

John Wolters

Feb 5, 2013

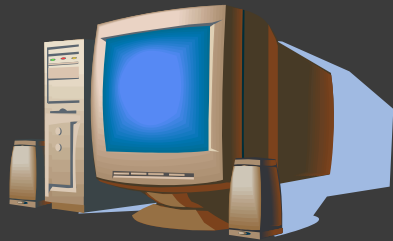
THE WIRING AND CONFIGURATION OF FLDIGI

FLDIGI Wiring

- ① The wiring between the computer running FLDIGI and an Amateur Radio is relatively simple but has multiple options.
- ① This presentation will hopefully give you an idea of the option you want to pursue and circuit diagrams if you want to build it yourself.

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There are two or three connections between the computer and the radio.



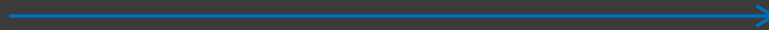
Sound from radio to computer input/mic



Sound from computer to Radio mic



Push to Talk control to radio if needed



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- Sound to and from the radio and computer are required.
- Push to Talk is only required if the radio does not have a VOX control.

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- ① The sound connections can be either direct or buffered/isolated by using a transformer between the computer and radio.
- ① Both methods have been used successfully by many hams but I prefer isolating the two with a cable containing a transformer.

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- ⦿ Transformer Isolation can be accomplished by either building or buying.
- ⦿ If you choose to build you can place an audio transformer in the cable between the computer and radio.
- ⦿ RS 273-1374 between the computer output and radio Mike.
- ⦿ RS 273-1380 between the radio output and the computer input.

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- ◎ Or you can buy;
 - Two Buxcomm “ISOLATORCA” cables (\$10ea)
 - A Buxcomm “ISOLATORX2” cable (\$24)
 - A Rigblaster (~\$200)
<http://www.westmountainradio.com/content.php?page=links>
 - A Signalink (\$90-140)
<http://www.tigertronics.com/slusbmain.htm>

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- Push to Talk (PTT) control can either be built or purchased. The two manufacturers earlier provide PTT control as well as isolated audio transport.
- If you choose to build PTT control there are two ways to go.

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- ① The first method of PTT control is the use of the RTS connection in a serial port to provide control.
- ① The second method is to build some type of VOX circuit to trigger PTT when a sound is present.

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- The use of the RTS pin on a serial port is simple and easy but most laptops today do not have a serial port.
- This problem can be corrected by purchasing a USB to serial adapter (~\$30) but its yet another thing to keep track of.

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- Building a VOX circuit is not very hard but depending on who you talk to, is not very dependable.

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- So here are build it yourself Kits and circuits. I have included comments where I either have experience building the circuit or was provided by another source.

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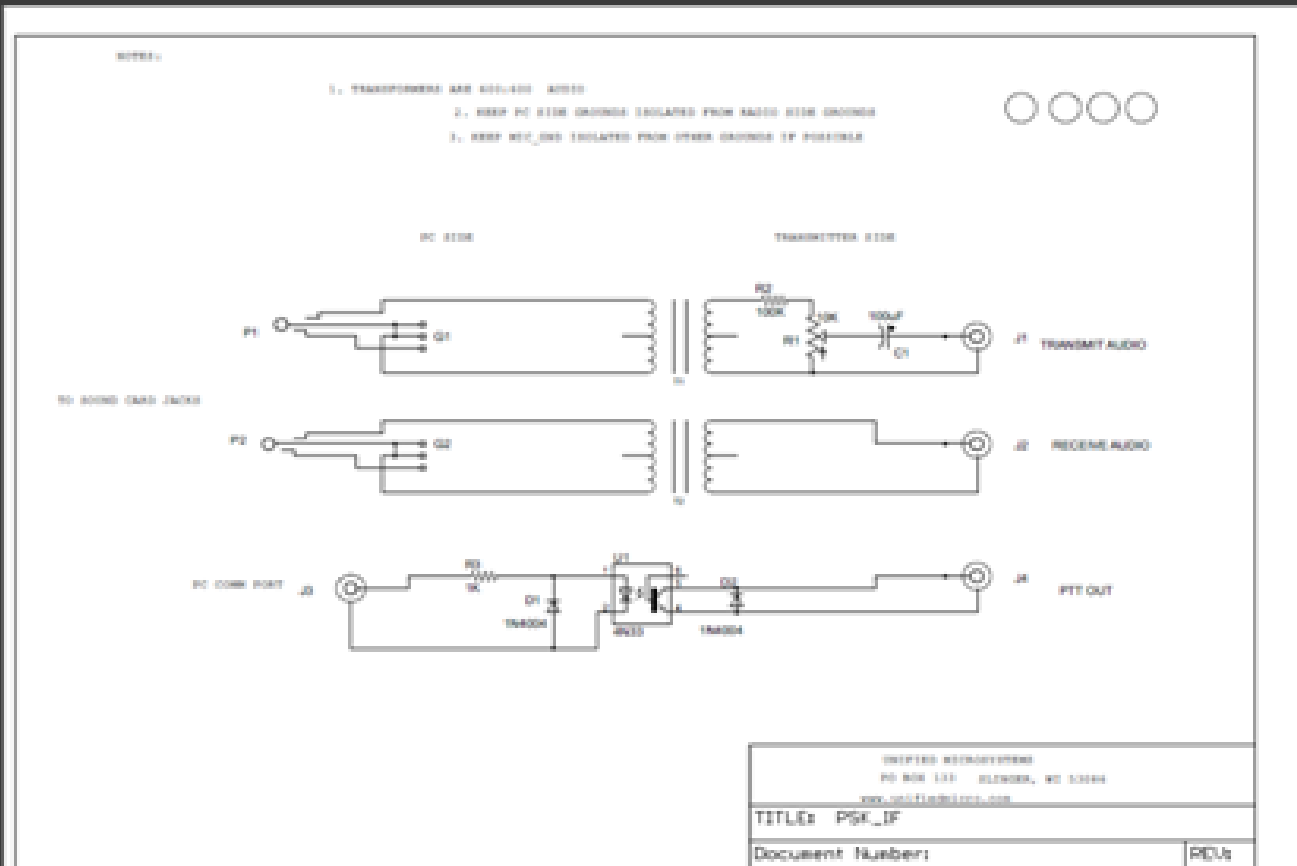
- I will start with KITS, then circuits that use a Serial port for PTT, and last Vox circuits.

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- ◎ <http://www.unifiedmicro.com/sci6.htm>
\$25

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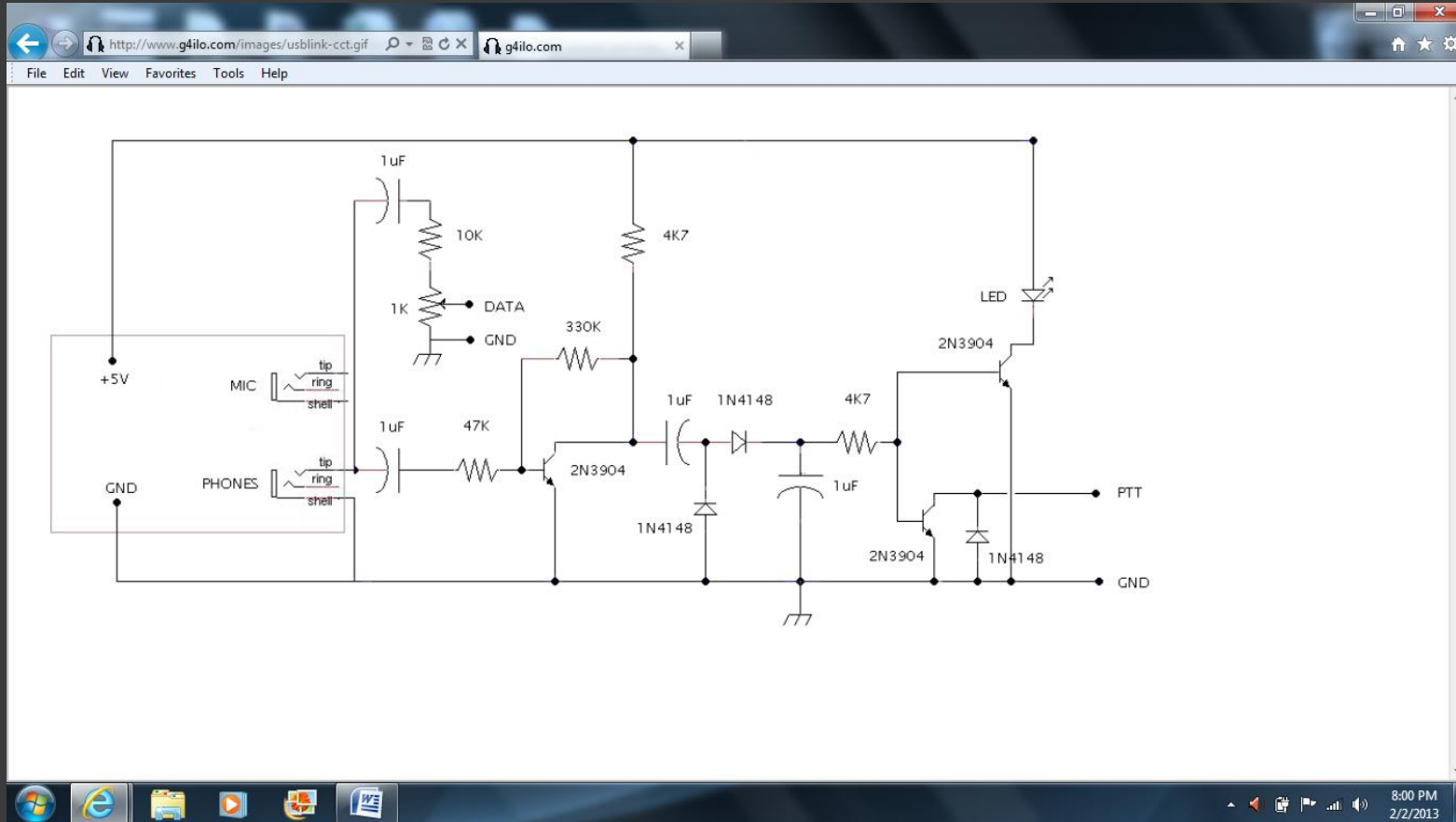


