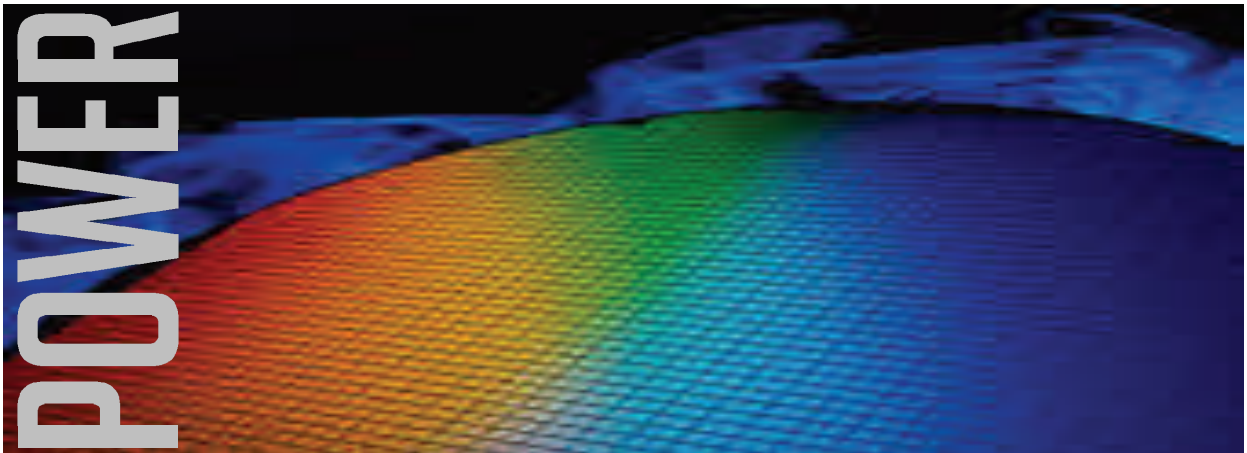


T&C POWER CONVERSION

T&C PLASMA SERIES

CATALOG

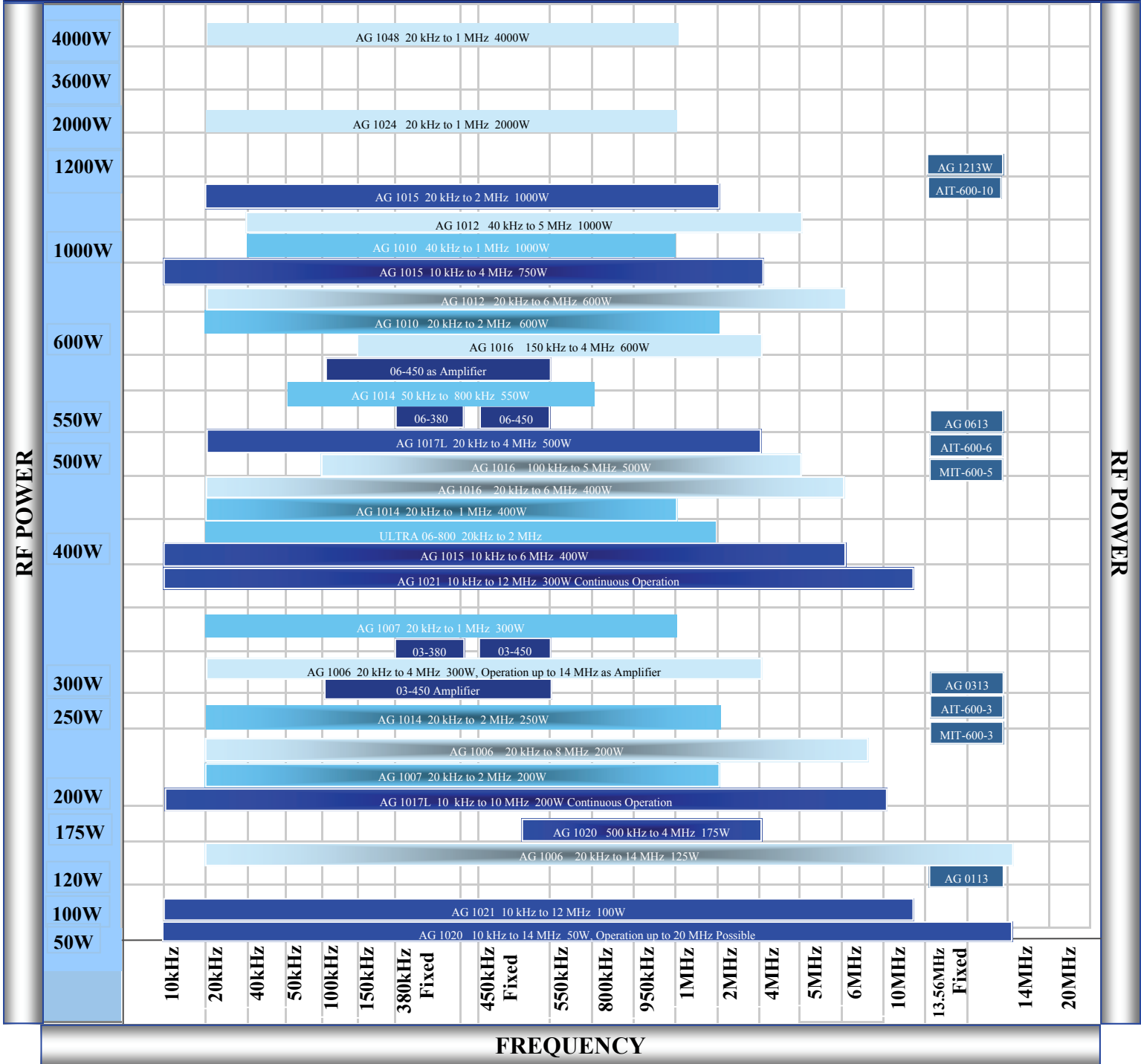


www.TCPOWERCONVERSION.com
info@tcpowerconversion.com

110 Halstead Street
Rochester, New York 14610
Tel: 585.482.5551

T&C RF PRODUCT MATRIX

FREQUENCY BAND vs. POWER



	HF PLASMA SERIES Fixed at 13.56 MHz		LF PLASMA SERIES
	LF BROADBAND PLASMA SERIES, EXTENDED PERFORMANCE		LF/HF BROADBAND PLASMA SERIES, EXTENDED PERFORMANCE
	LF/HF WIDEBAND PLASMA SERIES, EXTENDED PERFORMANCE		

The Purest RF Power Available.

