

IGU-16HR 3C

The IGU-16HR 3C node instrument can conveniently and quickly form various networked seismic arrays, and combine active and passive source methods to obtain massive data for high-density array spatiotemporal measurement (DAM). Suitable for scientific research and enterprise survey needs in different scale regions.

Applications:

- Geological structure research
- Research on surface and body waves
- Natural earthquake observation research
- Observation and research on volcanoes and tsunamis
- Infrasound research
- Observation and research on geological hazards
- Mineral resource exploration
- Infrastructure geological assessment



SmartSolo IGU-16HR 3C

3-Component High Resolution Smart Seismic Sensor



Features

- High quality
- High sensitivity
- High reliability
- Low distortion
- Low cost
- Low power consumption
- Compact, lightweight, and user-friendly
- IP68 waterproof
- Strong resistance to extreme and harsh environments
- Optional 10Hz and 5Hz built-in geophones

Descriptions

SmartSolo IGU-16HR 3C is a new generation 3-channel intelligent seismic sensor and offers the best cost-performance ratio in the market. IGU-16HR 3C supports multiple sampling rates and provides comprehensive and high-quality seismic data exploration. It is user-friendly, has a simple structure, and is both intelligent and reliable. With long battery life and excellent resistance to extreme and harsh environmental conditions, IGU-16HR 3C can operate stably even in complex environments. It has become a powerful assistant for numerous researchers conducting seismic research, contributing to the success of scientific research endeavors.

Applications

- Dense array
- Energy exploration
- Geological structure exploration
- Geothermal resource exploration
- Seismic disaster warning
- Mudslide and landslide disaster warning
- Shallow three-dimensional structure detection
- Mountain bedrock structure detection

High-resolution

High-resolution data
 32-bit Σ - Δ , high-resolution ADC
 Up to 0.25 ms sampling rate
 Built-in GPS and high-precision clock

Large Channel Count, Flexible Deployment

DT-SOLO high-sensitivity geophone
 Optional 5 Hz and 10Hz geophones
 Expandable to a million-channel system

Ultra-low Power Consumption, Low Cost

Lightweight, compact
 Shares a set of auxiliary equipment with IGU-16
 Significantly reduces equipment investment
 The most cost-effective system in the market
 Up to 30 days of battery life

Convenient and Highly Efficient

Integrated modular design
 Greatly improves production efficiency
 Reduces maintenance costs
 The main body and battery can be separated
 Allows for easy battery replacement

The Future of the Seismic Exploration Industry

Smaller team sizes, reduced manpower, simplified equipment, lower operational costs
 HSE (Health, Safety, Environment) assurance
 Efficient data download and management
 High density, capable of handling millions of channels

Typical Node Specifications

Seismic Data Channels	3
Size	103 mm (L) × 95 mm (W) × 187 mm (H) (without spike)
Weight	2.4 kg (including battery and spike)
Ingress Protection	IP 68
Operating Temperature	-40 °C ~ +70 °C
Charging Temperature Range	+3 °C ~ +45 °C
Charging Time	<6 hrs
Operating Life@25°C	30 days @ 2ms, 24 hrs/day operation 60 days @ 2ms, 12 hrs/day operation
Data Storage	64 GB
GNSS Mode	Support GPS, BEIDOU, GLONASS, single mode or double mode optional

Acquisition Channel

(@ 2ms sample interval, 31.25 Hz, +25 °C, unless otherwise indicated)

ADC Resolution	32 bits (The ADC has 32-bit resolution, the noise-free resolution is no more than 24-bit)
Sample Interval	0.25, 0.5, 1, 2, 4, 8, 10, 20 ms
Preamplifier Gain	0 dB to 36 dB in 6 dB steps
Anti-alias Filter	206.5 Hz @ 2 ms (82.6% of Nyquist)
	Selectable - linear phase or minimum phase
DC Blocking Filter	1 Hz to 10 Hz, 1 Hz increments or DC removed
Dynamic Range	125 dB @ 2 ms 0 dB
Equivalent Input Noise	0.18 μV @ 2 ms 18 dB
Total Harmonic Distortion	<0.0002% @ 0 dB
Common Mode Rejection	>100 dB
Gain Accuracy	<1%
GPS Time Standard	1 ppm
Timing Accuracy	±10 μs, GPS disciplined
Cross Feed	<-110 dB
System Dynamic Range	145 dB
Frequency Response	0 ~ 1652 Hz @ 0.25ms

Sensor Specifications DT-SOLO 5Hz

(All parameters are specified at +22 °C in the vertical or horizontal position unless otherwise stated)

Natural Frequency(Fn)	5 Hz
Spurious Frequency	>170 Hz
Coil Resistance	1850 Ω
Damping	Open Circuit Damping 0.60 Damping with 43kΩ 0.70
Sensitivity	
(Open Circuit Intrinsic Voltage Sensitivity)	80 V/m/s (2.03 V/in/s)
Distortion	< 0.1% @ 12 Hz, (0°~10°) vertical tilt (0°~3°) horizontal tilt

Sensor Specifications DT-SOLO 10Hz

(All parameters are specified at +25 °C in the vertical or horizontal position unless otherwise stated)

Natural Frequency(Fn)	10 Hz
Spurious Frequency	>240 Hz
Coil Resistance	1800 Ω
Damping	Open Circuit Damping 0.51 Damping with 20kΩ 0.70
Sensitivity	
(Open Circuit Intrinsic Voltage Sensitivity)	85.8 V/m/s (2.18 V/in/s)
Distortion	< 0.1% @ 12 Hz, (0°~10°) vertical tilt (0°~3°) horizontal tilt

Note: Follow SEG polarity rules(When shocked by seismic motion, sensor upward motion as the channel record is Negative signal,sensor downward motion as the channel record is Positive signal)

Specifications are subject to change without prior notice.

SMARTSOLO
S C I E N T I F I C

New generation of seismic instruments | New generation of electrical instruments |
New generation of data acquisition systems