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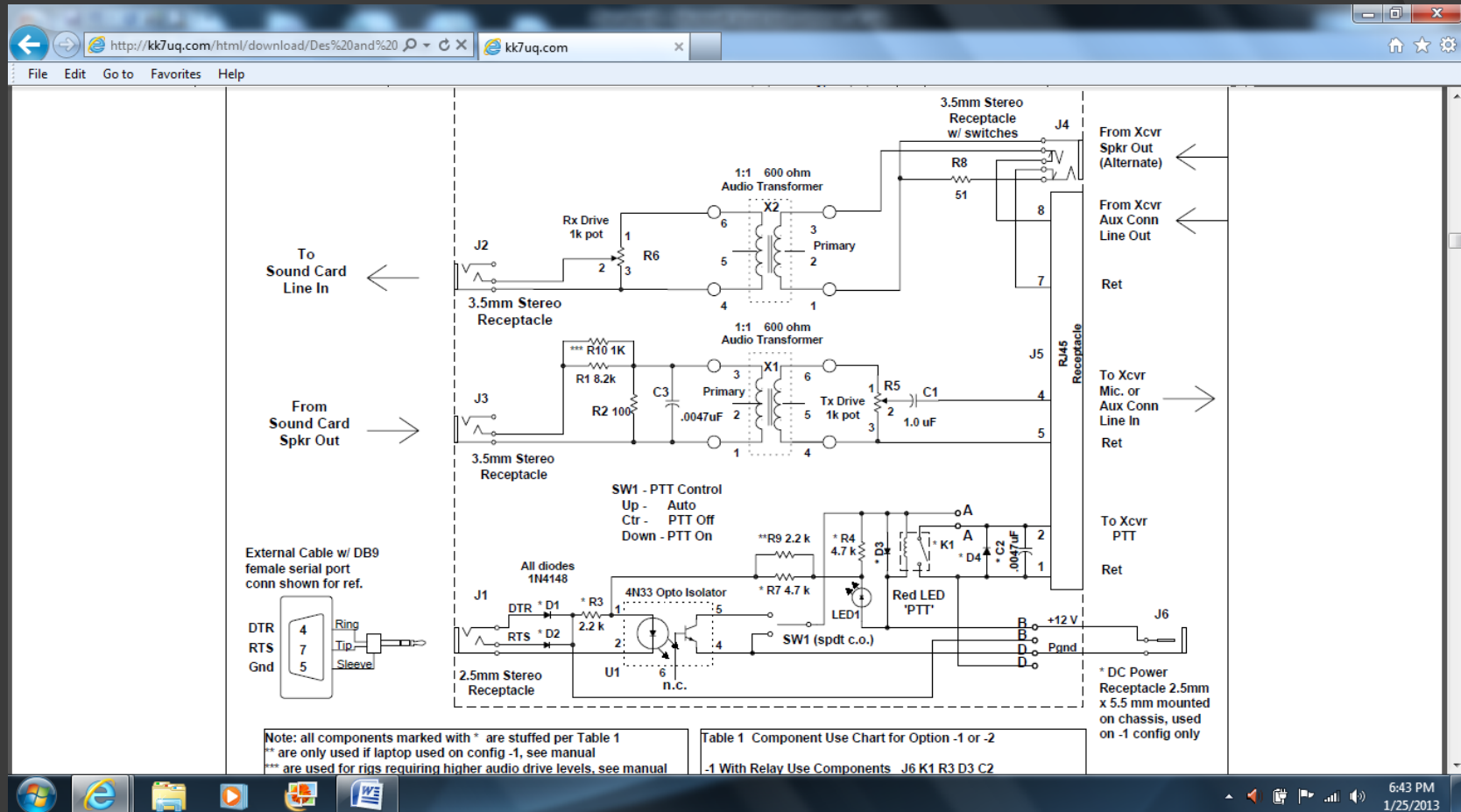
circuit <http://www.g4ilo.com/usblink.html>
Good article on how to build a soundcard interface.

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Circuit for previous page

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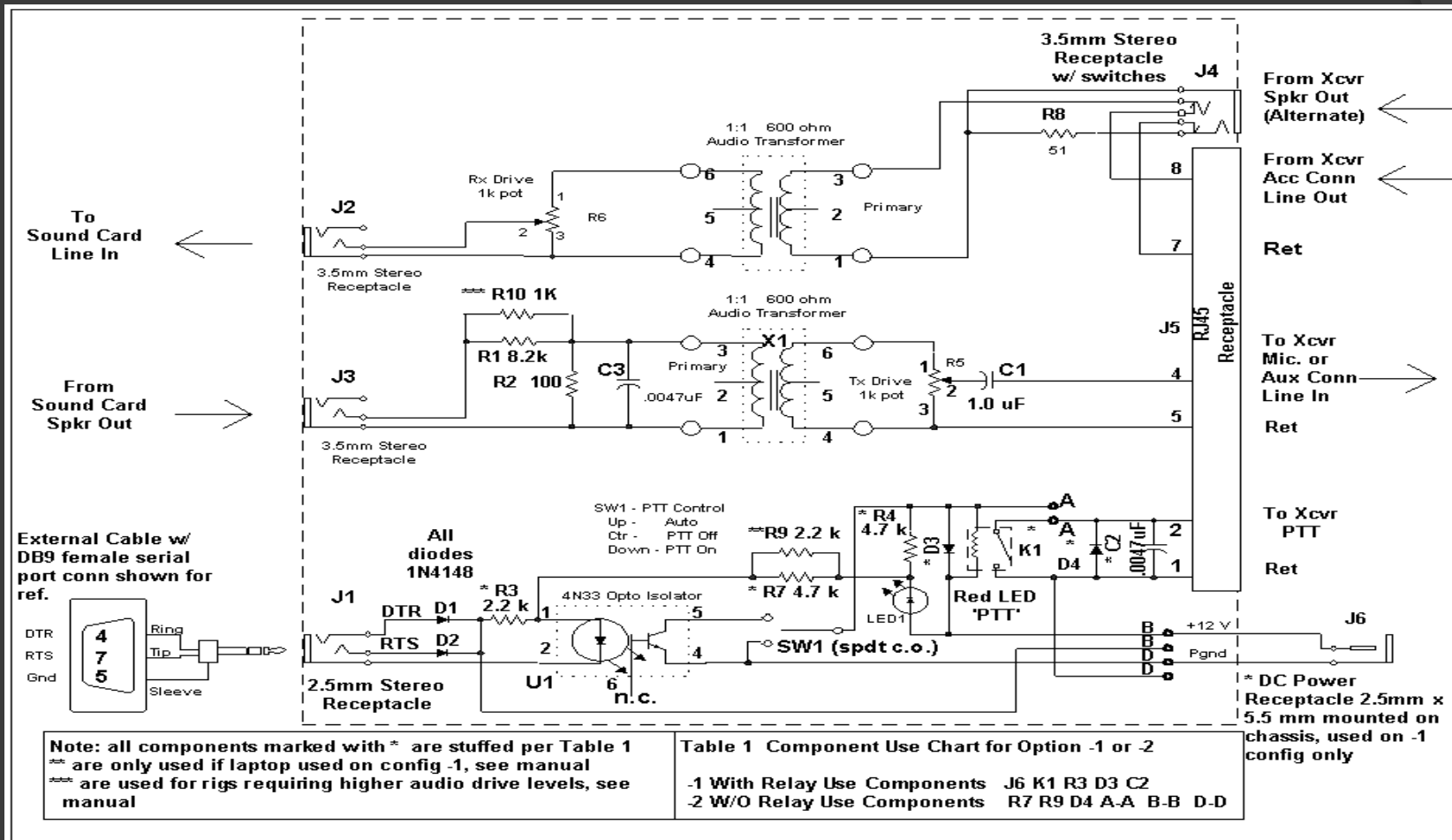
Complete manual on how to build this circuit.