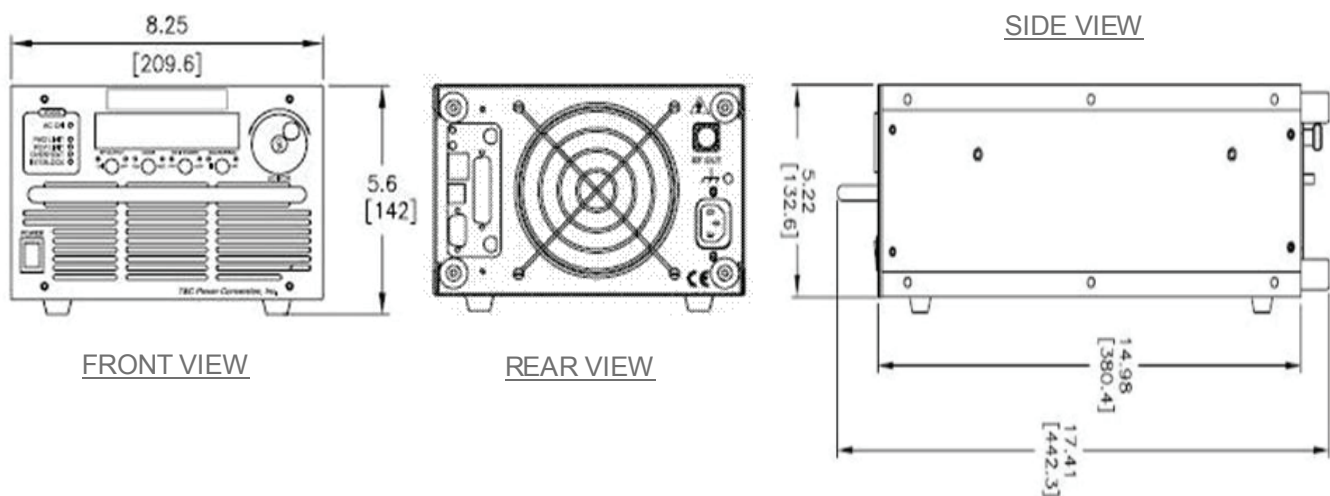
A compelling combination of pure RF classical hybrid design and modern digital amenities, the AG HF/LF Plasma Series utilizes unprecedented choice of system control.

Increasing production potentials with the on-board analog or digital interfaces provides the ultimate in any manufacturing process. The pride of ownership begins with the extraordinary engineering heritage, our employee craftsmanship and attention to detail with every quality product we manufacture. Imagine the possibilities, customer satisfaction with the never-ending high yields of quality products, and a continued positive increase to the bottom line year after year. The *T&C* AG Series RF Power Source is the driving force behind any great system. Operating at 13.56 megahertz (MHz) in multiple packages and available in pure RF power levels of 120, 300, 600, 1200 and 2400 watts of output power. This unique RF technology delivers enhanced performance for a broad range of applications in the production of plasma technologies. The result? Totally the best performance possible, ready to compliment and maximize any new or existing systems. Available in a compact OEM rack mount stand-alone version.

AG HF/LF Plasma Series RF Power Source

Features

- ◆ Exclusive Power Monitoring and Control



120 Watts, HF PLASMA SERIES:

AG 0113, 0113



AG 0113

0113

Accuracy

Based on Rate Power	AG 0113, 0113	± 2 Watts
Based on Set Point	AG 0113, 0113	± 2 Watts

Interface

A/D Interface	AG 0113	25-pin Sub-D
RS-232	AG 0113	9-pin Sub-D
RS-485	AG 0113	RJ 45
USB 2.0	AG 0113	USB Type B

Cooling Specifications

Forced Air	AG 0113, 0113	70°C, Monitored
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
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Weight

Unit Weight	9.0 kg, 20 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Plastic Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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Output Parameters

Nominal Power in Continuous Operation ¹⁾	AG 0113	1 to 120W
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Max. Output Power into mismatch

VSWR 2:1	AG 0113, 0113	120W
VSWR 3:1	AG 0113, 0113	120W
Operating Frequency	13.56 MHz ±	0.005%
Load Impedance	50 Ω	
Input RF Connection	AG 0113, 0113	BNC Female (Rear Panel)
Output RF Connection	AG 0113, 0113	Type "N" Female (Rear Panel)
External RF Input	AG 0113, 0113	BNC Female (Rear Panel)
Output RF Blanking	AG 0113, 0113	BNC Female (Rear Panel)
Spurious Modulation 3rd Order	AG 0113, 0113	-50 dBc

Mains Input

Mains Power Consumptions	AG 0113, 0113	600 Watts
Mains Voltage	AG 0113, 0113	100-120 VAC 200-240 VAC
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	AG 0113, 0113	1 to 120 Watts
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- 1) 50 Ohm Loads
- 2) No Condensation or icing

120 Watts, HF PLASMA SERIES: MODEL 0113S



0113S

Control

RF Power 1 to 120 Watts

Accuracy

Based on Rate Power ± 2 Watts

Based on Set Point ± 2 Watts

Interface

A/D Interface 25-pin Sub-D

Cooling Specifications

Forced Air 70°C, Monitored

Environmental Specifications

Ambient Temperature Operating -10°C to +40°C

Storage -10°C to +40°C

Relative Humidity²⁾ Operating (No Condensation or icing) 5% to 80%

Storage 5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions 8.3" (W) x 5.25" (H) x 12.8" (D)

Weight

Unit Weight 5.6 kg, 12.5 lbs.

Case

Front Panel Covers and Chassis Aluminum

Protection Class

Regulations and Standards CE Conform UL EN 61010-1

Output Parameters

Nominal Power in Continuous Operation¹⁾ 1 to 120W

Max. Output Power into mismatch

VSWR 2:1 120W

VSWR 3:1 120W

Operating Frequency 13.56 MHz \pm 0.005%

Load Impedance 50 Ω

Output RF Connection Type "N" Female (Rear Panel)

Output RF Blanking 25-pin Sub-D (User Defined)

Spurious Modulation 3rd Order -55 dBc

Mains Input

Mains Power Consumption 600 Watts

Mains Voltage (Switch Selectable Rear Panel) 100-120 VAC 200-240 VAC

Mains Frequency 50/60 Hz

Fuse Protection 10A

1) 50 Ohm Loads

2) No Condensation or icing

300 Watts, HF PLASMA SERIES:

AG 0313, 0313



AG 0313

0313

Output Parameters

Nominal Power in Continuous Operation ¹⁾	AG 0313, 0313	1 to 300W
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Max. Output Power into mismatch

VSWR 2:1	AG 0313, 0313	300W
VSWR 3:1	AG 0313, 0313	300W
Operating Frequency	13.56 MHz ±	0.005%
Load Impedance	50 Ω	
Input RF Connection	AG 0313, 0313	BNC Female (Rear Panel)
Output RF Connection	AG 0313, 0313	Type "N" Female (Rear Panel)
External RF Input	AG 0313, 0313	BNC Female (Rear Panel)
Output RF Blanking	AG 0313, 0313	BNC Female (Rear Panel)
Spurious Modulation 3rd Order	AG 0313, 0313	-55 dBc

Mains Input

Mains Power Consumptions	AG 0313, 0313	850 Watts
Mains Voltage	AG 0313, 0313	100-120 VAC 200-240 VAC
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	AG 0313, 0313	1 to 300 Watts
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Accuracy

Based on Rate Power	AG 0313, 0313	± 2 Watts
Based on Set Point	AG 0313, 0313	± 2 Watts

Interface

A/D Interface	AG 0313, 0313	25-pin Sub-D
RS-232	AG 0313	9-pin Sub-D
RS-485	AG 0313	RJ 45
USB 2.0	AG 0313	USB Type B

Cooling Specifications

Forced Air	AG 0313, 0313	70°C, Monitored
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
-----------------	------------------------------------

Weight

Unit Weight	9.0 kg, 20 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Plastic Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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- 1) 50 Ohm Loads
- 2) No Condensation or icing

600 Watts, HF PLASMA SERIES:

AG 0613, 0613



AG 0613

0613

Output Parameters

Nominal Power in Continuous Operation ¹⁾	AG 0613, 0613	1 to 600W
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Max. Output Power into mismatch

VSWR 2:1	AG 0613, 0613	600W
VSWR 3:1	AG 0613, 0613	600W
Operating Frequency	13.56 MHz ±	0.005%
Load Impedance	50 Ω	
Input RF Connection	AG 0613, 0613	BNC Female (Rear Panel)
Output RF Connection	AG 0613, 0613	Type "N" Female (Rear Panel)
External RF Input	AG 0613, 0613	BNC Female (Rear Panel)
Output RF Blanking	AG 0613, 0613	BNC Female (Rear Panel)
Spurious Modulation 3rd Order	AG 0613, 0613	-50 dBc

