



428 XL

SEISMIC ACQUISITION SYSTEM

Sound science.
The power to do more.



Ahead of the CurveSM

The Next Level



In order to address the growing demands of the geophysical industry for even larger channel counts, high performance digital receivers, and greater layout flexibility; Sercel has expanded upon the well known successes of the 408UL system to include even greater capabilities and expanded ownership value in the 428XL acquisition system. The 428XL offers all new hardware and software which is specifically designed to meet these needs while improving conventional operations. It also maintains compatibility with the 408UL field equipment.

Sercel's 428XL seismic acquisition system is a leap forward in technology, giving you the power to do more:

- More channels for the highest-possible resolution data.
- Greater electrical efficiency for longer battery life and less downtime.
- More layout capabilities to avoid obstacles in the field, and a wider range of compatible software and hardware platforms.
- The 428XL makes it easy for your crews to shoot the most accurate data in the least amount of time, with the fewest possible trucks and people in the field.

As customers demand more accurate, higher-resolution data, make sure you're ready with the best possible system in the industry.

428XL

428XL FEATURES & BENEFITS

THE BEST OWNERSHIP VALUE IN THE INDUSTRY

In this document we will show you that the 428XL is, today, the most capable seismic recording system in the industry. This system will offer the most advanced technology designed to be the most reliable and most productive system in the field.

The 428XL system has benefited from the vast field experience of the 408UL, the most reliable system in the industry. Owners of the 428XL will accrue this benefit in the form of a *five year warranty* on 428XL Line electronics, the longest in the industry.

In case there should ever be a problem with field electronics, Sercel has revamped its customer service to replace covered equipment with a standard exchange instead of repairing any individual piece of equipment. Our customers will have more of their equipment working for them a greater percentage of the time than owners of any other systems.

MORE CHANNELS, MORE ACCURACY

Sercel's 400 Series of seismic recording systems is the most popular in the world, with the total number of channels sold exceeding any previous to current systems offered.

The 428XL builds on the 400 Series' proven technology, reliability and efficiency with all new hardware and software designed to enable the largest channel count operations in the industry.

With a capacity of 100,000 channels – backed by a new telemetry structure that boosts by 500 percent the number of channels a wire transverse cable can address in real-time at 2 ms – the 428XL gives you outstanding accuracy, speed and ease of use for even the largest surveys.

And newly designed digital receivers – the DSU 1-428 and DSU 3-428 – offer new features such as insensitivity to tilt, reduced power needs and redesigned packaging to move sensors deeper into the ground when planted.

And because the 428XL is compatible with existing 400 Series technology, you can keep your current systems in operation and upgrade when you need additional power in the field.



428XL



The 428XL requires less power, lasts longer, and is more reliable than any of its competitors on the market today.

SIGNIFICANT WEIGHT SAVINGS

The 428XL uses new line electronics that are smaller and lighter, and can address more channels as the group interval gets smaller.

That gives you significant weight savings over traditional systems, with a total system weight per channel – including station electronics, line electronics, cables and batteries – that gets smaller as the number of channels increases.

STAY POWERED

The Sercel 408UL was the most power efficient system in the world. The 428XL is even better – up to 35 percent more efficient, depending on the type of sensor and the spacing between receiver points, up to 120 seismic channels can be powered up by a single standard $\pm 12V$ battery. That power efficiency makes a big difference in the field.

MORE CHOICES

The 428XL offers unparalleled flexibility and efficiency in the field. You choose the set-up and peripherals that will work best for each job, and the 428XL is ready when you are.

For example, the 428XL can be equipped with complete radio telemetry or 100 Mbps Ethernet wireless transverse systems built in. So you can choose wire, radio or both depending on your needs.

The 428XL can also be used with the widest possible range of software and hardware:

- digital or analog receivers
- 1c or 3c
- PC or Sun
- Windows, Linux, Solaris

Though the 428XL offers new technology, the system may be used with 408UL Links, giving you a choice in how and when you upgrade your existing equipment.



The new e-428 system software ensures compatibility, and all existing 408UL applications are fully supported by Sercel – plus, we've made some major enhancements for existing 408UL customers, including an all-new, easy-to-navigate system interface.

EQUIPMENT PROFILE

The Sercel 408UL has been the most power efficient system in the industry. Based on this same highly efficient design, the 428XL requires less power, lasts longer, and is more reliable than any of its competitors on the market today. The 428XL offers all new hardware and software which is specifically designed to meet the needs of large channel count operations while improving conventional operations. It is also compatible with the 408UL field equipment. Following the successes of the 408UL system, the 428XL has already proven itself a strong addition to the Sercel 400 Series family.



