



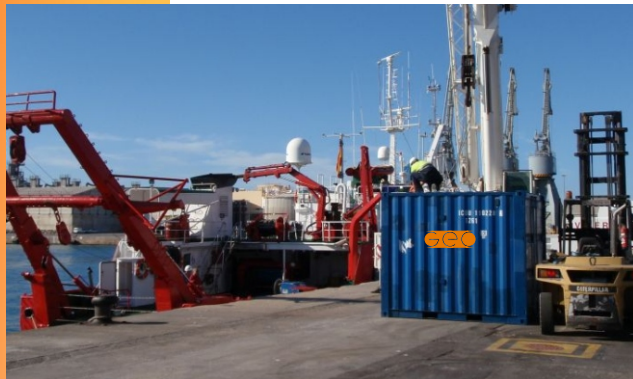
Mega-Spark 20- 40 kJ

12 kJ / sec charging capability

NEW



Mega-Spark 40 kJ



installed in 8" or 10 " container



Mega-Spark 20 kJ

What is NEW ?

The Mega-Spark 20 - 40 kJ has been developed using the new and fully proven HV charging technology of the 2000 X series.

The system features a stunning charging capability of 12 kJ/ sec allowing to shoot at 40 kJ full power every 4 seconds.

The system is very suitable for the LF Mode, where the towing depth of the Geo-Source is tuned to enhance the LF implosion pulse.

Range & Application

40 kJ : typically used with Geo-Source 2400 sparker in water depths up to 6000 m in combination with multi-, or single channel data acquisition .

20 kJ : designed for the Geo-Source 1600 mega-sparker

Both PPS models can also power all smaller sparkers models, including the Geo-Source 200 and 400 fresh water sparkers

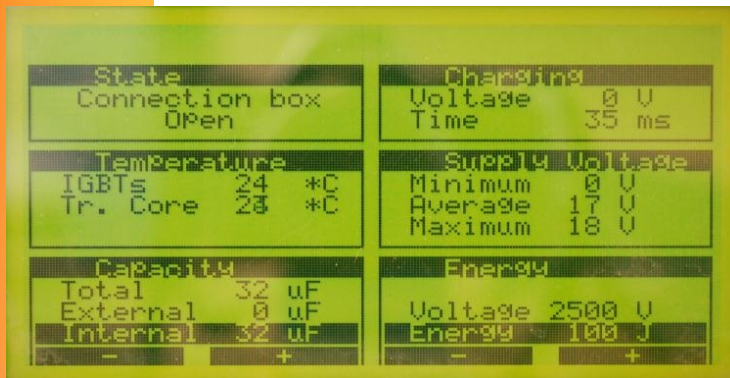
Operational Safety Features

All possible safety features have been integrated into the systems to safeguard against potential human error:

- High voltage (HV) can only be activated when the HV connection box is completely closed.
- If the HV connection box is opened, even partially, during operation, the HV will automatically switch off and the unit will generate a final trigger to discharge the capacitors.
- Similarly, when the HV is switched off normally by pushing the red stop button, an automatic final pulse will discharge the capacitors.
- When the HV connection box has been opened completely, both poles (zero and negative) will automatically be shorted.
- The system contains multiple internal bleed-off resistors to eliminate any possibility of unwanted charging effects, when not in use.

Operational Features

- Selectable capacitance in steps of 256 μF
- Selectable charging voltage from 2 to 4 kV
- 500 J - 40 kJ real power
- No electrical oscillations
- Modular architecture
- All sub-units can be hand-carried
- User-friendly & 100% safe



User Interface

All internal initializing and safety procedures are microprocessor-controlled and the current system status can be monitored via a comprehensive LCD display and a series of LED's. This provides straightforward system control which basically is limited to the following actions:

- switching on/off the system
- selecting capacitance and voltage
- advertising operational parameters
- activating/de-activating the HV generation

Safe and Intuitive Operation

All connections, command buttons, switches and status LEDs are front-mounted to ensure direct information and intuitive operation.

Triggering

Remote triggering of the unit is implemented by a TTL pulse, which is internally converted into a fibre-optic signal to the thyristor trigger device. There is no need for any external opto-isolator on the trigger line. During standby between survey lines, the unit will NOT trip - it will slowly bleed off but will remain ready for the next line.

Negative Electric Discharge Pulse

There is no other unit commercially available that allows you to generate a negative high voltage pulse with such a high dI/dt ratio.

Concept & Design

Cutting-Edge Pulsed Power Technology

The Mega-Spark 20-40 kJ is revolutionary high voltage (HV) power supply based on cutting-edge 'pulsed power' technology. The systems use an extremely reliable, state-of-the-art, optical thyristor, which can generate very short (100 - 200 μs) high voltage pulses up to **55 kA**

Flexible Energy Output

The systems has a selectable energy output from 500 J to 40 kJ, which can be modified by:

- selecting the charging voltage from -2000 V to -4000 V during operation
- changing the total capacitance from 256 to 5120 μF with 256 μF increments

Since the energy output can be calculated as $E = 0.5CV^2$, this creates the option to generate the same energy with different voltage /capacitance combinations. This effectively changes the shape of the pulse, while maintaining the same pulse energy.

No Electrode Wear

These pulsed power supplies are fundamentally different from any other HV power supplies. They have been designed specifically to power the Geo-Source range of multi-tip sparkers in our patented '**Negative Discharge Technology**'. In this technology the electrodes have a negative potential with respect to the source frame, thereby reducing electrode wear to almost zero.

High Quality Dry Capacitors

The pulse output has NO electrical oscillations, which affect the acoustic signature. Each capacitor bank contain 2 groups of 256 μF , which can be activated independently. The capacitors rated for more than 200 million discharges. For example, a one second discharge rate would give continuous work for six YEARS.

Power Consumption

At the maximum HV charging rate of 12 kJ /sec, the Mega-Spark 40 kJ systems can be operated from any 32 A, 3 phase 380 - 440 V, 50 - 60 Hz mains power source and does not draw excessive peak currents. This translates into 20 kVA, if powered from a generator.