PROGRAMMABLE PULSE DIELECTRIC CHARGING POWER SUPPLY SYSTEM

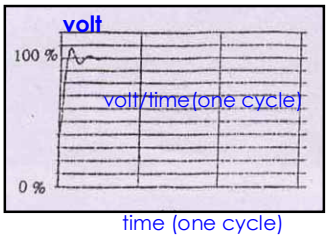
(Galvanostate/potentiostate)

MPDCG-Series

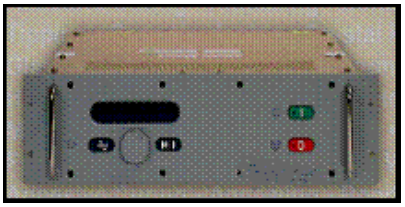
Introduction:

MPDCG series of high voltage/low-current pulse dielectric supply are designed for achieving optimum results in following electro-ceramic/dielectric applications... 1. dielectric charging and discharging 2. dielectric stress relieving and many other dielectric related applications. These pulse supply units contains programmable volt-minute controller, space mark controller, digital volt/ampere meter with RS-232 port which enable the user to online assess/monitor the process parameter and control the quality and quantity of dielectric alignment with high degree of repeatability, accuracy all the time. Only for this reason, our pulse supply is the first choice of any industrial/research application. These supplys could be operated in parallel. Company offers tailor made solution to custom requirement.

Operating Principle:



In conventional mechanism of charging the dielectric with D.C. high voltage system, there appears opposite polar effect due to polarization of dielectric. This surface polarization grows exponentially with respect to time. While dielectric sample is being charged, these surface polarization charges opposes the applied electric field as result of which effective polarizing electric field reduces in real time domain. This causes the exponentially decaying time domain charging and is the main reason for long and time wasting poling of dielectric. With our pulse, power supply, high Voltage is applied in quantized manner across the sample, subsequently surface polarization charges effect is not dominant as the moment pulse comes, some dipole get align to form local grain resulting into appearance of minor surface polarization charges on surface and at time particular time pulse is removed off. During off period, these surfaces get weakens/dis-appears without effecting charging level of sample. During next pulse, sample gets further charge and again polarization effect is negligible. Now one can imagine that the sample shall be at constant rate or at less decaying rate In comparison to normal poling. Due to reason that pulse charging enhances better charging level. This ability of pulse dielectric supply makes it possible to achieve much high dielectric alignment in narrow and multipolar applications. Apart from above in conventional dipole alignment power supply, non-uniform charging leads to uneven grain structures leading to development of differential dielectric potential zone. A portion of zone having less polarization or more unregulated grain orientation has higher crack potential /poor dielectric properties and may imitate a specific form of crack there by reducing the life of sample even. Because of pulse mode periodic output pulse of supply, it is possible to achieve multi polar compact charging with high dipole moment, mechanical strength and better /reliable electro-ceramic properties.



MPDCG-0800200

MPDCG-0800500

MPDCG-0800050

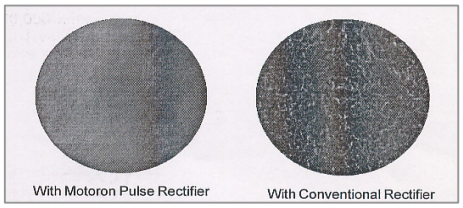
High Voltage pulse dielectric supply Specification(D.C.):

Model	Watts	Volts KV DC	Current m.a.	Switching frequency k.hz	cooling	Model	Watts	Volts KV D.C.	Current m.a.	Switching frequency k.hz	Cooling
MPDCG-0300015	45	03	15.0	05-50	Air	MPDCG-2002000	40000	20	2000.0	05-50	Air
MPDCG-0300025	75	03	25.0	05-50	Air	MPDCG-2004000	80000	20	4000.0	05-50	Air
MPDCG-0300050	150	03	50.0	05-50	Air	MPDCG-2006000	120000	20	6000.0	05-50	Air
MPDCG-0600100	600	06	100.0	05-50	Air	MPDCG-4008000	320000	40	8000.0	05-50	Air
MPDCG-0600200	1200	06	200.0	05-50	Air	MPDCG-6002000	120000	60	2000.0	05-50	Air/oil
MPDCG-1000500	5000	10	500.0	05-50	Air	MPDCG-8002000	160000	80	2000.0	05-50	Air/oil
MPDCG-1001000	10,000	10	1000.0	05-50	Air	MPDCG-8004000	1600000	80	4000.0	05-50	Air/oil

