

**15 kW Microwave Generator,
Model GA4312**

APPROVALS			REVISIONS			
	INITIALS	DATE	REV	DESCRIPTION	DATE	APPR
Drawn	JFG	28APR04	7	Added FWD PWR interface	15NOV06	JFG
Engineering						
Manufacturing						
Marketing						

1.0 General Description

This document describes the 15kW microwave generator, model GA4312, designed for industrial applications requiring a highly stable and reliable source of microwave power. Output power is delivered at 2.45 GHz and is continuously adjustable from zero to full output via local or remote controls.

The GA4312 system is a turn-key microwave generator consisting of three primary components, the model GA4009 remote magnetron head (MH), a rack mountable high voltage power supply (HVPS) and user interface module (UIM). The HVPS is the Spellman model MG24 which is a switch mode (inverter) type power supply consisting of a control module and two inverter modules. The UIM contains circuitry for local and remote controls, interlocks and line power distribution throughout the system. Both the HVPS and UIM are mounted in an attractive standard NEMA style 19" rack cabinet.

The MH utilizes the California Tube Laboratory (CTL) model CWM-15S magnetron and delivers microwave power via WR430 output waveguide. Contained within the MH are the filament transformer, interlock circuitry to ensure adequate air and water cooling of magnetron, and an arc detect circuit for protection against damage due to internal waveguide arcs. The MH may be located up to 100 feet from the HVPS.

Installation of the GA4312 system requires connecting only line power and cooling water, while remote controls and user interlock devices may be connected optionally. The modular design simplifies servicing and offers flexibility with system integration. All cables required for electrical interconnection between the primary system components are provided. To help reduce overall equipment costs, the user may separately purchase the HVPS directly from the manufacturer (Spellman) and integrate it with the remaining GA4312 components purchased from GAE (contact GAE for more information on purchase options).

2.0 General Specifications**2.1 Electrical Specifications**

Microwave Output Power	0-15 kW, continuously variable
Frequency	2450 +20/-30 MHz
Magnetron	CTL model CWM-15S
Output Regulation	+/- 1% max. for +/- 10% line voltage at full output
Output Ripple	5% RMS at full output
Line Power Input	432-528 VAC, 50/60 Hz, 3-phase, 32 Amp/phase (@ 480 VAC), Delta-connected (3-wire plus ground)
Interlocks	Magnetron overload; HV fail; Mag head access covers; Cooling air; Cooling water; Arc detection; External user device

**15 kW Microwave Generator,
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Waveguide	WR430
Waveguide Flange	CPR430 (UG437B/U)
Cooling Requirement	MH: Water @ 2.5 gpm min., 90°F max., 50-70 psig HVPS: Forced air convection by internal fans
Water Connections	1/4" NPT female
Electrical Connectors (mating connectors provided)	Line Power: Locking style flanged inlet Remote Control: 25-conductor female D-sub External Interlock: 2-position terminal block Fwd & Refl Power Interface: 9-conductor female D-sub (2x)
Enclosures	MH: Bench mount, zinc dichromate plated steel HVPS and UIM: 19" rack mount modules
Weight (approx.)	MH: 45 lbs (20 kgm) HVPS: 170 lbs (77 kgm) UIM: 20 lbs (9 kgm)

2.3 Environmental

Ambient Temperature	0-40 °C
Relative Humidity	20-80% (non-condensing)

2.4 Local Controls

System Start/Stop	Pushbuttons
Microwave Start/Stop	Pushbuttons
Emergency Off	Large mushroom head pushbutton (red)
Microwave Power Adjust	Multi-turn dial
Local/Remote Power Adjust	Toggle switch
Microwave Power Meter	Digital panel meter
Status Indicators	Filament Warm-up; System Ready; HV On
Fault Indicators	Cooling Water/Air; Covers; External; Arc Detect; Temp; Control

2.5 Remote Controls

System Start	Dry relay contact (close to enable)
System Stop	Dry relay contact (open to disable)
Microwave Start	Dry relay contact (close to enable)
Microwave Stop	Dry relay contact (open to disable)
Microwave Power Adjust	0-10 VDC input (10 k Ω impedance)
Reflected Power Sense	0-10 VDC output (requires optional interface module)
Status Indicators	Filament Warm-up; System Ready; HV On (all 24 VAC)
Fault Indicators	Cooling Water/Air; Covers; External; Arc Detect; Temp; Control (all 24 VAC)

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3.0 Ordering Information

Description

15kW Microwave Generator (complete system)

15kW Mw Generator (less cabinet)

15kW Mw Generator (less cabinet, HVPS and magnetron)

Magnetron Head

HV Power Supply Modules

User Interface Module

Replacement Magnetron

Rack cabinet for HVPS and UIM

Reflected Power Interface Module (optional)

Cable for Interface Module (optional)

GAE Part No.