Mains Input

Mains Power Consumptions	AG 0613, 0613	1100 Watts
Mains Voltage	AG 0613, 0613	100-120 VAC 200-240 VAC
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	AG 0613, 0613	1 to 600 Watts
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Accuracy

Based on Rate Power	AG 0613, 0613	± 3 Watts
Based on Set Point	AG 0613, 0613	± 3 Watts

Interface

A/D Interface	AG 0613, 0613	25-pin Sub-D
RS-232	AG 0613	9-pin Sub-D
RS-485	AG 0613	RJ 45
USB 2.0	AG 0613	USB Type B

Cooling Specifications

Forced Air	AG 0613, 0613	70°C, Monitored
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
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Weight

Unit Weight	9.0 kg, 20 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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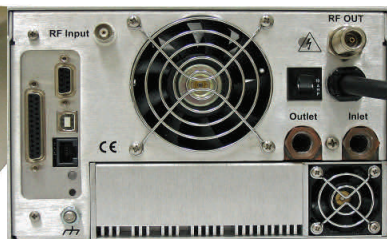
- 1) 50 Ohm Loads
- 2) No Condensation or icing

1200 Watts, HF PLASMA SERIES:

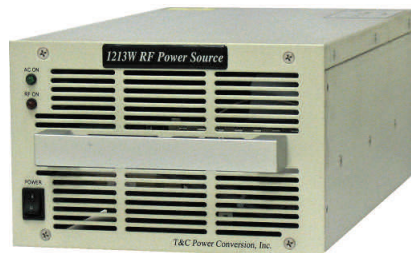
AG 1213W, 1213W



AG 1213W



REAR PANEL VIEW



1213W



REAR PANEL VIEW

Output Parameters

Nominal Power in Continuous Operation ¹⁾	AG 1213W, 1213W	1 to 1200W
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Max. Output Power into mismatch

VSWR 2:1	AG 1213W, 1213	1200W
VSWR 3:1	AG 1213W, 1213W	1200W
Operating Frequency	13.56 MHz ±	0.005%
Load Impedance	50 Ω	
Input RF Connection	AG 1213W, 1213W	BNC Female (Rear Panel)
Output RF Connection	AG 1213W, 1213W	Type "N" Female (Rear Panel)
Water Inlet Input	AG 1213W, 1213W	1/4-inch NPT Pipe (Rear Panel)
Water Inlet Output	AG 1213W, 1213W	1/4-inch NPT Pipe (Rear Panel)
Spurious Modulation 3rd Order	AG 1213W, 1213W	-55 dBc

Mains Input

Mains Power Consumption	AG 1213W, 1213W	2000 Watts
Mains Voltage	AG 1213W, 1213W	200-240 VAC
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	AG 1213W, 1213W	1 to 1200 Watts
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Accuracy

Based on Rate Power	AG 1213W, 1213W	± 12 Watts
Based on Set Point	AG 1213W, 1213W	± 12 Watts

Interface

A/D Interface	AG 1213W	25-pin Sub-D
RS-232	AG 1213W	9-pin Sub-D
RS-485	AG 1213W,	RJ 45
USB 2.0	AG 1213W	USB Type B

Cooling Specifications

Forced Air/Water	AG 1213W, 1213W	70°C, Monitored
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
-----------------	------------------------------------

Weight

Unit Weight	9.0 kg, 20 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Plastic Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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1) 50 Ohm Loads

2) No Condensation or icing

300/500 Watts, Manual Tuner Networks:

MODEL MIT-600 MANUAL TUNER

Front Panel View



Rear Panel View



Operating Parameters

RF Power Rating	MIT-600-03 MIT-600-05	Up to 300 Watts Up to 500 Watts
Operating Frequency	13.56 MHz	
Input RF Connection	Type "N" Female,	
Output RF Connection	Type "N" Female, HN Female, Ceramic Stud Available	
Input Impedance	50 Ohms	
RF Impedance Standard Range Coil	2 to 11 ZC Ohm and -3 to -9 ZL, .39 μ H	
Range Z Change Range Re (Z)	0.40 to 0.91 μ H coil / 0 to 31 ZC, to -25 ZL 3 to 50 Ohm	
Load Capacitor	21 to 985 pF Variable	
Load (fixed additional) Capacitor	3 to 200 pF, up to 600 pF total	
Tune Capacitor	26 to 325 pF	Variable
Input Impedance	50 Ohms	

Mains Input

Mains Input	100 - 120 Vac +/- 10% 200 - 240 Vac 50/60 Hz
Power Consumption	45 Watts Maximum

Interface Connections

Gen/Tune COM	Manual Tuner	15 Pin Sub "D"- J1
Phase/Magnitude Adjustment	Manual Tuner	(Rear Panel)

Cooling Specifications

Air	Manual Turner	Air Cooled
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ¹⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions

Auto Turner	8.30" (W) x 5.25" (H) x 15.0" (D)
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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1) No Condensation or icing

300/600/1000 Watts, Automatic Tuner Networks: MODEL AIT-600 AUTO TUNER

Front Panel View



Rear Panel View



Operating Parameters

RF Power Rating	AIT-600-03	300 Watts
	AIT-600-06	600 Watts
	AIT-600-10	1000 Watts
Operating Frequency	13.56 MHz	
Input RF Connection	Type "N" Female,	
Output RF Connection	Type "N" Female, HN Female, Ceramic Stud Available Available in 1,2 or 3 outputs	
Input Impedance	50 Ohms	
RF Impedance Standard Range Coil	2 to 11 ZC Ohm and -3 to -9 ZL, .39 μ H	
Range Z Change Range Re (Z)	0.40 to 0.91 μ H coil / 0 to 31 ZC, to -25 ZL 3 to 50 Ohm	
Load Capacitor	21 to 985 pF Variable	
Load (fixed additional) Capacitor	3 to 200 pF, up to 600 pF total	
Tune Capacitor	26 to 325 pF	Variable
Input Impedance	50 Ohms	

Mains Input

Mains Input	100 - 120 Vac +/- 10%	200 - 240 Vac 50/60 Hz
Power Consumption	45 Watts Maximum	

Interface Connections

Gen/Tune COM	Auto Tuner	15 Pin Sub "D"
A/D Interface	Auto Tuner	25 Pin Sub "D"
Phase/Magnitude Adjustment	Auto Tuner	(Rear Panel)

Cooling Specifications

Air	Auto Turner	Air Cooled
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ¹⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions

Auto Turner	8.30" (W) x 5.25" (H) x 15.0" (D)
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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1) No Condensation or icing

120W, 13.56 MHz Complete RF Delivery System



Model AIT-600-03 NAU3 Automatic/Manual Tuner (Matching Network), 13.56 MHz, Air Cooled, up to 120 watts RF input at 50 Ohm Impedance Rating.

Type "N" Input and Output Connectors, air load and tuning capacitor.

Includes Built-in Controller, capacitors positions Display Meter, manual operation Position Switches, Automatic / Manual Switch Selector.



AG 0113 RF Power Source, 120 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs., Dimensions 5.25"H x 8.75"W x 15.00"L

or



MIT-600-03 NAU3, Manual Tuner (Matching Network), 13.56 MHz, Air Cooled, up to 120 watts RF input at 50 Ohm Impedance Rating.

Type "N" Input and Output Connectors, air load and tuning capacitor.

Includes Built-in Controller, capacitor positions Display Meter, knobs for manual operation, Gen/Tune communication connector.

Dimensions: 5.0"H x 8.75"W x 15.00"L.



