

**Icom IC-7100A
Connected to a laptop or desktop computer
Via only a USB cable
To utilize the built in sound card in the radio
To achieve packet radio communications
Over 2 Meter FM
Using no other hardware
Or external TNC.**

**Myself and two ham friends have had trouble with this set up.
This document is an effort to explain in great detail how to get it working.**

This document was written by Stan Ham, WB9GFA. Please see my [credits](#) and [acknowledgements](#). I got the information elsewhere, and am just pulling all the bits together in one place with great detail added.

If you are quite savvy with computers, software installations and configurations, then you will most likely find this document to be tedious and excessively detailed. If not so much, then read on. If you're somewhere in between, then maybe you can skip around and find the parts that are useful to yourself.

This document could certainly be printed and gone through that way. However, I put it together with the idea that it would be viewed on a computer screen. I therefore used a lot of hyperlinks to aid in navigating around this document without having to scroll around so much.

For you savvy guys, here's the speed march answer:

The key piece of information is that this radio can ONLY have its transmitter keyed over the USB cable to the radio's virtual com port via CAT commands. At this writing, I know of no software TNC's that can output CAT commands to an RS-232 com port. They can only toggle the RTS line (or some other line) of a physical RS-232 serial cable. This radio has no such physical RS-232 connector. The only solution of which I am currently aware, is a piece of software written by John Wiseman, G8BPQ in the UK called CAT7200. This software can be configured to listen to one virtual com port for RTS line toggling, and respond by sending the PTT CAT command out over another virtual com port. So, you configure your software TNC to key the transmitter on one virtual com port, and configure John's software to output the CAT command to the virtual com port to which the radio is listening. Configure the appropriate settings in the radio, the softwares, etc, and off you go.

IMPORTANT NOTE!

Near the end of the installation steps of the CAT7200 software, you will need to make an important decision that is specific to you. You will be presented with two choices. One choice enables this whole set up to work. The other choice puts it dead in the water and you will not be able to achieve success. Jump [here](#) real quick to see those choices and my remarks.

For convenience, here are hyperlinks to the start of some specific locations in this document:

Installations and first round of configurations:

[**Warning!**](#)

[**This document's objective.**](#)

[**What this document is about... and not about.**](#)

[**List of software used in this write-up.**](#)

[**Configuring the Icom IC-7100A.**](#)

[**Installing the IC-7100A driver and some other important notes.**](#)

[**Verify the two new Icom virtual com ports.**](#)

[**Install the CAT7200 software.**](#)

Post installation set up.

[**Gather the needed information from Device Manager.**](#)

[**Set up the CAT7200 application software.**](#)

[**Get the UZ7HO software configured.**](#)

[**Get Winlink Express configured to work with the UZ7HO software.**](#)

The objective of this document:

What I am attempting to do with this write-up is to pull pieces of information, from those web pages which are acknowledged herein, and bring it all together into this one document. I wish to add large amounts of detail and clarifications.

The objective of this document is somewhat narrow:

This document seeks to explain how to use an Icom IC-7100A with Winlink Express over 2 Meters, using the internal sound card of this radio, and no external TNC. And this to be accomplished with no more hardware than the radio, a laptop or other computer, and a USB cable connected between them.

The software involved with this project:

In order to achieve the above objective, the following software is utilized. Again, many thanks to the hams who have created this software and made it available free of charge to the ham community.

Winlink Express

This is the ultimate software that this document seeks to get working toward use with ARES.

UZ7HO soundmodem.exe

This is the software TNC/modem which packetizes the data that it will receive from Winlink Express and send it on to the radio in audio tones which the radio can transmit. At this writing, Winlink Express has no internal, built in TNC for operation on 2 Meter FM (or higher frequencies). Winlink, at this writing, does have a built in TNC called Winmore, but that is for HF operations ONLY. This document will not be addressing HF operations.

CAT7200

For 2 Meter operations, at this writing, neither Winlink Express, nor UZ7HO soundmodem.exe are able to key the transmitter of the IC-7100A directly. CAT7200 is the software that bridges the gap. The UZ7HO software was designed to key a transmitter by use of a physical RS-232 cable connected to a radio, and to do so by toggling the RTS line thereof. Well, the IC-7100A has no physical RS-232 connector. But it does have a USB cable connection port over which it can receive a PTT CAT command. This software listens for the PTT signal on the UZ7HO's configured com port and translates that into the PTT CAT command needed by the radio. Icom's name for these CAT commands is referenced as "CI-V".