Mfr Part No.

GA4312

n/a

912580

n/a

912580-1

n/a

GA4009

n/a

000308

MG24

912555

n/a

010212

CWM-15S

911597

n/a

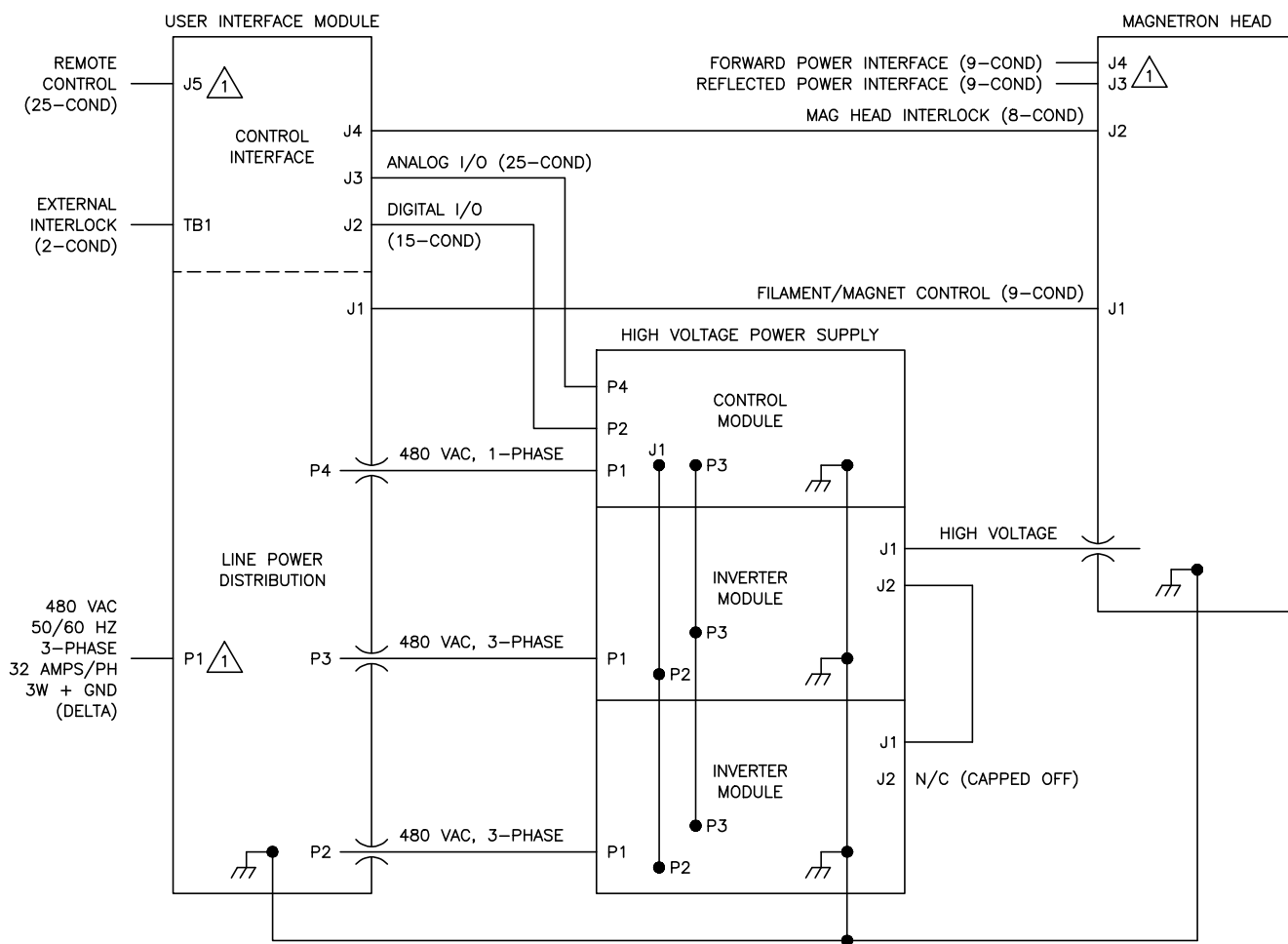
GA3301

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071402-09

