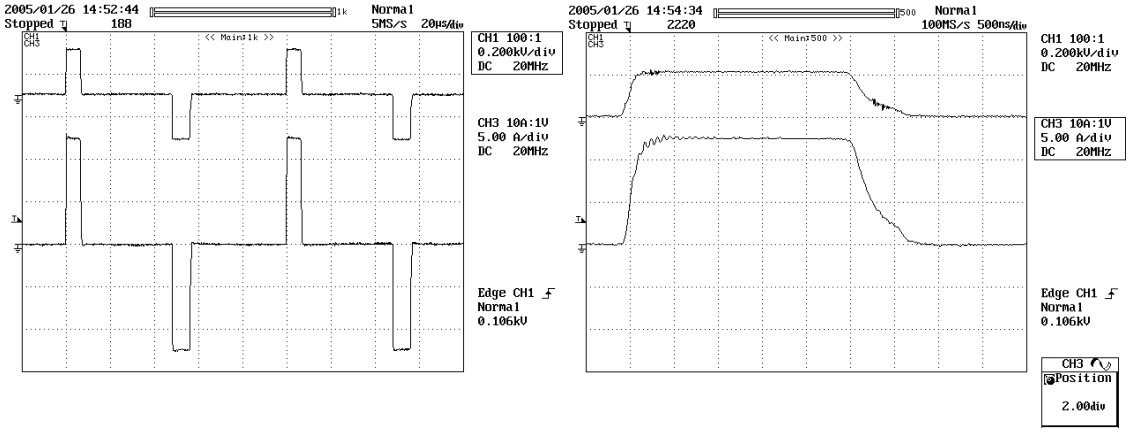
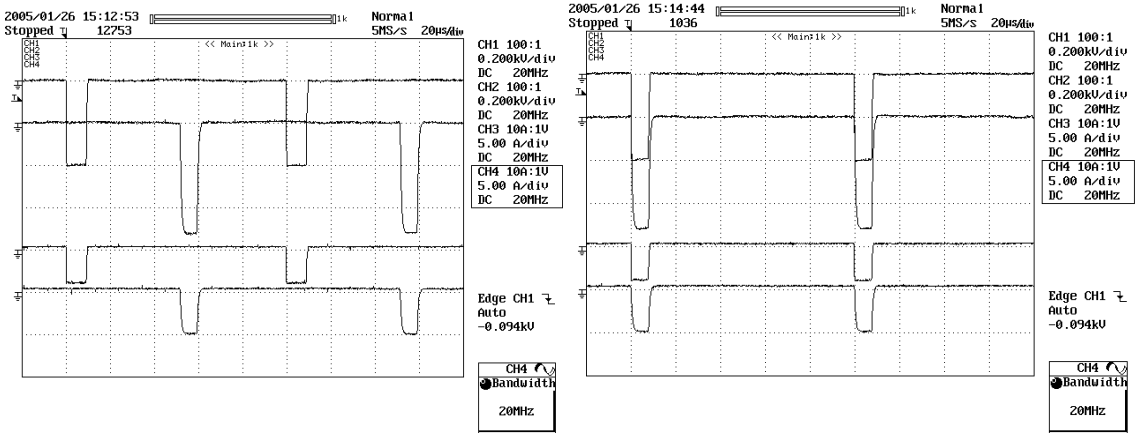
Pulse generator RUPmag

The pulse generator RUPmag is a smaller pulse generator for magnetron sputter applications. It allows Frequencies up to 20 kHz, voltages up to 800V, power up to 1kW. Depending on operation mode, it allows to operate two magnetrons in parallel or one magnetron in bipolar mode.
Both outputs can be connected alternatively through a protective resistor, a protective inductor or directly.
In bipolar mode, both square outputs are operated with 180° phase shift and one output is connected to ground wheras the other is conneted to the magnetron.
In unipolar mode, the positive pole of the internal power supply is connected to ground, and the outputs are connected to the magnetrons.

Examples for output wave forms



Operation mode bipolar, 100 Ohm load, 500V, 10 kHz, small duty cycle. The upper signal is current, the lower is voltage. The right picture is a different time base (500ns/div), and shows details of the switching edge..



Operation mode unipolar negative, 10 kHz 500V, both outputs 100 Ohm load. The highest curve is the voltage on output 1 below the voltage on output 2. The lower lines are the corresponding currents. Output 1 is connecte by internal resistor, output 2 is connected by internal inductor. The left picture shows operation with 180° phase shift, the left picture no phase shift.

