

# MEDIUM APERTURE ACTIVE LOOP ANTENNA

50kHz to 30MHz

The Active Loop Antenna Model ALA 100M is a medium size aperture antenna designed to provide improved performance compared to traditional active and passive antennas. The ALA 100M has two modes of operation; at Medium and Low Frequencies the antenna is a high efficiency broadband Loop; for High frequencies the antenna has a response similar to a Longwire. The ALA 100M is **primarily designed to reduce local interference** and provides similar performance to the larger ALA100. However, the smaller size loop allows the user more scope to erect the antenna away from local noise.

The ALA 100M is broadband and does not have to be tuned in step with the receiver. The loop can be mounted remotely from the receiver away from local interference. Whereas, traditional antennas require a lot of space and can pick-up local noise.

## ALA 100 FEATURES

- **Very low intermodulation products ensures good performance in a strong signal environment**
- **Medium size aperture; Ideal for LW/MW DX**
- **Figure of eight directivity and deep nulls to reduce interference for MW and LW**
- **High sensitivity**
- **Antenna is balanced/isolated from ground and feeder induced currents**
- **Very high rejection of mains borne noise**
- **Supplied with Antenna Interface and 12 volt PSU**
- **Broadband, no tuning necessary or matching unit**
- **No planning problems, mounted outside at ground level**

## ALA 100M ADVANTAGES

Active antennas are necessary for several reasons:

The difficulty of matching a conventional wire antenna to a 50 ohm feeder and still retaining a broadband response is not easy. At certain frequencies; conventional wire antennas can deliver excessive signal strength, leading to receiver overload. Planning regulations restrict antenna erections.

The active antenna solves the problem of impedance matching to the feeder and yet the performance is comparable with larger antennas. However, most active antennas are of the whip or dipole type and respond mainly to the electric-field. The ALA 100 is balanced antenna and responds primarily to the magnetic-field at medium and low frequencies, this ensures high rejection of nearby electric-fields. The intensity of the electric-field is usually higher than the magnetic-field when an antenna is close to interference sources such as TVs florescent lamps, mains wiring etc. Therefore, by rejecting the electric-field there will be a reduction in local interference compared to other types of active and passive antennas. The large aperture of the ALA 100 signal pickup to optimise the signal to noise ratio and also reduces fading at HF, this is a very important advantage compared to small active antennas.

## INTERMODULATION

The **second order intermodulation** performance of a broadband active antenna is very important because active antennas do not have any selective circuits to reduce intermodulation. The ALA 100M has been specifically designed to reduce intermodulation products to a minimum. The second order and the third order intercept points are typically **+80dBm** (IP2) and **+42dBm** (IP3) respectively. Thus the level of the intermodulation products are generally below the atmospheric and man made noise.

## ANTENNA DESIGN

The ALA 100M consists of a 3-10m circumference wire Loop and 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 ALA 100M 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.

## INSTALLATION

The ALA 100M Loop Antenna comprises of a loop/amplifier Head Unit together with an Antenna Interface and a 12 volt regulated power supply ( UK and US only ). RG58C 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. The wire Loop is provided by the user. This can be supported by a tree or light weight wooden poles 2.5m high spaced 2.5m apart. Alternatively the Loop can be loft mounted or simply attached to the inside or outside wall of the home. However, for lower noise performance, the ALA 100M 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 mounting the antenna near ground level and at least 6m from buildings. The Loop size can be altered to match the receiver performance and thus reduce overload problems when used with medium priced receivers.

The ALA 100M can also be mounted on to an antenna rotator using a simple 2m x 2m wooden frame to exploit the Loops directional characteristics. Alternatively an 10m circumference triangular loop can be used.

## TECHNICAL INFORMATION

Power consumption:	12 volts at 150mA
Frequency coverage:	50kHz to 30MHz
Intermodulation typically:	2nd order -114dBm
With two signals of 32mV (-17dBm)	3rd order -135dBm
(Test freq. 0.8MHz+1.0MHz)	
Intercept point typically:	2nd order +80dBm
(Test freq. 0.8MHz+1.0MHz)	3rd order +42dBm
1dB compression point:	+25dBm
Output:	50 ohms, BNC