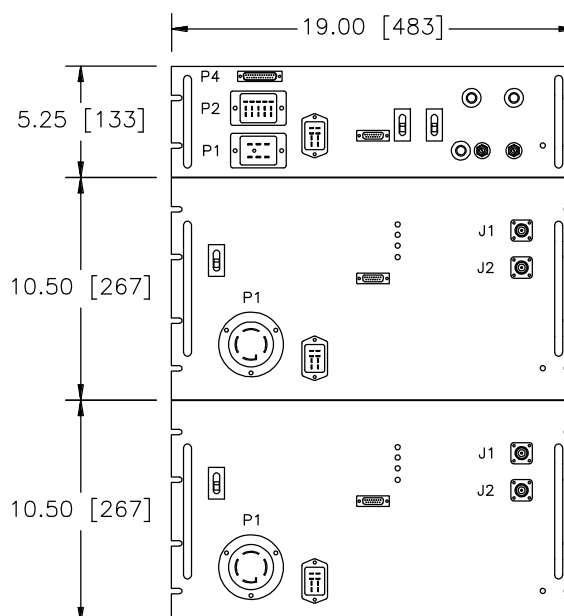
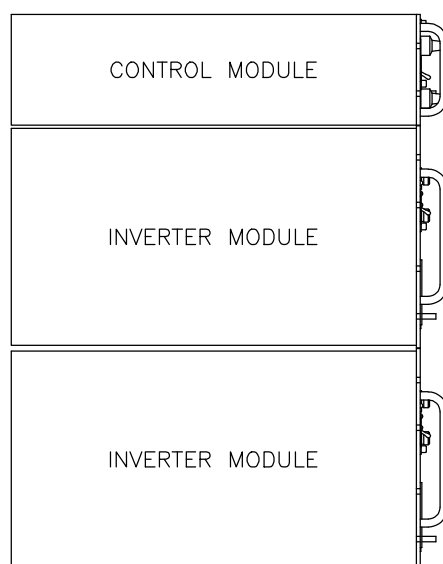
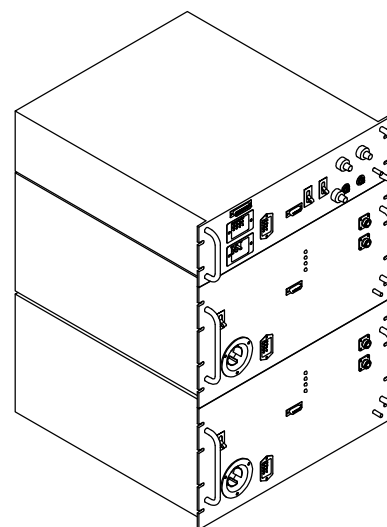
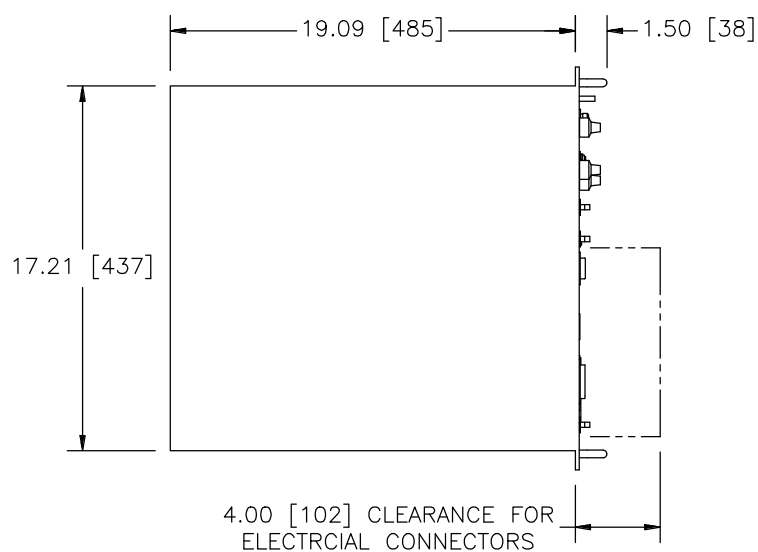
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4.0 System Electrical Diagram