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Credit where credit's due.

Below are links to the internet where I got my information(s). All I did was re-format it, maybe change around some of the order of presentation, and add some clarity for myself, which I discovered along the way. It was quite difficult for me at the time of this writing to discover and gather together the components of information needed for obtaining a successful outcome. If the situation should arise a year from now, whereby I might need to go through all of this again, I am certain that I would very likely have to start over from scratch and re-learn or re-discover these steps. So, for my own possible future benefit, I am writing up this procedure document, and including as many screen shots as I think would add clarity to the text. I know of two other hams who have the same radio, and have experienced the same issues as I have. So, I'm guessing that there being two in my little sphere of hams that I know, that there must very likely be numerous other hams having the same problems. I, therefore, thought it worthwhile to add a bit more polish to my notes here, such that others may also benefit. I hope it does. I am intending to post this to my club's various information distribution media locations as a pdf document, where others may download and re-post to wherever it may help other hams.

Here are the internet links that got me to where Winlink Express working with my software TNC, would fully operate my Icom IC-7100A on 2 Meters with just a USB cable between the computer and the radio:

<http://kk4sih.blogspot.com/2015/04/icom-7100-ptt.html>

A Google search brought me here.

Don's web site in turn led me to these following additional very useful sites.

Thank you Don for taking the time to write this up, and to the folks that took the time to write up the others, and particularly to John for creating the CAT7200 software. It is THE key component for making this work!

<http://www.cantab.net/users/john.wiseman/Documents/CAT7200.html>

<http://www.vk3bq.com/2014/12/04/icom-ic-9100-rtts-cat-control/>

<http://www.cantab.net/users/john.wiseman/Documents/VCUSMInstallW7.htm>

<https://www.coilgun.info/hamradio/meteor-scatter2.htm>

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Additional acknowledgements and thanks:

Prior to my purchase of the Icom IC-7100A, I was using an old Kenwood mobile for 2 Meter packet, in conjunction with a Signalink USB external sound card, and a Yaesu transceiver on HF for PSK-31. These radios will ultimately remain my radio set up at the base. The Icom IC-7100A will be my radio in the go-box, in case of ARES deployment. I would unplug and reconnect the Signalink USB back and forth between those two transceivers. Prior and along with setting up the old Kenwood mobile, I did many hours of reading, studying, and chasing numerous Google searches in order to try to grasp into my grey matter just what is this "Packet Radio" thing. I still kept coming up short as I would try to do something with it. Here, I would like to acknowledge two very significant mentors who helped me get off of ground zero:

Stephen Price, KK4YQV

Stephen has exuded immense patience with me on several occasions, as I asked my questions, and engaged him in discussions toward clearing up my confusions. He is still my current, and most readily available source of knowledge, even though he is an incredible busy fellow. Thank you Stephen; I can't tell you how much I appreciate you!!

Lee McDaniel, WB4QOJ

I met Lee at the Georgia State's annual ARES meeting in January of 2017. He was putting on a demo of packet radio. I began peppering him with questions, and he generously offered to help me get going with my efforts toward using packet radio. He pointed me to the UZ7HO software TNC that day. He later engaged me over the telephone and walked me through setting up that software, and beyond that, walked me through making some connections over my now operational packet radio set up. Thank you, Lee. You got me off of ground zero for using standard packet radio.

And finally:

Thanks to all the hams who have posted information out on the internet relating their experiences with digital ham radio and all the numerous topics associated therewith. I have done literally hundreds of Google searches, and chased links from one web site / web page to another on my quest to understand and use digital radio and more specifically packet radio. I have not kept track of all the places to where I have gone on the internet on my quest to acquire knowledge and understanding of this vast subject. So, I would like to offer this generic thank-you to all those hams who sought to assist others by taking the time to write up some text describing their learning and experience. Thank you, thank you, thank you!!

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Here's the essence of what this write-up is all about:

Before I go on, let me say this: This write-up does NOT APPLY to the scenario, whereby you are using a hardware TNC or even an external sound card like the Signalink USB. In those scenarios, you would be most likely utilizing the data port or the accessory port on the back of the IC-7100A, and NOT the USB port on the back. Having said that, here we go....