<http://kk7uq.com/html/download/Des%20and%20Constr%20Man%20RevB.pdf>

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- Circuits that use Serial Port for PTT Control

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http://ve3elb.ham-radio.ch/soundcard%20inter Soundcard Interface

File Edit View Favorites Tools Help

"RING" Not used

Shield P.C Ground

Radio Ground/Shield

To Radio External Speaker

TIP P3

DIAGRAM BY: VINCE VE3ELB

PC Sound Card To Transceiver Interface

3.5 mm Stereo plug

TIP

Sound Card "LINE OUT"

"SPEAKER"

P1

R3

C1

Shield P.C Ground

Tx Audio

Radio Ground/Shield

DIAGRAM BY: VINCE VE3ELB

T1/T2 Specifications:
 Coil Turns Ratio: 1:1
 DC Resistance - Primary: 51 Ohms \pm 5%
 DC Resistance - Secondary: 70 Ohms \pm 5%
 Impedance: 600-900 Ohms
 Freq. Response: 300 Hz To 5 KHz
 Insulation Resistance: More Than
 100 Megohms At 250VDC

If "D TR" line is to be the PTT driver, then use pin 4

1

2

3

4

P4 (GROUND)

Shield P.C Ground

1N914

IC1

4N33 or 4N32

PTT

Radio Ground

3.5 mm Stereo plug

TIP

Sound Card "LINE IN" or MICROPHONE"

P2

Shield P.C Ground

Rx Audio

To Radio External Speaker

TIP P3

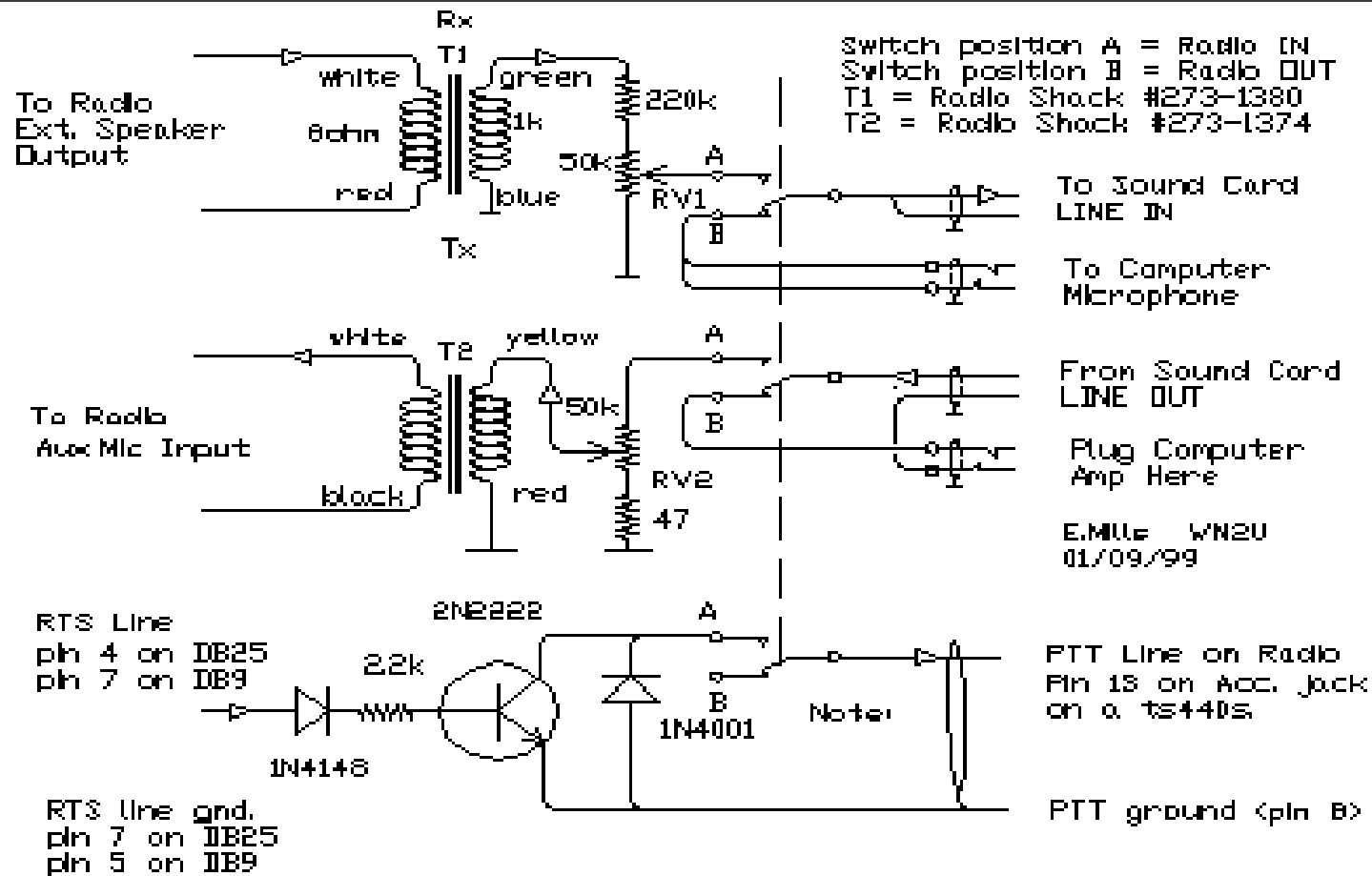
DIAGRAM BY: VINCE VE3ELB

NOTE:
 SORRY...I DO NOT SELL THE INTERFACE. IF YOU NEED HELP BUILDING ONE, I AM ABLE TO HELP YOU.

U A R Y 2 0 1
 N 10 11 12 1 2 3
 A 9 8 7 6 5 4 3 F
 J 8 7 6 5 4 I
 5 7 6 5 4 I
 2 Y A D

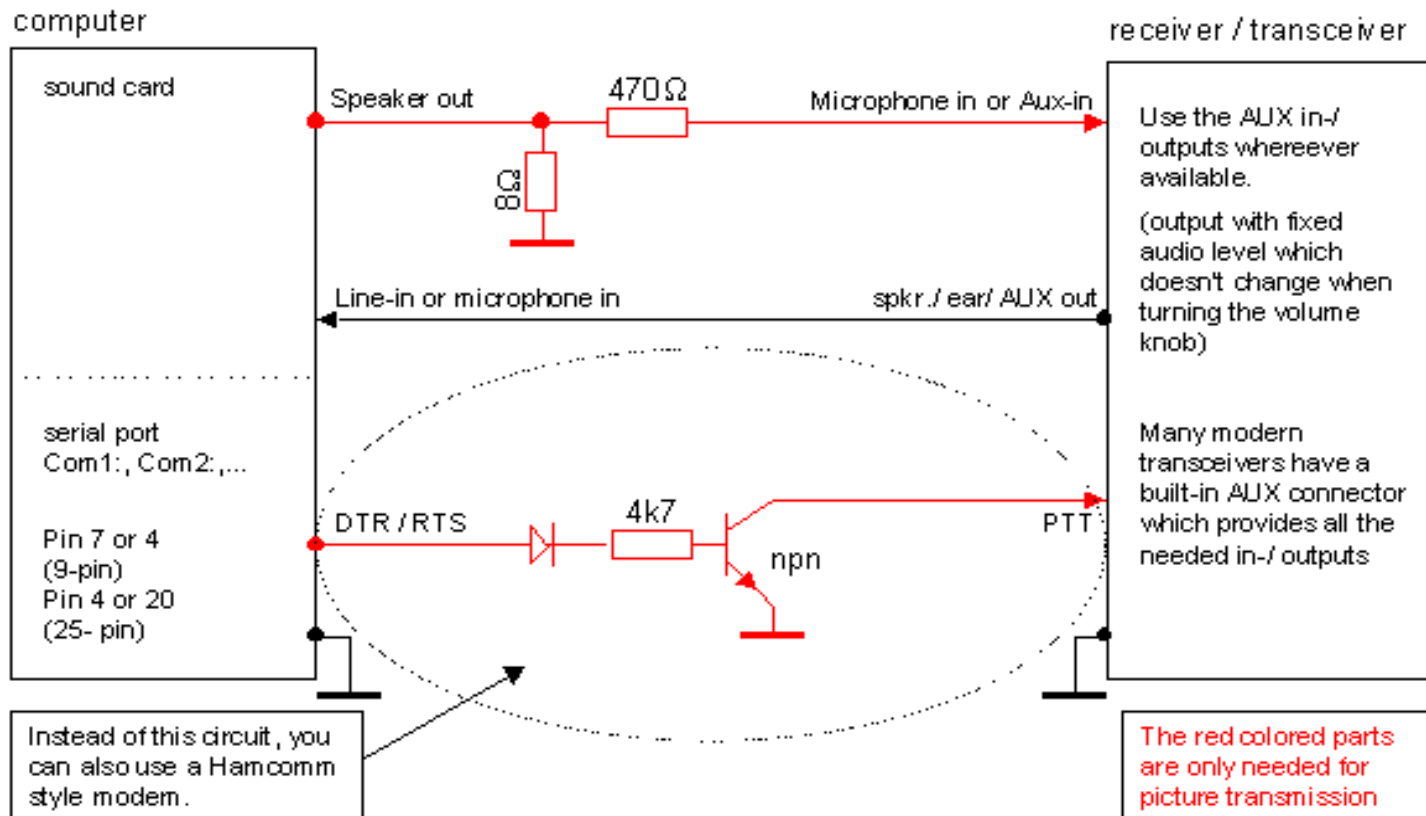
I have built this circuit and it works well. IC is a 4N33.

