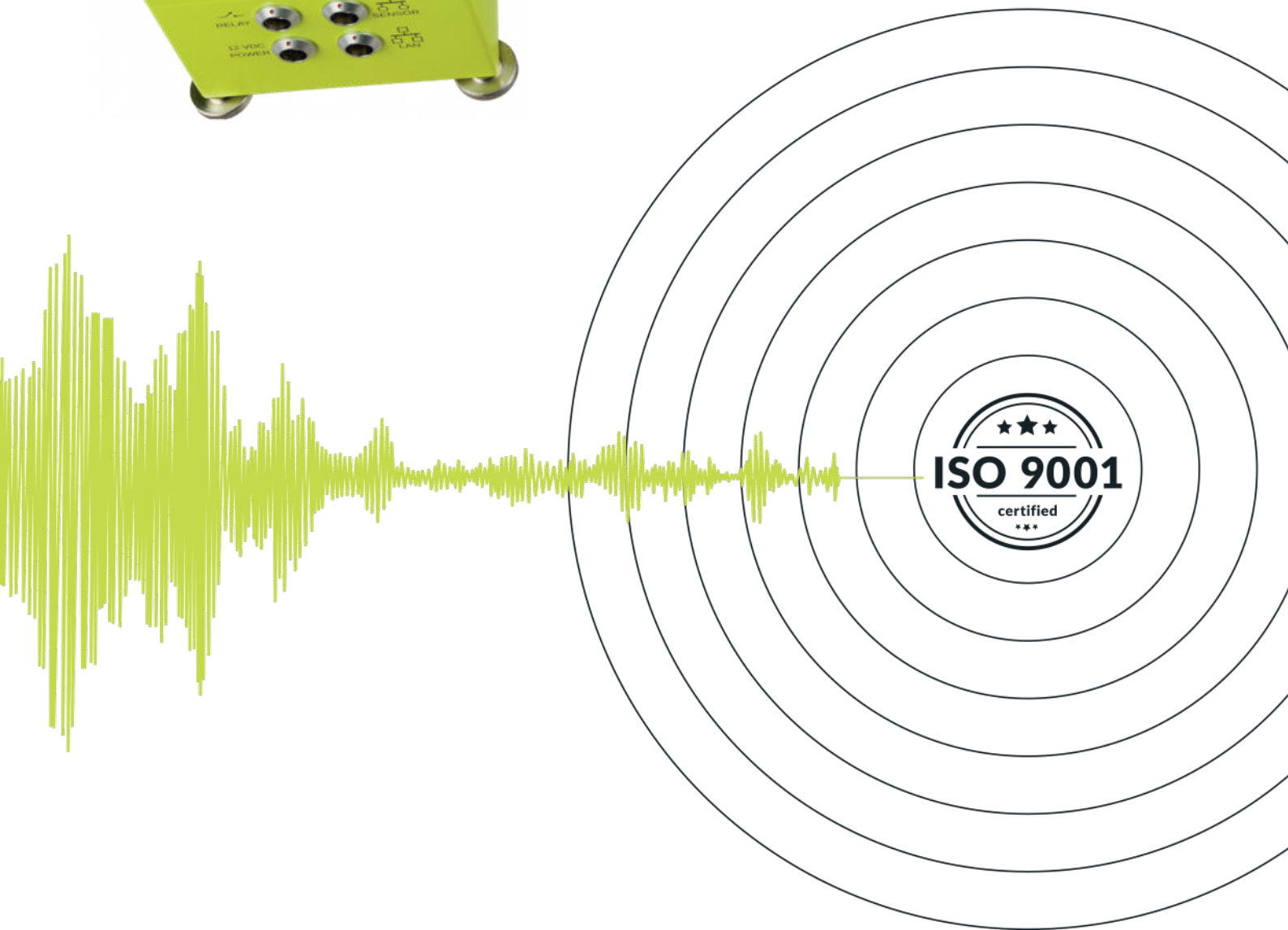




MENHIR

Add an expert to
your team



Vibration Monitoring Solution

MENHIR is a high performance and versatile platform for civil engineering, structural dynamics and seismic monitoring applications requiring easy-to-use but highly reliable instrumentation solutions.

