

WL1030

Wideband Magnetic Loop

10kHz – 30MHz



... to ease your listening

DEAR READER

Some 15 years ago I started listening to shortwave and long wave radio. I began with a simple receiver and antenna, and over the years I used various types.

During this period I got increasingly frustrated by the noisy signals I heard. Another frustration was placing these large antennas, planning problems, annoyed neighbours, etc. Using small active antennas did not help much either, in terms of noise and interference.

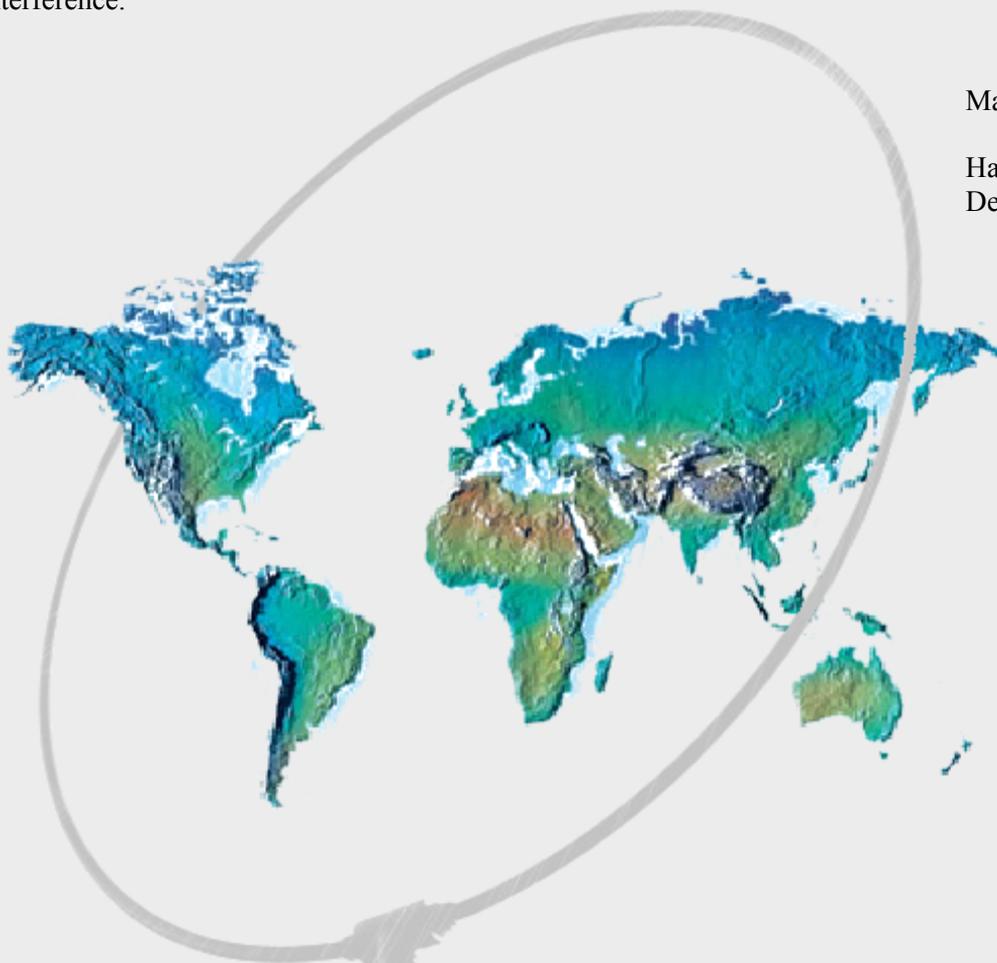
So I wondered, being an electronic designer and radio enthusiast, whether I could do better?

After long and hard thinking, reading, simulating, prototyping and engineering, the answer is yes!

I am proud to present to you the **WL1030**, a wideband magnetic loop antenna, just built ... to ease your listening.

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IS THE ANTENNA YOUR WEAKEST LINK ?

Most radio enthusiasts use long wire or small active whip antennas. These different types of antennas suffer, however, from serious drawbacks. In particular, their size and sensitivity to local interference (QRM) makes them less suitable to use.

Planning problems and rising levels of man made noise induced by light dimmers, TV sets and other (switching) electronic appliances makes the choice for loop antennas more sensible.

Loop antennas have been used since the early days of radio listening. Their compactness, directive- and reduced sensitivity for local interference, make them the preferred choice among different types of antennas. Most (passive) loop antenna designs however have to be tuned in step with the receiver, which is a considerable disadvantage.

