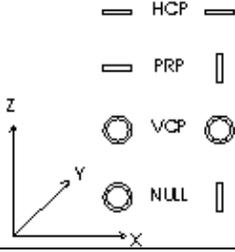


Glossary of Geophysical Terms Commonly Used with Dualem Instruments

aligned	An array aligned with the traverse direction.
apparent conductivity	Conductivity measured at a given height above the surface of the earth. In general, apparent conductivity will be less than the conductivity measured at the surface, as a portion of the volume sampled by the array consists of non-responsive air.
array	<p>A fixed arrangement of a transmitter coil and a receiver coil. The adjacent figure shows the arrays available from a DUALEM instrument. In standard orientation, the instrument incorporates the HCP and PRP arrays. When rotated $\frac{1}{4}$ turn about its long axis, the instrument incorporates the VCP and NULL arrays.</p> 
broadside	An array oriented at right angles to the traverse direction.
coil	Turns of wire in a fixed form, used to transmit or receive electromagnetic fields.
conductivity	The ratio of electrical current flow to applied voltage, per unit length. The MKS unit is siemen/m or S/m.
coplanar	An array where both the transmitter coil and the receiver coil lie in the same plane.
depth of investigation	See depth of sounding.
depth of sounding	The depth to which an array, operating at low induction number, accumulates about 70 % of its total response.
dipole	A pair of opposite poles at infinitely small separation. A coil in an array can be represented by a magnetic dipole aligned with its axis (i.e. perpendicular to the coil) if the coil is separated from the other coil by at least several coil-diameters.
electromagnetic induction	A geophysical method in which the primary time-varying magnetic field of a transmitter induces time-varying electrical current in the earth, which produces a secondary time-varying magnetic field that is sensed by a receiver.
EM	Electromagnetic.
geometry	The situation of the transmitter and receiver in an array relative both to each other and to the earth.
HCP	Horizontal coplanar.
horizontal coplanar	A coplanar array where both coils are horizontal. The low induction number for this array is about 0.09, and its depth of sounding is about 1.5 times the transmitter-receiver separation.
induction number	A dimensionless parameter of electromagnetic response. For a uniform earth, it is $(cmf)^{1/2}s$, where c is the conductivity and m is the magnetic permeability of the earth, and where f is the angular EM frequency and s is the transmitter-receiver separation of the array.
in-phase or inphase	The component of the secondary magnetic field that is in phase with the primary magnetic field. The in-phase component is negligible below the low induction number.
LIN	Low induction number.
loop	One-or-more turns of wire, usually in a flexible form.
low frequency approximation	See low induction number.
low induction number	The induction number below which the patterns of electrical current induced in the earth are essentially invariant; thus, the sensitivity of a array at LIN to a given volume of earth is constant,

	and the response of that volume of earth is directly proportional to its conductivity.
magnetic permeability or susceptibility	A response from the re-orientation of magnetic domains in the earth induced by the primary field of the transmitter, which tends to oppose the in-phase component of induction.
null	An array that obtains no response from a uniform- or layered-earth.
perpendicular	An array where one coil is horizontal and intersected by the axis of the other coil. The low induction number for this array is about 0.34, and its depth of sounding is about 0.6 times the transmitter-receiver separation.
ppt	Parts-per-thousand. A unit for the amplitude of the secondary magnetic field relative to the primary magnetic field sensed by the receiver. In DUALEM instruments, the in-phase component is expressed in ppt; the quadrature component is scaled linearly from ppt to mS/m, a unit of conductivity.
PRP	Perpendicular.
quadrature or quadphase	The component of the secondary magnetic field that is shifted 90-degrees relative to the primary magnetic field. At low induction number, quadrature is linearly proportional to conductivity.
resistive limit	See low induction number.
sferics	Atmospheric EM noise. Vertical coils with tend to be more sensitive to the noise, especially if the coil is coplanar with the source.
VCP	Vertical coplanar.
vertical coplanar	A coplanar array where both coils are vertical. The low induction number for this array is about 0.19, and its depth of sounding is about 0.75 times the transmitter-receiver separation.
vertical sounding	The technique of measuring apparent conductivity at a range of heights above a given location, in order to deduce the nature of layering within the depth of sounding.