Applications



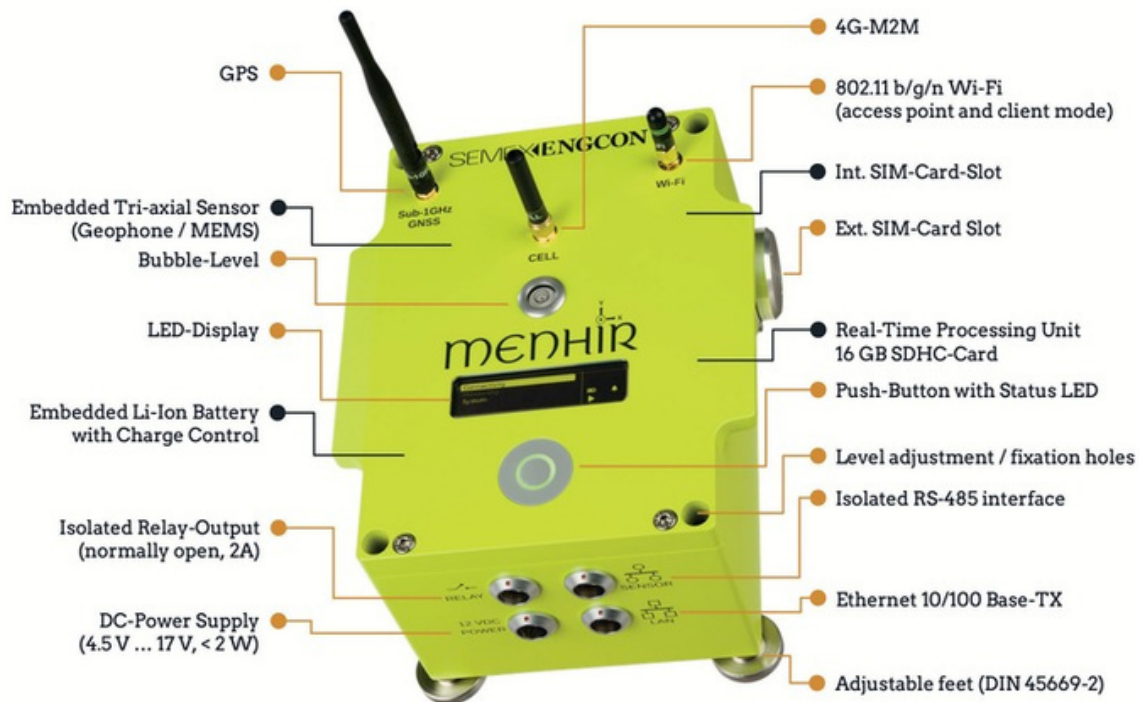
Benefits

	MENHIR provides outstanding measurement performance in full compliance with DIN 45669-1:2020-06 .
	MENHIR has a very intuitive user interface for quick deployment, remote access and easy configuration.
	MENHIR comes in a very compact but robust form factor. It can be configured in modern IoT-compliant network topologies using both wired and wireless communication channels.
	MENHIR is best deployed along with the SEDRIX cloud application for powerful data management, analysis and visualization. In addition, tailored expert reports can be generated in compliance with a large and growing suite of applicable standards and regulations.

Technical Details

Product specifications and data are subject to change without prior notice!

MENHIR Meter – 200 mm x 140 mm x 108 mm coated aluminum (IP65), 4.5 kg



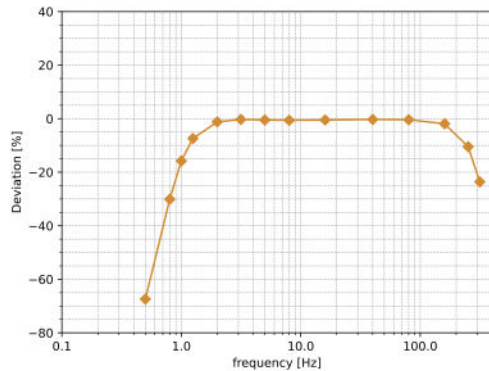
Operating temperature	-30°C ... 60°C
Humidity	0 ... 95% RH (non-condensing)
Electrical Safety	In compliance with DIN EN 61010-1
EMC	In compliance with DIN EN 61326-1
Conformity	DIN 45669-1:2020-06 Combined standard uncertainty: $uc(y) = 2.5$ Expanded overall instrumental measurement uncertainty ($k=2$): $U = 5.0$