NOTES: (UNLESS OTHERWISE SPECIFIED)

1. MATING CONNECTORS PROVIDED WITH SYSTEM.

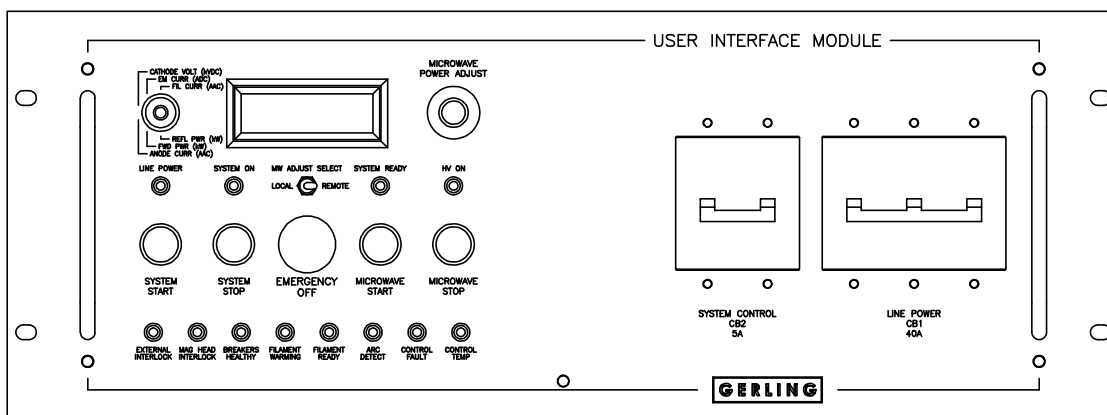
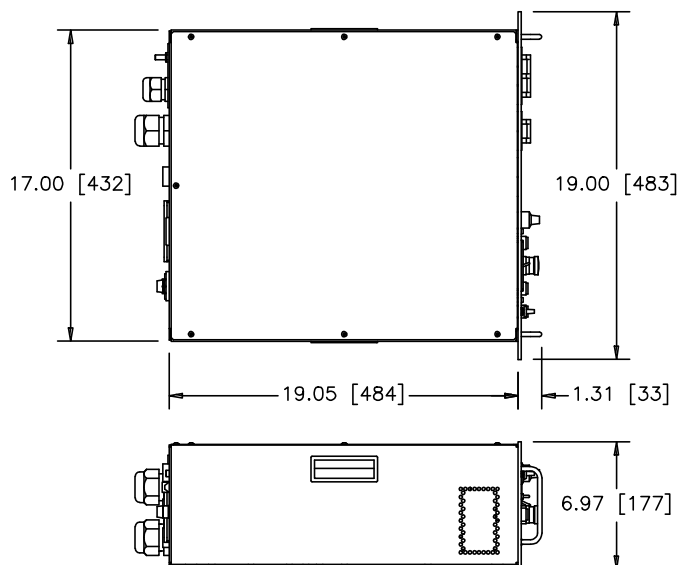
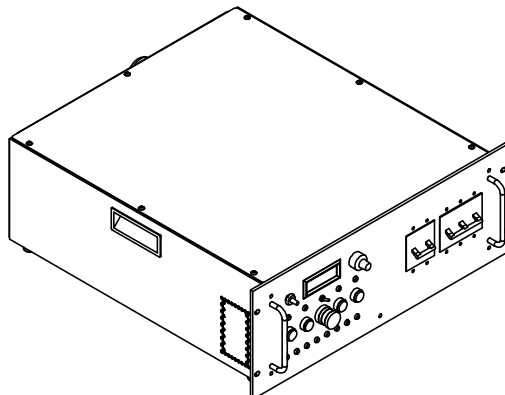
**15 kW Microwave Generator,
Model GA4312****5.0 High Voltage Power Supply Outline**

NOTE: Module interconnect cables provided with HVPS are not shown.

