EARTH NETWORKS LIGHTNING SENSOR

ENLS ELECTRICAL, MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

COMMUNICATIONS: ETHERNET		
Electrical	Power Requirements	100 to 240 volts AC; 50 Hz to 60 Hz
	Power Consumption	60 watts
	Power Protection	Fused and multiple surge protection devices
Mechanical	Digital Signal Processor Housing	NEMA 4X rated enclosure (NEMA 4X = IP66 definition)
	Mounting	Exterior at base of weather station mast
	Weight	2.04 kg for Digital Signal Processor (DSP)
Antenna	Lightning	Tubular, omni-directional Dipole with two sensing elements
	GPS	Active patch
	Mounting	Mast mounted
ENVIRONMENTAL OPERATING PARAMETERS		
Outdoor	GPS Antenna	-40 °C to +85 °C
	Stroke Antenna	-40 °C to +85 °C
	Digital Signal Processor	-40 °C to +85 °C
	Wind Speed	216 km/h (mounting dependent)
	Hail	3 cm
	Rain	NEMA 4X rated enclosure
	Humidity	100% condensed
	Ice	2.5 cm

The Earth Networks Lightning Sensor (ENLS) was designed and built utilizing the most advanced electronics and components within one compact unit. Exceptional efforts were made to reduce system noise and to broaden the frequency range in order to create an integrated unit capable of detecting both ground and cloud strokes with very high detection efficiencies.

ENLS has an industry leading broad frequency range extending from 1Hz to 12 MHz; which is 20x higher than other sensors in the marketplace.

ENLS OPERATIONAL CHARACTERISTICS

Types of Lightning Detected	Cloud-to-Ground (CG) and In-Cloud (IC) strokes
Location Accuracy	<250 meters (ENLS density dependent)
Detection Efficiency	CG: > 95%; IC: > 85% (ENLS density dependent)
Sensor Baseline	20 km to 400 km
Sensor Sitting Criteria	Roof or tower mounted on existing structures with power and internet connectivity
Sensor Radio Frequency Bandwidth	1 Hz to 12 MHz (industry leading); 20x more
Sensor Timing Accuracy	<15 nanoseconds
Sensor Re-Arm Time	None
Waveform Digitization	Standard; ENLS is a fully digital system. Full waveforms delivered from sensor
Points in Waveform	Standard; 1000 points per second. Full waveform analysis available
Digitizing Resolution	HF: 12 bit; LF: 24 bit
Digitizing Speed	HF: 24 MHz; LF: 625 KHz

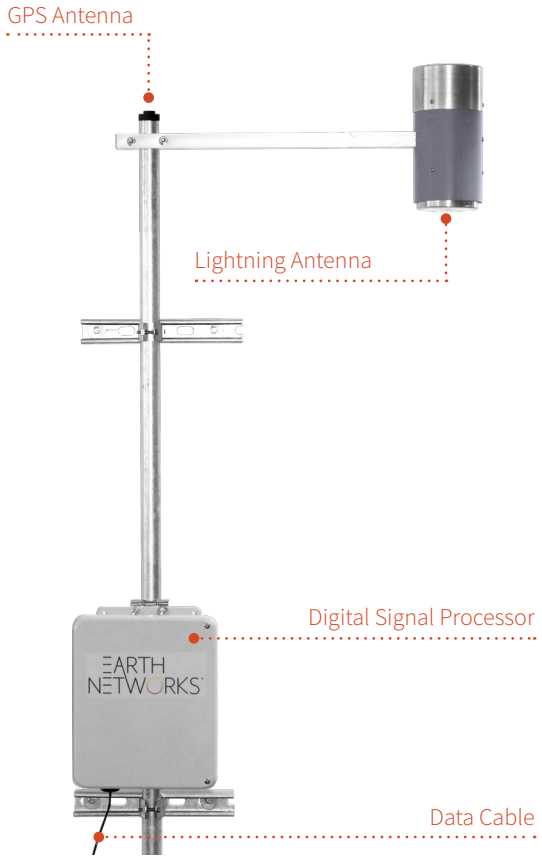
The ENLS Digital Signal Processor (DSP) converts each signal from analog to digital, then uses filtering technology to remove noise and compress each waveform to produce greater location accuracy and detection efficiencies.

ENLS DIGITAL SIGNAL PROCESSOR (DSP) SPECIFICATIONS

Fully digital system: small footprint and lower power requirements	
REMOTE MONITORING AND CONTROL	
Sensor Sensitivity Control	Fully adjustable sensor gain controls. Remote calibration of system
Remote Configuration	Fully remote firmware configuration and upgrades
Remote Diagnostics	Remote login; continuous monitoring Sensor stat; connectivity, data, QA/QC
RELIABILITY AND MAINTENANCE	
Mean Time to Failure	10 years
Mean Time to Response	Continuous remote monitoring and support

The lightning and weather instrumentation consists of separate instruments feeding into a common network data appliance. The instruments and associated specifications are provided below.

ENLS HARDWARE AND SPECIFICATIONS



DEVICE	WEIGHT	DIMENSIONS (L X W X H)
Earth Networks Hub	2.63 kg	29.2 cm x 23.5 cm x 10.8 cm
Digital Signal Processor	2.27 kg	29.2 cm x 23.5 cm x 10.8 cm
Lightning Antenna	0.9 kg	5.1 cm x 5.1 cm x 26 cm
GPS Antenna	0.23 kg	4.4 cm x 4.2 cm x 1.3 cm
Data Cable	2.95 kg	60.9 m Length