

Digisonde-4D Specifications

13 FEB 2010

Quad Receiver	
Frequency Range	0.5 – 30 MHz (all modes of operation)
Bandwidth	34 kHz @ 3 dB
Input Impedance	50 Ω
Noise Figure	11 dB (at receiver antenna preamplifier)
Receiver Sensitivity	-130 dBm (+/-6 dB) into main chassis; better at preamplifier (amount depending on preamp gain setting)
Dynamic Range	>90 dB instantaneous >140 dB total operating range including gain control
Recovery Time	40 μ s
Output	16-bit quadrature samples
RF Output	
Frequency Scan	0.5 - 30 MHz, start, stop and step size selectable to 1 kHz
Restriction of Transmission	Programmable list of frequencies without RF transmission
Ionogram Scan Time	Standard VIS ionogram 2 - 200 sec (varies with programmable settings)
Frequency Synthesis	Fully digital (frequency switching time < 1 μ s)
Pulse Repetition Rate	100 and 200 pps
Pulse Width	533 μ s (16 chips of 33 μ s) waveform with 30 kHz signal bandwidth
Peak Pulse Power	2 channels @ 150 W each
Output Impedance	50 Ω
Transmitter Type	Dual RF MOSFET Amplifiers for polarized transmission using turnstile transmit antenna
Lightning Protection	In-line spark gap discharge devices
User Interface	
Unattended operation	Controlled by 128 measurement programs, 128 schedules, automatic schedule switch rules and preprogrammed campaign events
Remote access & control	Network TCP/IP) interface for Input/Output access to schedules, measurement data, diagnostic data, and operating software. Standard Remote Control Interface uses Microsoft Remote Desktop over Internet or LAN.
Time Setting	Integrated GPS receiver keeps time to +/-25 μ s
Built-in-Test (BIT)	Full diagnostics to isolate failures to line replaceable units runs automatically, remotely accessible
Self Calibration	Built-in internal cal automatically updates phase/ amplitude adjustment tables. Remotely accessible results.
Signal Processing	
Processors	Two Embedded Intel Core 2 Duo Dual Core processor SBCs (Control and Data Platforms)
# of Range Bins	Selectable: 256 or 512
Height Range	0-1200 km (0 km used for self-calibration)
Height Resolution	2.5 km sample spacing 500 m using differential phase technique
RF Interference Mitigation	RFIM reduces coherent interference up to 35 dB
Waveform Processing	Pulse compression of 16-chip phase code provides 15 dB signal processing gain
Doppler Processing	4 to 128 integrations can provide up to 21 dB signal processing gain

Doppler Range	+/-3 Hz to +/-50 Hz
Doppler Resolution	.0125 to 12.5 Hz
Amplitude Resolution	< 0.01 dB
Wave Polarization	Alternating transmission with O and X, synchronized receive antenna polarizations (doubles reliability of O/X identification by ARTIST). Linear polarization on request.

Reinisch, Nov 2009