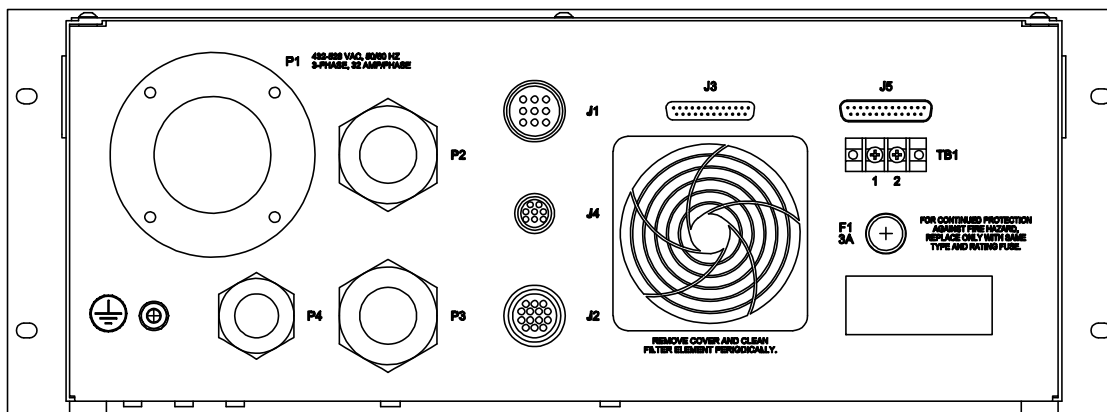
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6.0 User Interface Module Outline