AG 0113 RF Power Source, 120 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs., Dimensions 5.25"H x 8.75"W x 15.00"L

Other components of the system:

RF Cables for Plasma Systems

Cable: Tuner Output to Load Input, RG 393 or RG 400, "N" or "HN", 4'/1.2m length or as needed.

Cable: Generator Output to Tuner Input, RG 400 "N", Length as needed.

Communication Cables for Plasma Systems

HD15 Male to Male Molded 7.5, 5 or 2.5 Feet as needed, Generator to Tuner communications.

DB25 Male to Male Molded 6 Feet Straight Thru, Analogue/Digital Generator to PLC controller communications.

Rack Mount Kit: One Pair for Plasma Systems

Rack Mount Kit: One Pair, Generators or Tuner, M4 x 10mm screws, 0.7mm pitch



300W, 13.56 MHz Complete RF Delivery System



Model AIT-600-03 NAU3

Automatic/Manual Tuner (Matching Network)
13.56 MHz, Air Cooled, up to 300 watts RF input at 50 Ohm Impedance Rating.

Type "N" Input and Output Connectors, air load and tuning capacitor.

Includes Built-in Controller, capacitors positions Display Meter, manual operation Position Switches, Automatic / Manual Switch Selector.

Dimensions: 5.0"H x 8.75"W x 15.00"L.



AG 0313

RF Power Source, 300 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs.,

OR



Model MIT-600-03 NAU3

Manual Tuner (Matching Network),
13.56 MHz, Air Cooled, up to 300 W RF input at 50 Ohm Impedance. Type "N" Input and "N" Output Connector, air load and tuning capacitors.

Includes its own basic Built-in Controller for capacitors positions Display Meter and communications with generator.

Dimensions: 5.0"H x 8.75"W x 15.00"L.



AG 0313

RF Power Source, 300 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs.,

Other components of the system:

RF Cables for Plasma Systems

Cable: Tuner Output to Load Input, RG 393 or RG 400, "N" or "HN", 4'/1.2m length or as needed.

Cable: Generator Output to Tuner Input, RG 400 "N", Length as needed.

Communication Cables for Plasma Systems

HD15 Male to Male Molded 7.5, 5 or 2.5 Feet as needed, Generator to Tuner communications.

DB25 Male to Male Molded 6 Feet Straight Thru, Analogue/Digital Generator to PLC controller communications.

Rack Mount Kit: One Pair for Plasma Systems

Rack Mount Kit: One Pair, Generators or Tuner, M4 x 10mm screws, 0.7mm pitch



500W & 600W, 13.56 MHz Complete RF Delivery System



600W System



Model AIT-600-06 HNAU3

Automatic/Manual Tuner (Matching Network)
13.56 MHz, Air Cooled, up to 600 watts RF input at 50 Ohm Impedance Rating.

Type "N" Input and "HN" Output Connectors, air load and tuning capacitor.

Includes Built-in Controller, capacitors positions Display Meter, manual operation Position Switches, Automatic / Manual Switch Selector.

AG 0613

RF Power Source, 600 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs., Dimensions 5.25"H x 8.75"W x 15.00"L

500W System



Model MIT-600-05 HNAU3

Manual Tuner (Matching Network),
13.56 MHz, Air Cooled, up to 500 W RF input at 50 Ohm Impedance. Type "N" Input and "HN" Output Connector, air load and tuning capacitors.

Includes its own basic Built-in Controller for capacitors positions Display Meter and communications with generator. Dimensions: 5.0"H x 8.75"W x 15.00"L.



AG 0613

RF Power Source, 600 Watts at 13.56 MHz, Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.

Crystal Oscillator at 13.56 MHz, 9.0 kg, 20 lbs.,

Other components of the system:

RF Cables for Plasma Systems

Cable: Tuner Output to Load Input, RG 393 or RG 400, "N" or "HN", 4'/1.2m length or as needed.

Cable: Generator Output to Tuner Input, RG 400 "N", Length as needed.

Communication Cables for Plasma Systems

HD15 Male to Male Molded 7.5, 5 or 2.5 Feet as needed, Generator to Tuner communications.

DB25 Male to Male Molded 6 Feet Straight Thru, Analogue/Digital Generator to PLC controller communications.

Rack Mount Kit: One Pair for Plasma Systems

Rack Mount Kit: One Pair, Generators or Tuner, M4 x 10mm screws, 0.7mm pitch



1200W, 13.56 MHz Complete RF Delivery System



Model AIT-600-10 HNVU3

Automatic/Manual Tuner (Matching Network)
13.56 MHz, Air Cooled, up to 1200 W RF input at 50 Ohm Impedance Rating.
Type "N" Input and "HN" Output Connectors, air load and vacuum tuning capacitor.
Includes Built-in Controller, capacitors positions Display Meter, manual operation Position Switches, Automatic / Manual Switch Selector.
Dimensions: 5.25"H x 8.75"W x 15.00"L. (Mini case)



AG 1213W

RF Power Source, 1200 Watts at 13.56 MHz, Water and Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.
Crystal Oscillator at 13.56 MHz

or



Model AIT-600-12R HNVU3

Automatic or Manual Tuner (Matching Network),
13.56 MHz, Air Cooled, up to 1200 W RF input at 50 Ohm Impedance. Type "N" Input and "HN" Output Connector, air load and Vacuum tuning capacitors.
Includes its own basic Built-in Controller for AUTO operation, capacitors position Display Meter and Manual Operation Position Switches, Automatic/Manual Switch Selector.
Dimensions: 6.0"H x 12.0"W x 16.00"L. (Regular case)



AG 1213W

RF Power Source, 1200 Watts at 13.56 MHz, Water and Air Cooled, 50 Ohm Impedance, Front panel display for complete Generator/Tuner control and RF Power Meters, AGC and Burst operation settings, Analog/Digital Communications Interface via SubD 25. RS 232 and USB digital communications.
Crystal Oscillator at 13.56 MHz
Dimensions 5.25"H x 8.75"W x 15.00"L

Other components of the system:

RF Cables for Plasma Systems

Cable: Tuner Output to Load Input, RG 393 or RG 400, "N" or "HN", 4'/1.2m length or as needed.

Cable: Generator Output to Tuner Input, RG 400 "N", Length as needed.

Communication Cables for Plasma Systems

HD15 Male to Male Molded 7.5, 5 or 2.5 Feet as needed, Generator to Tuner communications.

DB25 Male to Male Molded 6 Feet Straight Thru, Analogue/Digital Generator to PLC controller communications.

Rack Mount Kit: One Pair for Plasma Systems

Rack Mount Kit: One Pair, Generators or Tuner, M4 x 10mm screws, 0.7mm pitch



2400W R-Series 13.56 MHz Complete RF Delivery System



AIT-600-24R

Automatic or Manual Tuner/ Matching Network, 13.56 MHz, Water and Air Cooled, up to 2400 W RF input at 50 Ohm Impedance.

- ⇒ 2 Front panel options: Blank or Manual Control display (shown above)
- ⇒ Type "N" Input and "HN" or 716DIN Output Connector, vacuum load and tuning capacitor.
- ⇒ Includes its own **built-in controller for AUTO operation**, capacitors positions Display Meter, manual operation Position Switches, Automatic / Manual Switch Selector.
- ⇒ Dimensions: 6.0"H x 12.0"W x 16.0"L (Regular case)

Generator Front Panel Display: Tuner Control Menu

(appears automatically with generator/tuner)

A TUNE - Tuner in AUTO operation
M TUNE - Tuner in Manual control from the generator front panel. Selection by membrane switch "TUNE".
P TUNE - Tuner in Programmable, PRESET mode. Offers up to 10 programmable preset points (STO0 to 9) that can be recalled later (REC0 to 9) for the process needs.



