

# OEM SERIES

If you are designing or producing state-of-the-art plasma systems with power requirements of 650 to 5,000 watts at 13.56 MHz, the ENI Power Systems OEM Series Generators were built just for you. A comprehensive survey of the present and future needs of the most prominent equipment users and manufacturers in the plasma industry was the starting point in the ground-up design of the OEM Series. All solid state, high reliability, small size, accurate RF power control, fast pulse mode operation, stable RF power with line voltage changes, linear analog power meter with compatible digital readout, full remote control functions and process water-cooled operation were the most often stated requirements. The OEM Series has all of these features and more.

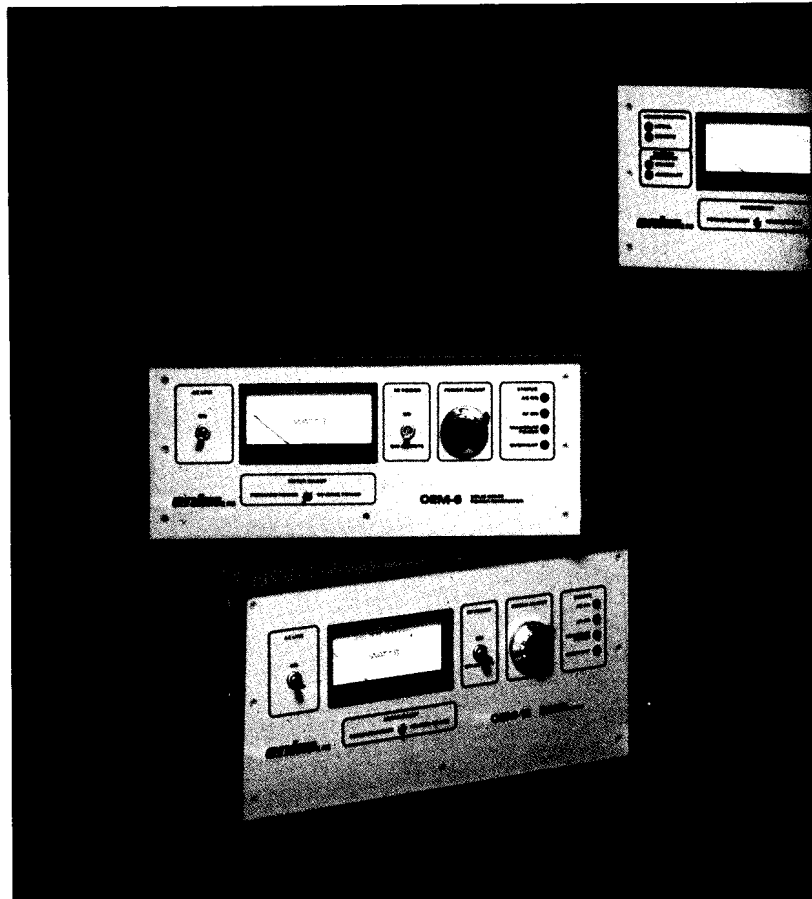
**AUTOMATIC POWER CONTROL** The reliable operation of any solid state power generator is directly influenced by the sophistication of its power control circuitry. The OEM Series automatic power control module measures forward RF power, reflected RF power, and the current draw of each RF power amplifier module. Should any of these parameters exceed a preset limit, the automatic power control will immediately fold back its RF output power so that the components always remain within their safe operating limits. Besides assuring safe operation of the OEM Series, the automatic power control module will provide constant RF power output level to within 3% of the matched power setting regardless of the plasma load VSWR. In addition, the automatic power control eliminates power output drift due to line voltage variations, component aging and reduces output hum and ripple to insignificant levels. An external DC voltage or pulse fed into the rear panel connector will permit the power output of the OEM Series to be accurately controlled by a computer program that includes end point detection information.

**COMPUTER COMPATIBILITY** The OEM Series is provided with an external computer interface bus that is compatible with TTL logic levels. This interface bus permits RF power to be turned On or Off, indicates to the computer when the unit is developing its maximum power and indicates lack of water cooling or RF power. In addition, external analog voltages are available at the interface connector for both forward and reverse power indications. These voltages are calibrated precisely at 1.00 volt per kilowatt and therefore a digital panel voltmeter will read power directly in kilowatts.

**SAFE, EASY MAINTENANCE** The use of conservatively rated solid state components and automatic power control insures the user of reliable and continuous performance with an absolute minimum of maintenance. A built-in diagnostic servicing switch (except OEM-6) permits the service technician to read out both the voltage and current draw of each individual module directly on the front panel meter. Should service be required, all of the plug-in modules are easily removed for replacement or repair. The very low DC voltages used in the OEM Series greatly reduce the potential hazards associated with its servicing when compared with vacuum tube equipment.

