

In this application initially a capacitor (0.22 microfarad, 50 kV) is charged using a DC power supply (30 kV, 10 mA) to a voltage of about 1kV-30 kV. This charged capacitor is then discharged through a plasma load, using a trigger-able ignitron HV switch. A HV dump switch is provided so as the capacitor will get discharged to the ground in case if the plasma load does not discharge

The High Voltage Working Circuit consists of two parts-

- 35kV, 10mA Power Supply Rack
- Triggerable Ignitron HV Switch & Dump Switch Cubicle



TECHNICAL SPECIFICATIONS

PARAMETER	SPECIFICATION
35KV HVDC CAPACITOR CHARGING POWER SUPPLY	
Input	240VAC±10%, 50Hz, single phase
Output Voltage	0 to 35kV DC positive
Output Current	0 to 10mA
Maximum Static Output Power	350 W
Duty	Continuous
Polarity	Positive
Mode of Regulation	Constant voltage / Constant current
Load type	Capacitor charging
Voltage Regulation	Load: <0.1% of full voltage
	Line: <0.1% of full voltage
Current Regulation	Load: 0.1% of full current ±100µA for any voltage change
	Line: ±0.1% of full current over specified input range
Stability	<0.1%
Protections	Against overload, over current, thermal switches, arc quenching resistors, arc quench, arc sensing, external interlock, remote HV enable/disable, short circuit withstanding capacity
Special Protections/Features	Against dynamics caused due to surface discharge inside the chamber
	Short circuit
	Door interlocks

	Resin cast for isolation transformer One DC pulse CT and HV probe across capacitor and another HV probe at the output. The output of the sensors are buffered and given to the front panel for front panel monitoring and external monitoring.
Front Panel	Switch for mains ON Switch for turning ON/OFF the high voltage Switch for the capacitor to get discharged to the ground through a dump switch in case if plasma load does not discharge H.V.capacitor LED indications for power ON, HV ON, fault 3½ digit meters to display the output voltage & current Multi-turn potentiometers to vary output DC voltage & current Switch for selection of Local OR Remote mode of operation Switch for triggering the ignitron to discharge the charged capacitor through load
Back Panel	Stud for grounding the power supply 3 pin socket for plugging the power supply to 230V AC mains Isolated trigger signal to trigger the ignitron Output connections for remote operation Terminal for high voltage output
Remote Controls & Signals	Remote ON/OFF Remote setting for voltage and Current Remote reading of voltage and current
Output Cable	10ft of 50kV cable
Mounting	MS cabinet, powder coated
TRIGGERABLE HV SWITCH	
Maximum Peak Forward Holding Voltage	35kV
Maximum Ampere – Seconds Per Pulse	100As
Maximum Peak Current	> 100kA
Maximum Pulse Repetition Rate	1 pulse per 100 seconds
Type of Switch	Ignitron
Number of Igniters	2
Igniter's Driver Circuit Isolation	Fiber optical isolation
Switch Trigger	Through an external source electronically
Mounting	MS cabinet
HV ENERGY STORAGE CAPACITOR	
Capacitance	0.22 micro farad
Voltage	50kV
Test Voltage	120% of rated voltage
Percentage Voltage Reversal	10% of rated voltage
Hold Time	Normally charged up to 35 kV continuous

Operating Temperature	0 to 50°C
Tolerance	±10%
Dissipation Factor	0.5% at 1 KHz
Insulation Resistance	More than 1G ohms
Peak current	35 kA
Pulse repetition rate	Two Pulses per hour
Termination	With suitable bushings on both ends (corona free)
Trigger Generator Isolation	Isolation using a FO cable
Mounting	Floor mountable

For any queries or customization requests contact us at info@ionics.co.in

For product line information visit us at www.ionics.co.in