THE WEST RAND AMATEUR RADIO CLUB

August 2010
Volume 11, Issue 2

ANODE

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Volume 11, Issue 2

Elektor unveils DSP radio
Publication date: 1 July 2010

The Summer Circuits issue of Elektor features a construction project for a world radio receiver using a digital signal processor (DSP). The DSP radio has a USB interface for connection to a PC, which enables the radio to be configured and controlled from the PC if desired and use the PC speakers for audio output, as well as drawing power from the USB port. The unit can receive and demodulate FM signals in the FM broadcast band and AM signals over a frequency range of 153 kHz to 21.85 MHz.

Many radio amateurs use two receivers in practice: one portable and the other fixed, with PC control capability. The Elektor DSP radio can operate in either capacity. To support stand-alone portable operation with power provided by a 6 V battery, the circuit also includes an audio amplifier for mono or stereo output. A backlit 2 x 16 LCD module provides the user interface.

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"Listeners"
AIRBAND AWARD
For logging 50 or 100 different airlines. Can be claimed for HF, VHF or mixed.

Really? An award for listening to the

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Automatic Antenna Tuners

I had intended to do a survey of "Automatic Antenna Tuners" here. But I only got to scratch the surface.

http://www.miami.muohio.edu/president/personal/w8zr/eztuner/ezcontents.htm **vvv below vvv**

Special points of interest:

- Contact details on back page (corrected & updated July 2010)
- Ham-Comp Latest on web site.

Perhaps you would like to build one like this? —>

A large number of units have a microprocessor controlling the functionality and providing a "memory" of the tuned and best matched position.

Some have switched inductors and motor tuned

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Editor's Comments

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aircraft radio frequencies? For non-radio amateurs? Whatever next?

IARUMS to concentrate on cleaning-up 40 metres

The South African Radio League's councillor for the IARU Monitoring System (IARUMS), Fred Scheepers, ZS1FCS, invites radio amateurs and shortwave listeners to join a campaign to remove non-amateur stations from the 40 metre amateur band.

It requires many persons to monitor the band from 7 000 - 7 200 kHz for intruders and record their details such as the station ID, the frequency and time. Many intruder broadcast stations will broadcast their ID on the hour and half hour.

If you cannot understand the language make an mp3 recording or a wave file and add it to your report. Fred has set a special email address that is easy to remember. It is **intruder@sarl.org.za**.

The South African Radio League

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Amateur Radio contesting simplified

Over the next few weeks, South African Radio League (SARL) Contest Manager **Geoffrey Levey** will highlight details of the up and coming contests. This week, he focuses on the SARL HF Contests.

The aim of the SARL HF Phone Contest is for participants to contact as many amateurs in Southern Africa as possible on the 20, 40 and 80 m bands.

The HF Phone contest takes place on Sunday 1 August 2010 from 13:00 to 16:30 UTC. The following frequencies may be utilized - 14,125 to 14,350 MHz; 7,060 to 7,100 and 7,130 to 7,200 MHz; 3,603 to 3,650 and 3,700 to 3,800 MHz.

There are four categories of participation -

a) Single Operator Single Band
b) Single Operator All Band
c) Multi Operator Single Band or
d) Multi Operator All Band.

The exchange is a RS report and a consecutive serial number starting at 001. A multi-operator station transmitting on several bands simultaneously may at their discretion use separate number sequences for each band.

Each contact counts 1 point, each call area worked on each band counts 2 points and each station contacted on all three bands counts 2 points. Contacts with stations outside these areas are allowed, QSO points may be claimed but no zone or three-bander points may be claimed.

More details including the call areas are available in the contest manual. Download it from www.sarl.org.za and select contests in the left hand column.

There are trophies and certificates awarded for the highest overall score as well as the highest score on a single band. Logs must be submitted within 15 days to the Bloemfontein Radio Amateur Club, Box 12104, Brandhof, 9324 or sent by e-mail to zs4bfn@netactive.co.za.

The closing date for the log submissions is 16 August 2010.

Participants under 19 years old and participants over 18 years old will take part in two separate draws for a 2010 ARRL Handbook and an ARRL Antenna book respectively.

Get those antennas in order and get radio active in the SARL HF Phone contest on 1 August.

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Radio Amateur received Apollo 11

The ARRL report on the reception of signals from the Apollo 11 lunar astronauts by a Radio Amateur 41 years ago.