FRONT PANEL

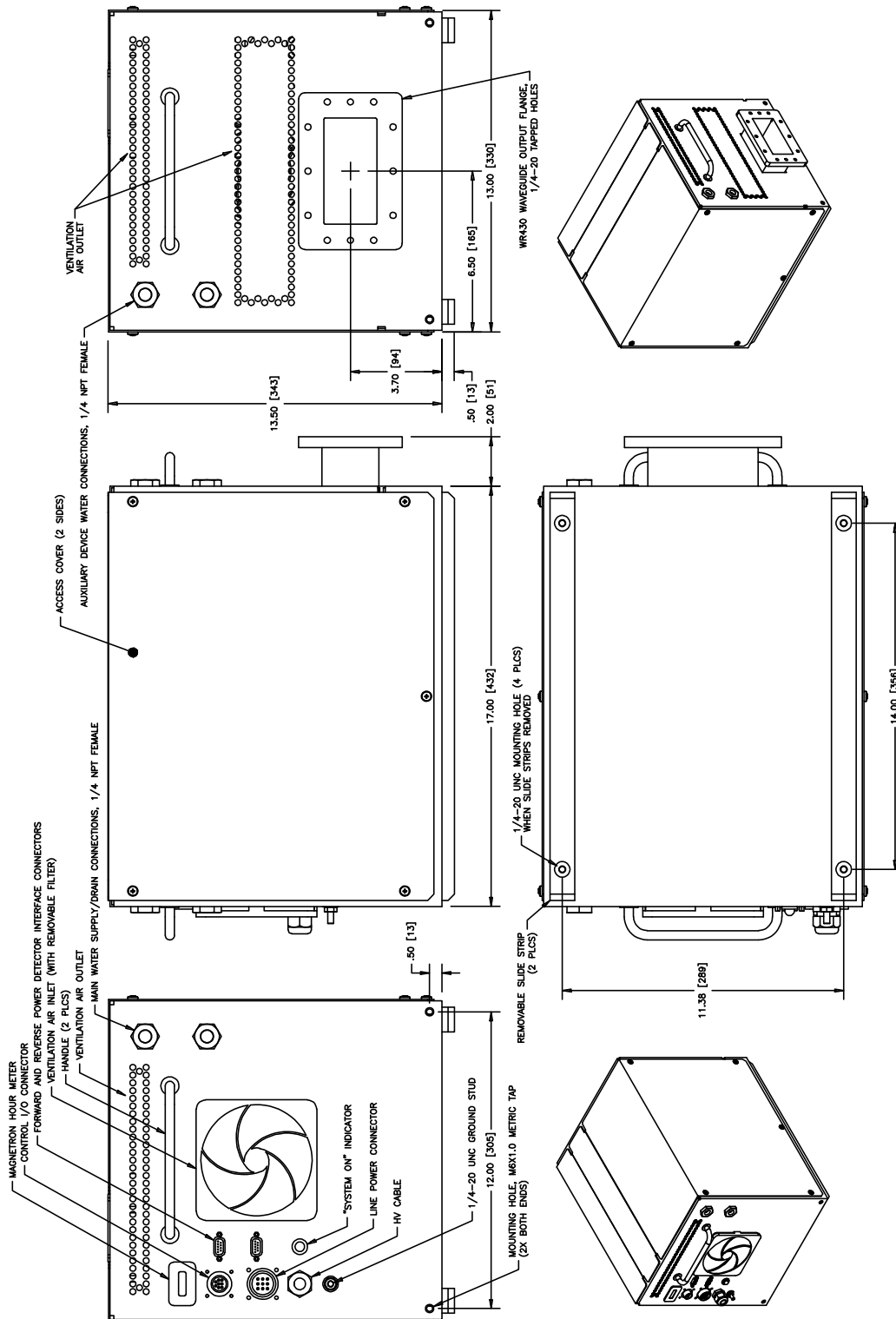


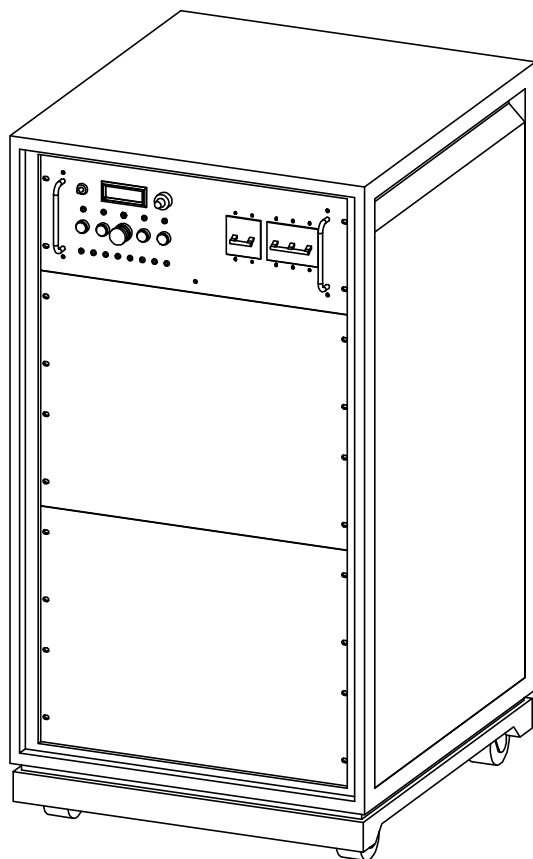
REAR PANEL

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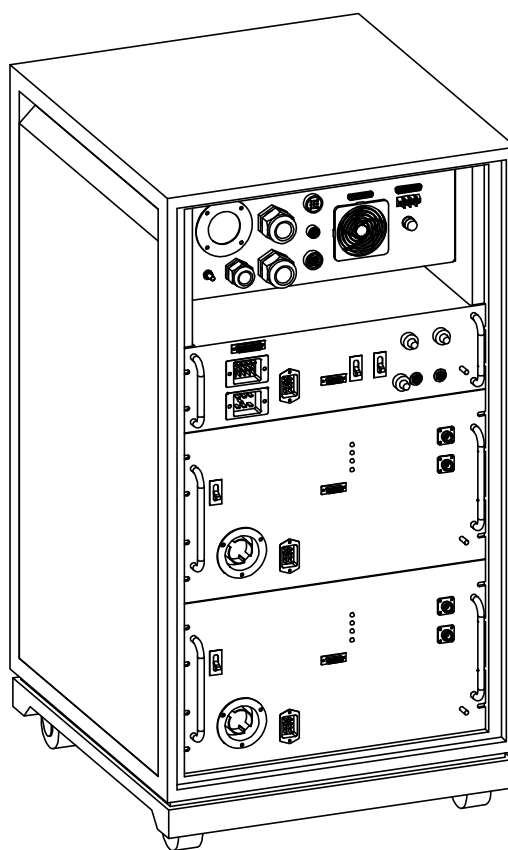
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7.0 Magnetron Head (GA4009) Outline



**15 kW Microwave Generator,
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FRONT VIEW



REAR VIEW

