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CERTIS

EASY DEPLOY 'ANY ANGLE' MEDIUM-MOTION SEISMOMETER WITH ADVANCED USER FRIENDLY FEATURES

The Worlds only 'any-angle' medium-motion broadband seismometer offering an analogue output. The compact Certis also features an adjustable response and low-power operation for effortless surface and posthole deployments.

KEY FEATURES

> Fully operational at ± 90°
> Remotely adjustable 120 s to 100 Hz response with the long-period corner selectable between 20 s and 120 s
> Analogue output
> Compact and low-power
> Serial output includes instrument serial number, response and calibration parameters

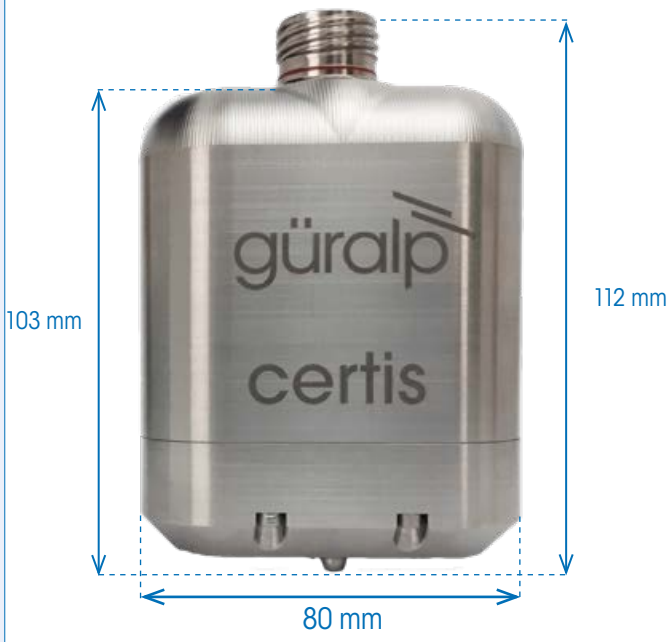
APPLICATIONS

> Local, regional and global monitoring
> Microseismic and induced seismicity monitoring
> Permanent and rapid deployment for volcanic unrest monitoring

Certis

Designed to take the complexity out of field deployments Certis' advanced sensor technology offers 'any-angle' operation and an adjustable response in an exceptionally small form factor.

CERTIS DIMENSIONS:



Durable and corrosion resistant stainless steel enclosure, with the connector and lifting hook located on the top, for easy access in posthole deployments.

THERMAL COVER

Protects the sensor from very slight fluctuations in temperature that can effect the instrument self-noise.

Applications

- Local, regional and global seismic monitoring
- Temporary deployment in challenging environments or remote areas
- Rapid deployment for aftershock monitoring
- Microseismic and induced seismicity monitoring in the hydrocarbon market, e.g. fracture monitoring
- Geothermal energy production monitoring
- Permanent or rapid temporary deployment for volcanic unrest monitoring

The popular choice for regional arrays following its launch, the Certis is a compact and portable medium-motion broadband seismometer with advanced sensor technology. Certis delivers maximum flexibility and unique user-friendly features;

> The state-of-the-art sensor in the Certis can operate at a tilt range of ±90°, streamlining deployment requirements
> The wide frequency response of 120 s to 100 Hz also benefits from seven adjustable long-period corner settings including 20, 30, 60 and 100 seconds
> When paired with a Minimus digitiser, the long-period corner settings can be adjusted post-deployment to significantly reduce the settling time of the sensor
> Option to output to analogue or digital feeds or both
> The unique design of the sensor means the Certis can output using serial communication. So, in addition to analogue seismic data you can access instruments' state-of-health, response and calibration parameters
> Certis is a compact and low power unit measuring just 80 mm × 80 mm × 112 mm with 350 mW power consumption in low-power mode

The stainless steel casing is environmentally sealed to withstand the harshest environments and can be installed at depths of up to 10 m. An internal thermometer, pressure sensor and a humidity sensor alert you to any moisture ingress.