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FLDIGI Wiring

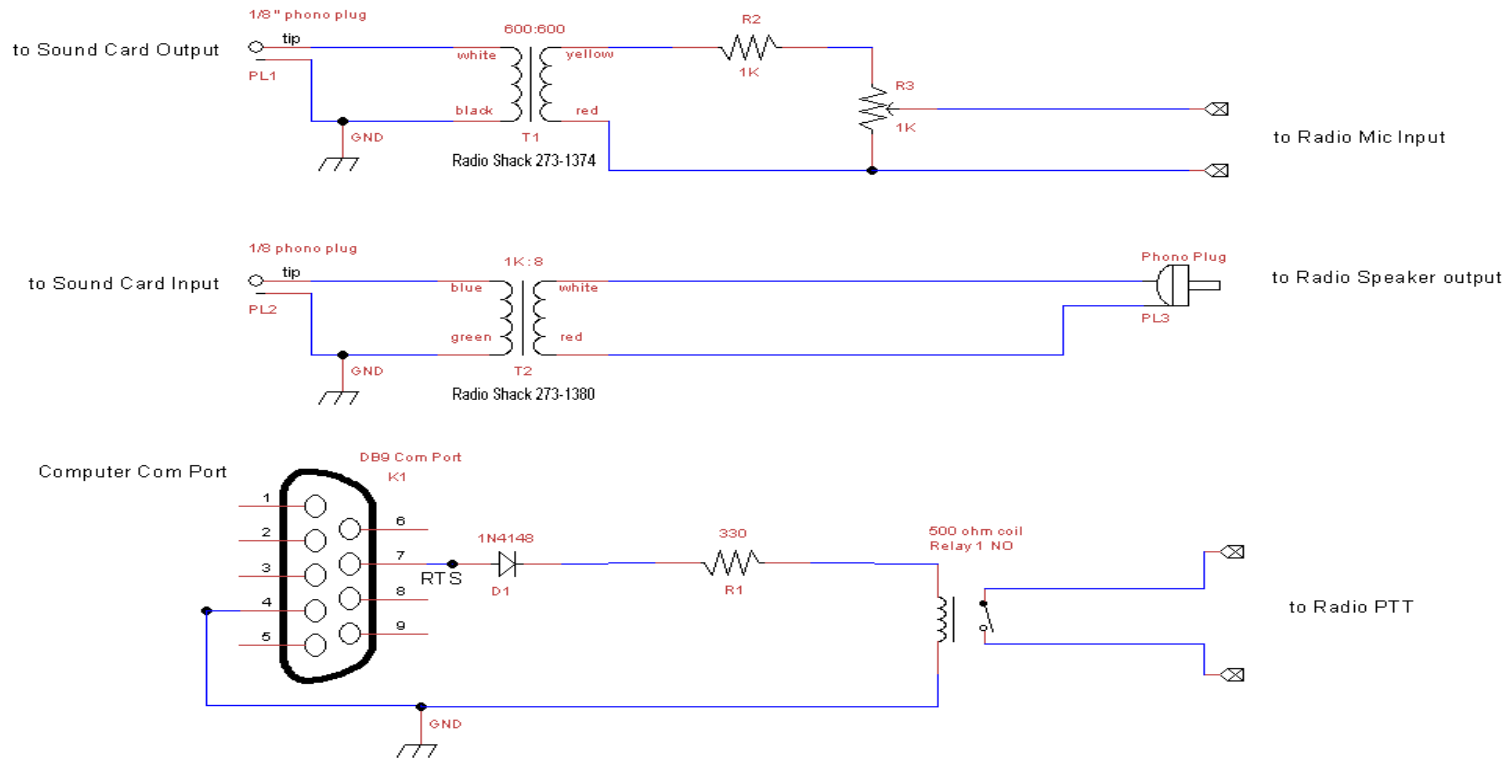
How to connect your PC and receiver/transceiver when using the sound card



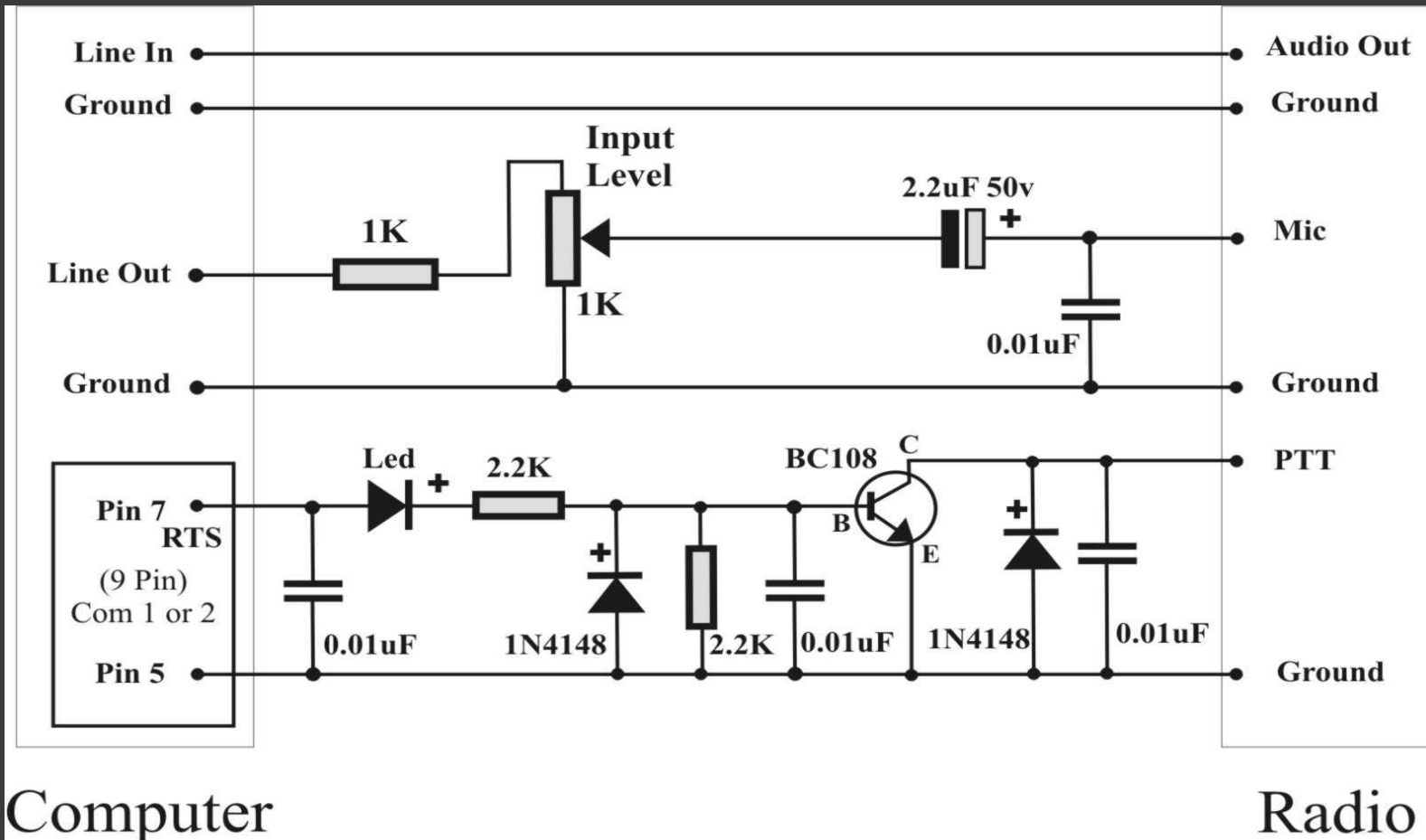
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Computer Audio to Radio Interface

K7EA Jan. 2008



FLDIGI Wiring



FLDIGI Wiring

The screenshot shows a web browser window with the URL <http://www.k7rdg.org/techprojects/DigitalSoundC...>. The browser's address bar and menu bar are visible. The main content area displays a wiring diagram and a photograph of the hardware.

Wiring Diagram:

- A DB9 female connector is shown on the left, labeled "Computer DB9 Female Solder Cup Side". The pins are numbered 1 through 9.
- A 680 ohm resistor is connected between pins 6 and 7.
- The base of a 4N36 transistor is connected to pin 3.
- The emitter of the 4N36 transistor is connected to pin 4.
- The collector of the 4N36 transistor is connected to pin 5.
- Pin 6 is connected to pin 1.
- Pin 2 is connected to pin 1.
- Pin 1 is connected to pin 6.
- Pin 4 is labeled "Gnd".
- Pin 5 is labeled "PTT".
- Pin 6 is labeled "To Radio".

Photograph:

- The photograph shows a close-up of a DB9 female connector with a 4N36 transistor and a resistor soldered to it.
- The transistor is labeled "4N36".
- The resistor is labeled "680".
- The connector is labeled "To Radio".
- The PTT pin is labeled "PTT".
- The ground pin is labeled "Gnd".

The Windows taskbar at the bottom of the screenshot shows the system tray with the time 8:19 PM and date 2/2/2013.

FLDIGI Wiring

the selected comport.

The purpose of the LED is to indicate the PTT is active. In most of the diagrams and schematics in this handbook, the option to select either RTS, or DTR will be shown or displayed. Although RTS is the PTT method of choice by most HAMs, in most applications, both RTS and DTR can be enabled in the interface through the use of isolating diode(s).

