Minipuls 0.1
Ultra light weight high voltage frequency generator for barrier discharge

The assembly Minipuls 0.1 is an improved version of the Minipuls 0 and developed to generate high AC voltages up to 6 kV peak (=12kVpp or 4.2 kV RMS) with frequencies in the range 5 - 20 kHz.

The assembly consists of two boards, the control board with the full bridge converter and the transformer cascade. Both boards are optimized for lowest total weight (around 340g for both boards). Power supply may be by a 26V Li battery. Burst frequency, duty cycle and output power (phase) may be controlled by external analog voltages as well as on board trimmers. The generator may be switched on and off by a TTL signal.

Control, input, output, size
- all inputs with screw type connectors.
- connection for supply voltage 15 - 35 V
- analog inputs 0-5V for external control of burst frequency, duty cycle and phase.
- inhibit input:
  - operation enabled U < 2 V
  - operation disabled input open or U > 2 V

Input current inhibit input < 0.5mA.
board size: 64*105mm, weight 83g.

Transformer cascade RM10
- 5 output transformers, cascaded, RM10
- maximum output voltage 6 kV peak at 10 kHz; voltage depends on frequency and load.
- The saturation limit for the time-Voltage integral is 200 - 250 kVµs.
- Maximum voltage is limited by a spark gap to around 8 - 10 kV peak to protect the transformers.
- Output capacity of the transformer cascade around 5 - 10 pF.
- The transformer cascade has two possibilities to connect: One is for operation with nominal load of 100pF, the other is for half load with corresponding increased primary inductance.
- A temperature sensor is integrated within the 1st transformer.
- From the first transformer, a DC monitor voltage (0-5V) is generated for surveillance.
- board size 73*153mm, weight 252g.

Environmental conditions
- environmental temperature 0 - 35 °C
- humidity 0-80%, the assembly ist intended for the use in dry rooms
- protection class III, IP 00

Safety, EMC
The high voltage output connector is not protected against touching! The user has to ensure that they can't be touched during operation. Outputs of high frequency transformers have very little stored energy(<100pF capacity). But the current may exceed allowed limits, touching may cause severe burns. The most common application (barrier discharge in an open setup) is a possible source of high frequency noise emissions, which may influence nearby electronics devices. This has to be considered by the user and appropriate measures taken.