AG 2413W

RF Power Source, 2400 Watts at 13.56 MHz, Water and Air Cooled, 50 Ohm Impedance.

- ⇒ Front panel display for complete Generator/ Tuner control.
- ⇒ Generator controlled via Front Panel, REM remote PLC or Digital Port
- ⇒ AGC and Burst operation settings
- ⇒ Analog/Digital Communications Interface via SubD 25
- ⇒ RS 232 and USB digital communications.
- ⇒ 13.56 MHz, crystal controlled, built-in DDS
- ⇒ Dimensions: 5.25"H x 19.0"W x 12.6"L
- ⇒ Weight: 15.0 kg, 33 lbs.

Generator Front Panel Display: Generator Mode Menu

SF - Set Point for Forward Power
FP - Actual Forward Power
LP - Load Power
RP - Reversed Power
12% - Set for Burst operation
12W - Set for AGC operation
MAIN - main operation window
SVC - service menu window (other window option)
REM - controlled from external PLC



Other components of the system:

RF Cables for Plasma Systems

Cable: Tuner Output to Load Input, RG 393 or RG 400, "N" or "HN", 4'/1.2m length or as needed.
 Cable: Generator Output to Tuner Input, RG 400 "N", Length as needed.

Communication Cables for Plasma Systems

HD15 Male to Male Molded 7.5, 5 or 2.5 Feet as needed, Generator to Tuner communications.
 DB25 Male to Male Molded 6 Feet Straight Thru, Analogue/Digital Generator to PLC controller communications.

Rack Mount Kit: One Pair for Plasma Systems

Rack Mount Kit: One Pair, Generators or Tuner, M4 x 10mm screws, 0.7mm pitch



300 Watts, LF PLASMA SERIES:

03-380 / 03-450



03-380

03-450

Output Parameters

Nominal Power in Continuous Operation ¹⁾	03-380	300 W
	03-450	300 W

Max. Output Power into mismatch

VSWR 2:1	03-380	300W
	03-450	
VSWR 3:1	03-380	300W
	03-450	
Operating Frequency	03-380	380 kHz ± 5 kHz
	03-450	450 kHz ± 5 kHz
Load Impedance	50 Ω	
Input RF Connection	03-380	BNC Female (Rear Panel)
	03-450	
Output RF Connection	03-380	Type "N" Female (Rear Panel)
	03-450	
External RF Input	03-380	BNC Female (Rear Panel)
	03-450	
Output RF Blanking	03-380	BNC Female (Rear Panel)
	03-450	
Spurious Modulation 3rd Order	03-380	-50 dBc
	03-450	

Mains Input

Mains Power Consumptions	03-380	700 Watts
	03-450	
Mains Voltage	03-380	100-120 VAC 200-240 VAC
	03-450	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	03-380	Up to 300 Watts
	03-450	

Accuracy

Based on Rate Power	03-380	± 3 Watts
	03-450	
Based on Set Point	03-380	± 3 Watts
	03-450	

Interface

A/D Interface	03-380	25-pin Sub-D
	03-450	

Cooling Specifications

Forced Air	03-380	70°C, Monitored
	03-450	

Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
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Weight

Unit Weight	13.0 kg, 28.7 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Plastic Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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- 1) 50 Ohm Loads
- 2) No Condensation or icing

550 Watts, LF PLASMA SERIES:

06-380 / 06-450



06-380

06-450

Output Parameters

Nominal Power in Continuous Operation ¹⁾	06-380 06-450	up to 550W
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Max. Output Power into mismatch

VSWR 2:1	06-380, 06-450	550W
VSWR 3:1	06-380, 06-450	550W
Operating Frequency	06-380 06-450	380 kHz ± 5 kHz 450 kHz ± 5 kHz
Load Impedance	50 Ω	
Input RF Connection	06-380, 06-450	BNC Female (Rear Panel)
Output RF Connection	06-380, 06-450	Type "N" Female (Rear Panel)
External RF Input	06-380, 06-450	BNC Female (Rear Panel)
Output RF Blanking	06-380, 06-450	BNC Female (Rear Panel)
Spurious Modulation 3rd Order	06-380, 06-450	-50 dBc

Mains Input

Mains Power Consumption	06-380, 06-450	1100 Watts
Mains Voltage	06-380, 06-450	100-120 VAC 200-240 VAC
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	06-380, 06-450	up to 550 Watts
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Accuracy

Based on Rate Power	06-380, 06-450	± 3Watts
Based on Set Point	06-380, 06-450	± 3 Watts

Interface

A/D Interface	06-380, 06-450	25-pin Sub-D
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Cooling Specifications

Forced Air	06-380, 06-450	70°C, Monitored
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ²⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.25" (W) x 5.25" (H) x 17.41" (D)
-----------------	------------------------------------

Weight

Unit Weight	13.0 kg, 28.7 lbs.
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Case

Front Panel Covers and Chassis	Coated Steel, Plastic Overlay Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-------------------------------------

- 1) 50 Ohm Loads
- 2) No Condensation or icing

300 Watts - LF BROADBAND PLASMA SERIES:

AG 1007 - CLASS "B"



AG 1007 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 1 MHz	1 to 300W
	20 kHz to 2 MHz	1 to 200W
Continuous RF Output ²⁾	20 kHz to 2 MHz	1 to 150W

Max. Output Power into mismatch

VSWR 2:1	300W	
VSWR 3:1	300W	
Operating Frequency	20 kHz to 2 MHz	± 0.001%
Load Impedance	50 Ω	
Internal RF Source	DDS Oscillator	20 kHz to 2 MHz, 1 kHz resolution, GUI Software—2 kHz Max
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	900 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 300 Watts	
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Accuracy

Based on Rate Power	± 3 %	
Based on Set Point	± 3 %	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +30°C
	Storage	-10°C to +30°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)
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Weight

Unit Weight	12 kg, 26 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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- 1) 50 Ohm Loads, Pulsing low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

400 Watts - LF BROADBAND PLASMA SERIES:

Ultra 06-800—AMPLIFIER—CLASS “B”



Ultra 06-800

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 1 MHz	1 to 400W
Continuous RF Output ²⁾	20 kHz to 2 MHz	1 to 250W

Max. Output Power into mismatch

VSWR 2:1	400W	
VSWR 3:1	400W	
Output Protection VSWR	80W max reflected	(Limited)
Operating Frequency	20 kHz to 2 MHz	
Load Impedance	50 Ω	
RF Input Drive	-15 dBm to 0 dBm, +3 dBm Max.	
External RF Input	Signal or Function Generator	BNC Female (Rear Panel)
Output RF Connection	BNC Female (Rear Panel)	
RF Blanking	25-pin Sub-D (User Defined TTL Low/High)	Pin 14
Spurious Modulation 3rd Order	-50 dBc	

Mains Input

Mains Power Consumptions	1000 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	
Mains Frequency	50/60 Hz	

Mains Input (Continued)

Fuse Protection	15A	
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Control

RF Power	1 to 400 Watts	
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Accuracy

Based on Rate Power	± 3W	
Based on Set Point	± 3 W	

Interface

A/D Interface	25-pin Sub-D	
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Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +30°C
	Storage	-10°C to +30°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.3" (W) x 5.25" (H) x 13.5" (D)
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Weight

Unit Weight	12.7 kg, 28 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads
- 2) Continuous Output Any Load
- 3) No Condensation or icing

400 Watts - LF BROADBAND PLASMA SERIES:

Ultra 06-800 MQ—AMPLIFIER—CLASS “B”