The diagram illustrates a circuit for connecting a PC DE9 comport to a radio's PTT line. On the left, a DE9 connector is shown with pins 1 through 9. Pin 1 is labeled '(RTS)', pin 2 is '(DTR, EITHER, OR, BOTH)', and pin 5 is '(BARE)'. The other pins are numbered 3, 4, 6, 7, 8, and 9. The circuit includes two 1N4148 isolating diodes connected to pins 1 and 2. The cathodes of these diodes are connected to PC Ground. The anodes are connected to the input of an Optoisolator (IC1), specifically pins 1 and 2. Pin 3 of IC1 is labeled 'N/C'. Pin 4 is connected to PC Ground. Pin 5 is connected to the PTT line of a Kenwood or ALINCO mic. Pin 6 is labeled 'N/C'. Pin 7 is connected to Radio Ground. A Red LED is connected in series with a resistor (R1) to the output of the Optoisolator (pin 5). The other end of the LED is connected to PC Ground. A second DE9 connector is shown on the right, with pin 2 labeled 'PTT'.

PC DE9 comport

PC Ground

Radio Ground

Optoisolator 4N34 or similar IC1

Red LED

Isolating diodes (1N4148)

R1

(RTS)

(DTR, EITHER, OR, BOTH)

(BARE)

PC Ground

Radio Ground

PTT

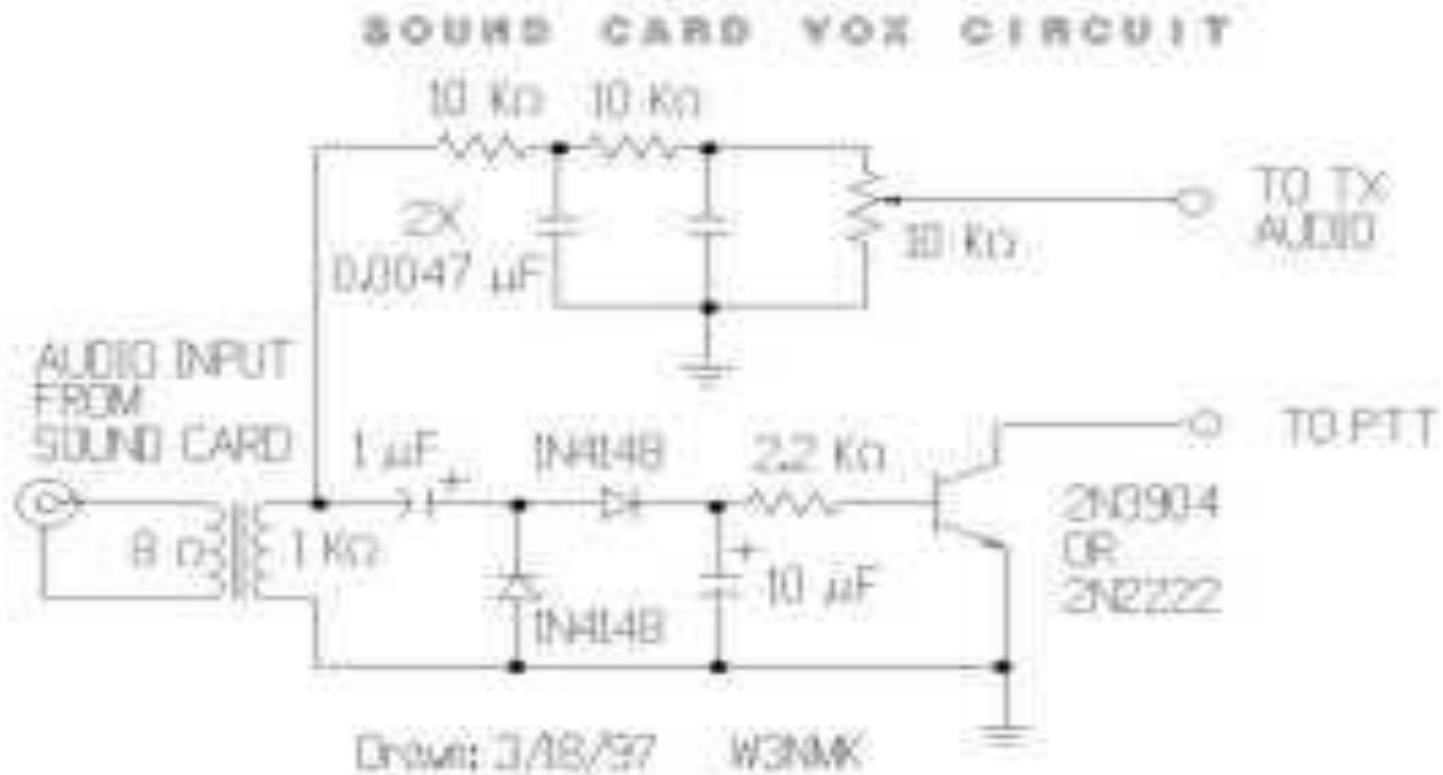
Kenwood or ALINCO mic PTT.

In the above drawing, I've illustrated how both RTS and DTR lines can be enabled using the 1N4148/1N914 isolating diodes. Driven by the software for PSK31, this circuit provides "automatic" PTT control of the transceiver between transmit and receive. Note that we use an opto-coupler, or optoisolator IC to provide isolation between the PC sound card ground and the transceiver (radio) ground. This type PTT circuit provides a greater degree of isolation from ground loops and possible RF feedback, than the transistor PTT switch in the next diagram.

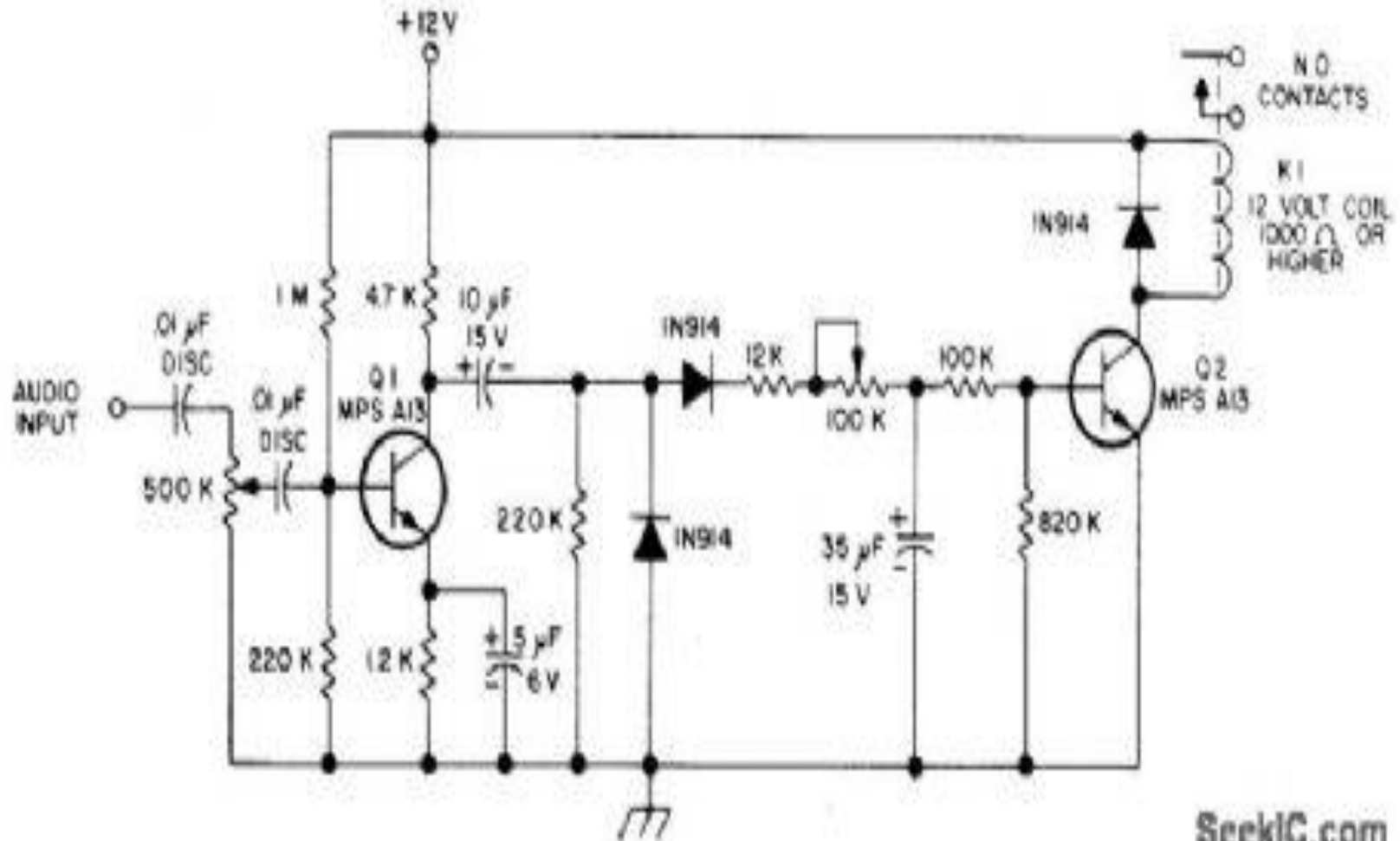
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- ⦿ Circuits that use Vox for PTT Control
- ⦿ I have no experience with these circuits.

