

Pulse Generator RUP6-12c

- True square wave pulse with active switching off
- Arbitrary pulse width
- rise time ~200 ns
- frequency up to 3 kHz
- voltage up to 12 kV
- peak current up to 120 A
- short circuit proof

The RUP6 is a new universal solid state pulse generator which may be constructed for voltages up to 30 kV.

Prominent features are high pulse current, very high efficiency, scalability of the voltage and an ultra fast switching off in case of arcs.

The RUP6 consists of numbers of 1 kV pulse modules which are charged in parallel and are switched in series during pulse. Power supply and modulator are integrated within this principle.

Technical Data

Current and Voltage

- output impedance about 10 Ohm, corresponding to 0.8 Ohm per module.
- internal pulse capacity about 4.2µF, corresponding to 50 µF per module.
- peak current 120 A. Overcurrent for more than 2 µs will activate short circuit switch off. The inherent short circuit current limit is about 200 A. An Arc (sudden short circuit within a pulse) will initiate switch off within 500 ns
- average current 500 mA max.
- maximum output pulse voltage 12 kV. Output pulse voltage can be adjusted continuously, however, there is a hysteresis of about 1% in the voltage regulation, so accuracy as well as minimum voltage is in the order of 120V.
- maximum output power 6 kW, decreasing with duty cycle. $P_{out} = P_{max} * (1 - \text{frequency} * (\text{pulse width} + 150\mu\text{s}))$

Wave Form and Frequency

- square wave with variable pulse width and variable frequency
- rise time about 200 ns
- fall time 3 µs maximum, eventually faster depending on load.
- pulse width 0.5 µs - 100 µs, using external control or computer control also longer. Principally the internal pulse capacitor should not discharge more than 10 % of the maximum rated voltage.
- Duty cycle can be chosen nearly arbitrarily, it has only to be noted that maximum possible output power will linearly decrease to zero when the duty

cycle is approaching 100%, as the internal power supply is off during pulse and starts again after end of pulse with a 150µs delay..

- maximum frequency 3 kHz
- control of voltage, pulse width and frequency by potentiometers on the front or alternatively by computer control via RS 232 interface. Pulse control may also be done by external TTL signal at the control input at the front and voltage control is possible by an analog voltage (0-10V).

Mechanical, included items

- rack, 780 * 553 * 1630 mm (depth, width, height)
- grid supply 3 * 480 V
- 2m output cable
- Internal controller, addressable by RS232, with the following functionalities:
 - programmable pulse generator
 - control of output voltage
 - wave form control (peak current, peak voltage)
 - Arc counter
- RS232 light fibre cable
- software for PC
- documentation

Safety

- external interlock
- a fast short circuit detection protects the pulse modules from damage by short circuit or arcing in the load.
- short circuit currents are inherently limited to 200 A.
- The pulse generator is compatible to regulations about electromagnetic compatibility (EMC).

Not included or to be provided

oscilloscope

Warranty

Warranty includes email and telephone support, spare parts, labour and shipping costs to customer. It does not cover travelling costs nor eventual shipping costs from customer.

Servicing should be done by experienced personell only as there are hazardous voltages inside the device.

