GROW CONTROL
POWER TECH PVT. LTD.
We Provide Solutions....

AN ISO 9001:2015 COMPANY

ELECTRONIC POWER CONDITIONER

GROW CONTROL **Electronic Power Conditioner (EPC)** for **Traveling Wave Tubes (TWTs)** is an advanced power management system designed to provide clean, stable, and efficient power for high-frequency TWT amplifiers. The EPC ensures reliable operation of TWTs by offering precise voltage regulation, protection mechanisms, and noise filtering. With over 30 years of expertise in power electronics and leveraging **indigenous technology**, ***GROW CONTROL*** has developed robust EPC solutions that meet the demanding performance and environmental requirements of defense, aerospace, and commercial applications. ***GROW CONTROL*** EPC generates high & low DC voltages. EPC is designed to power all the internal units of the Transmitter.The EPC contains multiple DC- DC converters configured for powering various electrodes of the TWT, a solid-state power amplifier (SSPA), and a Linearizer. The control and management logic card manages the sequencing, coordination, fault monitoring and protection within the transmitter.

GROW CONTROL **Electronic Power Conditioner for TWT** provides a reliable, efficient, and precise solution for powering TWT amplifiers in critical applications such as radar, satellite communications, and electronic warfare. Developed using **indigenous technology**, our EPC ensures stable and clean power with advanced protection features, making it ideal for high-performance defense and aerospace applications.

Features

- **Precise Voltage Regulation**: Ensures stable, well-regulated output voltage for TWT operation, eliminating voltage variations that could affect TWT performance and lifespan.
- **High Efficiency**: With efficiency rates exceeding 90%, the EPC minimizes power losses, providing optimal energy usage for continuous and high-performance applications.
- **Advanced Protection Mechanisms**: Offers comprehensive protection for TWTs, including over-voltage, over-current, under-voltage, and short-circuit protection to enhance operational safety and longevity.
- **Low Ripple & Noise**: Delivers ultra-low ripple and noise performance, ensuring the stability of high-frequency signals in sensitive radar and communication applications.

- **Rugged, Compact Design**: Engineered to meet **MIL-STD-810** for ruggedness, making it suitable for harsh environments like defense, aerospace, and industrial applications.
- **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.
- **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

1. **Indigenous Technology**:
   Designed and manufactured entirely in India, ***GROW CONTROL*** EPC for TWTs provides reliable and cost-effective solutions tailored to domestic defense and industrial needs.
2. **Stable Power Supply**:
   The EPC ensures steady and well-regulated power delivery to TWT amplifiers, crucial for their consistent performance in applications like radar, satellite communication, and electronic warfare.
3. **Energy Efficient**:
   With efficiency rates over 90%, the EPC reduces power wastage, minimizes heat generation, and enhances overall system efficiency, resulting in lower operational costs.
4. **Comprehensive Protection**:
   The advanced protection mechanisms safeguard TWTs from potential damage caused by power fluctuations, ensuring long-term reliability and durability.
5. **Rugged and Reliable**:
   Built to withstand extreme environmental conditions, the EPC is MIL-STD compliant, making it suitable for deployment in tough defense and aerospace environments.
6. **Customizable Design**:

GROW CONTROL offers customization in power output, voltage regulation, and form factors, ensuring the EPC meets specific requirements for different defense, aerospace, and commercial applications

Applications

1. **Radar Systems**:
   Ensures steady, clean power delivery for TWT amplifiers used in radar systems, supporting high-gain, high-frequency signal transmission in defense and aerospace applications.
2. **Satellite Communication**:
   Powers TWTs used in satellite uplinks and communication systems, ensuring stable power output for reliable, long-distance signal transmission.
3. **Electronic Warfare**:
   Provides critical power management for TWT amplifiers in electronic warfare systems, ensuring consistent operation during signal jamming and countermeasure applications.
4. **Broadcasting**:
   Supports broadcasting applications, delivering reliable power to TWT amplifiers for television and radio transmission, ensuring clear and uninterrupted signal coverage.
5. **Aerospace and Defense**:
   Designed for harsh defense and aerospace environments, offering durable and reliable power conditioning for TWTs used in military communication and radar systems.

Customization Options

GROW CONTROL offers the following customization options to meet the unique needs of various industries:

- Output Voltage & Power Adjustments
- Cooling System Customization (Air or Liquid)
- Enhanced Protection Features
- Additional Monitoring and Control Interfaces
- Modular Form Factors for Easy Integration

Our engineering team collaborates with customers to design and develop solutions tailored to their specific operational and environmental requirements

Why Choose *GROW CONTROL?*

- **Indigenous Expertise**: ***GROW CONTROL*** indigenous technology is backed by decades of experience in power electronics, providing EPC solutions that meet the highest standards in defense, aerospace, and commercial sectors.
- **Precision & Stability**: The EPC provides highly stable and precise voltage regulation with low ripple and noise, ensuring optimal performance of TWT amplifiers in high-frequency applications.
- **Energy Efficient**: Designed for high efficiency, the EPC 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 EPC 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.	GCPT303-2C-EPC
Prime Power Input	230 V AC±10%, 50Hz, Single Phase
Power Factor	95% or better
Efficiency	>90%
Power Consumption	3.2 KVA max.
Outputs	
Heater / Filament	
Voltage	-6.3V to −6.7V DC (Adjustable)
Current	1.3A max
Surge current	1.95A
Regulation (Line)	(1%) max. on load
Warm up time	180±10 sec
Focus electrode Beam Off	
Voltage	−3KV DC
Current	1mA max.
Focus Electrode Beam On	
Voltage	0V DC
Collector 1	
Voltage	(54.5±2.5%) of Cathode Voltage (52−57%)
Current	350mA max.
Collector 2	
Voltage	(13.5±2.5%) of Cathode Voltage (11−16%)
Current	550mA max.
Cathode	
Voltage	−13.0KV to −15.0KV DC w.r.t GND (Adj.)
Helix Current	25 mA max.
Regulation	Better than ±0.1 % with Line and Load
Ripple	5 V max. peak to peak (excluding spikes) of AC component on full load
Cathode Current	550 mA
Cathode Build up Time	500 msec
Modulator	CW/PULSE MODE

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Input	TTL (H), (Input Impedance 50 Ohms)
Pulse Width	1µs and CW
PRF	10KHz
Rise Time	100ns max.
Fall Time	100ns max.

OUR CLIENTS

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