



No longer Manufactured, replaced by the ALA1530LNP

NEW ALA1530S+ IMPERIUM MAGNETIC BROADBAND ACTIVE LOOP ANTENNA

50kHz to 30MHz

Improved mechanical design



The **ALA1530S+** is the high gain version of the ALA1530 Loop antenna. This compact Active loop antenna primarily is designed to provide improved performance over conventional passive and active whip antennas. The ALA1530S+ has been re-engineered to increase the upper HF gain is increased by approx. 7dB. Also the amplifier intermodulation performance has been significantly improved. An FM band filter is now fitted. Also a resettable fuse is now fitted to Antenna Interface.

Over the past decade the ALA1530 range of loop antennas has redefined the active antenna market place; by affording the user the possibility to reject locally radiated and mains borne noise and still provide improved sensitivity compared to larger antennas.

1m dia. Aluminium loop is designed for outdoors, even at ground level. The loop has a frequency range from **50kHz to 30MHz** and matches directly to the receiver. The loop can be mounted remotely; away from local interference. The amplifier is fitted in a separate module to reduce mechanical stress on the amplifier and facilitate easy replacement.

Note: due to the high MW gain of this antenna, it is not recommended to be used close the AM BC transmitters, otherwise this may cause receiver overload problems.

- Balanced low impedance Magnetic loop with enhanced performance compared to shielded and Moebius loop types
- Unique Impedance tracking Amplifier to optimise loop/amplifier matchin
- Loop reactance is cancelled out to increase the sensitivity in the upper HF region
- Up to 30dB rejection of locally radiated and power-line noise compared to an active whip
- Figure of eight directivity and deep nulls to further reduce interference; Ideal for LW/MW with antenna rotator
- Unique two transformer Norton amplifier with a +55dBm IOP3 ensures good performance in a strong signal environment
- Rugged construction 1m dia, Aluminium loop, with Antenna Interface and a reg. power supply (UK, Europe, N. A. only)
- No tuning necessary or matching unit; No planning problems, works at ground level, can be camouflaged.
- Separate Head Amplifier fits on top of loop to reduce mechanical stress and afford easy replacement.

This is no ordinary loop antenna

The ALA1530 range of antennas are the result of several years development. Most Broadband loops work by virtue that the current induced by the H or Magnetic Field is constant irrespective of frequency. Wideband loop antennas are usually designed by connecting a low impedance, high gain amplifier to a single or multi-turn loop (shielded). This approach presents several problems:

1. Shielded Moebius and Multi-turn loops have too much capacitance or inductance and hence reduced HF bandwidth. A Moebius shielded loop has 4-5 x the inductance of the ALA1530S+ loop thus limiting the loop current with 6-12dB roll off above 20MHz
2. Optimum loop/amplifier power transfer occurs over a narrow bandwidth, this is because the loop impedance rises with frequency from a few Ohms at LF to several hundred Ohms at HF. This rise in loop impedance opposes the current transfer to the amplifier and reduces the loop/amplifier power transfer (gain)

Wellbrook has solved the loop/amplifier matching problem by using a low inductance loop element, so that the loops' reactance at HF is not too high. To optimise the power transfer, the amplifier has a input impedance that matches loops' reactance over the design bandwidth. The ALA1530 family are believed to be the only commercial loop antennas to use Impedance tracking Amplifiers. Hence, the problems associated with Shielded, Moebius and single or Multi-turn loops have been avoided. The E-Field is cancelled out by virtue of the loop aperture being very small in terms of wavelength and the phase difference of the balanced loop output is 180 degrees.

MAGNETIC LOOP ANTENNA ADVANTAGE

Most active antennas are the whip type and respond mainly to the electric-field. The Magnetic Broadband Loop responds primarily to the magnetic-field, 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. Interference reduction is further enhanced by the deep nulls of the 'Figure-of-Eight' directivity pattern.

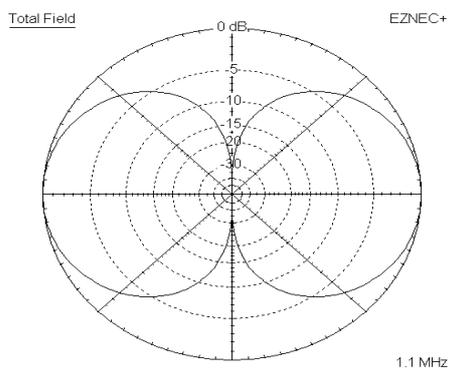
INTERMODULATION

Some active antennas generate intermodulation products which can appear as spurious signals interfering with reception. This interference is usually second order intermodulation is caused by non-linearity in the amplifier, producing signals which are the sum and difference of strong Broadcast stations. The ALA 1530S+ Broadband Loop has been specifically designed to reduce intermodulation products to a minimum. The second order and the third order intercept points are typically **+90dBm** OIP2 and **+55dBm** OIP3 respectively for the MW band. Thus the level of the intermodulation products are generally below the atmospheric and man made noise. Note: Some manufactures don't even state the second order intermodulation performance.

ANTENNA DESIGN

The Loop antenna consists of a rigid aluminium loop and a variable impedance balanced gain optimised broadband amplifier using low noise RF power transistors with transformer noiseless feedback. The amplifier is encapsulated in resin and housed in a uPVC box, this ensures reliable operation in all weather conditions. This antenna provides low noise performance, large signal handling ability. Rejection of mains borne noise is accomplished by using a balanced amplifier so that the feeder does not form part of the antenna return path. The amplifier input is protected with high speed diodes.

The ALA1530S+ is supplied Antenna Interface and a 12 volt regulated power supply. RG58C 50 ohm coaxial feeder cable is recommended for the antenna. The recommended maximum feeder length is 100m. A 1m coax. lead connects the Antenna Interface to the receiver. The ALA 1530S+ should be positioned approximately 5m away from any buildings.



Loop pattern as viewed from above

TECHNICAL INFORMATION

Power consumption:	12 volts at 240mA
Amplifier Intercept point typically:	OIP2 +90dBm OIP3 +55dBm (MW Band)
1dB compression point:	+30dBm
Antenna Factor A F:	0dB to -5dB above 1MHz. Note: A F -5dB (1uV/m gives 1.8uV into 50 Ohm receiver)
Max. Field strength	400V/m or 1.0A/m pulse
Output impedance:	50 ohms BNC

[See Review in August 2013 Radiouser](#)

Wellbrook Communications
The Farthings
Beulah
Llanwrtyd Wells, Powys
LD5 4YD

GB



www.wellbrook.uk.com

Design/specification subject to change without notice

© 2014

All products are design copyright

Phone 01591 620316

E-mail: sales@wellbrook.uk.com

ala1530S+P 17-06-15