bandwidth necessary to capture the earliest portion of the transient decay. When the TEM47 is used for profiling, it supplies 3 A to an 8-turn 5 x 5 m moving transmitter loop to provide a dipole moment of 600 ampere square metres. With base frequency of 75 Hz and 20 gates from 49 microseconds to 2.9 milliseconds this configuration is optimal for slingram (horizontal loop) surveys for mineral exploration to shallow depths, and for groundwater exploration in bedrock fractures. Electrical sounding is performed simultaneously with the search for fault or dike-like targets.

The TEM47 can be supplied, or upgraded, to the high power variant which increased the maximum current to 10amps and output voltage level to 48V, on external batteries. Common applications for the PROTEM 47 HP system include data collection for static shift correction of magnetotelluric (MT) surveys and, with a small, multi-turn transmitter loop, in-mine mapping of water saturation zones.

Product Dimensions

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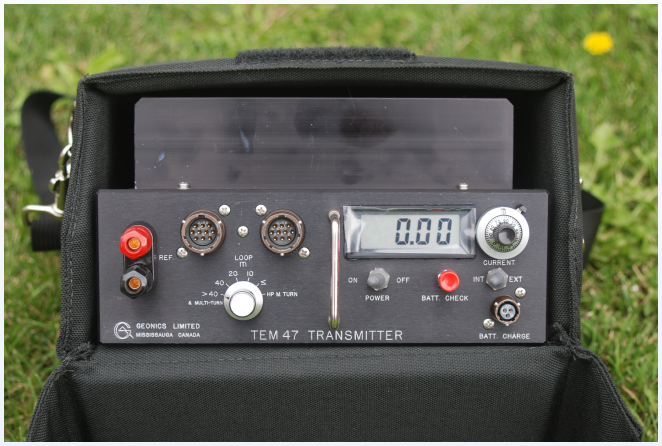
Physical	Dimensions (L x W x H)	Weight
(instrument only)	10.5cm x 24cm x 32cm	5.3kg

Technical Specifications

Current Waveform:	Bipolar rectangular current with 50% duty cycle.
Base Frequency:	30, 75 or 285 Hz where powerline frequency is 60 Hz. 25, 62.5 or 237.5 Hz where powerline frequency is 50 Hz.
Turn-Off Time:	2.5 us at 3A into 40 x 40 m loop. Faster into smaller loop.
Transmitter Loop:	5 x 5 to 100 x 100 m single turn loop or 5 x 5 m 8-turn loop.
Output Voltage:	0 9 V, continuously variable.
Power Supply:	Internal 12 V rechargeable battery.
Battery Life:	5 h continuous operation at 2A output.

Gallery



TEM47HP, note the attentional heatsink. Image courtesy of Geonics Limited.

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