Key features

State-of-the-art seismic sensor allows full operation over a wide tilt range of ±90° by automatically centring the mass

Triaxial orthogonal (ZNE) instrument with high cross-axis rejection (> 65 dB)

Seven, remote, user-selectable long-period corner settings of 20 s, 30 s, 45 s, 60 s, 90 s, 100 s and 120 s

Serial output can stream instrument serial number, response and calibration parameters

Environmentally sealed stainless steel casing suitable for posthole installations

Highly compact and portable at just 80 mm × 80 × 112 mm

Connector and lifting hook located on the top of the enclosure for easy access in posthole deployments

Optional thermal cover

The ideal data acquisition partner for Certis is the Minimus which provides state-of-the-art communication capabilities:

> Select sample rates of up to 1000 samples per second
> Simultaneously stream multiple sample rates in addition to two recording rates.
> Utilise the ultra-low-latency mode for EEW
> Industry standard triggering algorithms for EEW (STA/LTA, threshold);
> Multi-instrument voting functionality
> Common Alert Protocol (CAP) enabled for automated emergency warning
> GüVü Bluetooth Android App for installation integrity checking without disturbance

Enhanced instrument and data management

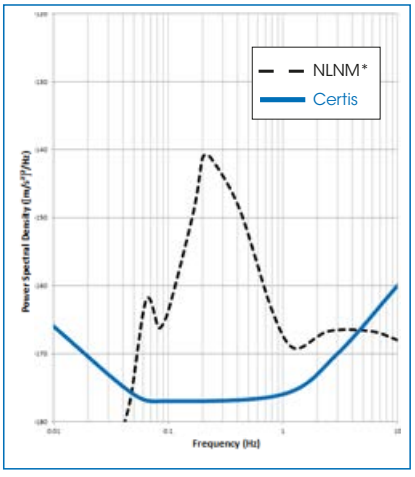
By pairing with a Minimus you also access Güralp Discovery, our sophisticated instrument and data management software platform[1].

Discovery's powerful tools include:

> Instrument IP address identification on LAN or internet, eliminating the need for static IP addresses
> Access to hardware State-of-Health (SoH), GNSS location, instrument response and calibration values
> View and stream data with back-fill capabilities plus selectable date-and-time-window data transmission
> Advanced data analysis including spectral density graphs, spectograms, discrete Fourier transforms and histograms
> Remotely and simultaneously apply configuration files to multiple units within a network

[1]You can also acess the common instrument controls via a standard web browser.

SELF NOISE PLOT:



*(Peterson, 1993)

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SPECIFICATIONS

BROADBAND SEISMOMETER SYSTEM	
Technology	Force feedback digital sensor
Configuration / Topology	Triaxial orthogonal (ZNE)
PERFORMANCE: BROADBAND SEISMOMETER	
Maximum frequency response bandwidth	120 s (0.0083 Hz) to 100 Hz User selectable long-period corner of 20 s, 30 s, 45 s, 60 s, 90 s, 100 s and 120 s.
Peak full-scale output voltage	Differential: ±11 V (22 V peak-to-peak) Single-ended: ±5.5 V (11 V peak-to-peak) Option: Differential: ±20 V (40 V peak-to-peak) Single-ended: ±10 V (20 V peak-to-peak)
Output sensitivity	750V/ms^{-1} (2 x 375 V/ms^{-1}) differential standard output. Other options available
Clip level	30 mms^{-1} differential peak to peak
Sensor dynamic range	155 dB
Self-noise	-175 dB from 10 seconds to 1 Hz
Operational tilt range	±90°
Cross axis rejection	> 65 dB
Linearity	> 95 dB
Lowest spurious resonance	> 450 Hz
Transfer function	Measured sensitivity, frequency response and instrument poles and zeros are stored within the instrument and accessible via web interface of the digitiser
DIGITAL SERIAL OUTPUT	
Output format	24-bits
Output rate	500 samples per second
Clip level	13.5 mm/s peak to peak
Adjustable gain	× 1 to × 24
MASS / MONITORING	
Sensor mass positions	Three independent sensor mass position outputs (integrator), single mass position output when connected to third party digitiser
Centring	Automatic / can be disabled
Orientation sensor	3 axes MEMS accelerometer and 3 axes MEMS magnetometer
Internal sensors	Temperature, pressure, humidity

OPERATION AND POWER USAGE	
Operating temperature	-20 to +60 °C
Relative humidity range	zero to 100 %
Power supply	6 - 28 V DC*
Power consumption	350 mW Low power mode 380 mW Analogue output mode 390 mW Dual output

**Power voltage for operation of this unit only. Connection to additional instrumentation or use of longer cables may result in a higher input voltage requirement.*

PHYSICAL	
Casing type	Stainless steel
Environmental sensor	Humidity and temperature
Weight	1.9 kg (disconnected)
Dimensions	80 mm × 80 mm × 112 mm high (including fixed feet to top of connector)
Connector type	MIL-DTL-38999 Series III connector, 22 Pin
Installation depth	Suitable for installation to depths of 10m
Environmental protection	IP68
OPTIONAL ACCESSORIES	
Thermal Cover	

Güralp Systems Limited
Midas House
Calleva Park
Aldermaston
Reading
RG7 8EA
United Kingdom

T +44 118 981 9056
F +44 118 981 9943
E sales@guralp.com

www.guralp.com

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