

# APEX PARAMETRICS MAXMIN I-8 SYSTEM

- Designed for groundwater and mineral exploration, and for geo-engineering applications, continuing the concepts of the earlier and highly popular MaxMin models.
- Frequency span is extended to eight octavely spaced frequencies from 110 to 14080 Hz increased range and number of coil separations. These and other developments result in greater performance with more applications and enhanced interpretation.
- Advanced spheric and powerline interference rejection is still further improved, resulting in more accurate surveys, particularly at the larger coil separations.
- MaxMin Computer or MMC, which is described in a separate data sheet, is offered for processing, display, storage and transfer. The MMC displays and stores the in-phase quadrature readings, their standard deviations, and the corresponding apparent conductivity values. Rough terrain surveys are also simplified with the MMC.
- Data interpretation and presentation programs are available for layered earth parametric soundings and discrete conductor surveys done with MaxMin EM.

## MAXMIN COMPUTER MMC

- The MMC interfaces with MaxMin EM System receivers for digital data processing, display, storage and transfer, enhancing survey productivity and data accuracy.
- Digital display and logging of in-phase (real) and quadrature (imaginary) readings with standard deviations, the corresponding apparent ground conductivity values, line, station, terrain slope and coil tilt information.
- Easy fingertip operation by read and store switches on MaxMin receiver front panel, with digital averaging for improved signal to noise ratio,
- Rough terrain surveys are simplified with the use of built-in tilt meter, slope entry and computed coil orientation and separation information.
- Data transfer, formatting, correction and viewing programs are supplied for personal computers. Program for computing multi-frequency best-fit apparent conductivities and fit errors is provided.
- Data interpretation and presentation programs are available for multi-layer parametric or geometric soundings and discrete conductor surveys done with MaxMin EM.

## MAXMIN I-8 ELECTROMAGNETIC SYSTEM SPECIFICATIONS:

FREQUENCIES:	110, 220, 440, 880, 1760, 3520, 7040 & 14080 Hz.
COIL SEPARATIONS:	SET NO. 1: 12.5, 25, 50, 75, 100, 125, 150, 200, 250, 300 and 400 metres (the standard set). SET NO. 2: 10, 20, 40, 80, 100, 120, 160, 200, 240, and 320 metres (selected with grid switch in receiver). SET NO. 3: 50, 100, 200, 300, 400, 500, 600 and 800 feet 12.5, 25, 50, 75, 100, 125, 150, 200, 250, 300 and 400 metres (selected with grid switch in receiver).
TRANSMITTER DIPOLE MOMENTS:	110 Hz: 220 $\text{Atm}^2$ 1760 Hz: 160 $\text{Atm}^2$ 220 Hz: 215 $\text{Atm}^2$ 3520 Hz: 80 $\text{Atm}^2$ 440 Hz: 210 $\text{Atm}^2$ 7040 Hz: 40 $\text{Atm}^2$ 880 Hz: 200 $\text{Atm}^2$ 14080 Hz: 20 $\text{Atm}^2$
MODES OF OPERATION:	MAX 1: Horizontal loop or slingram - transmitter and receiver coil planes horizontal and coplanar MAX 2: Vertical coplanar loop mode transmitter MIN 1: Perpendicular mode 1 - transmitter coil plane horizontal and receiver coil plane vertical. MIN 2: Perpendicular mode 2 - transmitter coil plane vertical and receiver coil plane horizontal.
PARAMETERS MEASURED:	In-phase and quadrature components of the secondary magnetic field, in % of primary field
READOUTS:	Analog direct edgewise meter readouts for in phase, quadrature and tilt. Additional digital LCD readouts provided in the optional MMC computer. Interfacing and controls are provided for ready plug-in of the MMC.
RANGES OF READOUTS:	Switch activated analog in-phase and quadrature 0 scales: 0 $\pm$ 4%, 0 $\pm$ 20 % and 0 $\pm$ 100 %, and digital 0 $\pm$ 199.9% autorange with optional MMC. Analog tilt 0 $\pm$ 75 % and 0 $\pm$ 99 % grade with MMC.
RESOLUTION:	Analog in-phase and quadrature 0.1 to 1 % of primary field, depending on scale used, digital 0.01 % with autoranging MMC; tilt 1 % grade,
REPEATABILITY:	0.01 to 1 % of primary field, typical, depending on frequency, coil separation and conditions.
SIGNAL FILTERING:	Powerline comb filter, continuous spheric noise clipping, auto-adjusting time constant, and more.
WARNING LIGHTS:	Receiver and reference warning lights to indicate potential error conditions.