In July of 1969, a ham radio operator and amateur radio-astronomer by the name of Larry Baysinger, W4EJA, accomplished an amazing feat. He independently detected radio transmissions from the Apollo 11 astronauts on the lunar surface.

Fortunately, his accomplishments were recorded by Glenn Rutherford, a young reporter for the Louisville (Kentucky) Courier-Journal. "Lunar Eavesdropping: Louisvillians hear moon walk talk on homemade equipment,"

Read the ARRL story at
http://www.arrl.org/eavesdropping-on-apollo-11

Cutting bills made easy
http://technology.iafrica.com/gadgets/reviews/2485380.htm

Black box flight recorder inventor dies

The death of Dr David Warren brought to a close the very interesting life of a man who developed the black box that has played a crucial role in improving aviation worldwide.

He was born in 1925 at a remote mission station on Groote Eylandt in the Gulf of Carpentaria, North Australia, and the first European child to be born on that Aboriginal settlement.

His father was killed in one of Australia's earliest air disasters in Bass Strait between Tasmania and the mainland, and the last gift received from his dad was a crystal set.

That encouraged the young David in boarding school to build radio receivers and enroll to sit for his ham ticket, hoping to become Australia's youngest radio amateur.

But this ambition was thwarted when the government imposed a ban on amateur radio with the outbreak of World War II.

However his schoolboy knowledge of electronics led him to later to build the world's first flight data recorder.

Being involved in the accident investigation of the world's first jet-power aircraft, the Comet, in 1953, led him to advocate that there be a cockpit recorder as a means of solving otherwise unexplainable aircraft crashes.

The idea initially raised little interest, so while the Principal Research Scientist, Aeronautical Research Laboratories in Melbourne, he designed and built an experimental unit that could record four hours of speech as well as flight instrument readings.

The idea took five years to be finally accepted.

Dr David Warren died aged 85.

Jim Linton VK3PC

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Suggestion made to person re-locating to SA

Try looking at an Internet radio device.

Yes: you need access to the Internet (and if you are it a lot a quite large (or ideally unlimited) account. But I recently set one up for an overseas friend; and was blown away with the possibilities.

ooo! short wave radio!

I think that was the natural home for all nerds and geeks before the internet evolved, & now

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Editor's Comments

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they are all busy blogging, podcasting and You Tubing... But I fear that the hams are becoming a rare breed now!

Many, many, (many) years ago I remember making sure that any radio bought had to have short wave as that was, in sure postings, the only away you could get the news on BBC World Service.

Anyone else remember making crystal radio sets, with aerials so long no batteries were required? More satisfying than a 'play station' (in my sad old mind!)

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Does Anyone remember Radio Caroline? (or LM Radio)

http://sc5.radiocaroline.net:8010/listen.pls

Story from the Radio Caroline web site

Ronan was told of new technology, where thousands of feet of copper wire were spiral wound on to a glass fibre mast and encased in resin. The result was a free standing eighty foot glass fibre tower which electrically behaved like a much larger and taller antenna. He was seduced by this excellent new idea and surely, he reasoned, if he put two masts on the ship Caroline could broadcast from one and Monique from the other.

Without seeking technical advice he had two towers built.

When the first arrived, 'Chicago' announced that it was totally unsuitable. As soon as the device was erected it swayed alarmingly and months passed while a means was found of restraining it. Then when it was energised it caught fire, broke in two and fell into the sea.

In fact the device had a handling capacity of only 5 kilowatts so when Peter fed an experimental 15 kilowatts into it the tower self destructed.

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An Infra-Red remote for a PC

"We don't get any demand for them", she said, "so we don't import them".

One of the most annoying things about the IT industry here is the inability to understand the minority requirements for components that are provided as standard items overseas.

If you read the little book that comes with most motherboards today, you will read that unit 'xyz' comes with an infra red interface connector on the main board. The pin out is shown in diagram form and the item that plugs in there is usually given an item number that can be ordered with the motherboard. But it never is because it costs a whole $2 more! (And there is no demand for it!)

Before 'Bluetooth' became a standard fitment to a cell phone, Infra-Red communication was the only wireless connection. A USB device was available for a time but no more. Most PC's diverted Com2 to provide serial communication over Infra-Red.

Why would you want to remote control your PC? How about if your PC was another source of your multimedia, like the Windows Media Center?

