

PROTEM Data Sheet

It is well known that there is a trade-off between depth of exploration and target definition in terms of conductivity, extent and orientation. Greatest depth is obtained with large fixed loop Turam-type systems which generate large half space responses and along with current gathering makes target detection difficult. Better spatial resolution is obtained with a moving transmitter configuration with a short intercoil spacing but is limited to a shallower depth of exploration. These variations in survey requirements make system flexibility an important design consideration.



PROTEM TEM Receiver console. Image courtesy of Geonincs Limited.

Time Domain systems are also now routinely employed for general geological exploration such as for freshwater aquifers in bedrock fractures, and mapping groundwater contaminant plumes. Mapping to the shallow depths required in these applications requires a very wide bandwidth and many narrow sampling gates.

Recognition of these diverse requirements led GEONICS to develop the extremely flexible PROTEM time domain system. The digital, 3 channel receiver is used with any of the 3 TEM transmitters and choice of receiver coil to cover all applications. With its 23 bit resolution, system bandwidth of 500kHz, microsecond sampling gates and simultaneous XYZ component measurements, the PROTEM receiver provides the ultimate in time domain capability. Used with the GEONICS 3-component coil, mineral surveys are quickly completed with more data in either the fixed loop or slingram mode. The three component measurement also allows a quick and accurate check on geoelectric sounding data for lateral variations in conductivity which could invalidate a layered-earth interpretation.

PROTEM CM & CMX

The PROTEM CM & CMX are complete TEM systems which combine the standard PROTEM receiver with a TEM47 or TEM47HP transmitter. The PROTEM CMX is certified by the Canadian Standards Association (CSA) for operator in hazardous locations.

Product Dimensions

Physical	Dimensions (L x W x H)	Weight
(instrument only)	34cm x 38cm x 27cm	15kg

Technical Specifications

Measured Quantity:	Rate of decay of induced magnetic field along 3 axes, in nV/m ² .
EM Sensor:	Air-cored coils. Fluxgate or SQUID magnetometers.
Channels:	1 channel used sequentially for 3 components, or 3 channels for 3 component simultaneous operation.
Time Gates:	20 gates covering 2 time decades or 30 gates covering 3 time decades.
Dynamic Range:	29 bits (175 dB).
Base Frequency:	0.3, 0.75, 3, 7.5, 30, 75 and 285 Hz or 0.25, 0.625, 2.5, 6.25, 25, 62.5 and 237.5 Hz.
Integration Time:	0.5, 2, 4, 8, 15, 30, 60 or 120 s.
Display:	240 x 64 dot graphic LCD.
Data Handling:	Solid-state memory for 25,000 data-sets, RS232 or USB output.
Synchronisation:	Reference cable or, optionally, highly stable quartz crystal.
Power Supply:	12 V rechargeable battery for 8 h continuous operation.
Operating Temperature:	-40°C to +50°C.

Gallery



Single channel Transmitter and Receiver TEM system. Image courtesy of Geonics Limited.