



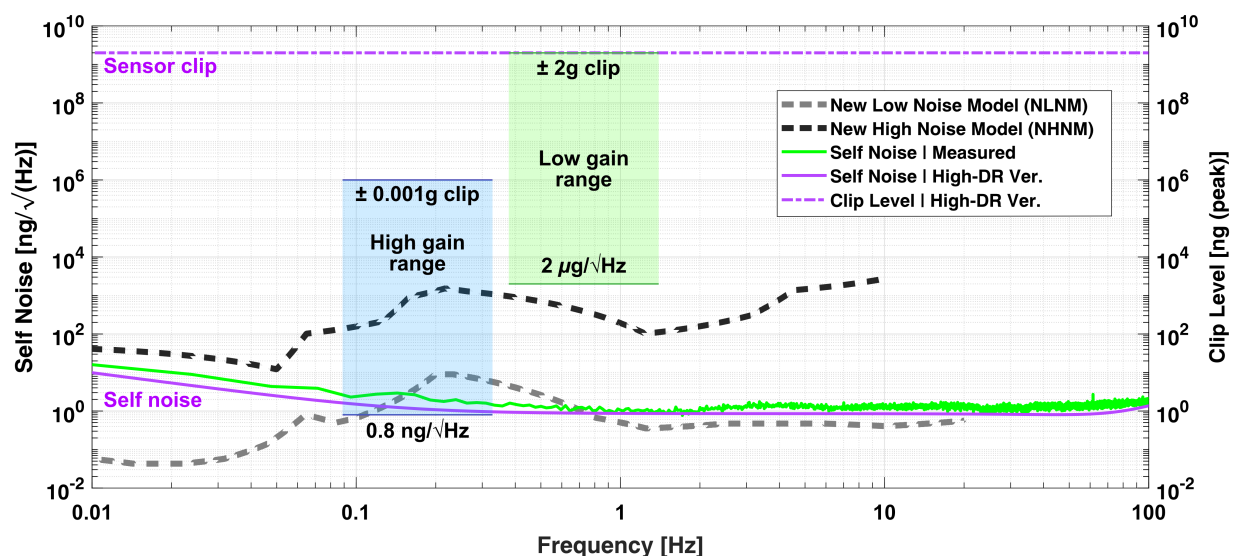
To capture the full performance of our optical interferometer-based seismometer we developed a complete digital sensor system. High levels of integration allow for a compact, low mass and high-performance sensor installation that can act as the heart of geophysical monitoring stations.

Performance Attributes:

- Integrated double digitization to capture 183-dB of seismic dynamic range
- Smart sensor system with optional integrated solar charging, state of health, sensor response and metadata integrated.
- Embedded Linux server allows easy system integration via Seedlink and an expandable architecture.
- Additional inputs available for expanding stations to include infrasound, inclinometers, meteorological and other instruments
- Redundant storage options for data security.
- Direct burial: Easy to deploy, lightweight, rugged.
- Wide bandwidth and dynamic range.
- High clip levels and low distortion levels.
- Bridges weak- and strong-motion applications.
- Low power design.
- High shock tolerance.
- Very large tilt tolerance.
- Modular design for simple maintenance.



With the largest dynamic range available among seismic sensors, the Silicon Audio sensor eliminates the need for multiple sensors to maximize the signal capture in terms of seismic amplitude and bandwidth. For example, applications which once required a broad-band seismometer paired with a strong-motion accelerometer can be addressed with a single Silicon Audio digital sensor.





Specifications

SENSOR PERFORMANCE		503-15
Passband		0.004 – 800Hz
Noise		0.8ng/VHz at 10Hz
		1ng/VHz at 1Hz
		3ng/VHz at 0.1Hz
		10ng/VHz at 0.01Hz
Clip Level		±2.0g peak
Dynamic Range (@1Hz over 1Hz BW)		183dB
Sensitivity (custom settings available)		15V/g
Max V _{out}		60V pk-pk
Spurious Resonance		> 600Hz
Tilt Tolerance		±15°
Distortion		< 0.03% at 12Hz and 0.7in/s pk-pk
POWER		
Power		• 2W max (sensor, ethernet, GPS, 8 channels at 1000 sps) • < 0.6W low power mode (sensor, no network, duty cycled) • Optional internal 65W solar charge controller
Supply Voltage		6-25V DC
HANDLING		
Transport		No mass lock required for transport
Shock Tolerance		> 1500g (0.5ms ½ sine)
Operating Temperature		–35°C to 75°C (polar-rated sensors available)
Environmental Protection		Sensor IP68 rated immersion to 10m
DIGITAL RECORDER		
Converters		8 channels 24-bit delta sigma simultaneous sampling • 3 channels low gain (±2g 60 V p-p) • 3 channels high gain (±0.001g 0.03V p-p) • 2 auxiliary channels
Sample rates		100, 200, 250, 500, 1000Hz
Filters		Linear phase 0dB at 80% Nyquist
State of Health / Auxiliary sensors		Voltage, Current, Temperature, Humidity, MEMS accelerometers, optional Inclinator
GPS timing		• Internal 72 channel receiver • Continuous or duty cycled power
Connectivity		• Ethernet connection for Seedlink Server, remote access and web settings interface • RS232 and RS485 available to interface to other digital sensors
Metadata management		Generates StationXML from sensor calibrations and station configuration information
Storage		• Removable External USB media (miniSEED formatted data) • Internal SD Card 32GB and/or USB (miniSEED formatted data)
GENERAL		
Dimensions		• Posthole Digital Sensor: 3.25" Diameter × 5.7" Length (83mm D × 145mm L) • GeoServer: 7.4" long × 4.3" wide × 1" thick (188mm × 110mm × 25 mm)
Mass		• Posthole Digital Sensor: 1.4kg • GeoServer: 0.6kg

