

Sigma System Details



Sigma is the most advanced, field-proven acquisition system in the world. Its unique features include:

- 1) **Built-in, low-power mesh-type network complete with transceiver.** This network enables Sigma Boxes to communicate with each other, and with the operator. The MRN's extremely low power consumption means the network is kept active around the clock so the user can sleep, wake, command and control the acquisition system at any time. During data acquisition, the MRN returns status information to user as often as desired, including real-time noise monitoring. Some of our clients view this as a security feature as the disappearance of a node could mean that a Box or battery have been stolen from the line. Also, Sigma's MRN functionality can also provide remote control of battery power for Wi-Fi equipment and powered sensors.
- 2) **Built-in, high-speed Ethernet port.** This is 100base-T compatible connection gives the user a myriad of ways to build a seismograph network for transferring seismic data to a central location in real time. For example, Sigma Boxes may be interconnected with a combination of Wi-Fi radios, CAT5 cables, or cellular data modems. This makes it a fully configurable, hybrid (wired *and* wireless) seismic recording system and this flexibility enables customers to adapt Sigma Boxes for any project.
- 3) **Multiple time base options.** Like many nodal seismographs, Sigma Boxes use GPS to discipline its internal sampling clock. But only Sigma has the option to use a VHF radio timing signal. This lets the



user operate Sigma Boxes inside buildings, dense vegetation, or even underground, in situations where GPS signals are either obstructed or otherwise unavailable. Other system must stop recording if anything affects their GPS signal, or else they risk corrupted data.

- 4) **External removable USB Plugs.** While recorded seismic data can be downloaded via the Ethernet port, another option is use a USB Plug. The first method copies data to the Plug while it's being acquired. As the operator needs data, the USB Plugs are simply gathered from the line, returned to the operation's base, and there the data is copied and processing into records. Alternatively, time limits can be written to empty Plugs and sent to the line. There, when it's connected to Sigma Box, that Box transfers its acquired seismic data from within that time window to the USB Plug. And the USB Plug is returned to the shop for offloading and processing. Rapid data collection helps limit operator exposure in the field. Sigma Boxes do not rely on 2.4 GHZ connectivity, or large, very, expensive data harvesting racks.

5) **External battery options.** Because Sigma Boxes use external batteries, the customer has extra flexibility in adapting Sigma to their project. Small, lightweight batteries can be selected for increased portability, or larger, higher capacity batteries may be chosen for additional longevity in the field. Customers can select battery types and chargers that are available locally and matched to the local power grid. And, for long-term deployments, solar panels or stationary power may be selected. Our customers are not forced to use Lithium Ion batteries. Lithium batteries in general are difficult to manage, ship commercially, hard on the environment and they are quite expensive.



6) **External sensors.** Sigma's internal 32-bit architecture provides a high-speed, low noise, analog-to-digital sampling platform that can handle a wide range of sensors. Industry-standard locking KCK connectors mean that many geophone strings are already compatible with a Sigma Box! Other systems are restricted to a narrow selection of sensors and changing sensors means an expensive system overhaul.

7) **Software.** Sigma Acquisition Systems come with a large selection of software. Software is provided to configure and monitor the Sigma system, to quickly and easy offload data, and to process "raw" SEG-Y data into industry-standard SEG-D and SEG-Y records. Sigma software runs on Windows 7 and Windows 8 compatible computers. Fancier, more expensive hardware is not required but can be added as needed for different projects.

8) **Passive and Active Acquisition Options.** While Sigma Boxes will acquire passive seismic data right out of the box, Sigma Acquisition Systems are also completely compatible with Seismic Source Co.'s source control electronics. This includes options for Vibroseis, Dynamite and Accelerated Weight Drop acquisition. This gives the operator the option of acquire passive data with their active sensor spread, or else running a conventional source inside this passive sensor network. No other instrumentation in the world provides the level of flexibility or integration like Sigma.



For More Information, contact us at info@iseis.com!