The Icom IC-7100A has a built in sound card, accessible via a USB cable to a computer. Also, the IC-7100A presents two virtual serial com ports to the computer over that same USB cable. It is therefore possible to run digital communications with no other hardware (other than a computer, a USB cable, and the radio, that is), thus saving the cost of a hardware TNC, or external sound card, like the Signalink USB. However, it is not very clear from the Icom manual how to adequately utilize that internal sound card toward that end. The information is there in the manual, but it could certainly be presented much more clearly. This write-up is my attempt to bring together several "blocks" of information and procedures toward achieving the goal of having no other hardware beyond the computer, the radio, and the USB cable between them. Please be informed that, even though I do have a long background dealing with computers, I still do not count myself as a guru. There are numerous holes and/or shallowness that exist in my knowledge. I only have Windows 7 Pro running on my computers, so far. So that is the OS upon which this document is based. My friend Don, has used this same information on his Windows 10 computer and also achieved success. With any other OS, I have little or no knowledge.

The keys to getting this working as described above is understanding these following facts, and then going about working within those realities:

- Unless you supply one somehow, there is no TNC involved by just simply connecting a USB cable between the IC-7100A and your computer. The IC-7100A provides ONLY a sound card.
- The UZ7HO software TNC is my chosen TNC of which I will be explaining its setup and utilization, but only toward the objective of this write-up. There are numerous settings available in this software, most of which their meaning or use I am ignorant. I believe I have left the majority of them at their respective default settings
- The UZ7HO TNC cannot key the transmitter of the IC-7100A directly over the USB cable. This software was written, assuming a real, physical com port on the computer being utilized to key the transmitter, as is done with numerous other radios. It, therefore, provides configuration settings for accomplishing such in that manner.
- The IC-7100A is only capable of keying its transmitter over the USB cable via CAT commands. Icom's name for these commands is referenced as "CI-V".
- The IC-7100A is capable of receiving these CAT commands over the USB cable at one of its internal virtual serial com ports. It then executes that PTT command to achieve keying the transmitter.

-In some manner, it is necessary to key the IC-7100A's transmitter with a CAT command. Here, that will be done with an additional piece of software as a go-between, between the UZ7HO TNC's com port configuration, and the IC-7100A's com port. That piece of software is CAT7200. This software creates another virtual com port on the computer, then listens for toggling of the RTS line on that com port. When CAT7200 sees that incoming RTS line get toggled, it then sends the PTT CI-V (CAT) command out over another virtual com port. So, what you do is configure CAT7200 software to send its output to the com port to which the IC-7100A is listening, and Voila!! the transmitter gets keyed.

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With some obvious redundancy, here are the basic components that this write-up is attempting to pull together:

- The needed configuration settings within the IC-7100A
- The set up of the UZ7HO TNC software in the Windows 7 Pro OS.
- The installation and set up of the CAT7200 virtual serial com port software into the Windows 7 Pro OS. And, again, this component is used to interface between the TNC software and the virtual serial com port which is presented to the computer by the IC-7100A over the USB cable. Yes, you will be dealing with a total of three virtual com ports overall, but actually utilizing only two of those three.

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Installing the USB driver for the Icom IC-7100A (and some other notes).

The first thing that you must do is to get your computer set up to work with the virtual com ports, which are presented to the computer over the USB cable. I lifted the following out of the Icom IC-7100A full manual from page 1-18. I did a bit of added spacing and indentations for slightly improved readability after pasting below:

12 USB (Universal Serial Bus) PORT [USB]

Using a USB cable, connect a PC to do the following:

- Input modulation
 - Remotely control the transceiver using CI-V commands (p. 20-2)
 - Send the received audio to the PC
 - Send the decoded characters to the PC
 - Low-speed data communication in the DV mode (p.9-17)
 - Cloning using the optional CS-7100 cloning software (p. 21-5)
 - Remote control operation using the optional RSBA1 ip remote control software (p. 21-5)
- Two COM port numbers are assigned to the [USB] connector.
 - One of them is "USB1," used for cloning and CI-V operation.
 - The other one is "USB2," whose function is selected in "USB2 Function" item of the "Connectors" Set mode. (p. 17-25) SET > Connectors > USB2/DATA1 Function >

USB2 Function

About the USB driver:

The USB driver and the installation guide can be downloaded from our website.

➡ <http://www.icom.co.jp/world/index.html>

The following items are required:

PC

- Microsoft® Windows® 8/8.1 (32/64 bit)*, Microsoft® Windows® 7 (32/64 bit), or Microsoft® Windows Vista® (32/64 bit) OS
- *Except for Microsoft® Windows® RT.

- A USB 1.1, 2.0 or 3.0 port

Other items

- USB cable (supplied with the transceiver)
- PC software (such as the optional RS-BA1 or CS-7100)

NEVER

connect the transceiver to a PC until the USB driver installation has been completed.