Data Processing

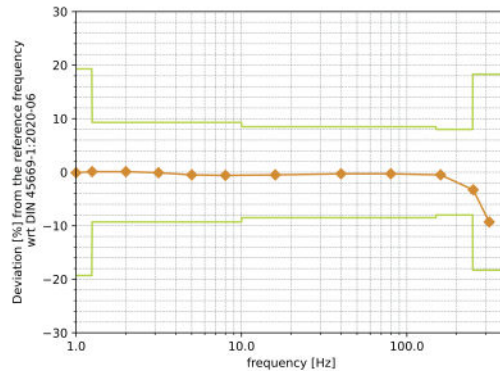
Compliance	 Data processing complies with several standards and regulations: <table><tr><td>D:</td><td>DIN 4150-2/-3</td><td>CH:</td><td>VSS 40 312</td></tr><tr><td>A:</td><td>ON S 9012/9020</td><td>F:</td><td>Circulaire '86</td></tr><tr><td>NL:</td><td>SBR-A/-B</td><td>I:</td><td>UNI 9614</td></tr><tr><td>UK:</td><td>BS EN ISO 8041/4866</td><td></td><td>Vibration Criteria (VC), VDI 2038-2</td></tr></table>	D:	DIN 4150-2/-3	CH:	VSS 40 312	A:	ON S 9012/9020	F:	Circulaire '86	NL:	SBR-A/-B	I:	UNI 9614	UK:	BS EN ISO 8041/4866		Vibration Criteria (VC), VDI 2038-2
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UK:	BS EN ISO 8041/4866		Vibration Criteria (VC), VDI 2038-2														
Acquisition	 High dynamic range tri-axial acquisition (alternative geophone or MEMS configuration) Selectable measuring ranges (sensitivity): Geophone: $\pm 12.5 \text{ mm/s}$ [240 V/(m/s)] up to $\pm 200 \text{ mm/s}$ [15 V/(m/s)] $\pm 1 \text{ g}$ MEMS: 12 V/g up to $\pm 4 \text{ g}$ [0.5 V/g] (1 -80) Hz, (1-315) Hz or user defined signal bandwidth NTP or GPS synchronized sampling																
Processing	 Comprehensive suite of vibration data processing and attribute analysis: Configurable filter, peak values, RMS, FFT and 1/3-octave spectral analysis, Vibration Criteria, VDV, Secondary airborne noise, etc.																
Alerting	 Multi-level alerting (SMS, Email) Relay output (e.g., opto-acoustical beacon) Common network alerting, health status alerting																
Data Recording & Transmission	 Triggered time domain data (events) in full sample resolution Continuous vibration profiles (PPV, KBF, 1/3-octave spectra, etc.) in sub-sampled resolution SDHC card 16 GB (default), other capacities on request Lossless compressed format (MKA), CSV, miniSEED																

Sensing Characteristics

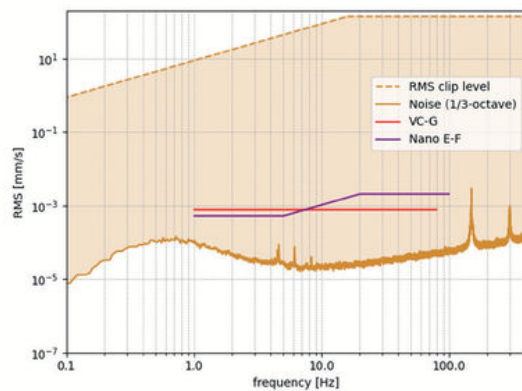
Geophone frequency response calibrated in compliance with DIN 45669-1:2020-06



