

# FLAG, KAZ ANTENNA AMPLIFIER

## FLG100

100kHz to 10MHz

### FLG100

The Flag Antenna Amplifier Model FLG100 is designed to provide a high impedance match to a Flag or similar loop antenna whilst providing additional gain.

The Flag, and the KAZ delta loop are probably the simplest uni-directional antennas available for amateur construction. Some of these antennas have a relatively low output. Hence, their performance can be limited by the receiver noise floor, therefore a high gain low noise amplifier is required to bring the signal to an acceptable level.

The FLG100 amplifier is based on the proven design of the Wellbrook ALA100 Large Aperture Loop antenna.

A key feature of the FLG100 is the very high antenna to feed-line isolation.

### FLG100 FEATURES

- **Very low IMD ensures good performance in presence of strong BCB signals**
- **Ideal for LW/MW DX and 160m Ham Band**
- **Antenna to feeder isolation equiv. to 12pF at 1.8MHz**
- **18dB gain compared to Flag with a 800 to 50 Ohm xmfr**
- **Very high rejection of power-line noise**
- **Supplied with Antenna Interface and a low noise 12 volt regulated PSU; Europe and N. A. only**
- **Compatible with the Wellbrook Array Phasing Unit**
- **Close Phased Matched amplifier for Antenna Arrays**
- **Can be used with EWE, Pennant, K9AY and KAZ**

### FLG100 ADVANTAGES

Correct operation of the Flag antenna i.e. maximum F/B ratio depends critically on the antenna being isolated from the feeder. Otherwise the antenna will behave as an end fed vertical with little or no directivity. Hence, a feed line matching transformer is required with a very low input/output capacitance. Also as the Flag antenna has a relatively low output, normally additional amplification is required at the receiver to bring the signal up to an acceptable level. However, in some installations common mode or feeder pick-up can degrade the antennas' performance. Therefore, if the additional amplification is at the antenna, then the signal output will far exceed any feed-line pick-up. Hence, there will be no degradation of F/B. The issue of feed line pick-up and low signal output can be of much higher importance with an end-fire Flag array where the array gain is lower than a single Flag. Hence, additional antenna amplification is a must for close spaced arrays.

### INTERMODULATION

The second order intermodulation performance of a wideband amplifier is very important because sum and difference signals especially from high power AM BCB can produce IMD way before the third order IMD is noticeable. Most commercial wideband amplifiers generate quite high second order IMD. The FLG100 has been specifically designed to reduce intermodulation products to a minimum. Hence, the second order and the third order intercept points are typically +90dBm (IP2) and +42dBm (IP3) respectively. Thus the level of the intermodulation products are generally below the atmospheric and man made noise.

### ANTENNA DESIGN

The FLG100 consists of a 800 to 50 Ohm matching/isolating transformer a high gain balanced broadband amplifier using 4 low noise RF power transistors. The amplifier is encapsulated in synthetic resin and housed in a ABS box, this ensures reliable operation in all weather conditions. The FLG100 provides very low noise performance and a large signal handling ability. Rejection of power line/mains borne noise is accomplished by using a balanced amplifier and the input isolation transformer.

### INSTALLATION

The FLG100 Antenna Amplifier simply connects to the antenna using the two screw terminals. The user provided feeder cable connects to the Antenna Interface. The 12 volt regulated power supply ( EU, UK and US only ). Connects to the Antenna Interface. 50 ohm coaxial feeder cable is recommended for the antenna. The maximum feeder length is 100m. The Antenna Interface feeds the 12 volt dc power to the antenna. A 1m coax. lead connects the Antenna Interface to the receiver.

Flag, EWE and K9AY Use:

Replace the existing antenna matching transformer with the FLG100 Head and fit the Antenna Interface/PSU at the receiver.

The FLG100 should be positioned away from sources of interference such as fluorescent lights, TVs, computers and electrical wiring. In most cases satisfactory results can be obtained by vertical mounting the antenna about 0.5m above ground level and at least 10m from any buildings.

### TECHNICAL INFORMATION

Power consumption:	12 volts at 130mA
Frequency coverage:	100kHz to 10MHz
Intermodulation typically: With two signals of 32mV (-17dBm)	2nd order -124dBm 3rd order -137dBm (Test freq. 0.8MHz+1.0MHz)
Intercept point typically: (Test freq. 0.8MHz+1.0MHz)	2nd order +90dBm 3rd order +42dBm
1dB compression point:	+26dBm
Output:	50 ohms, BNC

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