

# SMARTSOLO®

World's First Smart Seismic Sensor



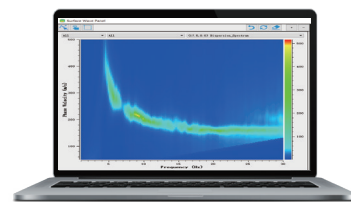
## IMU-3C

### IMU-3C Features

IMU-3C is a three-channel intelligent monitoring unit, which can carry out three-Component data acquisition. Based on the mobile communication technology, equipped with WIFI, Ethernet and 4G data transmission interfaces, IMU-3C is able to fulfil remote parameter configuration, real time data transmission, real-time data monitoring and real-time quality control.

Equipped with external sensor connector it is compatible with most multi-channel sensors used in the seismic industry.

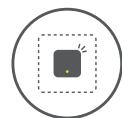
Equipped with external power supply connector, IMU-3C can be customized for long term data acquisition. The integrate GNSS module utilizes an internal antenna or can also be connected to an external GNSS antenna. A surface wave processing software developed by DTCC is now available for real-time dispersion, surface wave velocity analysis, inversion and imagining.



New Generation 3-Components intelligent monitoring unit



High resolution data with up to 0.25ms sampling and 32-bit delta-sigma ADC



Externally connected with various sensors



Built-in GNSS module, support internal and external GNSS antenna



Built-in 4G module (support SIM card replacement), achieve real-time data transmission, parameter configuring



Support internal and external power supply



Dual-LED indicator, indicates the acquisition and data transmission status of device



Built-in 4G antenna

### IMU-3C Peripherals

#### Single-port adapter charging

Single-port charging equipment  
Low cost quick charging solution



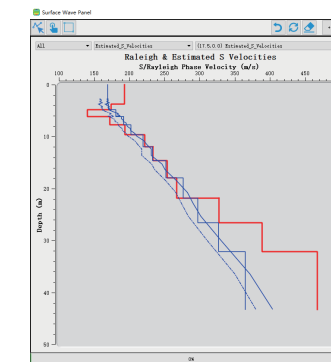
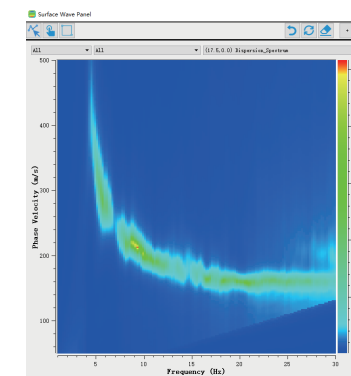
#### Single-port USB data download cable

Achieve 20mb/s high speed data download



#### SoloSW surface wave processing software

- Data transmission and dispersion analysis
- 1D/2D active surface wave analysis (MASW)
- 1D/2D passive surface wave SPAC and ESPAC method analysis



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General Specification

Analog channel	3
ADC resolution	32 bits
Sample intervals	0.25, 0.5, 1, 2, 4, 8, 10, 20 milliseconds
Preamplifier gain	0dB to 36 dB in 6 dB steps
Anti-alias filter	206.5 Hz @ 2ms (82.6% of Nyquist) - Linear Phase
DC blocking filter	DC Removed
GNSS mode	Support GPS, BEIDOU, GLONASS, single or double mode operation
Operating temperature	-40°C ~ +70°C
Waterproof	IP68
Physical Size	136mm*120.7mm*88mm (w/o external 4G antenna)
Weight	1.3Kg
Data Storage	64 GB (can be expanded to 128GB)
Operating Life@25°C	60h 4G real-time transmission working mode@2ms 25 days working offline@2ms
Data transmission mode	4G mode (4G, USB); Ethernet mode (Ethernet, USB)
External power supply	7~ 15V DC (single supply)
Charging Temperature Range	+3°C ~ +45°C
Recharge Time	≤7 h

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

Maximum Input Signal	±2.5Vpeak @ Gain 0dB
Equivalent Input Noise	0.18uV@2ms 18dB
Total Harmonic Distortion	≤0.0002% @0dB
Instantaneous dynamic range	128dB
Common Mode Rejection	>100dB
Gain Accuracy	<1%
GNSS Time Standard	1ppm
Timing Accuracy	±10μs, GPS Disciplined
Cross Feed	< -110dB
System Dynamic Range	145dB
Frequency Response	0~1652Hz@0.25ms

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SmartSolo®  
IMU-3C Applications

- Urban underground space investigation
- Disaster and adverse geological investigation
- Geological structure investigation
- Geothermal and water resources survey
- Energy and mineral exploration
- Geological survey of rail transit
- Railway real-time monitoring
- Observation of short-period array
- Microseismic fracturing monitoring
- Vibration monitoring

4G IoT Frequency Band

Parameters	Specification
Performance	LTE CAT4 3GPP R11 (Type 4: 150Mbps Upper peak/50Mbps Lower peak)
Frequency band	LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/ B19/B20/B25/B26/B28 LTE-TDD: B38/B39/B40/B41 UMTS: B1/B2/B4/B5/B6/B8/B19 GSM: B2/B3/B5/B8

Geophone features

Natural frequency	2Hz +15%	5Hz ±7.5%
Distortion	≤ 0.30%	≤0.15%@12 Hz 0.7 in/s Measured a
	≤ 0.30% 0.7 in/s Measured	peak-to-peak velocity, 0° ~ 10° vertical at
Coil resistance	at peak-topeak velocity.	0° ~ 3° horizontal angle
Damping	6000 ohm ± 10%	1850 ohm + 5%
Sensitivity	0.70±15%	0.6 ± 7.5%
Remark	260 V/m/s (6.6Vin/s)±10%	8p V/m/s (2.03 Vin/s)* 5%
	All parameters are tested under +20° C,	All parameters are tested under +22°C
	horizontal angle unless otherwise indicated.	horizontal angle unless otherwise
Inertial body mass	60 g (2.12 oz)	indicated.
Maximum coil	3 mm (0.12 in)	22.7g (0.801 oz)
Displacement p-p	38.5 mm (1.52 in)	3 mm (0.118 in)
Diameter	47 mm (1.85 in)	30.5 mm (1.2 in)
Height	260 g (9.17 oz)	40.7 mm (1.6 in)
Weight		138 g (4.87 oz)