RMS Express for WICEN Data operation

August 2012

THE FIRST TIME DATA OPERATOR:
If you have already been using other soundcard modes, your equipment is probably ready for Email over HF.
If you have been using Ham Radio Deluxe (HRD) for Cat Control, you need to add Audio & PTT.
In both cases, all you should need do is install RMS Express and Winmor, and some basic setup.

HARDWARE:
Laptop – Win XP sp3 at least, although Win7 64 bit fine.
Radio – Ideal - All band, with Aux socket & CAT Control (IC706 or sim.), but older radios can be used, with less functionality.
Interface – Either purchase a SignaLink ($120 ?) or similar interface (less functionality)*, or build as per circuit suggested in the HRD manual (see my offer below).

SOFTWARE:
For a history of Digital Modes in AR, you can look at http://wb8nut.com/digital/, but the modern soundcard modes are significantly more advanced.
RMS Express & Winmor can be downloaded from http://www.winlink.org/ - look in 'Software', 'UserSoftware' – Winmor is part of RMS Express. (You should read about Winmor under the Software tab).

<u>Now, some explanation:</u>
RMS EXPRESS is software developed by the WL2K team, for use on their worldwide CMS system. RMS Express can handle various delivery modes – Soundcard & TNC. IE: It will work with Winmor, Packet & Pactor 1,2,3,4, in both WL2K & PtoP, and there are more enhancements coming. Very versatile. It's the control centre. Messages are input in an 'Outlook' Email type interface.
WINMOR is a soundcard virtual TNC. Its ONE of the modes RMS Express works with. It does the Encoding & Decoding, error correcting etc.
PACKET & PACTOR are both hardware TNC's, and both work in RMS Express.

*A word of warning about thinking SignaLink will do it all.*

SignaLink is basically an external soundcard for your computer – it supplies the laptop with Audio from the Radios line level output (RX), and Audio to your radio Mic. using the USB connection on the laptop.

There is a problem with some internal soundcards in Laptops, where phase & timing distortions cause problems for decoding, so external can be a good thing.
But, the Laptop does NOT control the PTT function, rather the SignaLink has a VOX relay that switches the PTT when there is audio from the computer. I wonder if this could be a problem in high speed modes, as there is a LOT of TX/RX switching.
Also, the SignaLink does **NOT perform any Cat Control** – When using RMS Express, the CMS stations details are downloaded from the Internet, and updated regularly – callsign, frequency, offset, propagation info etc, all very useful, but you can make do without CAT control, manually tuning your radio.

Icom & Yaesu produce a CAT Control cable for their radios – around $100, but they do not do any Audio & PTT functions. I suppose you could use a SignaLink & CAT Cable to achieve the full compliment of functions, but its getting a bit costly.
Also, speaking cost, if you one day upgrade to PATOR 3, all this is not required, as the Pactor modem handles all interfacing, leads with ferrites supplied for your radio, and can even handle Packet with an add-on daughter board – BUT, at about $1600.00. Soundcard modems & Winmor are looking good !

Anyhow, from my experience, I don't have any problems just using the internal soundcard, with the circuit I'm about to describe. I could add a $15 USB soundcard dongle if there was decoding problems, but I have not been able to detect any problem. This circuit uses a TTL to RS232 level shifter IC for the Cat control, an OptoIsolator for PTT and 2 mini audio transformers for audio isolation.