**USE IT ANYWHERE** A wide range of AC line voltages is readily accommodated by the multitap AC line transformer and the connections verified by a built-in line test meter indicator. The OEM Series may be rack mounted, using the rack mounting kit, into any 19 inch relay rack or operated remotely within the plasma system cabinetry.

**NO RFI PROBLEM** The OEM Series units are provided with extremely well shielded and filtered power supplies that virtually eliminate conducted line leakage. An extremely sharp low pass filter at the output of each unit insures that all harmonics are reduced to very low levels. Extensive use of shielding and RF suppression techniques permits the units to more than meet FCC requirements for ISM equipment at the same time that it eliminates any RF susceptibility problem for associated plasma system circuitry.



MODEL	OEM-6	OEM-12
Frequency (MHz)	13.56	13.56
Maximum power output (watts)	650	1,250
Minimum cooling flow (gal./min.)	0.8	1.2
Power meter scale (watts) <sup>(1)</sup>	0-750	0-1,400
Max. reflected power (watts) <sup>(2)</sup>	150	300
Power requirements (50-60 Hz)	190/208/240 Vac ± 5% at 10 amps max.	190/208/240 Vac ± 5% at 20 amps max.
Size (H x W x D inches)	7 x 16.6 x 15.5	8.8 x 17 x 15.8
Weight (lbs.)	76	126
RF power connector	Type "N"	Type "N"
Water line connection	¼" Male (NPT) pipe thread	¼" Male (NPT) pipe thread

NOTES: (1) Meter accuracy ± 4% of full scale.

(2) Generator will tolerate the amount of reflected power shown before folding back.

- All solid state.
- Specifically designed for OEM use.
- Ultra reliable.
- Computer compatible.
- Small physical size.
- Water-cooled.



OEM-25	OEM-25 F	OEM-50
13.56	13.56	13.56
2,500	2,500	5,000
2.0	2.0	4.0
0-3,000	0-3,000	0-6,000
600	600	1,000
190/208/220/240 Vac ± 5% 3 phase at 20 amps max.	330/360/380/415 Vac ± 5% 3 phase at 11 amps max.	190/208/220/ 240/330/360/ 380/415 Vac ± 5% 3 phase at 25 amps max.
17.5 x 17 x 21	17.5 x 17 x 21	26.5 x 17 x 21
225	225	375
Type "HN"	Type "HN"	Type "LC"
¼" Male (NPT) pipe thread	¼" Male (NPT) pipe thread	½" Male (NPT) pipe thread

**POWER FOLDBACK PROTECTION:** Automatic, occurs when reverse power exceeds the specified wattage, or power amplifier current exceeds a preset limit.

**RF OUTPUT IMPEDANCE:** 50 ohms.

**POWER LEVELING:** Automatic forward power leveled to ± 3% of set power for load variation from 1:1 VSWR to ∞:1 VSWR (within foldback limits). Power control is by front panel or remote input (switch selectable), from 1 watt to full power.

**AC LINE TO POWER REGULATION:** 0.25% maximum change in output power for 7.5% change in AC line voltage.

**FREQUENCY STABILITY:** ± .005% maximum.

**HARMONIC DISTORTION:** All harmonics are more than 55dB below the fundamental. Noise, hum and ripple; more than 30dB down at maximum power output.

**PULSED OPERATION:** Rise time is less than 0.5ms. RF output may be controlled simultaneously for amplitude and pulse width.

**CABINET AND SPURIOUS RADIATION:** Exceeds FCC specifications.

**COOLING WATER:** Maximum inlet temperature of 35 °C.

**RACK MOUNTING:** 19 inch rack mounting ears supplied.

EXTERNAL COMPUTER CONTROL INTERFACE	
CONTROL / READOUT	INPUT/OUTPUT
RF power level control	0-10Vdc, positive pulse input or external potentiometer
External RF on/off control	TTL compatible; switch contact 0V = RF Off, +5V = RF On
Forward RF power readout	Calibrated at 1.00 volt per kilowatt, direct reading on digital voltmeter
Reverse RF power readout	Calibrated at 1.00 volt per kilowatt, direct reading on digital voltmeter
Maximum RF power indication	TTL compatible 0V = normal operation, +5V = maximum power
RF power "on" indication	TTL compatible 0V = RF off, +5V = on