In the U.K. you can purchase a dedicated (cheap) PC that doesn't even look like a PC, that interfaces to your existing HiFi and your flat screen TV.

Apart from the fact that you cannot purchase these "fancy" cases here in SA. You can still use the Windows 7 Media Center to play videos, mp3's and slideshows. Oh and by the way, you will have to fork out a little bit more for your

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Editor's Comments

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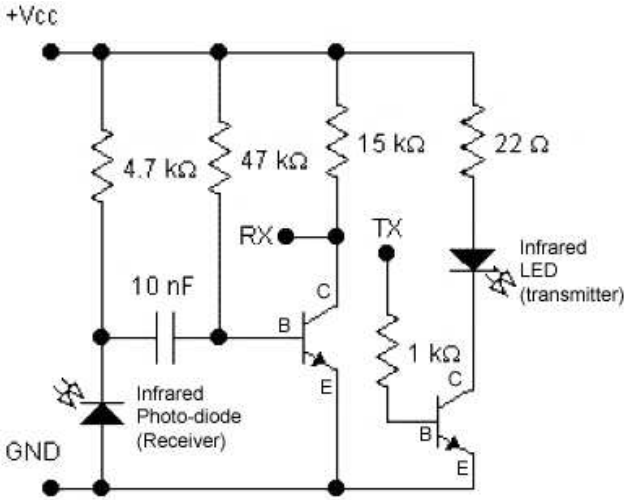
Windows as its only available in the versions above Home Basic. Alternatively you could use VLC, the "Open Source" media player which plays everything.



So, do you think you could handle constructing this circuit?

According to the web site I found it on. Once you have connected it and booted the PC, it should be recognized by Windows and the 'driver' installed. I await your comments. JB

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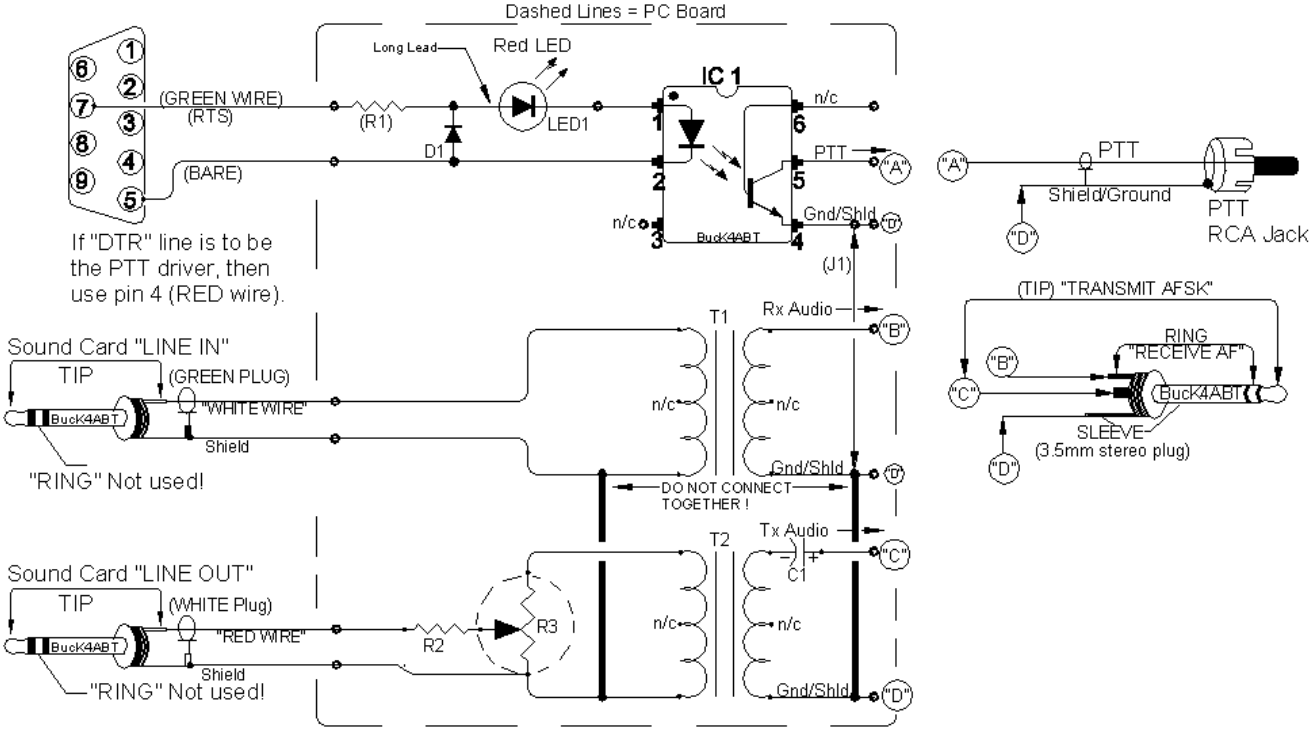
More on the opto-coupler interface to a radio for PSK31.