FLDIGI Wiring

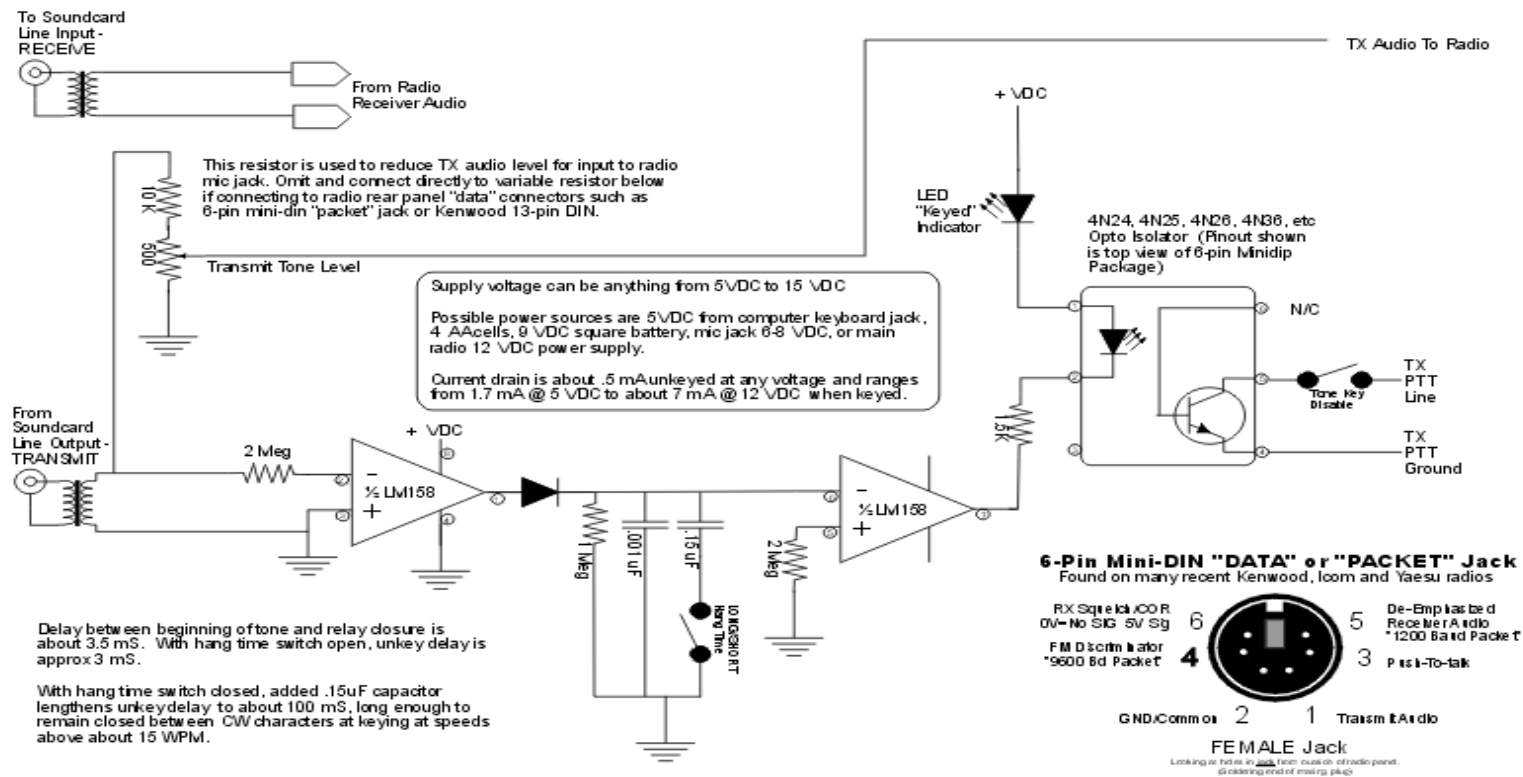


FLDIGI Wiring

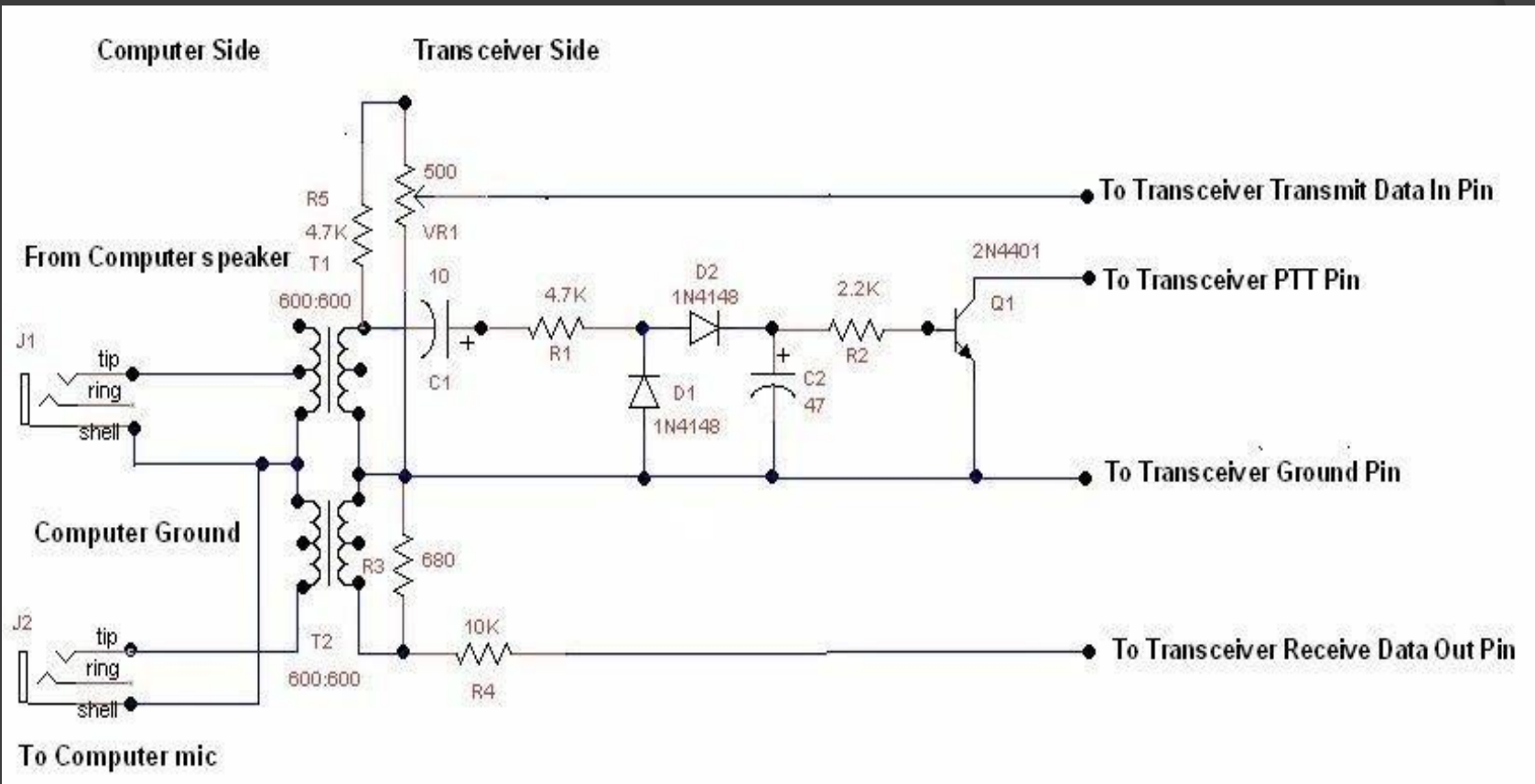


FLDIGI Wiring

Tone Keyed Sound Card Interface (Alternative design using opto-isolator output)