Ultra 06-800MQ

Output Parameters

Nominal Power in Continuous Operation ¹⁾	550 kHz to 950 kHz	1 to 400W
Continuous RF Output ²⁾	550 kHz to 950 kHz	1 to 250W

Max. Output Power into mismatch

VSWR 2:1	400W	
VSWR 3:1	400W	
Output Protection VSWR	80W max reflected	(Limited)
Operating Frequency	550 kHz to 950 kHz	
Load Impedance	50 Ω	
RF Input Drive	-15 dBm to 0 dBm, +3 dBm Max.	
External RF Input	Signal or Function Generator	BNC Female (Rear Panel)
Output RF Connection	BNC Female (Rear Panel)	
RF Blanking	15-pin Sub-D (User Defined TTL Low/High)	Pin 14
Spurious Modulation 3rd Order	-50 dBc	

Mains Input

Mains Power Consumptions	1000 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	
Mains Frequency	50/60 Hz	

Mains Input (Continued)

Fuse Protection	15A	
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Control

RF Power	1 to 400 Watts	
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Accuracy

Based on Rate Power	± 3W	
Based on Set Point	± 3 W	

Interface

A/D Interface	15-pin Sub-D	
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Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +30°C
	Storage	-10°C to +30°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	8.3" (W) x 5.25" (H) x 13.5" (D)
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Weight

Unit Weight	12.7 kg, 28 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads
- 2) Continuous Output Any Load
- 3) No Condensation or icing

550 Watts, LF BROADBAND PLASMA SERIES:

AG 1014 - CLASS "B"



AG 1014 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	50 kHz to 800 kHz	1 to 550W
	20 kHz to 1 MHz	1 to 400W
	20 kHz to 2 MHz	1 to 250W
Continuous RF Output ²⁾	20 kHz to 2 MHz	1 to 250W

Max. Output Power into mismatch

VSWR 2:1	550W	
VSWR 3:1	550W	
Operating Frequency	20 kHz to 2 MHz	± 0.001%
Load Impedance	50 Ω	
Internal RF Source	DDS Oscillator	20 kHz to 2 MHz, 1 kHz resolution, GUI Software—2 kHz Max
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumption	1100 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 550 Watts	
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Accuracy

Based on Rate Power	± 3 %	
Based on Set Point	± 3 %	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +30°C
	Storage	-10°C to +30°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)
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Weight

Unit Weight	12 kg, 26 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
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- 1) 50 Ohm Loads, Pulsing low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

1000 Watts, LF BROADBAND PLASMA SERIES:

AG 1010 - CLASS "B"



AG 1010

Output Parameters

Nominal Power in Continuous Operation ¹⁾	40 kHz to 1 MHz	1 to 1000W
Continuous RF Output ²⁾	20 kHz to 2 MHz	1 to 600W

Max. Output Power into mismatch

VSWR 2:1	1000W	
VSWR 3:1	1000W	
Operating Frequency	20 kHz to 2 MHz	± 0.001%
Load Impedance	50 Ω	
Internal RF Source	DDS Oscillator	20 kHz to 2 MHz, 1 kHz resolution, GUI Software—2 kHz Max
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
RF Blanking Input	BNC Female (Rear Panel)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumption	2000 Watts	
Mains Voltage	200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 1000 Watts	
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Accuracy

Based on Rate Power	± 3 %	
Based on Set Point	± 3 %	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	14.25" (W) x 7" (H) x 15.25" (D)
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Weight

Unit Weight	25 kg, 54 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulsing low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

300 Watts, LF/HF BROADBAND PLASMA SERIES:

AG 1006 - CLASS "B"



AG 1006 Front Panel View

Output Parameters		
Nominal Power in Continuous Operation ¹⁾	20 kHz to 4 MHz	Up to 300W
	20 kHz to 8 MHz	Up to 200W
	Up to 14 MHz	<125W
Continuous RF Output ²⁾	20 kHz to 14 MHz	Up to 150W

Max. Output Power into mismatch		
VSWR 2:1	300W	
VSWR 3:1	300W	
Operating Frequency	As Amplifier ³⁾	20 kHz to 14 MHz
	As Generator	20 kHz to 6 MHz
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	BNC Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input		
Mains Power Consumptions	900 Watts	
Mains Voltage	100-120 VAC	
	200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control		
RF Power	1 to 300 Watts	

Accuracy		
Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface		
A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications		
Forced Air	70°C, Monitored	

Environmental Specifications		
Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ⁴⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)		
Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)	

Weight		
Unit Weight	12 kg, 26 lbs.	

Case		
Front Panel Covers and Chassis	Aluminum	

Protection Class		
Regulations and Standards	CE Conform UL EN 61010-1	

- 1) 50 Ohm Loads
- 2) Operating with External RF Input
- 3) Continuous Output Any Load
- 4) No Condensation or icing

600 Watts, LF/HF BROADBAND PLASMA SERIES:

AG 1016 - CLASS "B"



AG 1016 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	150 kHz to 4 MHz	Up to 600W
	100 kHz to 5 MHz	Up to 500W
	20 kHz to 6 MHz	Up to 400W
Continuous RF Output ²⁾	20 kHz to 6 MHz	Up to 250W

Max. Output Power into mismatch

VSWR 2:1	600W	
VSWR 3:1	600W	
Operating Frequency	20 kHz to 6 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	BNC Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-20 dBc	

Mains Input

Mains Power Consumptions	1600 Watts	
Mains Voltage	200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 600 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)
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Weight

Unit Weight	12 kg, 26 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

1000 Watts, LF/HF BROADBAND PLASMA SERIES:

AG 1012 - CLASS "B"



AG 1012

Output Parameters

Nominal Power in Continuous Operation ¹⁾	40 kHz to 5 MHz	Up to 1000W
Continuous RF Output ²⁾	20 kHz to 6 MHz	Up to 600W

Max. Output Power into mismatch

VSWR 2:1	1000W	
VSWR 3:1	1000W	
Operating Frequency	20 kHz to 6 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	BNC Female (Rear Panel)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	3080 Watts	
Mains Voltage	200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 1000 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +35°C
	Storage	-10°C to +35°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	14.25" (W) x 7" (H) x 15.25" (D)
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Weight

Unit Weight	25 kg, 54 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

2000 Watts, LF/HF BROADBAND PLASMA SERIES:

AG 1024 - CLASS "B"



AG 1024 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 1 MHz	Up to 2000W
	1 MHz to 2 MHz	Up to 1000W
	2 MHz to 3 MHz	Up to 400W
Continuous RF Output ²⁾	20 kHz to 3 MHz	Up to 1800W

Max. Output Power into mismatch

VSWR 2:1	2000W	
VSWR 3:1	2000W	
Operating Frequency	20 kHz to 3 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	1600 Watts	
Mains Voltage	200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 2000 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	21" (W) x 20.5" (H) x 18.5" (D)
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Weight

Unit Weight	71.4 kg, 157.5 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

4000 Watts, LF/HF BROADBAND PLASMA SERIES:

AG 1048 - CLASS "B"



AG 1048 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 1 MHz	Up to 4000W
	1 MHz to 2 MHz	Up to 2000W
	2 MHz to 3 MHz	Up to 800W
Continuous RF Output ²⁾	20 kHz to 3 MHz	Up to 3600W

Max. Output Power into mismatch

VSWR 2:1	4000W	
VSWR 3:1	4000W	
Operating Frequency	20 kHz to 3 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-76 dBc	

Mains Input

Mains Power Consumptions	1600 Watts	
Mains Voltage	120-240 VAC, 3 Phase "Y"	44 A
Mains Frequency	44/63 Hz	
Fuse Protection		

Control

RF Power	1 to 4000 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	21" (W) x 36.5" (H) x 20.5" (D)
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Weight

