



High Voltage Bipolar Pulse Generators

BPG Series
 ± 2.4 kV – 24 kHz
40 ns rise time



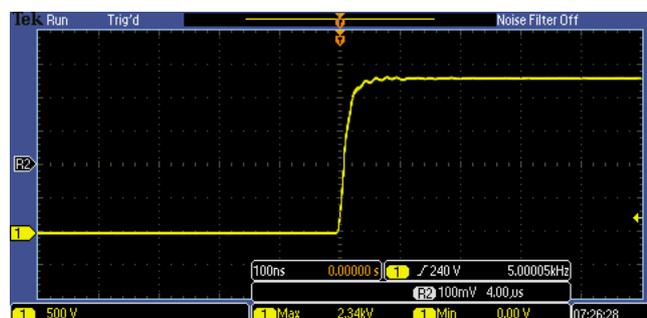
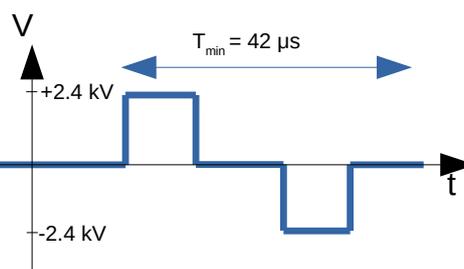
**Bipolar pulses
up to ± 2.4 kV
<40 ns rise time
24 kHz repetition rate**

PLe ready

Bipolar

The BPG Series pulsers are bipolar high voltage pulse generators able to output an alternance of positive and negative pulses up to ± 2.4 kV with a repetition rate (of the entire waveform) of up to 24 kHz.

Customized pulse patterns can be defined on request. Contact our engineers at info@sci-consulting.ch.



Ultrafast rise time

Thanks to the use of modern MOSFET technology, ultrafast rise time of 35 ns into 200 pF can be achieved, thus reaching rates of up to 60 kV/ μ s.

When used with 50 Ω coaxial cable the output signal is clean, with very little reflections and overshoot thanks to the good impedance matching. This trace was recorded on an 80 pF capacitive test sample at the end of a 1.5 m coaxial line. Note that the sample was purely capacitive and there was no circuit termination of any sort.

External trigger and synchronization

The pulser can be triggered externally by a TTL signal. Rising edges will alternatively trigger the transition from 0V to +HV or from 0V to -HV and the falling edge will trigger the transition back to 0V. Different behaviour can be achieved on request : info@sci-consulting.ch.

Two or more pulsers can be synchronized by wiring the Sync out output of one pulser to the Sync In input of another.

Short-circuit detection and power monitoring

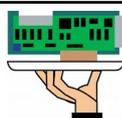
Short-circuits are detected within a few microseconds. When a short-circuit is detected the pulser immediately stops outputting HV. In addition, one can monitor the voltage and power consumption on each polarity in real time.

Remote control

The pulser is controlled remotely via an Ethernet link. LabVIEW drivers are already available. An API based on VISA over Ethernet can be proposed on request.

Redundant safety is ensured

In today's regulatory environment, installing such a test system can be a complex task, as it must be integrated into a system that meets the safety standards promulgated by the EU's Machinery Directive (in the EU). The BPG is an instrument that readily integrates into a modern safety scheme: It features two normally-closed high voltage grounding relays at its output, with a long lifetime of 1 million operations and mechanically-linked contacts for monitoring. The « Safety » connector on the rear panel provides access to the coils of the relays and to the monitoring circuit. The BPG's safety circuit can thus be integrated into a Category 4 safety scheme with redundant and monitored safety output in the sense of the EN ISO-13849-1 norm and a performance level that can easily reach PLe.



Sci-Consulting

+41(0)21 697 07 61
info@sci-consulting.ch
www.sci-consulting.ch

| OUTPUT | | | |
|----------------------------|--|---|--|
| Positive amplitude | Up to + 2400 V | Continuously variable from 0 to 2400V | |
| Negative amplitude | Up to - 2400 V | Continuously variable from 0 to -2400V, independently from positive amplitude | |
| Pulse width | 700 ns - ∞ | Resolution 25 ns Maximum pulse width depends on repetition rate Shorter pulse widths can be achieved on request : info@sci-consulting.ch | |
| Rise/fall time | <40 ns | From 10 % to 90 % from 0 to +2400V or 0 to -2400V into < 200 pF Can be as low as 25 ns depending on reflections. | |
| Rise rate | >50 kV/μs max | | |
| Output impedance | 50 Ω | | |
| Repetition rate | BPG-120 | 20 kHz | Continuously variable up to the maximum frequency with a resolution of 50 ns |
| | BPG-240 | 24 kHz | |
| Max. Output power | BPG-120 | 72W | 36 W per polarity |
| | BPG-240 | 144 W | 72 W per polarity |
| Trigger modes | <ul style="list-style-type: none"> • Internal trigger • External trigger (TTL level, >250 ns pulse, input impedance = 1 MΩ) | | |
| Sync out | TTL Level, a rising edge corresponds to a transition from 0V to the positive or negative HV and a falling edge to a transition from HV back to 0V. | | |
| Sync in delay | 200 ns | Sync in edge to output edge | |
| Sync out delay | 50 ns | High voltage edge to Sync out edge | |
| Connector | SHV | | |
| INPUT | | | |
| Input voltage | 100 - 240 VAC | | |
| Input power | BPG-120 | 120 W | |
| | BPG-240 | 240 W | |
| MECHANICAL - ENVIRONMENTAL | | | |
| Operating temperature | -10 °C to 40 °C | | |
| Storage temperature | -40°C to 85 °C | | |
| Dimensions | BPG-120 | H = 132.6 mm (3U), D = 315.5 mm, W = 448.9 mm (19" rackable) | |
| | BPG-240 | H = 132.6 mm (3U), D = 375.5 mm, W = 448.9 mm (19" rackable) | |
| REMOTE CONTROL | | | |
| Interface | Ethernet, RJ-45 | | |
| Drivers | LabVIEW drivers | A VISA API can be proposed on request | |
| SAFETY | | | |
| Interlock circuit | Redundant grounding of the output by two normally-closed high voltage relays with mechanically-linked monitoring contacts. Monitoring lines and safety relays voltage supply accessible through connector on the rear panel. | | |
| Safety connector | 4 pins male M8 connector. | | |
| Safety performance level | PLe (Cat. 4) | According to EN ISO-13849-1 | |