About the modulation input:

Select "USB" in the "Connectors" Set mode item "DATA OFF MOD" or "DATA MOD." The modulation input level from the USB jack can be set in the Set mode item "USB MOD Level." (p. 17-24)

SET > Connectors > **DATA OFF MOD**

SET > Connectors > **DATA MOD**

SET > Connectors > **USB MOD Level**

<end excerpt from Icom manual>

I want to draw your attention to a couple items in the excerpt from the Icom manual:

Where it says “Using a USB cable, connect a PC to do the following:”, the second entry under that heading says: “- Remotely control the transceiver using CI-V commands (p. 20-2)”. That’s an important clue which this write-up is addressing.

Where it says: “• Two COM port numbers are assigned to the [USB] connector.”, it makes reference underneath to “USB1 and USB2”. These are the two virtual com ports referred to in this write-up. On your computer, they will NOT show up as “USB1 and USB2”. They will show up on your computer as two com ports, and those two com ports will be sequentially numbered. However, the exact two port numbers on your computer will be specific to **your** computer. The specific numbers that get assigned on your computer are dependent upon what other com port numbers have been previously assigned in your computer.

Where it says:

“NEVER

connect the transceiver to a PC until the USB driver installation has been completed.”

The Icom folks really do mean **“NEVER”**!!

Do not take this lightly..... ask me how I know. <grin>

In my past, working with computers, Windows automatically sees new USB devices at the moment they are connected, and automatically goes about searching for and installing a driver. If you violate this “NEVER” instruction, Windows will do its normal thing, and it all looks completely normal and valid. But it won't work!! It is only after downloading the driver from Icom's web site, along with the pdf document which explains proper installation of the driver, do you discover the “why” that is associated with the **“NEVER”**. nuff said.

In addition, I want to draw your attention to this following excerpt from the pdf document which explains proper installation of the driver:

“• When installing the driver, confirm Windows has completed its startup, and then log in as the administrator.”

A couple of years ago, I learned a lesson the hard way while installing some other software on my Windows 7 Pro computer. Until I learned this following lesson, I chased my tail for many hours while trying to get that software working. So, when I saw this instruction, I immediately remembered that hard won knowledge and re-read it several times, before I went on. This instruction says “... and then log in as the administrator...”. Here's the hard lesson that I learned: Being logged in as the administrator **IS NOT THE SAME** as having “full administrator privileges assigned to your normal user login account!!! In my experience, 99.9 percent of the time it does not matter.... maybe even more often than that. But, even more exasperating is the fact that the administrator account is, by default, not activated in Window 7. I have found this to be also true for Windows 10, via my friend, Don. To drive this home a bit more, the administrator account is always there, cannot be removed, cannot be renamed, and is built right in to the Windows 7 OS. However, it is, again, by default, not activated, and thus you never see it as a choice at log in time. It is a security risk to have your administrator account always active. Therefore, what you want to do is activate it long enough to perform

needed installations, reboot to verify success, and then log back in to your normal user account before proceeding on toward utilizing the newly installed software. Once you have confirmed that all is working as desired, go back and de-activate your administrator account. If your administrator account is not activated, which is likely, here is how to activate it:

- Locate the “Command Prompt” application and right-click on it. Then choose “Run as administrator”. You will immediately be presented with a small window which says “Do you want to allow the following program to make changes to this computer?” Click on the mouse button labeled “Yes”.

- At the prompt, type the following and then hit the enter key:
net user administrator /active:yes

The computer will respond back with this phrase:
“The command completed successfully.”

If you get instead this phrase:
“The user name could not be found.”

Then you spelled administrator incorrectly. It ends in “or” not “er”.

Whenever you are all finished using the administrator account, you can go back and de-activate it according to the above instructions, but substituting “active:Yes” with “active:No”.

Note: If you are not “command line savvy”, just know that the presence or absence of spaces in the text that you type at the prompt are important, and that you choose the correct slash character on your keyboard... there is a forward slash: / and there is also a back-slash: \ Here you want to use the forward slash. Also, make note that there is no space between that forward slash and the word “active”, and no spaces around the colon. And, to belabor the point, that is a colon (dot-dot) not a semicolon (dot-comma). My apologies if this has insulted your intelligence. However, I'm betting that there will be somebody reading this who will see it as a welcome clarification, because it may not be clear on a printed version.

My suggestion is that, to ensure you have the latest driver, that you go to the icom web site and download it from there, along with the pdf instructional document. Then carefully follow those instructions.