Computer to Tcvr Interface
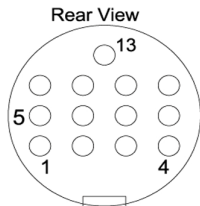

Paul Whitaker. VK3DPW
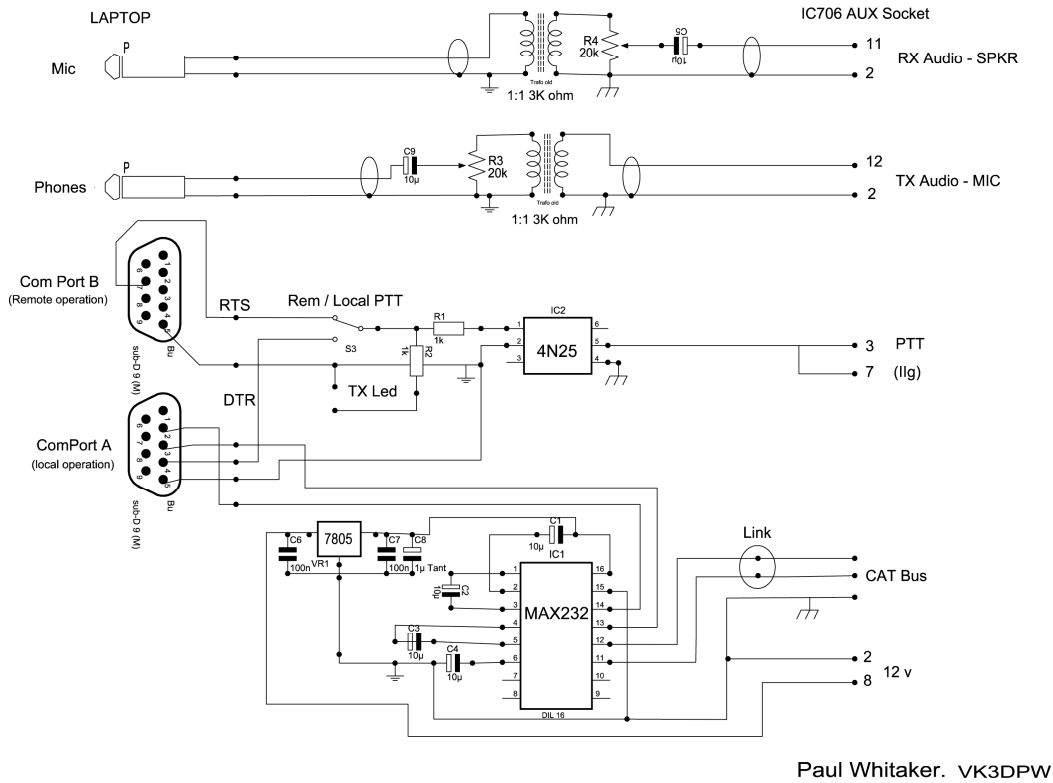
NB: "Link" – link for Icom radios.

This interface will work with many different modes.
PSK32, RTTY, Winmor, HRI, EasyPal, HamRadioDeluxe, V4 Protocol, etc.

The pin numbers on the Txcvr side is for the IC706 Aux socket. see diagram of back of Aux socket…
The IC706 CAT bus is a separate 3.5mm socket, also used in other brands of radios.

IC706 Aux socket

Pin 3 is the PTT for the IC706, if you have the 706IIG, it uses Pin 3 & 7 (HF,VHF). I have found that its safe to link 3 & 7, for compatibility.

You will note that it is using 2 Com Ports. Com port B is for when you wish to operate your station remotely using HRD over a network, or indeed the Internet. The PTT line is output on Com B port (annoying), can be omitted. The Interface is powered from the Transceivers 12v line. There is also a LED TX indicator – invaluable when setting up.

The hardest part is soldering the 13 pin Din plug, and finding decent 3.5mm phone plugs.

I have designed a PCB layout that you can use. If there is interest, I can produce a small run of boards at a cost. The parts are readily available from Jaycar. My prototype was in a plastic box – mistake. The trackpad on the computer was introducing noise into the receiver. So, a metal box is a must, with ferrite clipons (HF rated) on all lines.

PARTS:
Most of these may be in your parts box, the highlighted ones are probably the only ones you need to purchase……

|		
1 * **4N25**	– XD1928	$ 1.75
1 * **MAX232** level shifter	- ZK8824	$ 4.95
2 * **Audio Coupling TX 3k:3k**	- MM2534	$ 4.95ea
600:600 works, not that important.		
2 * 20k trimpots OR panel mount pots	?	$ 4.00 ea
4 * 10uF Electro Caps, 16volt.		$ .30 ea
3 * 1uf Tantalum Caps		$ .60 ea
7805 3 terminal regulator		$ 2.00
Power switch, led	- SK0955	$ 4.95
Diecast Metal Box (RF Seal)	?	$ 20.00 ?
DB9 Female panel mount socket	-PS0804	$ 1.95 ?
Mic & Spk sockets – suggest 3.5mm Mono	-PS0120	$ 1.45ea ?
Data cable to TXcvr – 13 Pin for Icom,		
5 pin for interface end. You could use same plug		
both ends. 13 pin Icom available WES Components -		$ 3.00 ?
RS232 to RS232 cable for USB converter.		$ 6.00 ?
2 * 3.5mm shielded audio leads – Good quality		$ 5.00
Good quality audio shielded cable, but not needed inside box.		
1 * RS232 to USB converter	– XC4834	$29.95 ?
HF Rated ferrite clipons		$15.00 ?