Company address

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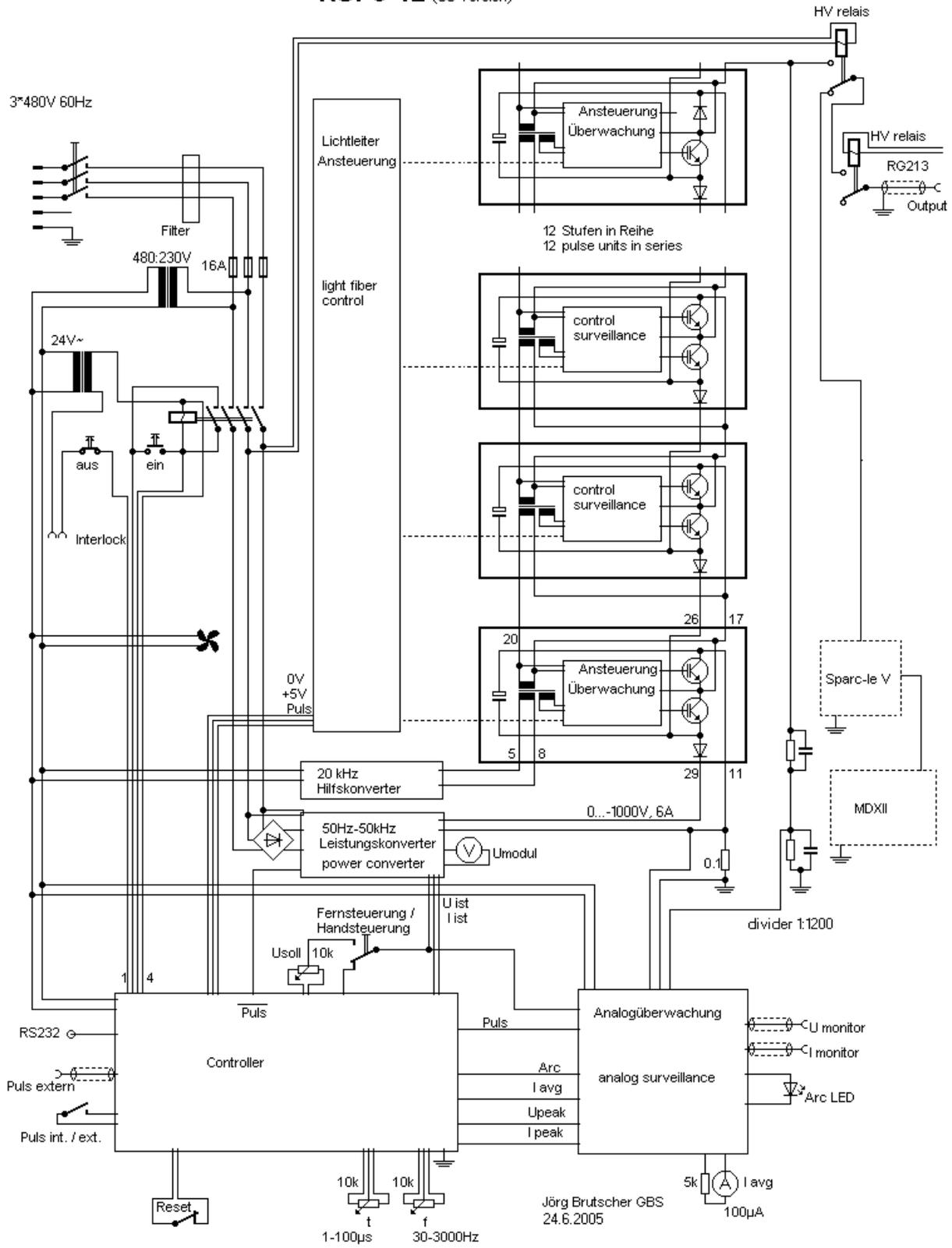
All given data and parameters are by best knowledge. Changes may be reserved.

Stand 6.05

principal scheme of pulse generator

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RUP6-12 (US Version)



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RUP6-12 layout

Control elements front plate

- 1: main switch
- 2: control lamps phase
- 3: high voltage off
- 4: high voltage on
- 5: switch voltage control computer / front plate
- 6: Reset internal controller
- 7: RS232 interface to computer
- 8: control signal input 3-10V (TTL recommended)
- 9: voltage monitor output 1:1000
- 10: current monitor output 100 mV/A
- 11: LED Arc
- 12: Internal pulse generation on/off

- 13: HV voltage control
- 14: pulse width control
- 15: frequency control
- 16: display module voltage
- 17: display average current
- 18: LED remote control

Connectors back side

- 19: central ground connection
- 20: interlock connection
- 21: output pulse voltage (RG11 cable)
- 22: grid supply cable
- 23: feedthrough for cable from MDXII supply