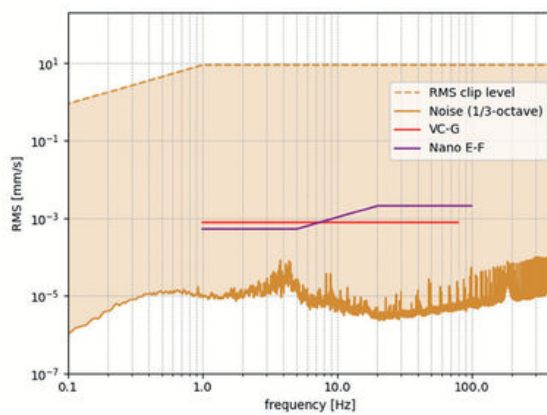
Geophone measuring range ± 200 mm/s



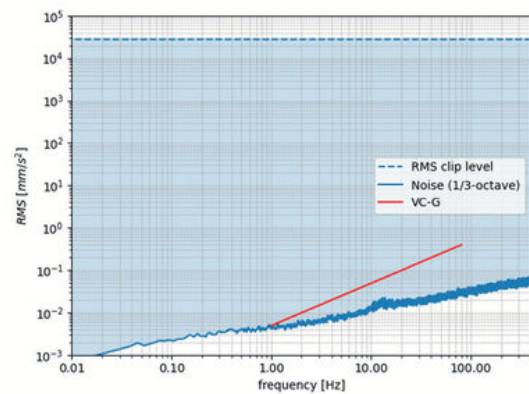
Geophone measuring range ± 12.5 mm/s



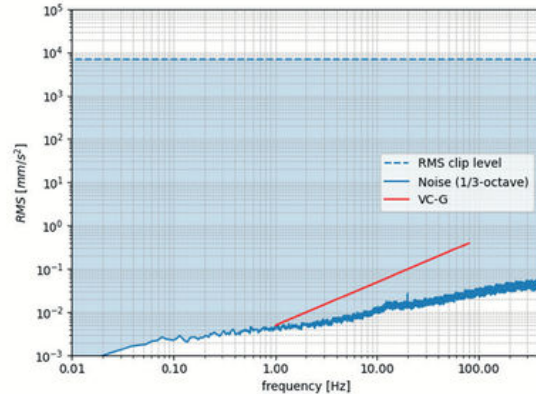
Accelerometer (MEMS) measuring range $\pm 4g$



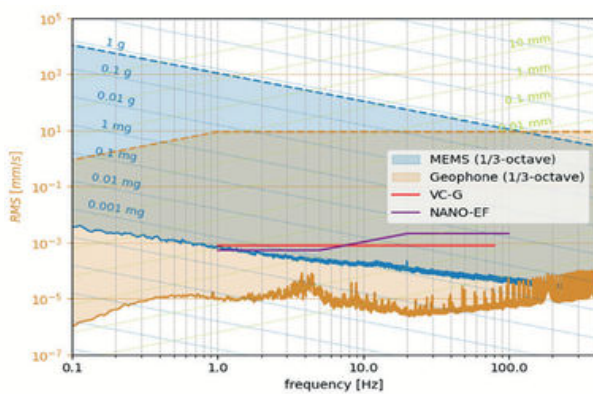
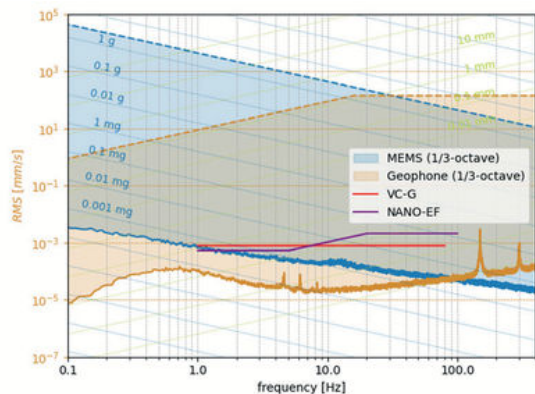
Accelerometer (MEMS) measuring range $\pm 1g$