SURVEY DEPTH PENETRATION:	From surface down to 1.5 times coil separation for large horizontal target and 0.75 times coil separation for large vertical target, values typical.
REFERENCE CABLE:	Lightweight unshielded 4/2 conductor teflon cable for maximum operating temperature range and for minimum pulling friction.
INTERCOM:	Voice communication link provided for operators via the reference cable.
TEMP. RANGE:	Minus 40 to plus 60 degrees Celsius, operating.
RECEIVER BATTERIES:	Four standard 9 V - 0.6 Ah alkaline batteries. Life 25 hours continuous duty, less in cold weather. Optional 1.2 Ah extended life lithium batteries available (recommended for very cold weather).
TRANSMITTER BATTERIES:	Standard rechargeable gel-type lead-acid 12 V - 13 Ah 14 Ah batteries (4 x 6V - 6.5 Ah) in nylon belt-pack. Optionally rechargeable long life 12 V - 14 Ah nickel-cadmium batteries (20 x 1.2 V - 7 Ah) with Ni-Cad chargers - best choice for cold climates.
TRANSMITTER BATTERY:	Lead acid battery charger: 14.4 V @ 1.25 A, Ni-Cad battery charger: 1.4 A @ 16 V nominal output. Operation from 110 - 120 and 220 - 240 VAC, 50 -60 Hz, and 12 - 15 VDC supplies.
RECEIVER WEIGHT:	8 Kg carrying weight (including the two ferrite cored antenna coils), 9 Kg with MMC computer.
TRANSMITTER WEIGHT:	16 Kg carrying weight.
SHIPPING WEIGHT	60 Kg plus weight of reference cables at 2.8 Kg per 100 metres, plus optional items if any. Shipped in two aluminum lined field / shipping cases.
STANDARD SPARES:	Spare transmitter battery pack, spare transmitter battery charger, two spare transmitter retractile connecting cords, spare set of receiver batteries.
OPTIONS AND ACCESSORIES	<ul style="list-style-type: none"> <li>- MMC, MaxMtn Computer option</li> <li>- Data interpretation and presentation programs</li> <li>- Reference cables, lengths as required</li> <li>- Reference cable extension adapter</li> <li>- Handheld inclinometer for rough terrain</li> <li>- Receiver extended life lithium batteries</li> <li>- Transmitter Ni-Cad battery &amp; charger options</li> <li>- Minimal, regular or extended spare parts kit</li> </ul>

## MAXMIN COMPUTER MMC SPECIFICATIONS:

OPERATING SYSTEM:	Menu driven user-friendly hierarchial operating system, interfacing with MaxMin EM System receiver and with personal computers.
DISPLAY:	Liquid Crystal Display, with two lines of 24 alphanumeric characters each.
KEYBOARD:	18 tactile push-button keys
BEEPER:	To provide audible operator guidance and to speed up operations, especially in very cold weather,
CLOCK CALENDAR:	Date and Time (year, month, day, hour and minute)
COIL TILT:	Tilt display, with built in tilt sensor and circuitry. with 0±99% grade range and with 1% resolution
IN-PHASE & QUADRATURE:	0±199.9% auto-ranging programmable gain system with 0.1% resolution for displayed data and 0.01% resolution for stored data
APPARENT CONDUCTIVITY:	0.1 to 3276 milliSiemens (millimho) per metre available conductivity range, with conductivity arrived at using the quadrature, in-phase, frequency and coil separation data
PROCESSOR:	16 bit low power CMOS CPU and bus at 6 MHz clock rate
MEMORY:	ROM: 16 Kb, expandable to 64 Kb RAM: 256 Kb, static CMOS
PHYSICAL SIZE:	24.2 x 17.3 x 4.3 cm, to fit inside MaxMin receiver leather case notebook pocket.
WEIGHT:	1.0 Kilogram
BATTERIES:	Two 9 Volt- 0.57 Ampere-hour alkaline batteries. Battery life 28 hours continuous duty, less in cold weather. Optional 1.2 Ah lithium batteries recommended for very cold weather operation. One lithium 3 Volt back-up battery, type 2032.
CONNECTIONS:	19 pin bayonet connector receptacle to connect to MaxMin receiver with the supplied aluminum tube connectors. One each of DB25S and DB9S data transfer cords supplied for downloading data to personal computer serial port.
TEMPERATURE RANGE:	Minus 30 to plus 60 degree Celsius. Temperature sensor and temperature display built-in.