



GROW CONTROL
POWER TECH PVT. LTD.

We Provide Solutions....

AN ISO 9001:2015 COMPANY



DIODE GUN INJECTION POWER SUPPLY



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GROW CONTROL is a research-driven power electronics organization that integrates technology, innovation, and engineering to transform concepts into world-class products and solutions.

The Diode Gun Injection Power Supply is an advanced power management system engineered to deliver clean, stable, and efficient power for critical applications. With over 20 years of expertise in power electronics and leveraging indigenous technology, **GROW CONTROL** has developed robust Diode Gun Injection Power Supply solutions that meet the stringent performance and environmental requirements of the defense, aerospace, and commercial sectors.

Designed to generate both high and low DC voltages, the Diode Gun Injection Power Supply powers all internal units of the transmitter. It incorporates multiple DC-DC converters to supply various electrodes of the Klystron, TWT, a Solid-State Power Amplifier (SSPA), and Linear Accelerators (LINACs). Additionally, a sophisticated control and management logic card ensures precise sequencing, coordination, fault monitoring, and protection, guaranteeing reliable and efficient transmitter operation.

Features

- **High Stability & Precision:** Low ripple and noise for consistent beam generation
- **Wide Voltage Range:** Supports up to **50kV DC**
- **High Current Capability:** Configurable for different beam current requirements
- **Fast Response Time:** Ensures smooth and stable injection process
- **Advanced Protection Mechanisms:** Over-voltage, over-current, short-circuit, and thermal protection
- **Remote Control & Monitoring:** Digital interface for easy operation
- **Compact & Modular Design:** Optimized for integration into accelerator systems
- **Power Factor Correction (PFC):** Integrated PFC ensures efficient energy usage, reducing energy waste and improving overall system performance.
- **Modular and Scalable:** The modular design allows for easy system integration and scalability, catering to a variety of power requirements based on the application.



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- **Digital Monitoring and Control:** Equipped with real-time monitoring and control capabilities via digital interfaces, allowing remote adjustments to voltage and power settings.
- **EMI/EMC Compliance:** Fully compliant with **MIL-STD-461** and **EN 55022**, ensuring minimal electromagnetic interference in sensitive environments like radar and communication systems.

Key Advantages

- **High Efficiency & Reliability:** Advanced power electronics ensure minimal energy loss
- **Customizable Design:** Configurable voltage, current, and control interfaces
- **Enhanced Safety:** Multiple protection mechanisms for secure operation
- **Rugged & Compact:** Optimized for space-constrained installations
- **Indigenous Development:** Supports self-reliance in critical power electronics

Applications

- Linear Accelerators (LINACs)
- High-Energy Physics Experiments
- Particle Beam Injection Systems
- Medical & Industrial Electron Beam Equipment
- Defense & Aerospace Research Labs
- Synchrotron Light Sources
- Radar Systems:

Why Choose **GROW CONTROL**?

- **Indigenous Expertise:** **GROW CONTROL** indigenous technology is backed by decades of experience in power electronics, providing DIODE GUN INJECTION POWER SUPPLY solutions that meet the highest standards in defense, aerospace, and commercial sectors.
- **Precision & Stability:** The DIODE GUN INJECTION POWER SUPPLY provides highly stable and precise voltage regulation with low ripple and noise, ensuring optimal performance of TWT amplifiers in high-frequency applications.



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- **Energy Efficient:** Designed for high efficiency, the DIODE GUN INJECTION POWER SUPPLY minimizes power loss and heat dissipation, reducing operational costs and enhancing system longevity.
- **Rugged Design:** Compliant with military standards for shock, vibration, and environmental conditions, the DIODE GUN INJECTION POWER SUPPLY is built for reliability in the toughest environments.
- **Customer Support:** From design and customization to installation and support, **GROW CONTROL** provides comprehensive customer support to ensure seamless integration and operation.



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Technical Specification

Model no.	GCPT20kV1APPS	GCPT40kV3APPS
Cathode Voltage:	Continuously adjustable from 0 KV to -20 KV DC Pulsed adjustable with knob on front panel.	Continuously adjustable from -0kV to -40 kV with respect to the ground (with $\leq 0.5\text{kV}$ resolution)
Cathode current:	From 1 mA to 1000 mA peak	A maximum of 3.0A Peak
Pulse width:	Max. 15 μs , adjustable 3 μs to 15 μs knob on front panel	0.25 micro sec to 10 micro sec (measured at 90 % point of pulse swing)
Pulse Repetition Rate:	500 HZ (adjustable from 10 HZ to 500 HZ with knob on front panel)	1 shot to 300 Hz
Duty cycle	Duty cycle 0.005 (pulse repetition rate and pulse width should conform to this duty)	Duty cycle 0.005 (pulse repetition rate and pulse width should conform to this duty)
Rise Time:	Less than 200ns	Less than 150 nsec between the 10% and 90 % points of pulse swing at full load of 3.0 A peak (with a load capacitance of 100 pF)
Flat top:	Max. 1% or less	1%
Amplitude Jitter:	Less than 1%	1%



OUR CLIENTS



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