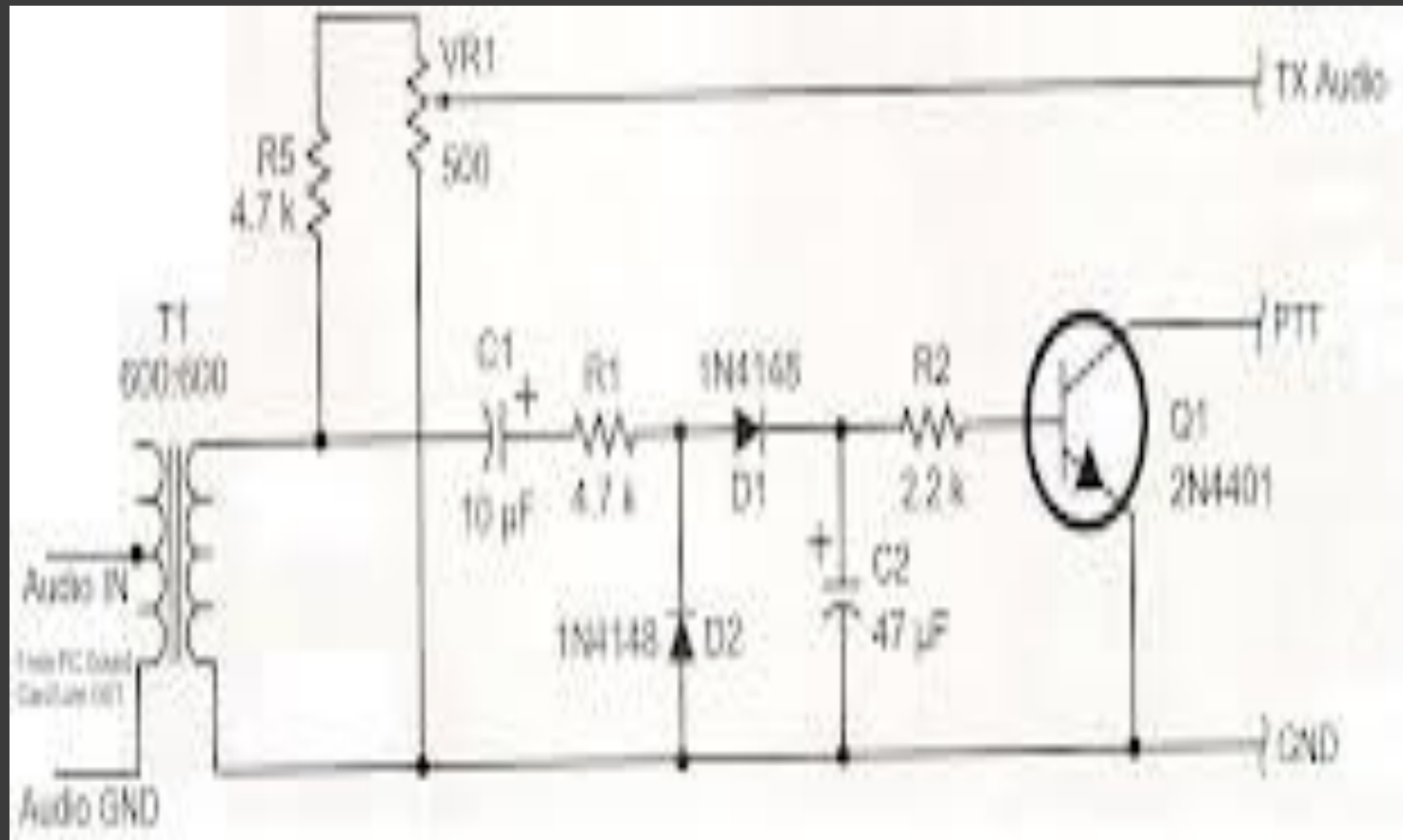


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<https://sites.google.com/site/kh6tyinterface/>

FLDIGI Wiring



FLDIGI Wiring

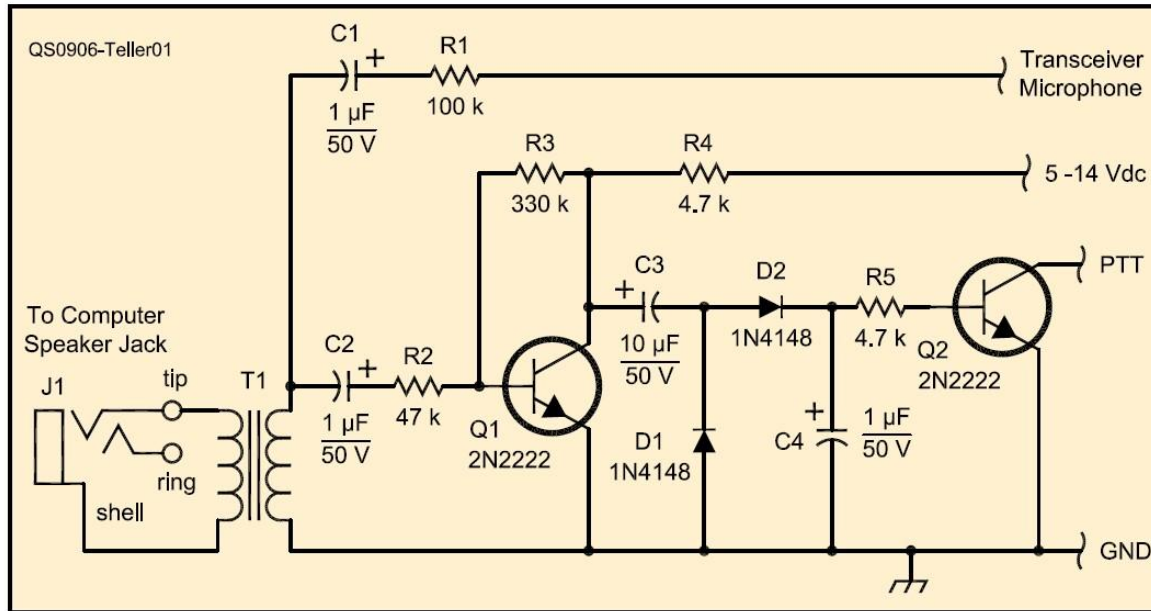


Figure 1 — FM transceiver interface schematic and parts list.

C1, C2, C4 — 1 μ F, 50 V electrolytic capacitor.

C3 — 10 μ F, 50 V electrolytic capacitor

D1, D2 — 1N4148 switching diode.

J1 — Panel mount 1/8-inch stereo jack

Q1, Q2 — 2N2222A or any small NPN audio transistor.

R1 — 100 k Ω 1/4 W resistor

R2 — 47 k Ω , 1/4 W resistor.

R3 — 330 k Ω , 1/4 W resistor.

R4, R5 — 4.7 k Ω , 1/4 W resistor.

T1 - 1:1 audio isolation transformer (RadioShack 273-1374).

FLDIGI Software

- ◎ The FLDIGI Software description can be found here
- ◎ <http://www.w1hkj.com/>
- ◎ The Software can be downloaded here
- ◎ <http://www.w1hkj.com/download.html>

FLDIGI Software

- ① You need to download the following under “windows setup”;
 - FLDIGI / Flarq
 - Flwrap
 - Flmsg
- ① I would also suggest that you download the .PDF help files for each.

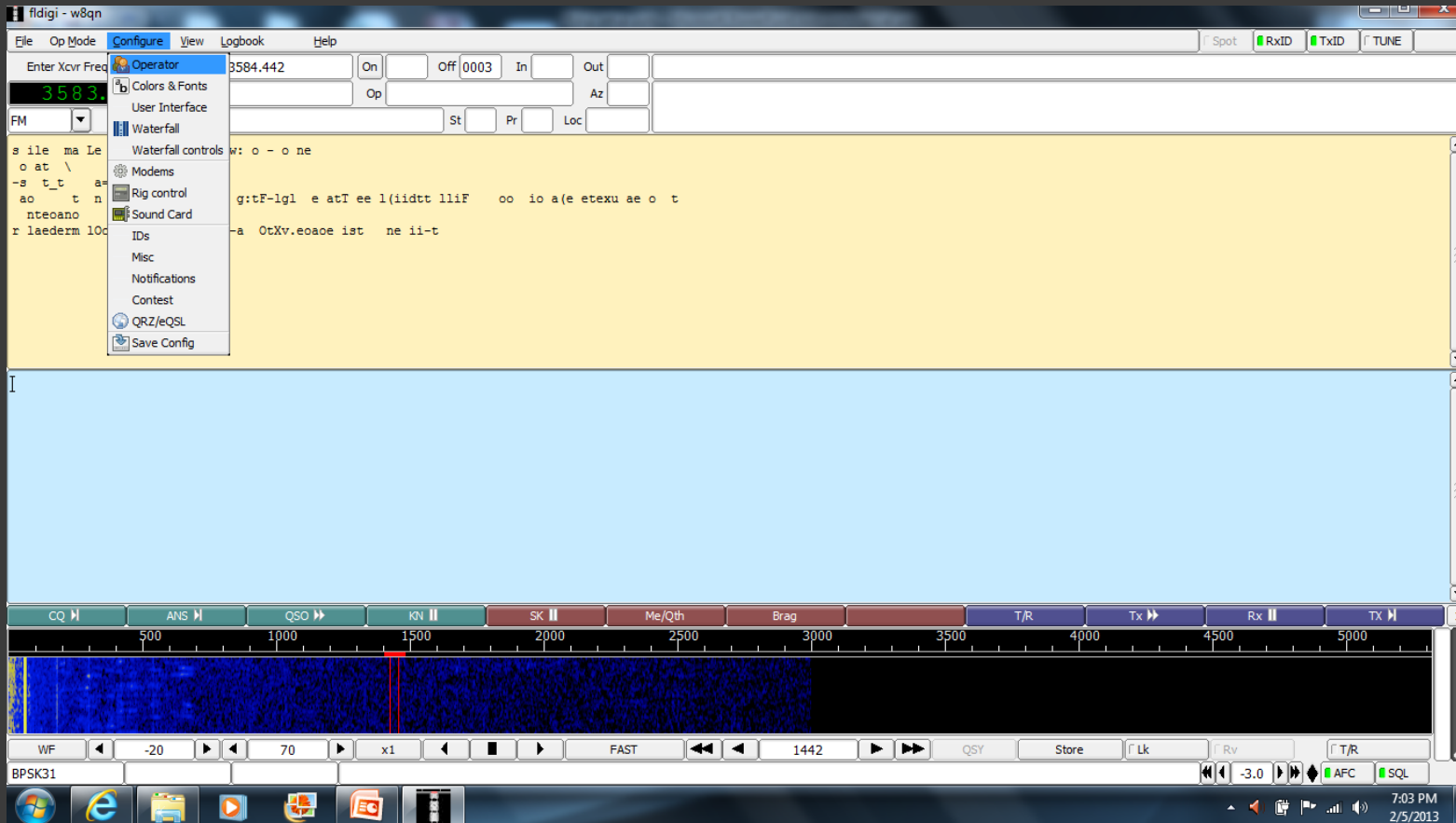
FLDIGI Software

- ⦿ What you will download is an executable file that will place the software in a folder and build startup shortcuts.
- ⦿ Read the HELP files before moving forward.
- ⦿ When you run the executable you will be asked where to place the software. (what folder) You will need to remember the folders for later setup.

