

ARTUS

A DIGITAL BROADBAND NODE FOR LARGE N ARRAYS



Easy deploy, ultra-portable digital, triaxial, broadband seismometer in node form for dense temporary arrays

KEY FEATURES

- $>30~{\rm s}$ to 200 Hz
- > Flexible power options, including lithium power packs
- > Seismometer with integrated digitiser and internal GNSS timing
- > Push deployment
- > Wireless configuration via Bluetooth
- > Rack mounted data download with output to miniSEED

APPLICATIONS

- > High resolution imaging using portable high density networks
- > Network densification
- > Rapid response
- > Temporary seismic investigations



An ultra-compact node housing a three-component, digital broadband seismometer for portable, dense arrays with internal GNSS, Bluetooth and miniSEED output.



Artius offers a unique combination of performance and portability. A three-component, digital broadband seismometer, Artius was designed as an economic and research-grade node for projects requiring higher station density in medium to high noise sites.

Artius has a true broadband response of 30 seconds to 200 Hz and is suited to rapid temporary deployments where it can be either pushed or staked into the ground. As Artius has an internal digitiser and GNSS, it requires just a single port to connect to an external power source to power the sensor during deployment. A bubble level housed within the top of the sensor allows for levelling once in situ.

The GüVü Bluetooth App provides field based configuration as well as displaying waveforms, orientation, temperature and humidity data for added confidence during deployments.

For a broadband instrument, the Artius has an impressively compact form-factor of just 80 mm square by 105 mm height. The hard anodised aluminium casing is environmentally sealed to withstand the most challenging field environments.

Data downloaded

Artius is designed to be docked into an eight-node capacity docking station that provides:

- > Testing and configuration controls prior to deployment
- > Convenient mass data validation on completion
- > Up to 3 MB/s data download per node

Accessible via the Discovery interface, the intuitive Artius dock software automates pre and post deployment workflows for easy handling of up to eight Artius sensors at any one time. Prior to deployment, the software allows for the mass formatting of the sensor SD cards and verifies performance by automating huddle test procedures. Post deployment, once the Artius sensors are inserted into the bays of the docking station, the software automatically begins to download the miniSEED and metadata files from the sensors and save these into a predefined location.

Data is locally recorded on a fixed 64 GB microSD card in miniSEED (with metadata stored in Station XML and dataless SEED formats).

Key features

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

30 s to 200 Hz response

Storage of instrument response and calibration parameters dramatically simplifies data management (RESP, Station XML and Dataless SEED formats)

Fixed 64 GB microSD card with option of 128 GB $\,$

A bubble level facilitates required levelling during deployments

A single port for power by external lithium battery

Accurate time-base provided by internal GNSS

Eight node capacity docking station for convenient mass configuration and 3 MB/s data download

GüVü Bluetooth App provides field based configuration and displays waveforms, orientation, temperature and humidity data for confident deployments

Artius has an ultra compact size of 80 mm \times 80 mm \times 105 mm and weighs just 1.4 kgs

Optional feet or deployment spike can be selected to suit the terrain for rapid push installations

Applications

- High resolution imaging using portable high density networks
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- > Rapid response
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Artius



SPECIFICATIONS

BROADBAND SEISMOMETER SYSTEM		
Configuration / Topology	Triaxial orthogonal (ZNE)	
PERFORMANCE: BROADBAND SEISMOMETER		
Maximum frequency response bandwidth	30 s (0.03 Hz) to 200 Hz	
Output sensitivity	500 V/ms ⁻¹	
Sensor dynamic range	> 145 dB	
Self-noise	-150 dB @ 10 seconds	
Operational tilt range	±5°	
Cross axis rejection	> 65 dB	
Lowest spurious resonance	1 kHz	
Centring	Automatic	
Transfer function	Measured sensitivity, frequency response and instrument poles and zeros are stored within the instrument and accessible via web interface	
ENVIRONMENTAL CHANNELS		
Sensor mass positions	Three independent sensor mass position outputs (integrator)	
Orientation sensors	MEMS based accelerometer (three component)	
Other sensors	Temperature, humidity, input voltage, power time lock	
DATA PROCESSING		
Output rates available	1 to 1000 samples per second	
	User configurable via GüVü bluetooth app or docking station	
Decimation filters	÷2, ÷3, ÷4, ÷5 (Causal / Acausal)	
TIMING AND CALIBRATION		
Timing source precision	Accuracy when GNSS locked ±50 ns.	
Timing sources	In-built GNSS (GPS and GLONASS, BeiDou optional)	
Calibration signal generator	Step, white noise with selectable amplitude and sinewave	
USER INTERFACE		
Configuration and control	(Ethernet) Güralp Discovery - free download (Windows, and Linux), web browser interface. GüVü Bluetooth app (Android)	

DATA	
Data recording formats	miniSEED (metadata stored in Station XML and dataless SEED formats)
ON-BOARD DATA STORAGE	
Flash memory and storage	1 fixed 64 GB microSD card Option for 128 GB at point of order
SOFTWARE	
Operating system	Windows and Linux
OPERATION AND POWER USAGE	1
Operating temperature	-20 to +70 °C -50 °C polar option available
Relative humidity range	zero to 100 %
Power supply	7 - 16 V DC
Power consumption	600 m W standard operation
*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	Environmentally sealed, hard anodised aluminium
Environmental sensor	Humidity and temperature
Weight	1.4 kg (disconnected)
Dimensions (exc. connector)	$80\mathrm{mm} imes 80\mathrm{mm} imes 105\mathrm{mm}$
Height with feet	109 mm
Height with triple deployment spikes	167 mm
Height with single deployment spike	255 mm
Connector type	Decoding M12 Automation Connector
Environmental protection	IP68 - protection against effects of prolonged immersion at 3 m depth for 72 hours
Artius package includes	Sensor Power cable for battery Deployment spike
DOCKING STATION	
Node capacity	Eight with concurrent data download
Operating system compatible	Windows, Linux
Communication technology	100BASE-T1 Ethemet
Data harvesting speed	3 MB/s
OPTIONAL ACCESSORIES	
Portable Power Module	
Deployment feet or spike	
Field protection cover	

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