

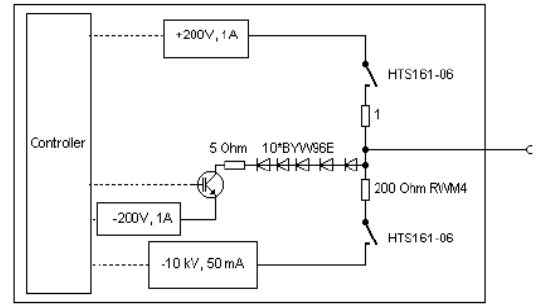
RUP3-10B

Rossendorfer Universal Pulse Generator

The pulse generator RUP3-10bip was developed for special applications in plasma immersion ion implantation. It allows to switch 3 different voltages to the output or leave it at high ohmic state.

The voltages to choose from are a negative 10 kV high voltage source delivering up to 6 A peak current, a negative Bias up to -200V and a positive Bias up to +200V. Nearly fully arbitrary pulse sequences can be executed.

The pulse generator can be controlled by serial interface over a computer.



Principal circuit diagram of RUP3-10 bip

voltages and current

high voltage 0...-10 kV, adjustable, average current 50 mA max., buffered by 330 nF
negative bias 0...-200V, 1A max., buffered by 66µF
positive bias 0...200V, 1A max, buffered by 66µF
Some high voltage modules from Behlke (HTS161-06-B) serve as switches.
The output impedance is about 200 Ohm for the pulsed high voltage and about 10 -20 Ohm for both of the bias voltages
The peak short circuit current of the high voltage is about 45A, in practical applications the current should not exceed 6A
maximum output power 900W in total

waveform and frequency

arbitrary sequences of positive bias, negative bias, HV and high ohmic state, programmable
Rise times in the order of 100ns – 1µs, depending on voltage and load
Pauses of 1µs are between different pulses
fall times depend on load; output capacity is about 300 pF
possible pulse width may range from 0.5 µs to 500ms (the maximum useful pulse width in case of larger pulse currents is given by the buffer capacitors)
duty cycle up to 100%
frequency 2 Hz to 5 kHz

computer control

The RUP3-10B includes an internal controller, which can be addressed by RS232- interface. So values of the voltages as well as the pulse sequences can be adjusted by computer. Actual voltages and currents are measured and can be read by the computer.

mechanical, included items

rack on wheels.
Front panel display of voltage and current for positive bias, negative bias and
HV voltage monitor output 1:1000
5m output cable RG213
complete documentation with circuit diagrams.

environmental conditions

operating temperature 5-35°C
humidity 0-80%, the pulse generator is designed for operation in dry rooms.
protection class I, IP20
grid supply 230V~, 1000W max.

safety

external interlock
By using protective resistors the pulse generator is widely resistant against short circuit and arcs even without the internal short circuit detection circuit.
short circuit currents are limited to 45 A
The pulse generator complies to regulations about electromagnetic compatibility (EMC).

Not included

Oscilloscope (recommended is something as TDS210 or similar)
connectors or feedthroughs for the vacuum chamber

24.03.3003