Geophone (± 200 mm/s) - MEMS (± 4 g) comparison

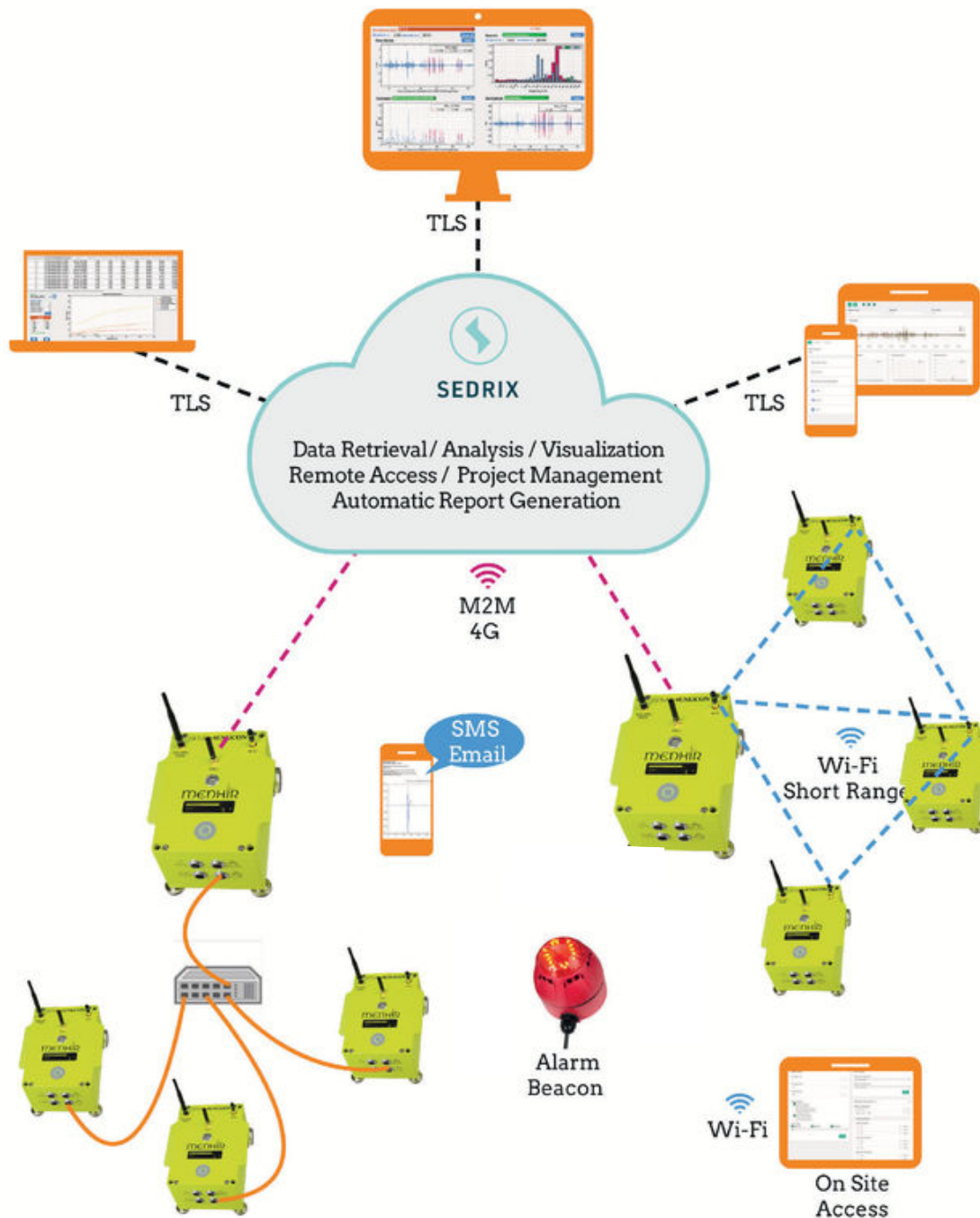


Geophone (± 12.5 mm/s) - MEMS (± 1 g) comparison



Monitoring Solution

The cloud-based SEDRIX application is ideal for unconstrained and highly secured remote access to all connected MENHIR devices and MENHIR networks. Analysis and visualization of acquired data in compliance with applicable standards allow for fast conclusion of the vibration impact. Report templates provide automatic generation of tailored reports to dedicated stakeholders.



Attachment Options

MENHIR can be extended with further attachments, such as external sensors (surface and downhole versions) and optical/acoustical alarm beacons.



Surface Sensor

		
Topology	Bi-/Tri-axial	Uni-axial
Mounting	3 adjustable feet with bubble level	
Housing	Coated aluminum, IP65	
Diameter/Height	100 mm / 75 mm	89 mm / 70 mm
Weight	1.8 kg	1.0 kg
Cable Length	3 m (default)	5 m (default)

Downhole Sensor

		
	Tri-axial (recoverable)	Uni-axial (vertical)
Mounting Housing	Stainless steel, IP68	Aluminum, IP67
Diameter/Height	70 mm / 220 mm	45 mm / (100+95) mm
Weight	3.5 kg	0.7 kg

Submersible Sensor

	
Topology	Tri-axial
Mounting	3 adjustable feet with bubble level
Housing	Seawater resistant, IP68
Diameter/Height	200 mm (mounting plate) / 90 mm
Weight	5 kg