Unit Weight	136 kg, 300 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

50 Watts, LF/HF WIDEBAND SERIES:

AG 1020 - AMPLIFIER/GENERATOR- CLASS "A"



AG 1020 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	500 kHz to 4 MHz	Up to 175W
Continuous RF Output ²⁾	10 kHz to 14 MHz	Up to 50W

Max. Output Power into mismatch

VSWR 2:1	50W	
VSWR 3:1	50W	
Operating Frequency	10 kHz to 20 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	BNC Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	800 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	8.0 A 4.0 A
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 50 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)
-----------------	-------------------------------

Weight

Unit Weight	12 kg, 26 lbs.
-------------	----------------

Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

100 Watts, LF/HF WIDEBAND SERIES:

AG 1021 - AMPLIFIER/GENERATOR- CLASS "A"



AG 1021 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	10 kHz to 20 MHz	Up to 300W
Continuous RF Output ²⁾	150 kHz to 12 MHz	Up to 100W

Max. Output Power into mismatch

VSWR 2:1	100W	
VSWR 3:1	100W	
Operating Frequency	10 kHz to 20 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	BNC Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	1000 Watts	
Mains Voltage	100-120 VAC 200-240 VAC	
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	Up to 300W	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	10" (W) x 5.25" (H) x 15" (D)
-----------------	-------------------------------

Weight

Unit Weight	12 kg, 26 lbs.
-------------	----------------

Case

Front Panel Covers and Chassis	Aluminum
--------------------------------	----------

Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

500 Watts, LF/HF WIDEBAND SERIES:

AG 1017L - AMPLIFIER/GENERATOR- CLASS "A"



AG 1017L

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 4 MHz	Up to 500W
Continuous RF Output ²⁾	10 kHz to 10 MHz	Up to 200W

Max. Output Power into mismatch

VSWR 2:1	500W	
VSWR 3:1	500W	
Operating Frequency	10 kHz to 10 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	BNC Female (Rear Panel)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	2000 Watts	
Mains Voltage	200-240 VAC	10A
Mains Frequency	50/60 Hz	
Fuse Protection	15A	

Control

RF Power	1 to 500 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +35°C
	Storage	-10°C to +35°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	14.25" (W) x 7" (H) x 15.25" (D)
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Weight

Unit Weight	25 kg, 54 lbs.
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Case

Front Panel Covers and Chassis	Aluminum
--------------------------------	----------

Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

1000 Watts, LF/HF WIDEBAND SERIES:

AG 1015 - AMPLIFIER/GENERATOR- CLASS "A"



AG 1015 Front Panel View

Output Parameters

Nominal Power in Continuous Operation ¹⁾	20 kHz to 2 MHz	Up to 1000W
	10 kHz to 4 MHz	Up to 750W
	10 kHz to 6 MHz	Up to 400W
Continuous RF Output ²⁾	10 kHz to 6 MHz	Up to 400W

Max. Output Power into mismatch

VSWR 2:1	1000W	
VSWR 3:1	1000W	
Operating Frequency	10 kHz to 6 MHz	
Load Impedance	50 Ω	
Input RF Connection	BNC Female (Rear Panel)	
Output RF Connection	Type "N" Female (Rear Panel)	
External RF Input	BNC Female (Rear Panel)	
Output RF Blanking	25-pin Sub-D (User Defined)	
Spurious Modulation 3rd Order	-26 dBc	

Mains Input

Mains Power Consumptions	4800 Watts	
Mains Voltage	2/N/PE ~200-240 Vac	24 A
	2/N/PE ~346-415 Vac	13 A
Mains Frequency	50/60 Hz	
Fuse Protection		

Control

RF Power	1 to 1000 Watts	
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Accuracy

Based on Rate Power	± 3 Watts	
Based on Set Point	± 3 Watts	

Interface

A/D Interface	25-pin Sub-D	
RS-232	9-pin Sub-D	

Cooling Specifications

Forced Air	70°C, Monitored	
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Environmental Specifications

Ambient Temperature	Operating	-10°C to +40°C
	Storage	-10°C to +40°C
Relative Humidity ³⁾	Operating (No Condensation or icing)	5% to 80%
	Storage	5% to 80%

Dimensions (Generator without mating connectors)

Unit Dimensions	21" (W) x 20.5" (H) x 18.5" (D)
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Weight

Unit Weight	71.4 kg, 157.5 lbs.
-------------	---------------------

Case

Front Panel Covers and Chassis	Aluminum
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Protection Class

Regulations and Standards	CE Conform UL EN 61010-1
---------------------------	-----------------------------

- 1) 50 Ohm Loads, Pulse and Low Duty Cycle
- 2) Continuous Output Any Load
- 3) No Condensation or icing

- IMPORTANT -
More Detailed system operating instructions
are located in the Operation Manual

Front Panel Controls & Basic Operations

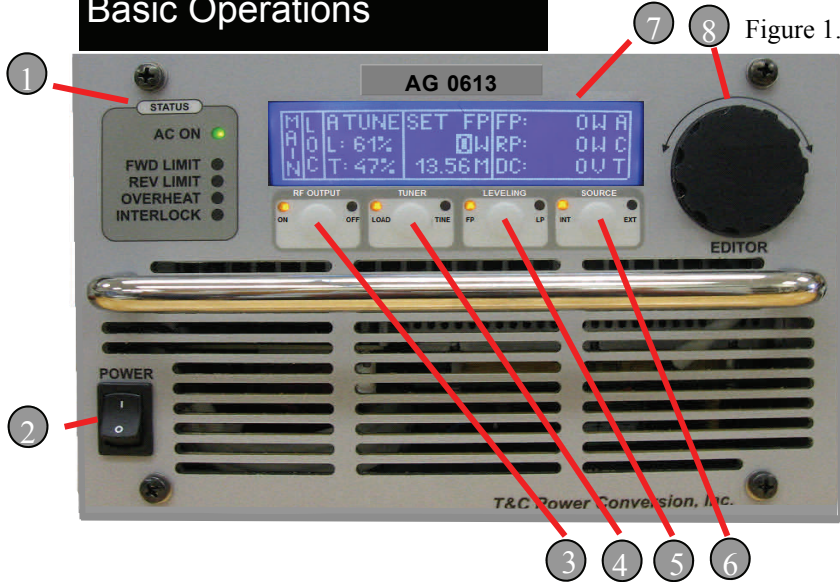


Figure 1.

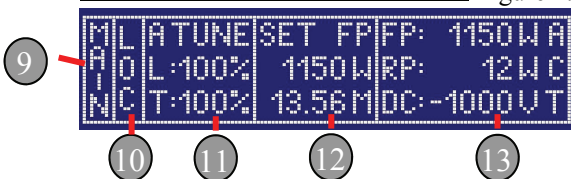
T&C XXX Family RF Generator Series Quick Start User Guide

- 1 Status Panel - Status Indicators are ON when limits are met (illuminated), Interlock, AC. Figure 1
- 2 AC POWER Switch (ON=I OFF/=O). Figure 1
- 3 RF OUTPUT Switch (Membrane) - Selection of RF Power ON or OFF. Figure 1
- 4 TUNER Switch (Membrane) - Selection of either Load Capacitor or Tune Capacitor position in Manual Operation. Figure 1
- 5 LEVELING Switch (Membrane) - Selection of either FP (Forward Power) or LP (Load Power) Display Setup Controls. Figure 1
- 6 SOURCE Switch (Membrane) - Selection of either Internal Oscillator Drive or External Drive Source. Figure 1
- 7 MAIN CONTROL DISPLAY (Figure 2 & 3). Figure 1
- 8 EDITOR KNOB - Function is to select, scroll and change fields within the "Main Menu" or "Service Menu". Pressing the Knob activities the chosen field. Scrolling right to left changes the field to desire setting. Status Panel - Status Indicators are ON when limits are

Display Screens:

1.) Main Control Screen

Figure 2.