I came across yet another interface diagram and on inspection found it ideal for "newbies".

It provides an indicator L.E.D. in series with the opto coupler to show when the PTT should be 'on'. It also has protection diode across the opto coupler's emitting diode to prevent reverse polarity voltages from breaking down the diode.

The opto coupler can be recovered from almost any dial-up modem rendered obsolete by lightning or a move to ADSL.



Automatic Antenna Tuners

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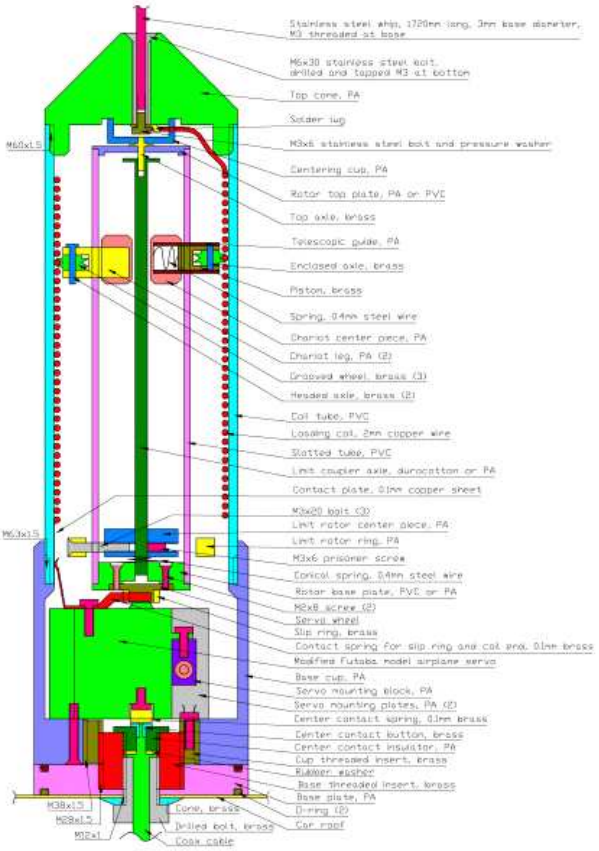
capacitors.

Most are power rated at greater than 100 Watts. And will cope with very bad standing wave ratios.

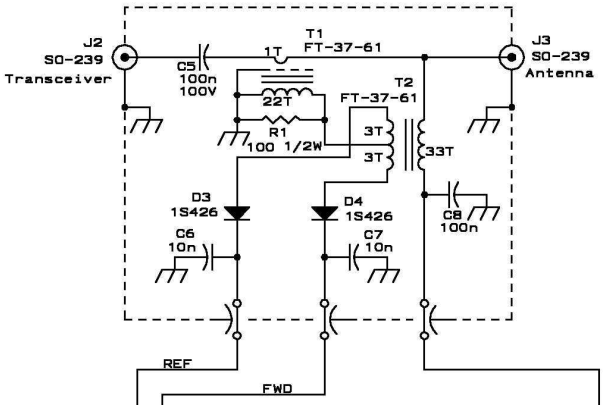
None appear to measure the phase of the current and voltage present at the antenna.

One of the most interesting articles I found was the QEX article by Manfred Mornhinweg;



An automatically tuned 7-30MHz mobile antenna
http://ludens.cl/Electron/HFantenna/HFAntenna.html

His construction of the base unit using a motor driven coil unit is a marvel of engineering. Using only a small lathe, he creates coil forms and assembles his mobile unit.



The sensing circuit he used (above) is "broadband" and is one to emulate.

The far left connection is for the d.c. control voltage going up the antenna.

The antenna tuning units are of various designs but most use an optional balun. The EZ unit uses stacked toroids (3) with high temperature insulation.