And if you want, an external soundcard dongle:

Creative SB Play USB SB1140 $18.00 ?

(I haven't tried configuring mine yet, as the internal soundcard seems to work just fine. When I do configure it, Im expecting all sorts of problems turning off the internal card, addresses for the new one etc.

I like things to work first time, every time I turn them on. The last thing I need in a evacuation centre is to be juggling interrupts !).

PCB: I have designed a PCB based on the above circuit. You could design your own, or use mine as a template, or, if there is some interest, I can produce a number at cost. I have tried to make it small, but with some optional versatility, and big enough to solder !
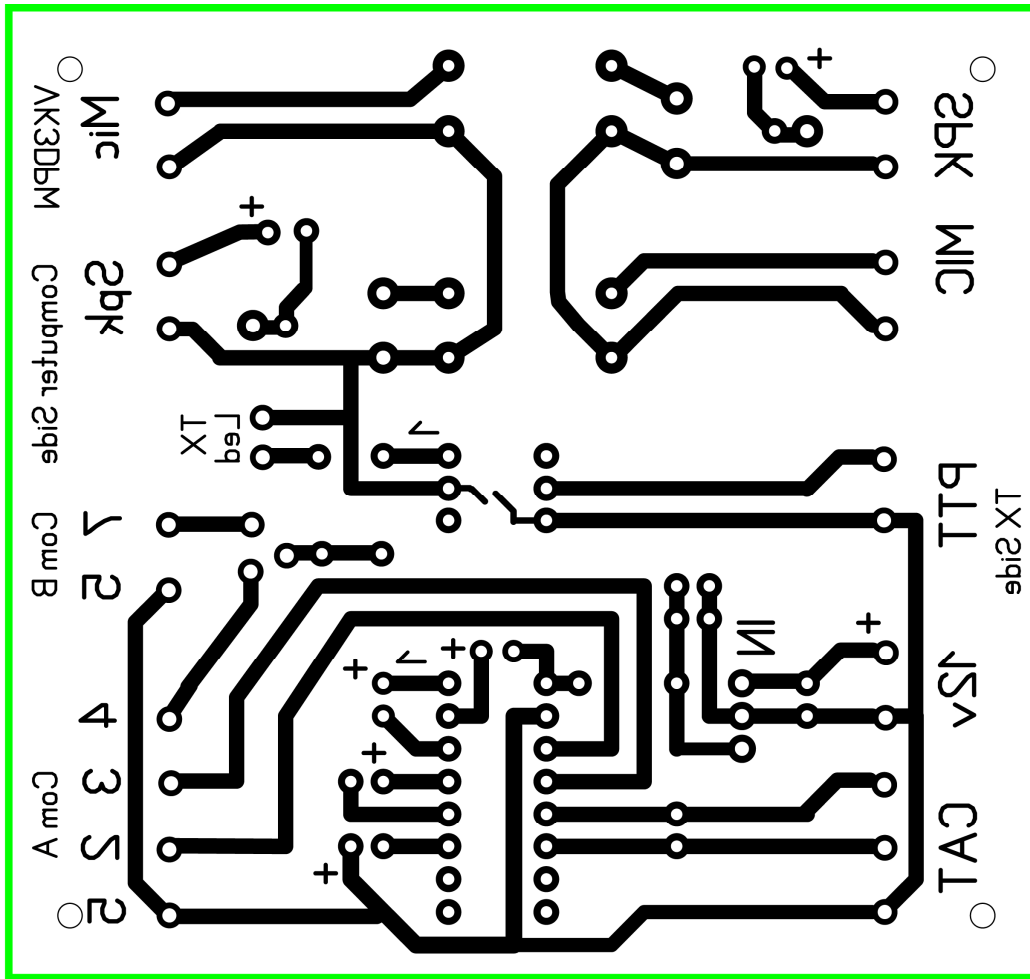
NB: Viewed from Component side. This is NOT to scale. If anyone needs the original to scale, please contact me.