<http://www.icom.co.jp/world/support/download/firm/>

On that site, scroll down to where you see reference to “USB Driver(Ver.....”
At this writing, the latest version is 1.20 released on 8/1/2013.

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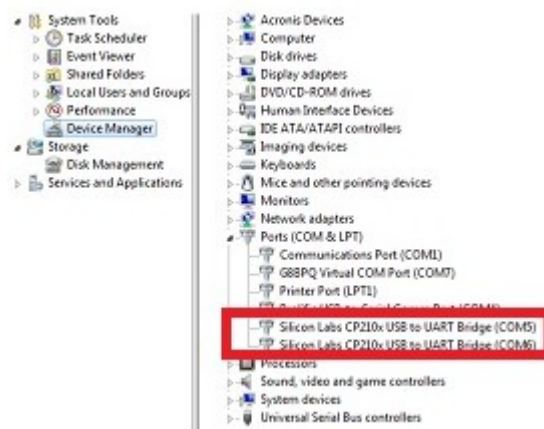
Verify that you have two new COM ports after installing the Icom USB driver.

If you have not already done so, reboot your computer and log in to your normal account instead of the administrator account.

Wait for the normal disk thrashing to die way down, so that you can be comfortable that Windows has finished all of its wake-up routines, and thus fully ready for business.

Check for the new COM ports as follows:

-Click on the Windows Orb in the lower left hand corner of the screen, and then right-click on “Computer”, then click on “Manage”. In the “Computer Management” window that comes up, click on “Device Manager”. Scroll down and look for “Ports (COM & LPT)”. Open that up by clicking on the little triangle to its left.



You should now see something similar to this above screen shot. There should be two new entries that start out: “Silicon Labs CP210x USB to UART Bridge...”. Two different COM port's numbers are shown. On this screen shot from my computer, you can see that ports COM5 and COM6 are now available. Again, as stated elsewhere in this document, those two precise numbers will very likely be different on your computer, but they will almost certainly be sequential. Very likely, you will be using the first one listed. However, be aware that it is occasionally possible for it to be the second one that will be of interest. For further clarification, go to this web page at Icom's web site. It is a pdf document:

<http://www.icom.co.jp/world/support/download/manual/pdf/USB Port Setting Ver.1.0 Eng.pdf>

Read Section 3-1 beginning on page 8. It will inform you how to tell which is which. The COM port that Icom references as “USB 1” is the COM port you want to use as described in this write-up.

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Your radio has some settings in it that must be configured properly for this to all work.

Refer to your Full Manual for the Icom IC-7100A.

Go to Section 17, beginning on page 17-24 where the “Connectors Set Mode” settings are described.

As I'm sure that you know, the IC-7100A has a variety of knobs, buttons, and a touch screen. At various times you will be using these to navigate through the menus in order to get the radio all set up to operate as desired. For purposes of this write-up, I will make up and use the following standard:

When I say “Click”, I mean to press a physical button on the radio's control head.

When I say “Touch”, I am referring to a specific place on the touch screen which you will need to touch, and that specific place on the screen is defined by the radio to have a specific meaning at that specific time. I'm certain this is obvious. What may not be so obvious, is, if you haven't already encountered it, that there are two kinds of “touch”. One is to just touch and immediately pull back. The other is to touch and continue to touch. In some cases the two different “touches” produce different results on the touch screen. So, just a word of caution.

When I say “Touch Return”, I mean to touch this place on your radio's touch screen:



On your radio, go to “Connectors Set mode”. To get there do this:

- Click the “SET” button.
- Scroll up or down if necessary until you see on the touch screen “Connectors”.
- Touch the word “Connectors” on your screen.
- Scroll, if necessary, to the top of that list where you see “USB Audio SQL”
 - Ensure its setting is “OFF (OPEN)”
 - If it is not, then touch it to get to the choices behind it, and then touch “OFF (OPEN)”. You will then be returned to the previous screen.

Before moving on, take a moment to notice how the screen is arranged. In the far upper-right corner at this point, you should see this indication: $\frac{1}{4}$. That means that in the “CONNECTORS” menu there are four screens, and that you are looking at the first of those four. On the next screen, that will change to: $\frac{2}{4}$ and so on. Also notice, if you haven’t already, the little scroll bar next to the up / down arrows. Like the $\frac{1}{4}$ in the upper right corner, it helps provide a visual indication as to how deep you are in the current menu. This format is consistent throughout all the menus in the radio.

