



The **Magnetron Modulator** by **GROW CONTROL** is a cutting-edge power supply solution specifically designed for driving magnetrons used in radar, microwave heating, and high-power RF generation applications. These modulators deliver high-voltage, pulsed power to magnetrons, ensuring precise and reliable performance in systems that demand high-frequency, high-power output. With over 30 years of expertise in power electronics and using fully indigenous technology, **GROW CONTROL** has developed a robust, highly efficient modulator that meets the stringent demands of defense, industrial, and medical applications.

GROW CONTROL Magnetron Modulator is a high-performance, precision-driven solution tailored to meet the demanding requirements of defense, industrial, and medical applications. With its **indigenous technology**, rugged construction, and high-efficiency design, it ensures reliable and consistent operation in critical systems.

Features

- **High Voltage Output:** Capable of delivering output voltages from 5kV to 50kV to accommodate a variety of magnetrons.
- **Pulse Power Output:** Pulse power ranging from 10kW to 5MW, 8MW & above making it suitable for high-power radar, industrial, and microwave heating applications.
- **Pulse Width Control:** Adjustable pulse widths from microseconds to milliseconds, allowing for precise control over magnetron operation.
- **Pulse Repetition Rate:** Supports pulse repetition frequencies from 100 Hz to 5 kHz, ideal for a wide range of radar and industrial applications.
- **High Efficiency:** Efficiency of up to 94%, ensuring minimal power loss and optimized energy usage.
- **Low Ripple & Noise:** Ultra-low ripple and noise characteristics maintain the stability of magnetron operation, crucial for sensitive applications such as radar and medical equipment.
- **Rugged Construction:** Built to meet **MIL-STD-810** standards for durability in challenging environments like military and industrial applications.
- **Compact Design:** The modular, compact design enables seamless integration into existing systems and space-constrained environments.

- **EMI/EMC Compliance:** Compliant with **MIL-STD-461** and **EN 55022** standards for minimal electromagnetic interference with other electronic systems.
- **Advanced Protection:** Features comprehensive protection mechanisms, including over-voltage, over-current, over-temperature, and short-circuit protection to safeguard both the modulator and the magnetron.
- **Remote Control & Monitoring:** Supports remote monitoring and control for real-time adjustments of voltage, pulse width, and repetition rates, providing enhanced operational flexibility.

Key Advantages

1. **Indigenous Technology:**
The Magnetron Modulator is designed and manufactured entirely in India, ensuring high reliability, accessibility, and support for domestic defense and industrial applications.
2. **Precision Power Control:**
Delivers precisely controlled high-voltage pulses with low ripple, essential for stable and efficient magnetron performance in radar and microwave systems.
3. **High Efficiency:**
With up to 94% energy efficiency, this modulator minimizes energy losses and reduces the thermal management overhead, making it cost-effective for continuous operation.
4. **Rugged & Durable Design:**
The modulator is built to withstand harsh environmental conditions, adhering to military standards for shock, vibration, and temperature tolerance, making it ideal for defense and industrial applications.
5. **Customizable Solutions:**
GROW CONTROL offers customizable output voltage, pulse configuration, and form factors to meet specific application requirements.

Applications

1. **Radar Systems:**

Provides high-voltage, high-power pulsed output to magnetrons used in military radar systems, ensuring accurate and reliable signal transmission in defense operations.

2. **Industrial Microwave Heating:**

Powers magnetrons in industrial applications such as drying, heating, and material processing with precise pulse control and high efficiency.

3. **Medical Equipment:**

Supports medical applications like cancer treatment systems (e.g., microwave ablation) by powering magnetrons with stable, low-noise pulses, crucial for patient safety and precision.

4. **Microwave Generators:**

Delivers the required power for microwave generation used in communication systems, ensuring consistent performance over long durations.

5. **Electronic Warfare:**

Used in electronic warfare systems, where precise, high-power magnetron control is critical for signal jamming and countermeasure applications.

6. **Aerospace and Defense Research:**

Ideal for defense and aerospace research labs, enabling testing and development of high-power microwave and radar systems with real-time adjustments and monitoring.

Customization Options

GROW CONTROL offers the following customization options to meet the unique needs of defense, industrial, and medical sectors:

- **Output Voltage & Power Adjustments**
- **Size and Form Factor Modifications**
- **Cooling Systems (Air or Liquid)**
- **Enhanced Pulse Control Features**
- **Additional Protection Mechanisms**
- **Remote Control & Monitoring Capabilities**

Our engineering team collaborates with clients to design tailored solutions that fit their specific application requirements.

Why Choose **GROW CONTROL**?

- **Indigenous Expertise:** Backed by over three decades of experience in power electronics, **GROW CONTROL** delivers robust, field-tested, and fully indigenous magnetron modulators that meet the exacting standards of defense, industrial, and medical applications.
- **Precision & Stability:** The modulator ensures precise, low-noise pulse power delivery, critical for optimal magnetron operation in high-performance systems.
- **Energy Efficiency:** With high energy efficiency and reduced thermal output, the modulator provides cost-effective and environmentally friendly operation.
- **Rugged Design:** Built for harsh environments and compliant with military standards, the modulator ensures durability and reliability in even the most challenging conditions.
- **Customer Support:** From customization to installation and maintenance, **GROW CONTROL** provides comprehensive customer support, ensuring seamless integration and reliable performance.

Certifications

- **MIL-STD-810** – Environmental Testing Standards
- **MIL-STD-461** – Electromagnetic Compatibility Standards
- **EN 55022** – EMI Compliance
- **ISO 9001:2015** – Quality Management Systems



GROW CONTROL
POWER TECH PVT. LTD.

We Provide Solutions....

Technical Specification

Model no.	GC5MWMM	GC8MWMM
Input	415V $\pm 10\%$, 3-phase, 4 Wire	415V $\pm 10\%$, 3-phase, 4 Wire
Peak Voltage	55KV (max)	55KV (max)
Peak Current	100A (max)	150A (max)
Pulse repetition Frequency	0-250Hz variable	1-300Hz variable
Duty Cycle	0.00125 (max)	0.0015 (max)
Pulse width	1.5-5 μ s variable	1.5-5 μ s variable
Rise Time	<1 μ S	<1 μ S
Fall Time	<1 μ S	<1 μ S
Filament voltage	5V and 10V AC	8-14V AC variable
Filament current	8-15A max	8-15A variable
Filament inrush current	20A	20A
Rise Voltage Rate	100KV/ μ S	180KV/ μ S
Pulse top flatness (dv)	<1%	<1%
Amplitude Stability	<0.1%	<0.1%



OUR CLIENTS



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