

IMU-3C

The IMU-3C node instrument can conveniently and quickly form various networked arrays, obtain massive data, and perform high-density array spatiotemporal measurement (DAM). Suitable for scientific research and enterprise survey needs in different scale regions.

Applications:

- Various long-term observation and research in the field (e.g. earthquakes, volcanoes, tsunamis, tides, glaciers, hydrology, lakes, ecology, forests, meteorology, grasslands, deserts, drylands, ports, etc.)
- Observation and research on geological hazards (e.g. debris flow, landslide, rockfall, seabed geology)
- Structural health monitoring (e.g. bridges, tunnels, buildings)
- Environmental monitoring



SmartSolo IMU-3C

3-Channel Intelligent Monitoring Unit



Descriptions

IMU-3C is a data monitoring unit designed for use in harsh outdoor environments and equipped with real-time communication capabilities. In environments with smooth network connectivity, it can remotely access data and configure measurement parameters through the built-in 4G, WiFi or Ethernet connection. It supports real-time data streaming under both Windows and Linux systems and offers features like event threshold triggering, self-testing, remote configuration updates, and remote firmware upgrades.

IMU-3C deployment is straightforward. It has an IP 68 protection rating, can operate stably in a temperature range from -40 °C to +70 °C for extended periods, and can be used independently without the need for additional protective equipment. It boasts extremely high reliability and offers the ultimate cost-performance ratio, making it one of the top choices for long-term monitoring tasks in harsh environments.

IMU Data Download Cable

Up to 20 MB/s fast data download



IMU Power Adapter

Single-port charging device

Low-cost fast charging solution



Features

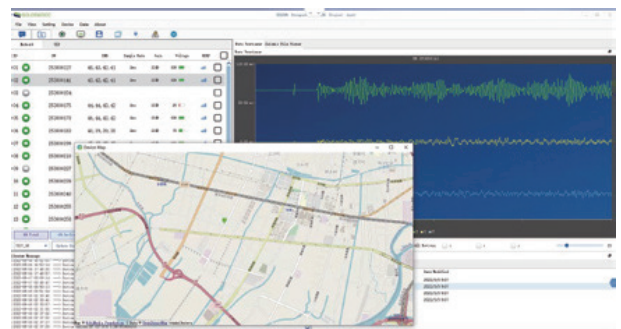
- Supports external various geophones
- 32-bit $\Sigma\Delta$ high-resolution ADC
- Supports various data transmission methods such as Ethernet, 4G and WiFi, and supports multiple real-time data transmission and QC
- Built-in GNSS module, supports both internal and external GNSS antennas
- Built-in 64 GB storage, expandable to 128 GB
- IP 68 waterproof
- Supports both built-in and external power supply
- Ultra-long battery life
- Ultra-wide operating temperature range
- Dual-state indicator lights, indicating data collection and transmission status
- Simple field deployment, no need for additional protective equipment

Applications

- Dam inspection
- Isolated rock karst detection
- Void detection
- Geological survey
- Geothermal and water resource exploration
- Structural health monitoring
- Landslide monitoring
- Energy and mineral exploration
- Real-time railway warning
- Short-period array observation
- Microseismic hydraulic fracturing monitoring
- Natural seismology research

Excellent Auxiliary Software

You can use the SoloSWDCC software for remote parameter configuration, real-time monitoring of device status and data transmission, and real-time data waveform display. This software also supports configuring event trigger modes.



Typical Specifications

Seismic Data Channels	3
Size	136 mm (L) x 120.7 mm (W) x 88 mm (H)
Weight	1.4 kg
Ingress Protection	IP 68
Operating Temperature	-40 °C ~ +70 °C
Charging Temperature Range	+3 °C ~ +45 °C
Charging Time	≤7 hrs
Operating Life @ 25 °C	10 days for ethernet transmission @ 2 ms 25 days for offline working mode @ 2 ms 80 hours for 4G transmission mode @ 2 ms
Data Storage	64 GB (expandable to 128 GB)
GNSS Mode	Support GPS, BEIDOU, GLONASS, single mode or double mode optional
Data Transmission Mode	Ethernet mode (ethernet, USB, WiFi) 4G mode (4G, USB, WiFi), SIM card support by local telecom operators
Data Harvesting	USB 3.0
External Power Supply	7~ 15 V DC (single supply)

Acquisition Channel

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

ADC Resolution	32 bits
Sample Interval	0.25, 0.5, 1, 2, 4, 8, 10, 20 ms
Preamplifier Gain	0 dB ~ 36 dB in 6 dB steps
Anti-alias Filter	206.5 Hz @ 2ms (82.6% of Nyquist frequency) - linear phase
DC Blocking Filter	DC removed
Maximum Input Signal	±2.5 V peak @ 0 dB
Equivalent Input Noise	0.18 μV @ 2 ms 18 dB
Total Harmonic Distortion	≤0.0002% @ 0 dB
Instantaneous Dynamic Range	128 dB @ 0 dB
Common Mode Rejection	>100 dB
Gain Accuracy	<1%
GNSS Time Standard	1 ppm
Timing Accuracy	±10 μs, GPS disciplined
Cross Feed	< -110 dB
System Dynamic Range	145 dB
Frequency Response	0~1652 Hz @ 0.25 ms

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.