



Smart 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.



MENHIR has a very intuitive user interface for quick deployment, remote access and configuration.



MENHIR comes in a very compact but robust form factor for easy deployment even in harsh environments. It can be configured in modern IoT-compliant network topologies using both wired and wireless communication channels.

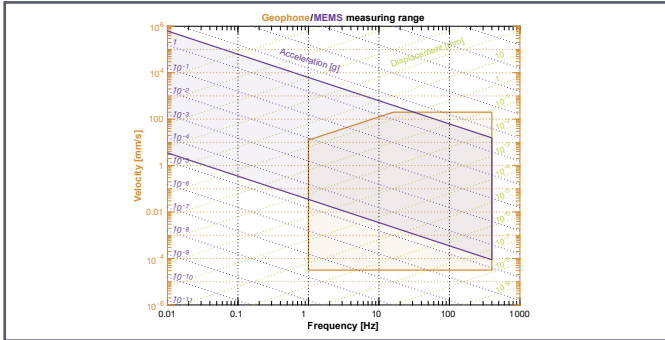


MENHIR is best deployed along with the SmartDataCenter (SDC) cloud application for powerful data management, analysis and visualization. In addition, tailored expert report generation in compliance with a large and growing suite of applicable standards and regulations is available.

Technical Details

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

Sensor Options		
Technology	Geophone (Velocity)	MEMS (Acceleration)
Measuring Range	± 200 mm/s	± 4g
Topology (default)	Tri-axial, orthogonally oriented	
6-channel Option	Tri-axial (internal), orthogonally Tri-axial (external), orthogonally	



Data Processing	
Compliance	Data processing in compliance with DIN-45669:2020-06 and: D: DIN-4150-2/3 CH: VSS 40 312 A: ÖN S9012/20 F: Circulaire '86 UK: BS EN ISO 8041/4866 NL: SBR-A/B I: UNI 9614 Other regulations upon request
Acquisition	3 independent channels with high dynamic range (140 dB RMS @ 400 sps)
Sample Rates	100, 200, 400, 500, 800, 1000, 2000 sps GPS/NTP disciplined
Event Trigger	Multiple, simultaneously applicable trigger criteria for event recording (cf. Real-Time Processing), Common network trigger
Alerting	Multi-level alerting (SMS, Email) to dedicated stakeholders Relay output (e.g. Beacon) Common network alerting Health status alerting
Real-Time Processing	Vibration data and attribute analysis: Configurable data filter, peak values, RMS, 1/3-octave band spectra, dominant frequencies, VDV, Secondary airborne noise, etc.
Data Recording & Storage	Both, triggered event and continuous vibration profile recording SDHC card 8 GB (default), others on request
Export Format	Compressed (lossless) MKA CSV, XMR/BMR SEEDLink/miniSEED

Interfaces	
On/Off	Push Button with LED, LCD-Display
Sensor Bus	RS-485 (isolated) for 6-channel extension
Relay	Power Relay (normally open), 2A
GNSS	GPS optional
SIM-Card	SIM-Card slot for cellular operation
Connectivity	
LAN	Ethernet 10/100Base-TX, IEEE 1588 compliant
Cellular (M2M)	4G, fallback to 3G/2G
WLAN (short range)	802.11 b/g/n Wi-Fi Transceiver Access Point and Client mode
Sub-1 GHz (long range)	863-870 MHz SD band with up to 1 km line of sight (LoS)
Communication	
Secure Content Delivery Options	TLS/SSL to SmartDataCenter cloud server Transfer to proprietary FTP server Local download
Remote Access	Secured access through SmartDataCenter cloud or VPN
Local access	WLAN access to internal Web-based UI
Power	
Supply Voltage	9...36 VDC unregulated
Protection	Reverse voltage, over/under voltage Self resettable fuse Power supply isolated from signal ground
Autonomy	Internal Li-Ion battery with charge control
Consumption	< 3W
Physical	
Mounting	3 adjustable feet with bubble level
Housing	Coated aluminium
Dimensions	200 mm x 140 mm x 108 mm
Weight	4.5 kg
Environmental	
Temperature Range	Operating: - 30°C to 60°C Storage: - 40°C to 75°C
Humidity	0 to 100% RH (non-condensing)
Enclosure rating	IP65 (IP67 optional)
Certification & Conformity	
Electrical Safety	In compliance with DIN EN 61010-1
EMC	In compliance with DIN EN 61326-1
Conformity	CE

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 aluminium, 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		
Mounting	Tri-axial (recoverable)	Uni-axial (vertical)
Housing	Stainless steel, IP68	Aluminium, 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	

Opto-Acoustical Alarm Beacon		
Connectivity	MENHIR Relay Output	Wireless 433 MHz
Power Supply	MENHIR (9...36 VDC)	Transmitter: MENHIR Receiver: 12...24 VDC or 85...260 VAC

Anti-Theft Lock Kit		

Wall Brackets		
MENHIR		
External Sensor		

Carrying Case		

Monitoring Solution

MENHIR is the flexible edge system of SEMEX-EngCon's complete vibration monitoring solution.

The cloud-based **SEDIRX** 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.