Technical data

Voltage and current

- Internal power supply 0-800V adjustable, maximum current 2A, Maximum power 1 kW
- peak current up to 20A.
- The internal power suppla is principially potential-free. But the positve pose must not get more negative than ground, and the negative supply must not get more positive than ground. Diodes inhibit otherwise operation.

Waveform and frequency

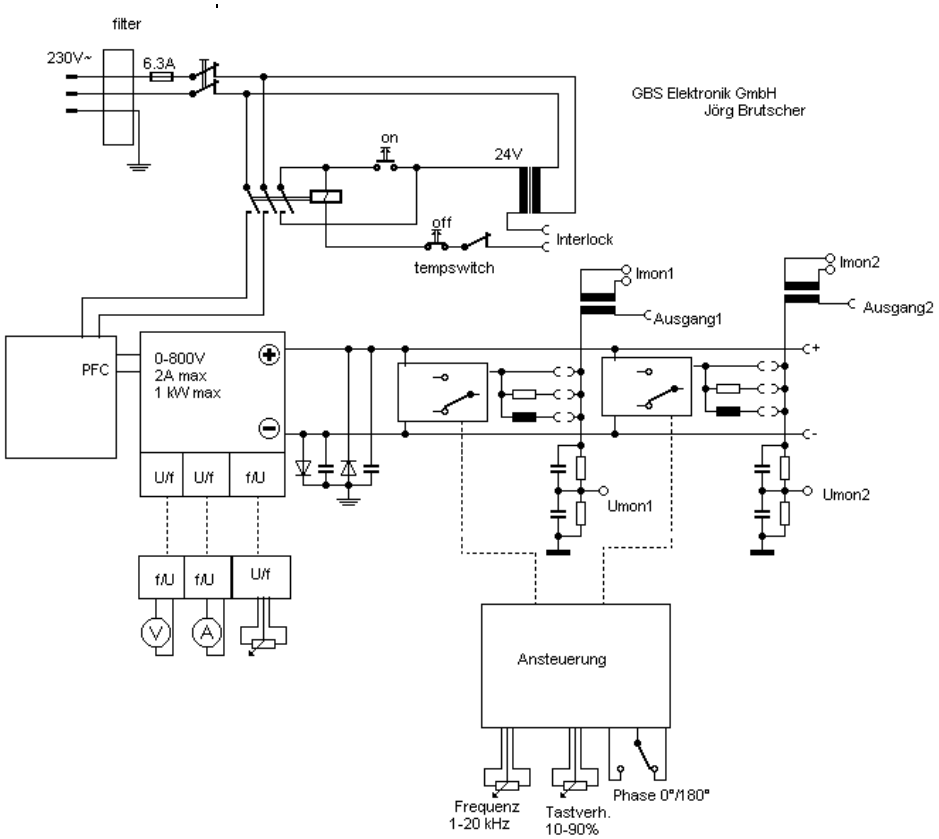
- square wave, rise times around 100-200 ns, fall times about 500-700ns.
- Both outputs can be operated synchronous or with 180° phase shift.
- duty cycle 0%-100%, adjustable, error <5%.
- Frequency 1-20 kHz, adjustable.

Mechanical, included items

- Housing designed for 19" rack 6 HE (483 *267 mm), 600 mm deep.
- Meters for voltage and average current.
- 10-turn Potentiometer for adjustment of voltage.
- 10-turn Potentiometer for frequency and duty cycle.
- Switch for Phase 0°/180°
- 2 voltage monitor outputs 1:100
- 2 current monitor outputs 100 mV/A, AC coupled
- Outputs with 4mm laboratory plugs.
- Optional connectable output resistor: 27 Ohm, 100W
- Optional connectable output inductor: 50 µH
- Manual with complete circuit diagrams.

Environmental conditions

- Environmental temperature 5-35°C
- Humitity 0-80%, the pulse generator is intended for use in dry laboratory rooms.
- protection class I, IP20
- supply voltage 220V-240V~, 1100W max.



pricipal scheme RUPMag

Safety

- External interlock
- The pulse generator is protected against short circuits and flashovers by protection resistors, by fast arc detection switch off, and overtemperature monitors. Positive pulses without protectional resistors are not allowed as the arc detection does not work in this case.
- Maximum short circuit current 40 A.
- The pulse generator, correctly connected, will be conformal to regulations about electromagnetic compatibility (EMC).

General

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