

# Geo-Spark Triple-Charger Pulsed Power Supply

HIGH VOLTAGE POWER SUPPLIES



Modular Architecture Pulsed Power Supplies for shallow and oceanic waters.

## Description

### CUTTING EDGE PULSED POWER TECHNOLOGY

The Geo-Spark Triple-Charger Pulsed Power Supply features a modular design that allows the system capacity to be increased up to 16 kJ by adding external capacitor bank units. This model is specifically designed with three independent Chargers, which substantially reduce charging time, enabling efficient operation even at the highest power output requirements.

### MODULAR ARCHITECTURE

It is possible to combine Geo-Spark Triple-Charger Pulsed Power Supplies to achieve higher energy outputs (the cover image features a common configuration where three Triple-Chargers are combined, achieving maximum 48 kJ energy output).

### 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.

### FLEXIBLE ENERGY OUTPUT AND REVOLUTIONARY PULSE SHAPING

The systems has a selectable energy output from 800 J to 16 kJ per unit, 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  $\mu\text{F}$  with 256  $\mu\text{F}$  increments

Since the energy output can be calculated as  $2 E = 0.5CV$ , 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.

### QUALITY BUILT TO LAST

Built to last, electronically and mechanically. The housing and frame consist of anodised aluminum and stainless steel 316. Rubber shock absorbers support all the vibration-sensitive components inside the housing.

- Revolutionary pulse shaping.
- Selectable capacitance in steps of 256  $\mu\text{F}$ .
- 800 J - variable (up to 16 kJ, depending on configuration).
- Modular approach with the possibility to combine units to achieve greater energy.
- No electrical oscillations.
- User-friendly & 100% safe.
- All sub-units can be hand-carried.

## Operational Features

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## 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.

## User Interface

### SAFE AND INTUITIVE OPERATION

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

## Other remarkable features

### HIGH QUALITY DRY CAPACITORS

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

### 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

## Specification

<b>Mains Power</b>	<u>4 × 220-240 VAC, 50-60 Hz, 16 A</u>  Four dedicated single-phase power inputs Charging Unit: Three 230 VAC (16A) single-phase Control & Trigger Unit: One 230 VAC (16A) single-phase
<b>Energy range</b>	From 800 to 16,000 J (depending on configuration)
<b>Operational depth</b>	Shallow waters to 3,000 m+
<b>HV charging capability</b>	3000-6000 J / sec per Power Supply (depending on input and output voltage settings)
<b>When selecting the power unit</b>	Power input selection must incorporate a safety margin for the charging units due to variable power consumption. Assuming ~2 kW average (3 kW peak) per charger, a 5 kW margin is recommended. Then, the power system should be able to supply 15 kW for a single Triple-Charger Power Supply - The neutral must be ground-referenced.
<b>Maximum output</b>	-5.6 kV
<b>Recommended source</b>	<a href="#">Geo-Source-800</a> (for single Triple-Charger Unit) or <a href="#">Geo-Source Triple 800</a> (for multiple Triple-Charger Units) in combination with multi-, or single-channel streamers.

We are always pushing for improvements, so equipment specifications can change without notice. Please keep in contact with support to stay in tune with the developments.