

The Digital Array (DA) is a modular high-speed real-time network system composed of a number of mono-, bi- or triaxial seismographs connected in a high speed bus. An interface connecting to a PC or a complete SL06 recorder equipped with a GPS provides accurate synchronization to the bus and data recording and processing feature. Up to 8 nodes can be connected on the same branch. Several branches can work as data source over the standard TCP/IP bus and SeedLink protocol.

◆ The Digital Array (DA) is a compact, low-cost, and portable seismic array.

The possibility to connect embedded sensors to a digital bus makes the DA10 significantly easier to use than traditional analog telemetry systems.

A client reported that conducting surveys with the DA is seven times faster than with the equipment they used previously.

◆ The connection cable carries power, data and synchronization; this minimizes cabling needs, guarantees the best synchronization and improves reliability, especially in electromagnetically polluted environments

◆ The DA10 has low power requirements, consuming less than 15W for an 8-unit branch. A standard 12V-80Ah lead-acid battery can power an 8-node system for several days in both recording and transmission modes.

◆ In our design, we always follow a modular approach, allowing the instruments to be easily repaired and upgraded. This safeguards your investment and the environment from wasted equipment, increasing the product's lifespan.

◆ The sensors and complete system are sourced from our laboratory and come with a Calibration Certificate, which includes the transfer function expressed in poles and zeroes. Its weight and adjustable tripod ensure excellent coupling with the deployment point.

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Specifications Master:

Power supply and consumption:

10-20Vdc, below 3W with all main features active.

Number of channels and dynamic range: Case:

up to 8 node 3 channels
Milled from a single aluminium block, also for wall mounting.

Protection grade: Operating temp.: Storage temp.:

IP68.

Humidity: Dimensions:

205x170x107 mm .

Weight:

Connectors:

Mil-C.

Bus interface:

RS-485.

Data interface:

Ethernet 10/100 + RS232 console port.

GPS receiver:

integrated and optimized for timing precision.

GPS antenna:

preamplified antenna with 10mt cable BNC.





Specifications Node

Power consumption:	< 1W.
Number of channels	3 24 bit ($\Sigma\Delta$) + 3 (12 bit low data rate for static measurement).
Type of sensor:	Velocimeter, FBA, MEMS, Tiltmeter, other.
Sampling:	Simultaneous for the three channels (1 a/d per ch), synchronized between nodes.
SPS	10 - 600Hz.
Dynamic range:	> 140dB @ 100SPS in the range of 0.1 - 10Hz.
Real time clock:	+/- 10 ppm (-20 / +50 °C)
Sync.:	PPS based with accuracy < 50ms over UTC.
Data interface:	RS-485.
Data format:	SADC20 binari protocol.
Operating temp.	-20 / +70°C
Storage temp.:	
Humidity:	
Case:	Milled from a single aluminium block, also for wall mounting or SS-BHV.
Protection grade:	IP68.
Dimensions:	Std case , compact case
Weight:	Variable with configuration from 2000g up to 4200g
Connectors:	Mil-C

The Digital Array solution can be assembled in various ways to meet the different requirements and applications of field work. The pictures show three different setups. One of the most challenging applications was the coaxial deployment of 6 triaxial units in a 285-meter borehole to monitor microseismic activity in a gas storage plant.

The Digital Array Master, shown in the picture, reads from the surface the data and is a single recording unit connected by a mobile network modem. The use of a single cable, the orange reinforced cable in the picture, for power distribution, data, and synchronization ensures the quality of the recording.

Digitizing inside the capsule (or inside the node for surface devices) guarantees the highest data quality by avoiding all crosstalk and electromagnetic interference. In this application, the housing of our SSBHV carrier was used, and three high-gain geophones recorded the signal.

Mechanical coupling was guaranteed by the leaf spring, and the wall locking was accomplished by a passive sawtooth clamping mechanism on the bottom of each capsule.

The use of coaxial sensors in the borehole allows for higher resolution and detection capabilities when detecting microseismic activity. The SL06 Digital Array master unit contains all the functions of a seismic recorder and can be directly connected to any seismic recording software, such as SEISMOWIN.



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