- Back at the “CONNECTORS” menu, the second item from the top is “ACC/USB Output Select”.

- Ensure that it is set to “AF”.

- If it is not, then touch it to get to the choices behind it, and then touch “AF”. You will then be returned to the previous screen.

- Back again at the “CONNECTORS” menu, the third item from the top is “ACC/USB AF Level”.

- Ensure that it is set to 50%.

- If not, then touch it to get to its setting. On that screen, touch the + or the - as necessary to change the percent setting to 50%, which is the default.

- Once you have it set to 50%, Touch Return to get back to the “CONNECTORS” menu.

There are a total of five “Level” menus under the “CONNECTORS” menu. In like manner as the one above, ensure that they are all set for 50%.

- Back again at the “CONNECTORS” menu, scroll up / down as necessary to arrive at the $\frac{3}{4}$ screen, where you will see “DATA MOD” at the top of the list. In similar manner as before, ensure that it is set to “USB” from among the four choices.

- Back again on screen $\frac{3}{4}$ of the “CONNECTORS” menu, the third item down is “CI-V”. Touch that item to see the possible settings behind it. The first item in this sub-menu is “CI-V Baud Rate”. This is a critical setting that will work hand-in-hand with the CAT7200 software's settings. The default setting here is “Auto”, which is a poor choice for our objectives. This setting will cause the radio to try to guess the setting at the other end of the virtual serial cable. If the other end is also trying to guess the radio's speed, they can very easily just scan right past each other and never lock on. And even if the other end is not trying to guess, it is often pretty iffy as to whether the radio successfully locks on to the speed expected at the other end. This issue is not about the radio or the software, it is just a reality of the RS-232 standard. Anyway, the better solution is to lock down both ends by telling them both to operate at a specific speed. What matters most is not the specific speed chosen, but that the speed chosen here, exactly matches the speed selected in the CAT7200 software. At this writing, I have mine set to 4800. However, I do plan to set both ends to 19200. I do not expect my slower speed to be an issue, but I might as well use the faster speed, just in case. Just haven't gotten around to it yet.

-Ok, back again to the “CONNECTORS” menu. The next sub-menu is “CI-V Address”. This is another critical setting that must match with the CAT7200 software. Again, the exact setting probably does not matter. What critically matters is that this setting is the exact same as that in the CAT7200 software. Icom defaults this setting to 88, and there is no reason to change it. Just be aware that the CAT7200 software does NOT default to 88, and that software MUST be changed in order to achieve success.

The remaining menu settings are not involved in the objective of this write-up. Touch Return however many times it takes to get back to the radio's main display, which should be no more than two or three times.

There is one final setting on your radio that is necessary. This setting is not in any of the menus just described. After you have dialed in the frequency on which you are going to operate in digital mode on 2 Meters FM, it is necessary to set the FM-D mode for modulation of the transceiver. On voice 2 Meter FM, you would set this to just FM, but for data, it must be set to FM-D. Refer to the Icom manual if necessary to achieve this setting.

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Install the CAT7200 software.

Download the zip file.

Move that zip file into a folder newly created by you where it will exist by itself.

With the zip file now living in your newly created folder, there will be a little triangle immediately to the left of your new folder.... click on that triangle to see what's indented under your new folder.

You should see in your left pane the zip file as the name of an indented folder. Now, click on that folder, and you will see in the right pane two folders and an executable file named "CAT7200.exe".

Double clicking on that exe file (an application Type is indicated) will decompress the contents of the zip file, creating two more new folders right under the new folder that you created, along with another exe application type file. Those two folder names are VCOM32 and VCOM64, and the exe file is named CAT7200.exe. Note that there is room for confusion here. If you are looking at the zip file, you will see an exe file named CAT7200.exe. Then if you look at the non-zip folder named CAT7200 (as opposed to CAT7200.zip), you will see another exe file by the exact same name: CAT7200.exe. The exe file under the folder name of CAT7200.zip is what unzips the zip file. The exe file under the folder name of just CAT7200 is your useable application program..... but only useful AFTER drivers are installed according to the following instructions.

First effort:

On both of my Windows 7 Pro computers, this first effort failed to produce a successful installation.

These instructions came from this web page:

<http://www.cantab.net/users/john.wiseman/Documents/CAT7200.html>

On that same web page there is continuing instruction that says:

"If that fails, the instructions for using the old method of installation are below."

Second effort:

And "below" you find this statement:

"For Installation on Windows 7+, see intructions [here](#)."