NEW GROUND EQUIPMENT

428 LINK

Similar in architecture to the 408 Link, the 428 Link is a combination of FDUs (Field Digitizing Units) and cables that can be handled as a single lightweight unit. The length and type of cable as well as the number of FDUs and their intervals are user-defined. The lightest weight and most efficient ground equipment in the industry, including cables, batteries and FDUs is the result. In addition, the sensors connect directly into the FDU eliminating any significant analogue path within the recording system.

DSU-428

With the introduction of the 428XL, the DSU1-428 and the DSU3-428 have been introduced with some new capabilities. The DSU-428 (Digital Sensor Unit) is a MEMS-based digital accelerometer with low power consumption and fully functional at any tilt angle. Still available as either a one-component or a three-component sensor, the packaging has been redesigned to move the sensors deeper into the ground when planted and lower the profile of the DSU-428. These sensors have proven to be high-performance, power-efficient and reliable in all operations.



428XL



The LAUX is used to connect each line in a 3D spread to the higher speed transverse connection to the recording system.



LAUL-LAUX

The line voltage provided to the FDUs and DSUs is supplied through the Link's cables from dedicated field units called LAULs. The power source is a conventional 12-volt battery with a typical capacity of 60 amp/hour. The LAUX is used to connect each line in a 3D spread to the higher speed transverse connection to the recording system. The LAUL and LAUX also ensure the following functions:

- Consolidation of the FDUs or DSUs data for transmission to the recording system
- Buffering of local data
- Processing of instrument tests

428XL TRANSVERSE CABLE

Based on an 100 Mbps Ethernet protocol, the 428XL transverse cable is capable of handling 10,000 channels at 2 ms in real-time with only one Crossing Unit (LAUX) per line. With the 428XL, the deployment of such a large amount of channels in the field has never been so easy and has never required such little equipment.

NEW RADIO TELEMETRY OPTION

The 428XL system introduces a new radio telemetry option. With this increased layout flexibility, seismic crews are able to avoid all types of obstacles and achieve greater field efficiency. The 428XL system offers a new data acquisition unit, the LAUR-428 and a transceiver unit, the LRU-428 with the ability to connect either to a 428 line or directly into the recorder.

LAUR-428

Capable of acquiring up to 30 channels of seismic data at 2 ms sampling rate in real-time, the LAUR-428 offers a high degree of flexibility without compromising the productivity of the operations. Using the 215 MHz – 250 MHz RF bandwidth that has already proven to provide strong propagation characteristics, the LAUR-428 allows data transmission up to 24 km. Equipped with a non-volatile data memory, the LAUR-428 allows temporary storage of acquired channels to avoid data losses in case of transmission or power supply failures.

LRU-428

Using wireless Line Repeater Units (LRUs) radio transmission can be incorporated into the cable network. The line cable, or the transverse cable, may be interrupted at any point and connected to another line or transverse cable using a pair of LRUs. They can be used to extend a portion of cable spread or to relay radio transmission from point to point. The LRU-428 acts also as a master of radio cells composed of several LAURs. Each LRU-428 can receive up to 240 channels at 2ms in real-time and connect either to a 428 line or directly into the recorder.

LASER LINK

The laser link is a wireless bridge relying on infrared laser transceivers therefore not requiring any frequency licensing. It can be used to relay the data from a line or a transverse, over a distance of up to 2,000 m in clear conditions.

NEW CENTRAL UNIT

E-428 SYSTEM SOFTWARE

To accompany the exciting new developments in field equipment and telemetry, Sercel's seismic network software also displays some important improvements including an all new user interface. Named e-428, this software, based on a client/server architecture, totally controls the spread and the operations. It also performs all the requested computations (stacks, correlations) before recording data onto tapes or disks. Supported software platforms for the e-428 system include Windows, Linux and Solaris. The supported hardware platforms include PC and Sun. Taking benefits of its client/server architecture, e-428 allows secured remote access through Internet connections.

LCI-428

Interface between the spread and the e-428 client/server architecture, the LCI-428 supports as much as 10,000 channels in real-time at 2 ms sampling rate. This compact unit (483 mm x 421 mm x 86 mm and 4.1 kg) (19 in x 16.5 in x 3.4 in and 9.0 lbs) acts as a router between the seismic data acquired in the field and the high-speed Ethernet network of the e-428 software. The LCI-428 also interfaces peripheral equipment such as the source controllers. Up to 10 LCI-428 can be linked together to handle up to 100,000 channels in real-time at 2 ms.



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