High Voltage pulse dielectric supply Specification:

Operating voltage 220 volts, 1/3 phase, 40-60 Hz
Output current/voltage 0-80 KV Volts/20000 m.a. (max)
Voltage/current ripple 10 micro volts-noload/ 100 micro volt-full load
Operating frequency 5.0-200 K.Hz
Voltage/current control accuracy 99.9% of set point
Resolution 0.1 volts/amps D.C.
Repeatability 100 percent
Response time 0.5 –1.1 mill-seconds
Interface Signal 0.0-12.0 volts D.C. [proportional to dielectric field]
Voltage control range 0.0-80 kilo volts
SPACE-MARK RATIO 1:3 to 1:9
Control options 1.cascade feedback control with soft start.
2. Contant voltage/dielectric energy mode with external Adjustment.
Display Voltage/current/gauss/space mark/volt-second in 3½ red glow LED display.
Protection over voltage/short **ckt**.

Additional: facility to plot P-E curve at different frequency.

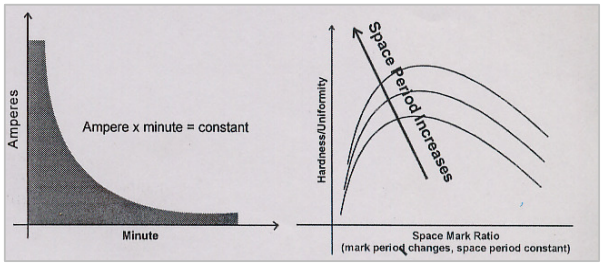


pictorial presentation of effect of pulse SUPPLYr

Common High Voltage Pulse dielectric supply dimension:

MPDCG-0300015	08X06X06	MPDCG-2002000	14X12X12
MPDCG-0300050	10X06X06	MPDCG-2004000	16X14X24
MPDCG-0600100	12X08X08	MPDCG-8002000	18X16X36
MPDCG-0600200	12X10X10	MPDCG-8004000	20X18X48

Two numerals after MPDCG indicates Kilo voltage of pulse supply and last five-digit Indicates current. All dimensions are in inches.



Effect of duty cycle variation

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Feedback controlled

High Voltage pulse dielectric supply Specification (A.C.):

Model	Watts	Volts KV	Current m.a.	Switching frequency k.hz	Cooling	Model	Watts	Volts KV	Current m.a.	Switching frequency k.hz	Cooling
MPDCG-0300015	45	03	15.0	05-50	Air	MPDCG-2002000	40000	20	2000.0	05-50	Air
MPDCG-0300025	75	03	25.0	05-50	Air	MPDCG-2004000	80000	20	4000.0	05-50	Air
MPDCG-0300050	150	03	50.0	05-50	Air	MPDCG-2006000	120000	20	6000.0	05-50	Air
MPDCG-0600100	600	06	100.0	05-50	Air	MPDCG-4000002	320000	50	2.0	05-50	Air
MPDCG-0600200	1200	06	200.0	05-50	Air	MPDCG-5002010	120000	50	10.0	05-50	Air/oil
MPDCG-1000500	5000	10	500.0	05-50	Air	MPDCG-8002000	160000	80	2000.0	05-50	Air/oil
MPDCG-1001000	10,000	10	1000.0	05-50	Air	MPDCG-8004000	1600000	80	4000.0	05-50	Air/oil

Two numerals after MPDCG indicate Kilo voltage of pulse supply and last five-digit Indicates current. All dimensions are in inches.

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