Optical-Acoustical Alarm Beacon

		
Connectivity	MENHIR Relay Output	Wireless 433 MHz
Power Supply	MENHIR (4.5 ... 17 VDC)	Transmitter: MENHIR Receiver: 12...24 VDC or 85...260VAC

Anti-Theft Lock Kit

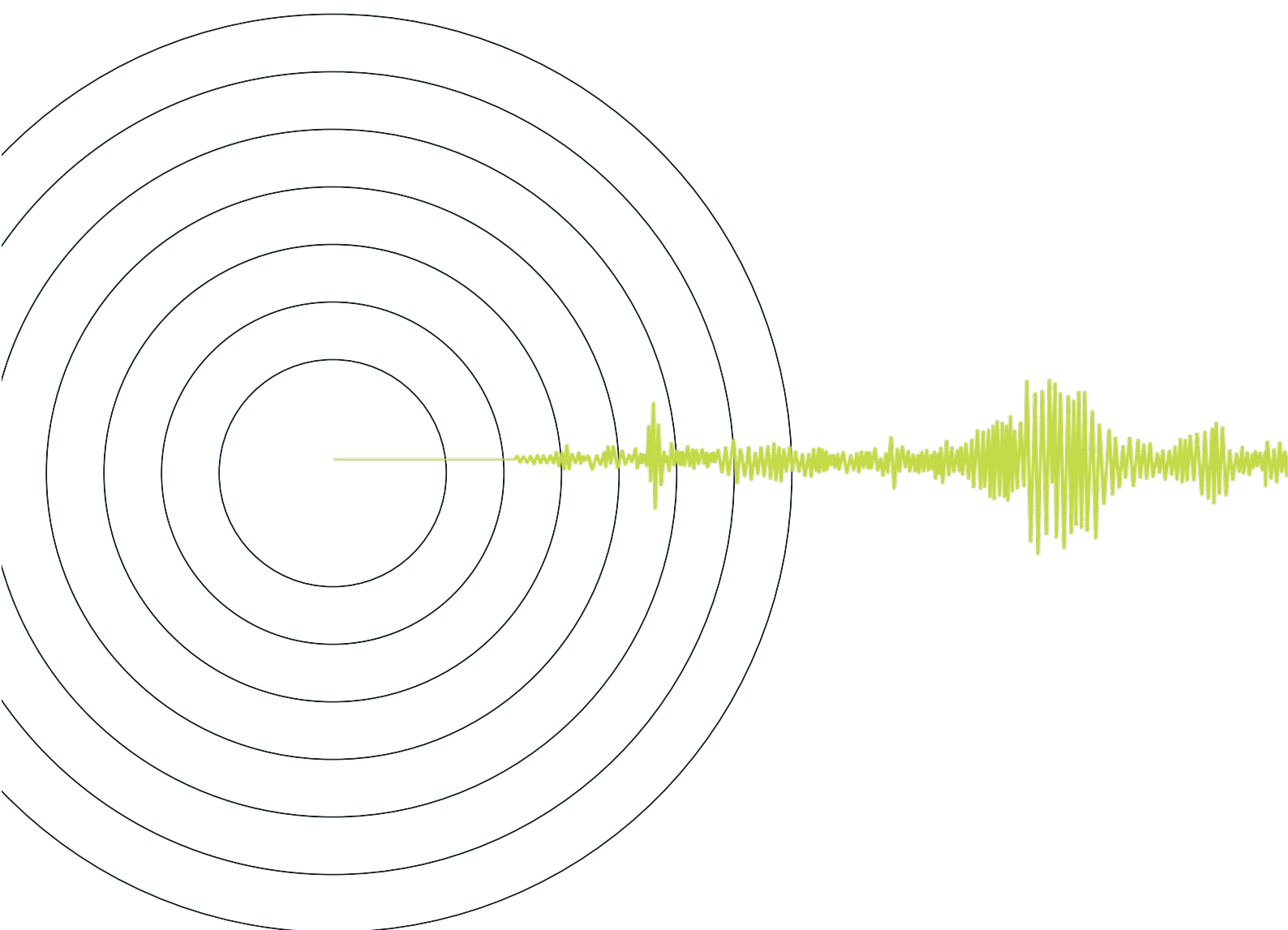
		
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Wall Brackets

MENHIR		
External Sensor		

Carrying Case

		
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**SEMEX-EngCon GmbH D-
76275 Ettlingen**
www.semex-engcon.com