The **WL1030** loop antenna *deals* with all of these drawbacks and its features make it a very good alternative antenna for radio listening.

- With its *well-balanced, wideband design*, the **WL1030** loop antenna is sensitive to radio signals though much less sensitive to local interference, with *no need* for tuning.
- Its *frequency range* makes the **WL1030** usable for VLF, Long Wave, Medium Wave, as well as Short Wave listening.
- Its well thought through *mechanical design* makes it *easy to install*.

ANTENNA DESIGN

The complete **WL1030** antenna system consists of a loop antenna, a mounting pole, an antenna interface, a power supply, connection cables, and some mounting material.

- The antenna itself consists of a one-meter loop element with the wideband amplifier mounted in a so-called T-element at its base. With the help of this T-element, the antenna mounts easily on the supplied mounting pole or on an aluminium or steel pole of your choice.

INTERMODULATION

One of the *main issues* with active antennas is their intermodulation behaviour.

Active devices and transformers used in antenna amplifiers generate intermodulation products because of their nonlinear behaviour. These so called second and third order intermodulation products, which are the sum and difference

- The amplifier is encapsulated in epoxy resin for reliable operation and is fitted with a BNC-connector.
- The antenna loop element, T-element and mounting pole are made out of high quality industrial plastics with low UV-sensitivity and will last for years.
- At the indoor antenna interface, the antenna signal and power supply run through the same coaxial cable.

NOISE FLOOR

The *sensitivity* of a receiver is determent by its noise floor. In the chain from the antenna to the loudspeaker, the first active element, often the front-end of the radio, determines this noise floor.

When using the **WL1030**, its amplifier is the first active

of strong signals, appear as spurious signals interfering with the original signal.

With the design of the **WL1030**, *special care* has been taken to keep the level of intermodulation to a minimum: it usually stays well below your receiver's noise floor, and is thus unnoticed.

NOISE REJECTION

One of the *main features* of the **WL1030** is its high rejection of locally radiated man made noise, thereby reducing noise interference.

This feature is acquired through its *well-balanced* design. Rotating the antenna will enhance noise rejection even further by balancing out local noise sources.

element in the chain and it will determine the noise floor.

In practice though, the level of atmospheric- and man made noise is much higher than the noise floor, so noise rejection is much more important.

S-METER OR S/N RATIO

A small joke perhaps, but meant seriously: There should be a law against S-meters.

Quite often people judge a radio signal by its signal strength, but there is no great value in doing that. Especially in these DSP ages, receiver equipment should

This reduced interference has positive effect on the S/N ratio and thus improves the signal quality. Balance and low capacitive coupling to mains wires reduces mains borne noise. Finally, signal quality improves because of the antennas immunity to static build-up.

be fitted with a S/N ratio- or some type of 'quality' meter. There is much more value to listening to quality or noiseless audio.

With its *high noise rejection*, the **WL1030** will enhance your listening.

POWER SUPPLY

In many applications, the noise contribution of the power supply is well underestimated or not recognized at all.

Much effort has been put in a clean, noise free power supply for the **WL1030**.

With common mode and differential mode filtering for LF and RF interference and with the use of a very low noise, voltage regulator a *clean power supply* is assured.

Even using a Switched Mode PSU is possible now.

TO TUNE OR NOT TO TUNE

A *huge advantage* of the **WL1030** is its feature of wideband reception with *no need* for tuning the antenna.

Its so-called 'zero ohm' input makes the amplifiers signal proportional to the field strenght and not to the frequency.

So just tune in your receiver to your favourite station and away you go.

*The **WL1030**, built... to ease your listening.*

LOOP FEATURES :

- Very low intermodulation figures
- Very low noise floor
- Good performance in a strong signal environment
- High rejection of locally radiated man made noise
- High rejection of mains borne noise
- Figure of eight receiving pattern, deep nulls
- Immune to static build-up
- No tuning necessary, no matching unit
- Electronics built with up-to-date SMT components
- Compact one-meter diameter design
- Semi-rigid construction, built to last
- Supplied with all necessary accessories
- Supplied with antenna interface and PSU
- No planning problems, can be placed virtually anywhere

TECHNICAL SPECIFICATIONS :

- OIP2 : + 70dBm
- OIP3 : + 40dBm
- 1dBcomp : + 23dBm
- CMRR : > 50dB
- Noise floor : - 123dBm (0.17uV) in 2.2kHz BW
- Ant. factor : 1
- Zout : 50 ohms
- PSU : 12Vdc – 15Vdc / 100mA

Design and specifications are subject to change without notice.

