AG 1020
LF AMPLIFIER/GENERATOR

50 Watts of Linear RF Power From 10 kHz to 20 MHz For Industrial, Laboratory and Medical Applications.

FEATURING:

- **500 kHz to 4 MHz up to 175 W of total RF Power**
- **10 kHz to 14 MHz, 50 W**
- **Linear Output of 50W h3 ≤-20 dBc**
- **Digital Meter, measures forward and reflected power**
- **Front Panel Control of Amplifier and Generator functions**
- **Data acquisition: Status Monitoring & Power Measurement at Analog Port**
- **RS232 communication: Full Control Of Amplifier & Generator Functions**
- **AGC or Power Leveling: Gain Control to better than ±0.5 dB**

The AG 1020 is a robust source of RF power for ultrasonic, laser modulation, RFI/EMI, plasma generation, laboratory and general industrial applications.
Featuring leading edge solid state design for all RF amplifier stages and a built-in DDS signal source, it provides everything for a complete and reliable, controlled RF power delivery system. It reflects the ongoing T&C commitment to provide RF power products of the highest quality, incorporating current requirements for complete remote control and data acquisition features.

OPERATION

The AG 1020 produces 50W of linear power over a frequency range of lower than 10 kHz to higher than 14 MHz, with low harmonic and intermodulation distortion. It operates over the entire frequency range without band switching or other adjustments. Extended range to over 20 MHz is possible in AGC mode. Gain is rated at 52 dB with a typical gain flatness of ±1 dB.
The Front Panel offers a LCD display of Forward, Reflected and Load Power readings, RF Status, MGC/AGC setups and operating frequency in Generator Mode.
Power meters are calibrated into a 50 Ohm Load and are accurate when the unit operates into a matched load. Outside of matched condition, the model AG 1020's power measurement system provides an accurate reading of VSWR.
When used as amplifier, the AG 1020 is compatible with most signal and function generators, computer synthesizer cards and accurately reproduces all waveforms within its output and bandwidth limits.
The Forced-air cooling system and the internal power supply are designed to permit operation over a wide range of temperature and global AC line conditions.
The AG 1020 is built to withstand a +13 dBm (2.8Vp-p) Input signal. The unit amplifies the inputs of AM, FM, SSB, pulse and other complex modulations with <-20 dBc (h3) harmonic distortion and output power stability.

OUTPUT PROTECTION

The AG 1020 is protected by its internal monitoring system for up to 175 Watts of Forward Power and 65W of Reflected Power. This will protect the amplifier output stage from accidental overdrive and an extreme mismatch at the Output.

GENERAL

T&C's products are designed to be reliable, compact and light in weight. The use of conservatively rated components ensures high reliability and eliminates the need for periodic retuning.

AG 1020 Specifications

Class Of Operation
Class A to 50 Watts

Frequency Of Operation
10 kHz to 20 MHz

RF Power Output
50W from 0.01 MHz to 14 MHz of continues linear output into any load.

Up to 175W max from 0.5 MHz to 4 MHz, 50 Ohm load only, 20C.
Pulsing and low duty cycle only!

Gain
52 dB @ 50W / 1 MHz
±1 dB 10 kHz to 14 MHz

RF Input Drive
Typical range –30 dBm to 0 dBm,
+5 dBm max

RF Input Drive for AGC
Recommended -5 dBm to 0 dBm for ±0.5 dB gain flatness

Input Drive Source
Signal or function generator, analog computer output capable of up to 1 Vp-p @ 50 Ohm (+5 dBm)

Internal RF Source
DDS oscillator: 10 kHz to 15 MHz, 1kHz resolution

Input and Output Impedance
50 Ohm

2:1 max INPUT VSWR

3:1 max OUTPUT VSWR

Output VSWR Protection
65 W max reflected power limit

Harmonic Level @ 50W
Better then - 20 dBc for 3rd harmonic, any other > -30 dBc

Harmonic Level @ 170W
- 16 dBc

Spurious Output
- 26 dBm continuous level noise present at the amplifier output in 70 kHz to 150 kHz band

RF Output Settings & Control
- Front Panel EDITOR and function switches for manual control,
- RS232 port for GUI or other computer communication. Rear Panel.
- SubD 25 Analog and Digital I/O . Port power scale 1V=100W. Rear Panel

RF Power Meter accuracy
± 3% typical

Output Blanking (Pulsing)
For pulsed applications, T&C amplifiers and generators offer blanking of the output signal for minimum noise RF spectrum.
Less then 1µs Rise/Fall time

BURST - internal
Pulse range: 1 to 500 usec
Period: 1 to 50 milliseconds
User settings via GUI and RS232

BURST - external
DC to > 200 kHz. User defined BURST scheme via SubD-25.
See analog port description for more details.

SWEEP operation
0.01 to 15 MHz. Min time 10 ms, max 10s. Settings and activation from GUI only.

RF Connectors
BNC Female: Back Panel

AC Power Source
100 - 120, 200 - 240 VAC,
+/- 10%, 47 - 63 Hz

AC Power Connection
IEC Standard Power Entry followed by RFI filter.
Filter range 0.1 to 30 MHz minimum

AC Circuit Protection
Internally fused on the main DC Power Supply, 15A.

AC Input Current (RMS)
RF Out nominal 175W:
I ≤ 7A @ 115V / I ≤ 3A @ 220V
Maximum: 10A

Cooling
Forced air, temperature controlled, heatsink temperature monitored via RS232 GUI interface.

Acoustic level:
45dBa @ Max Fan Speed @ temp.

Case
Designed to meet EMI and RFI shielding requirements AL chassis, yellow conductive finish.
Front Panel: T&C off-white.
Cover: T&C black.

Dimensions
H135mm x W254 mm x L385mm
(5.25" x 10" x 15")

Weight
12 kg, 26 lbs.

Mounting
Table top, stand alone unit.
Optional: Rack Mount Kit.

Environmental conditions
Temp.: 10° to 35° C ambient
Humidity: 80%

Equipment intended for ISM applications in laboratory and light industrial environment.

AG 1020 Performance Chart