I have produced a small number of PCB's, drilled & tin plated, that are available for those that wish to start there. Let me know if you are interested.

RMS Express and WINMOR

Download the software, Install and then use the screen dumps below as a guide for setting up your software.

To find the software, start here, and have a read.
http://www.winlink.org

Now, the RMS Express software can be downloaded from
http://www.winlink.org/ClientSoftware
then look under RMS Express for the FTP site.

Its really important to read & understand the concepts and requirements.
Find a WICEN member who has the system running and compare notes.
Its really helpful to be speaking on the phone whilst working through the process.
The screen dumps are specific to my station, but will be very useful in setting up.

Join in the net on Monday nights – 3.6335 Mhz, Dial frequency and Upper Sideband only.
Im happy to talk to anyone about the system, or pass you onto someone in your area, so give me an Email or call as per the bottom of this article.
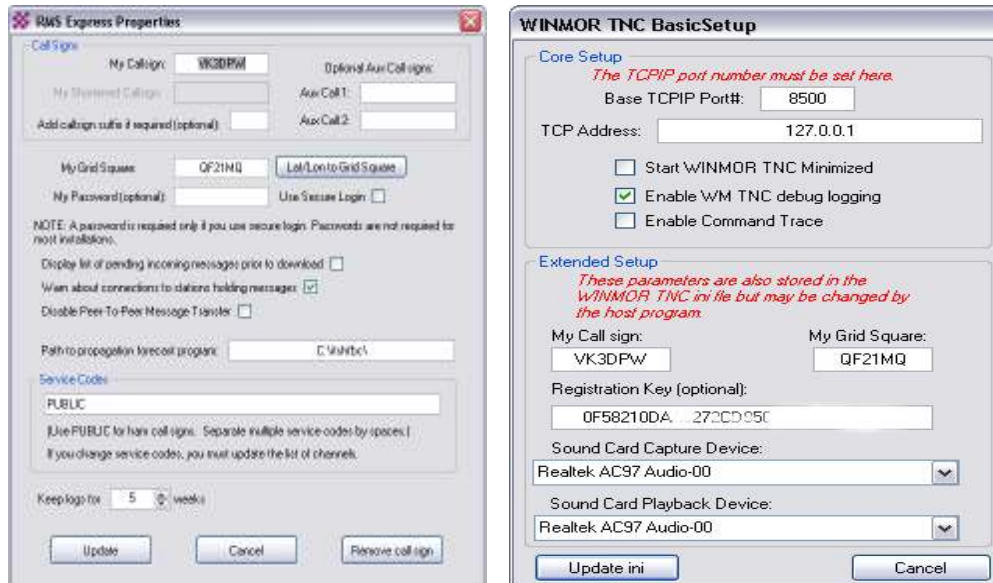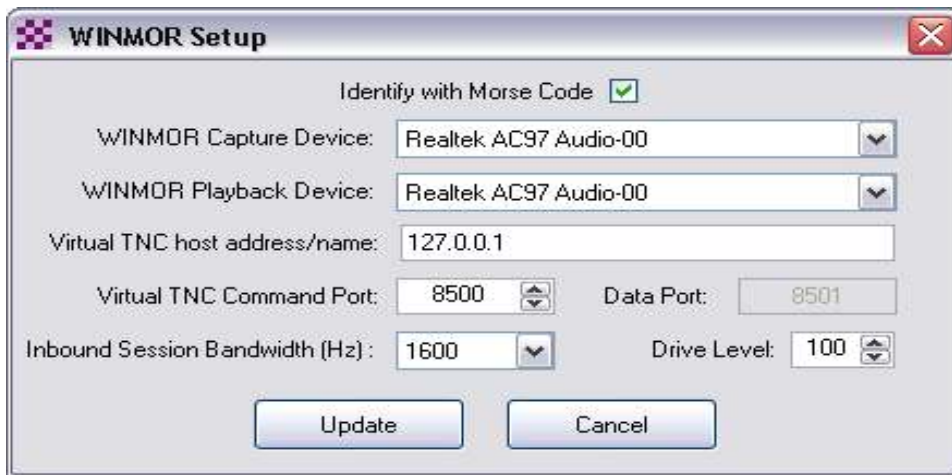
Paul Whitaker. VK3DPW
0414 314025
wicen@drivein.net.au
vk3dpw@winlink.org