FLDIGI Software

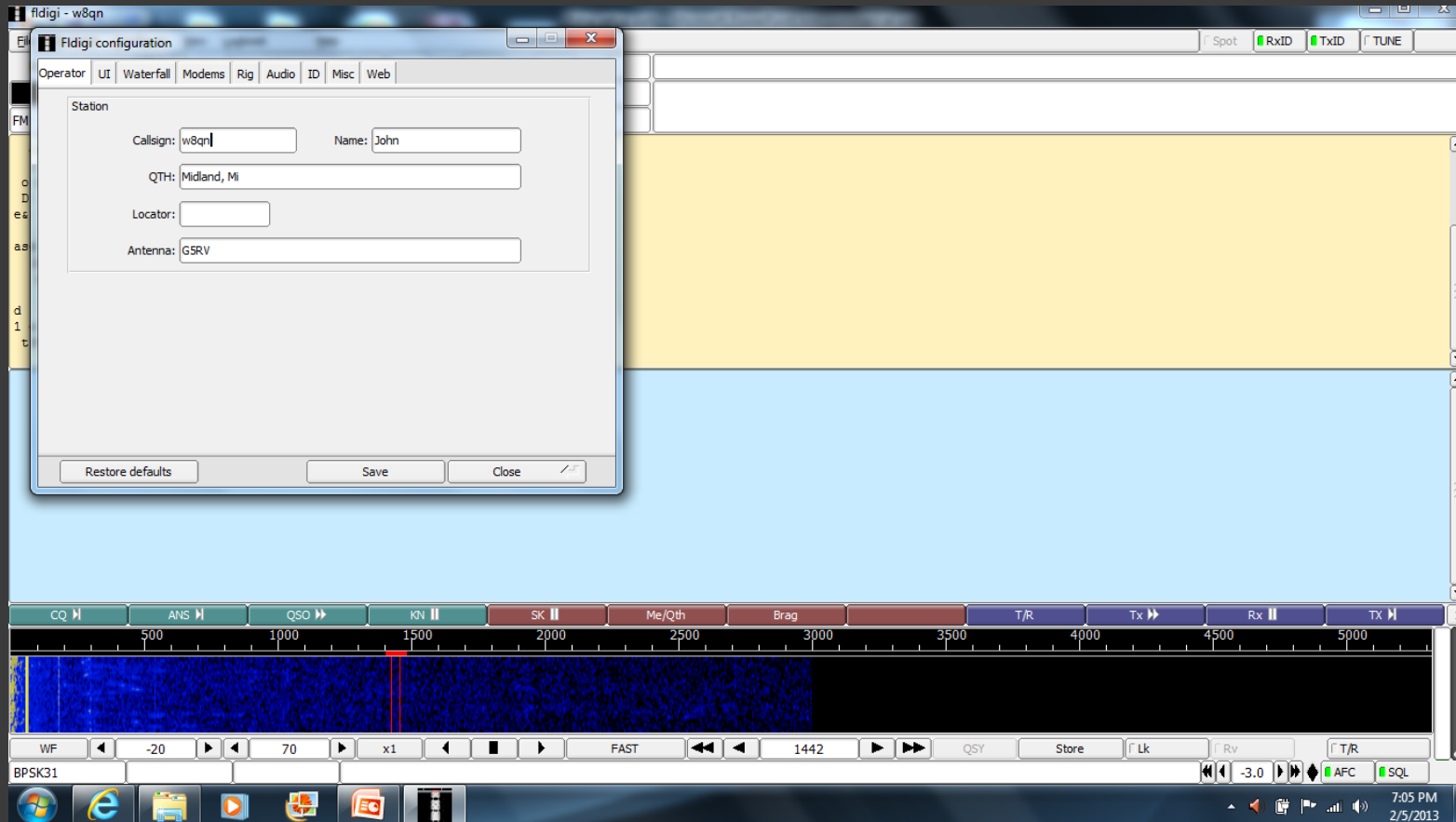
- If this is the first time you have downloaded the software, when you run FLDIGI it may go thru all the setup screens described in the Help PDF. If it doesn't we will walk thru them here.

FLDIGI Software



Select Configure, Operator

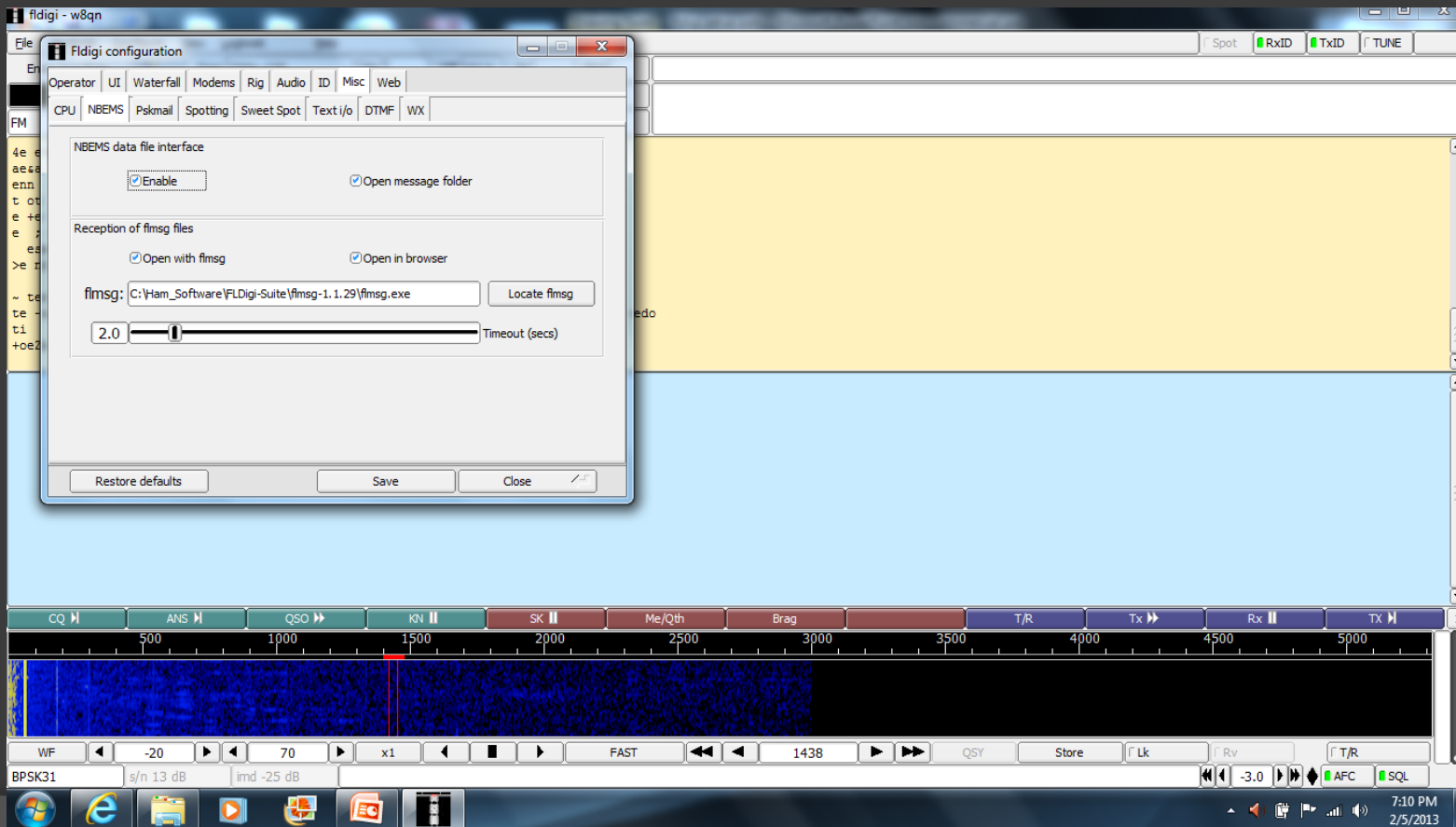
FLDIGI Software



Enter your call sign, name, and QTH - Press Save

FLDIGI Software

Click on MISC, NBEMS. Check all the option boxes and then use the “LOCATE Fmsg” button to find the Fmsg program.



FLDIGI Software

- Click “SAVE” and then “CLOSE”
- If you have one of the devices that has its own sound card you will also have to go into “configure”, “Audio”, “Devices”. Follow the directions included with the device.
- Attach all the wires to the appropriate place and you are ready to go.

FLDIGI Software

- There are many, many options on the use of FLDIGI. Play and explore.
- If you have problems or questions please contact W8QN at W8QN@arrl.net