2.) Tuner Presets Screen

Figure 3.



3.) Service Control Screen

Figure 4.



- 9 15 Main or Service toggle field. It is backlit, scroll to new field using Editor. Press Editor Knob to make selection. Figure 2
- 10 Local or Remote Operation, Ok selection with Editor Knob. Figure 2
- 11 Tuner Selections; Scroll, Automatic/Manual operation. Use Editor Knob to make selection. In Manual mode scroll to "Load" or "Tune" capacitors. Use Editor Knob to adjust capacitor setting. See Operation Manual for more detail. Figure 2
- 12 Set Forward Power, use Editor Knob to make selection. Figure 2
- 13 LIVE Readout Section Figure 2
- 14 Tuner Presets; Hold Editor Knob 1.5 sec. from any screen and will stop in pre-set screen, scroll store or recall, scroll to number field and select number and push OK on Editor Knob to store or recall position desired. Figure 3
- 16 Set Forward Power Limit. Section is backlit, use Editor Knob to make selection. Figure 4
- 17 Set Scale 5V or 10V = 600W. Section is backlit, use Editor Knob to make selection. Figure 4
- 18 Set Start Power. Section is backlit, use Editor Knob to make selection. Figure 4
- 19 Ramp ON/OFF; Yes=ON/NO=OFF. Section is backlit, Push Editor Knob to set selection. Figure 4
- 20 Set Ramp Timing in watts per second. Section is backlit, use Editor Knob to

- IMPORTANT -
More Detailed system operating instructions are located in the Operation Manual

T&C XXX Family RF Generator Series Quick Start User Guide

Rear Panel Connections

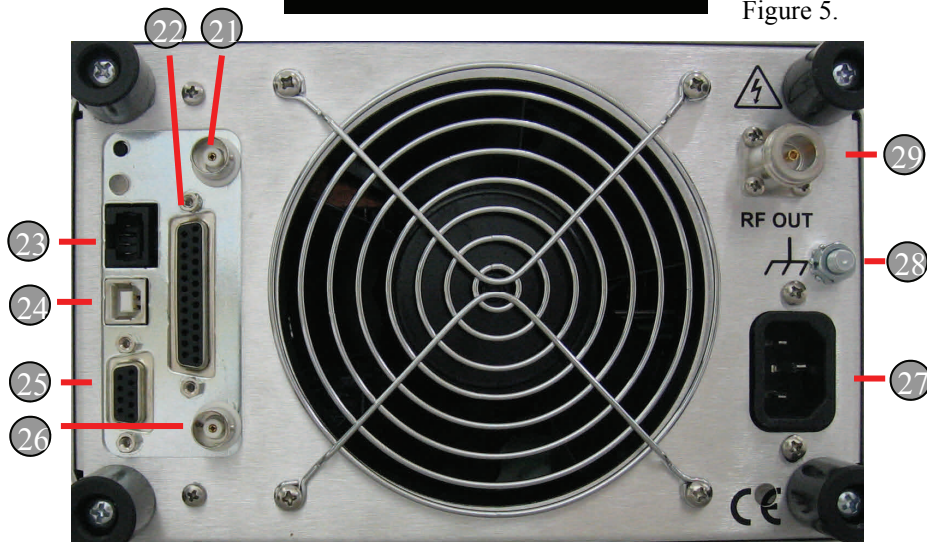
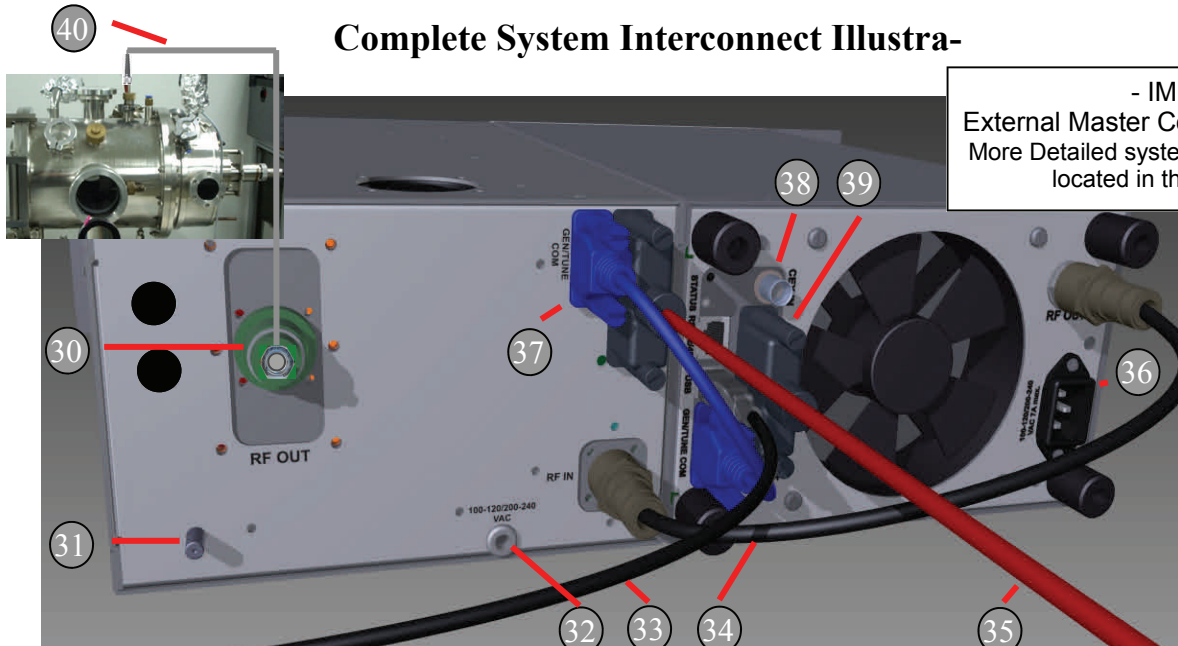


Figure 5.

- 21 External RF Input. Figure 5
- 22 A/D INTERFACE, DB-25 Analog & Digital Port. Figure 5
- 23 RS-232 via RJ45 Connection. Figure 5
- 24 Future 2.0 type B USB Connection. Figure 5
- 25 GEN/TUNE INTERFACE. Figure 5
- 26 Blanking, Functional Interlock in parallel with Pin 14 of A/D Interface. Figure 5
- 27 AC INPUT. Figure 5
- 28 Ground Connection. Figure 5
- 29 RF OUTPUT Type “N” Connection.

Complete System Interconnect Illustration



- IMPORTANT -
External Master Control (MC) Not Required!
More Detailed system operating instructions are located in the Operation Manual

- 30 Tuner RF OUTPUT (Stud, Type “N”, “HN”). Figure 6
- 31 Ground Stud. Figure 6
- 32 Tuner AC Input Cord. Figure 6

- 33 Future 2.0 type B USB Cable. Figure 6
- 34 RF Output Cable from Generator to RF Input to Tuner. Figure 6
- 35 Tuner A/D INTERFACE Cable, DB-25 Analog & Digital Port. Figure 6

Figure 6.

- 36 AC Input to Generator. Figure 6
- 37 Generator to Tuner Com Cable. Figure 6
- 38 CEX IN Connection. Figure 6
- 39 Generator A/D INTERFACE Cable, DB-25 Analog & Digital Port. Figure 6
- 40 Tuner RF Output to Plasma Chamber Load Input. Figure 6

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