SL06 VELBOX

Technologies for seismology, engineering and geophysics

VELBOX is a compact all-in-one high resolution seismograph. Based on the reliable and proven-on-field SL06 recorder it embeds three seismometers, allowing to put on the field an efficient and fast to deploy instrument. Within seconds from the switch on it is operative. It can embeds different types of seismometers from cheap 4.5Hz geophones to high resolution 0.1Hz sensors*.

It can also embeds additional MEMS accelerometers; this special version is named **Velbox Hybrid**. This hybrid version can measure very weak signals with the seismometers and, if the shake is strong the MEMS accelerometer preserves the readability of shake with maximum of 2 g; this features allow the VELBOX Hybrid to be used in all types of seismic scenarios.

The robust aluminum casing, coated and treated against corrosion, can be left on the field without time limit and with very small environemental protections.
Its weight and robustness guarantee good ground coupling.
Flexible data connectivity allows direct link of unit to your central observatory.

Applications

* Aftershock studies
* Soil property evaluation (Nakamura, HVSR)
* Reservoir microseismic monitoring
* Operational Modal Analysis (OMA)
* Structure Health Monitoring (SHM)
* Earthquake Early Warning Systems (EEWS)

Main features

* Ultra low noise design
* GPS synchronised or PPS or NTP when GPS not available
* Embedded MEMS accelerometer for extra strong motion channels (optional)
* Low power consumption for use in remote istallation with limited energy source
* Wide power supply voltage range
* Internal battery for safe shutdown on power failure (or UPS, optional)
* High computing power allowing edge-computing capabilities
* International SeedLink streaming protocol or custom protocols
* Substreaming capability
* Networking: TCP, SSH, FTP, http, ModBus, MQTT, Telnet, Telegram, SMS
* VPN ready to work behind firewalls and NAT filters
* High capacity local data storage
* Real time measurements according to the UNI9916 norm
* Automatic frequency peak-picking with frequency shifting alarm report
* Easy Web browser configuration and management
* IP68 protection grade for harsh environement use
* Response file in IRIS NRL repository
* Made in EU (Italy)

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** Kernel transducers are geophones of 4.5 or 2.0Hz, bandpass obtained with Lippmann method*

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Common Specifications

Power supply:	9-36Vdc, optional internal backup UPS battery (to be requested at order)
Power consumption:	< 1.9W in standard working mode§
Number of channel:	3 (6 channels for hybrid version with embedded MEMS accelerometer)
Input range:	depending on embedded sensors, ask for details
Dynamic range:	144dB system, >141dB from RMS noise to 20Vpp input range at 100 SPS 32 bit system version available with up to 162dB dynamic range
Sampling rates:	1,2,5,10,20,50,100,200,250,300,400,480,500,600,800,1000,1500 Hz
Anti Aliasing Filter:	Analog and Digital (FIR) both customizable upon request
Real Time Clock:	GPS disciplined clock +/- 10ppm -20/+50°C
RTC Accuracy:	down to 1µs to the respect of UTC with SPLL locked and PPS available
GPS Antenna:	external with coaxial cable of 10 meters and BNC connector
Messaging:	Telegram alerting for groups, message bot or SMS
Data Links:	Ethernet 10/100, RS232, RS485 (optional)
Mass Memory:	microSD and USB
Data Format:	GSEcm6, GSEint, SAC, SAF, miniSEED
Recording:	continous and/or on-event trigger
Triggering:	multimode STA/LTA, amplitude, IP voting and scheduled; fully independent, high/low/band pass filter; pre/post event: 1 to 10000 seconds
Operating temperat.:	-20/+70°C
Status of health:	Memory, Power, Vref, test pulse for sensors, peers status (if some units are connected toghether in voting systems)
Control panel:	LCD 16x2 + 3 buttons for system check and setup
Protection grade:	IP68
Norms conformity:	CE
Housing:	machined out of a solid block of aluminum, wall mount possible
Connectors:	MIL-C-26842 series, with 10, 18, 19, 26 pins depending on configuration
Dimensions:	205x170x107 mm (weight: about 4 kg, depending on embedded sensors)

§ *This is a typical power consumption, it may vary depending on nr of channels, memory size, active functions*

Accessory devices

Unit is provided with all necessary accessories to work: power and connection cables, GPS antenna, user's manual, levelling feet; there are some others accessories available like: memory expansion, cables extensions, nails for soft soil, USB adaptors, rugged transport cases, etc… Ask to us for details

Nails for soft soil

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SARA electronic instruments s.r.l.
Registered office - Via A. Mercuri, 4 – 06129, Perugia – Operations: – Via A.Morettini, 11 – 06128, Perugia - ITALY
Phone: +39 075 5051014 - +39 075 9370309 - +39 075 3726002 - +39 328 4165648 – www.sara.pg.it – info@sara.pg.it