Quote:
"Finally, it was time to start designing the RF section of the tuner, and this proved to be a much harder job than I'd anticipated. I started by bringing myself up to date on antenna tuner design, with several excellent QST and QEX articles by Bill Sabin, W0IYH, Dean Straw, N6BV, Frank Witt, AI1H, and others. There sure are a lot of subtleties for a device that only consists of two capacitors and an inductor!

I eventually settled on the basic T-network because of its versatility, but now I ran into a stumbling block. Virtually all the T-network tuners I saw used roller inductors, with continuously variable inductance.

My tuner, by contrast, was going to use a fixed inductor with an 11-position switch. What 11 inductances should I choose to maximize the matching range on all 9 HF bands, while also minimizing power loss (heating) and high peak RF voltages? I didn't even know how to go about

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Automatic Antenna Tuners

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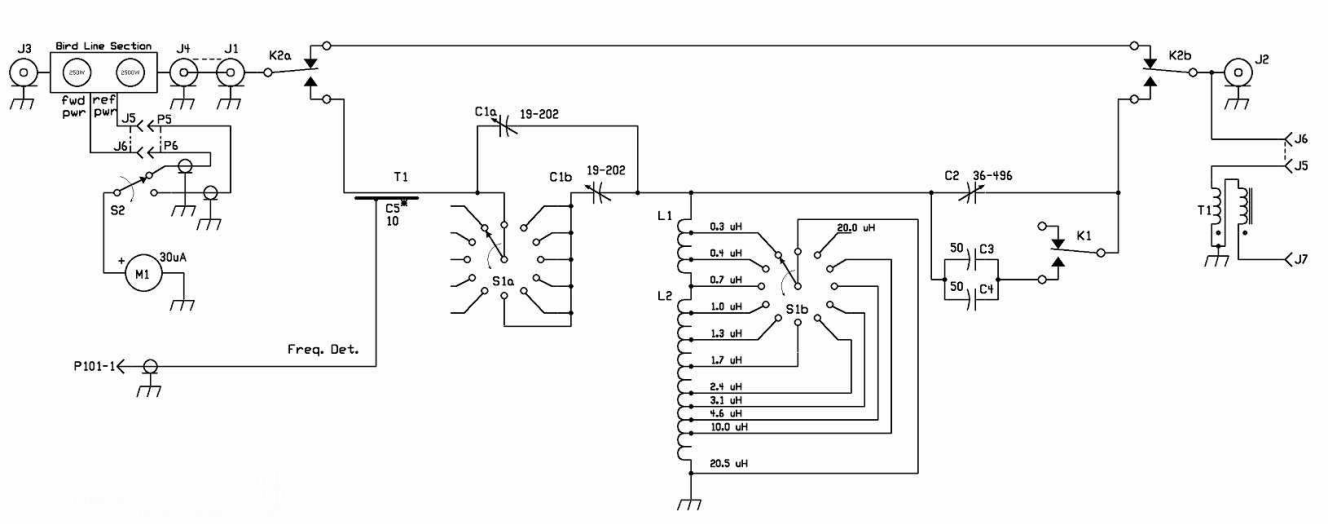
answering that question."



Instead of using a roller inductor, he used a switched inductor for the ATU. This seems to be a common choice of the AAT's makers. The rotary switch in many of the designs is replaced with a series of relays. The relays are again controlled by a small micro.

He decided on the inductor values by measuring the circuit on each band across the whole band in small steps. Having obtained the values, he then used a spreadsheet to plot the optimal desired values.

Of the thousands of hits, these sites stood out way above the rest.

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Email: **zs6wr.club@gmail.com**
Web page: www.zs6wr.co.za

Bulletins (Sundays at …)
11h15 Start of call in of stations
11h30 Main bulletin start

Frequencies
439.000MHz 7.6MHz split
Input: 431.4MHz (West Rand Repeater)
145,625 MHz (West Rand Repeater)
10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

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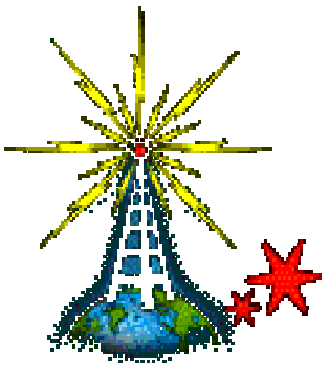
West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

See Club website at www.zs6wr.co.za for all ANODE back issues.



We need your input! Email us articles, comments and suggestions please.
zs6wr.club@gmail.com