Which, in turn, links you to this location:

<http://www.cantab.net/users/john.wiseman/Documents/VCUSMInstallW7.htm>

Following these instructions is what I had to do on both of my Windows 7 Pro computers.

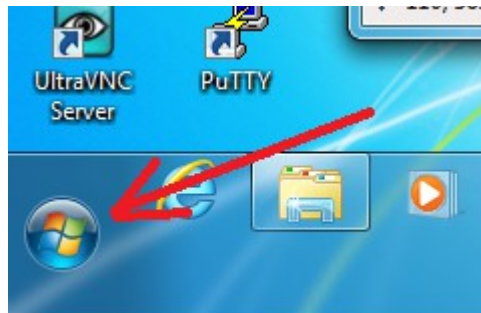
So, next I am going to follow along with those instructions on my own computer, make my own notes and take my own screen shots. I think these will be very similar, if not identical to those shown in that link just above.

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In these following steps, you will come to a point where you will need to navigate back to the folder on your computer where you downloaded and unzipped the CAT7200 software. You were instructed to unzip, etc that software, and a new folder was described. That folder name is CAT7200 (not the CAT7200.zip folder). Within that CAT7200 folder are two additional new folders named VCOM32 and VCOM64. When you get to that point in the following instructions, you will need to navigate to one of those two folders. The one to which you navigate is, of course, dependent upon your computer's hardware, and the version of Windows 7 that is installed on your computer. In case further clarity is needed, there are 32 bit versions of Windows 7 and there are 64 bit versions of Windows 7. You need to know which one you are running, so that you can choose the correct folder to which you navigate. Ok.... so here we go....

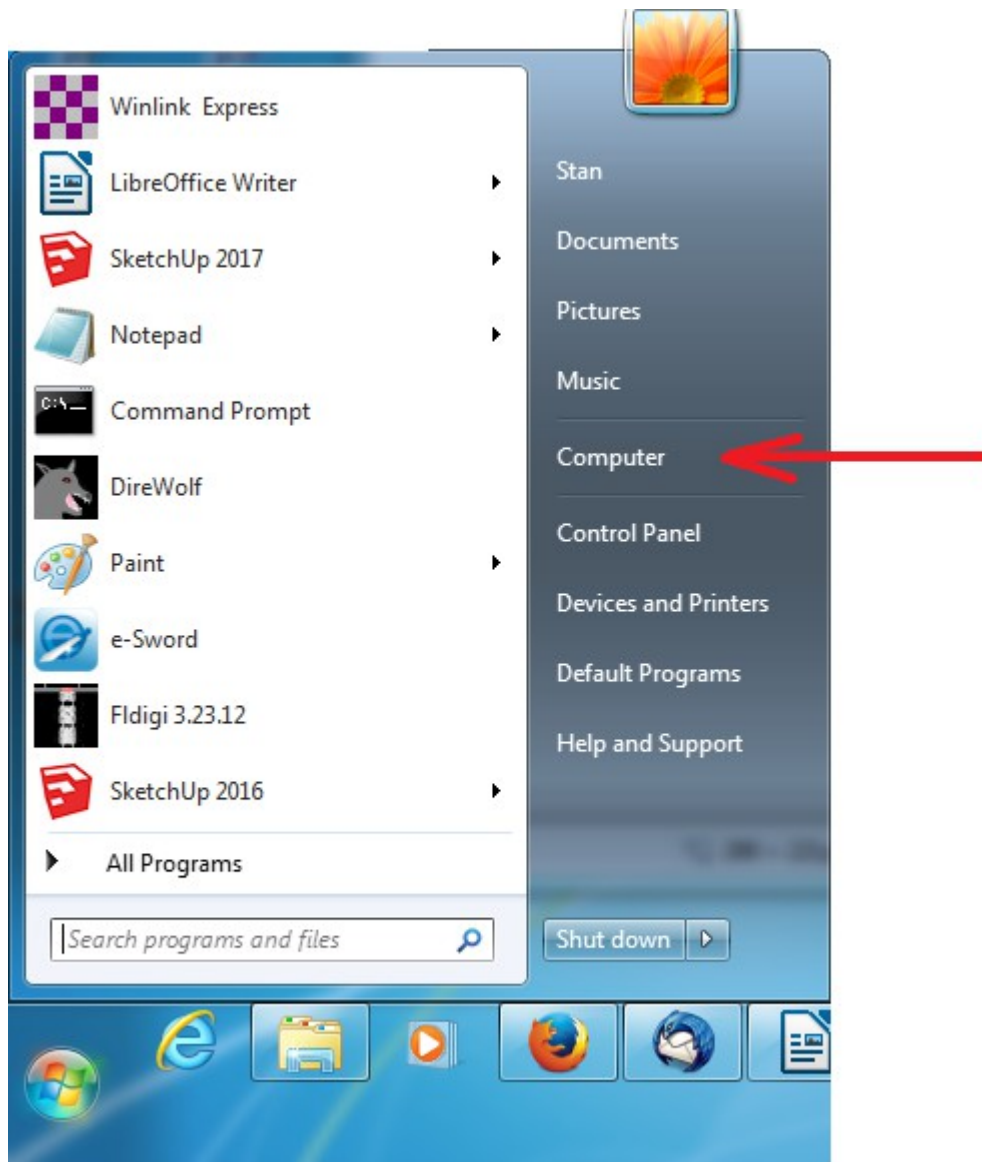
Go to your “Device Manager”. If you don't know how to get there, here are the steps:

Click on the “Orb” in the lower-left hand corner of your screen:



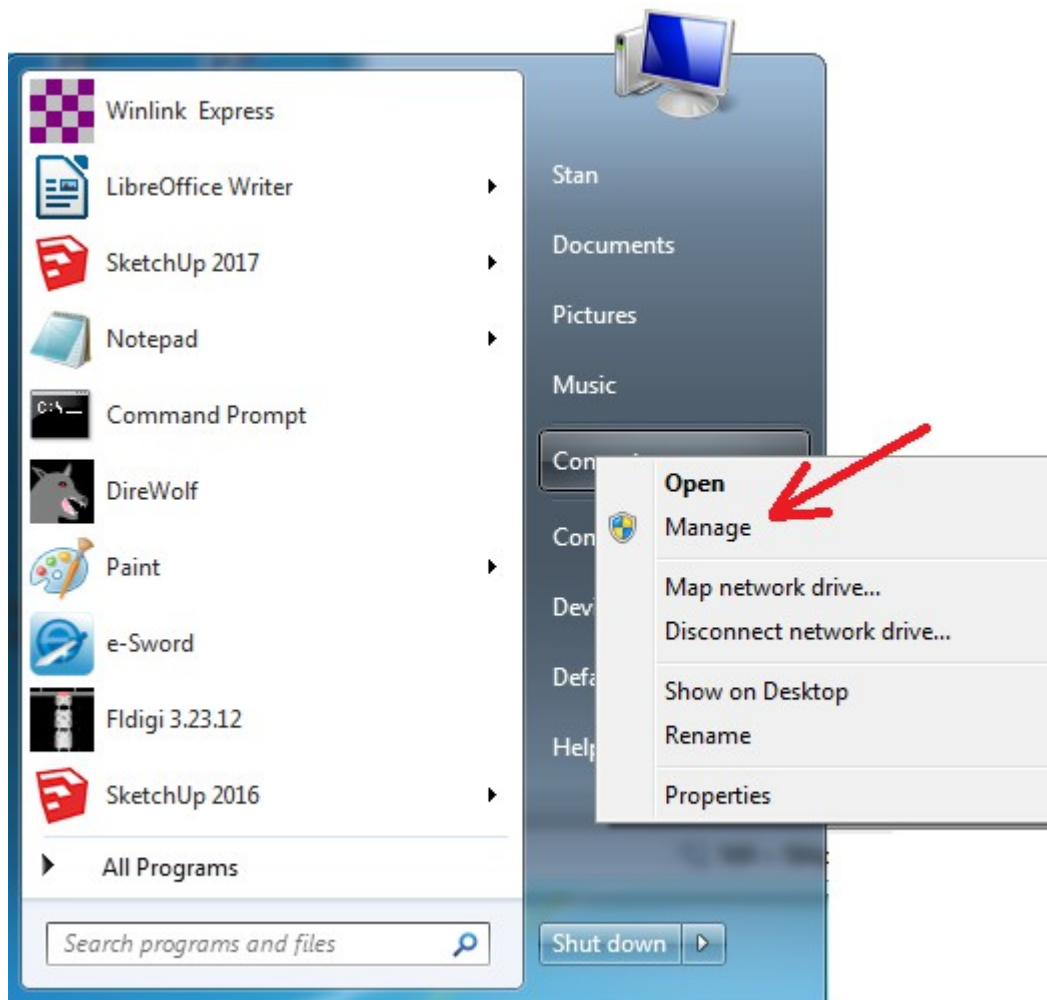
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Right-Click on “Computer”



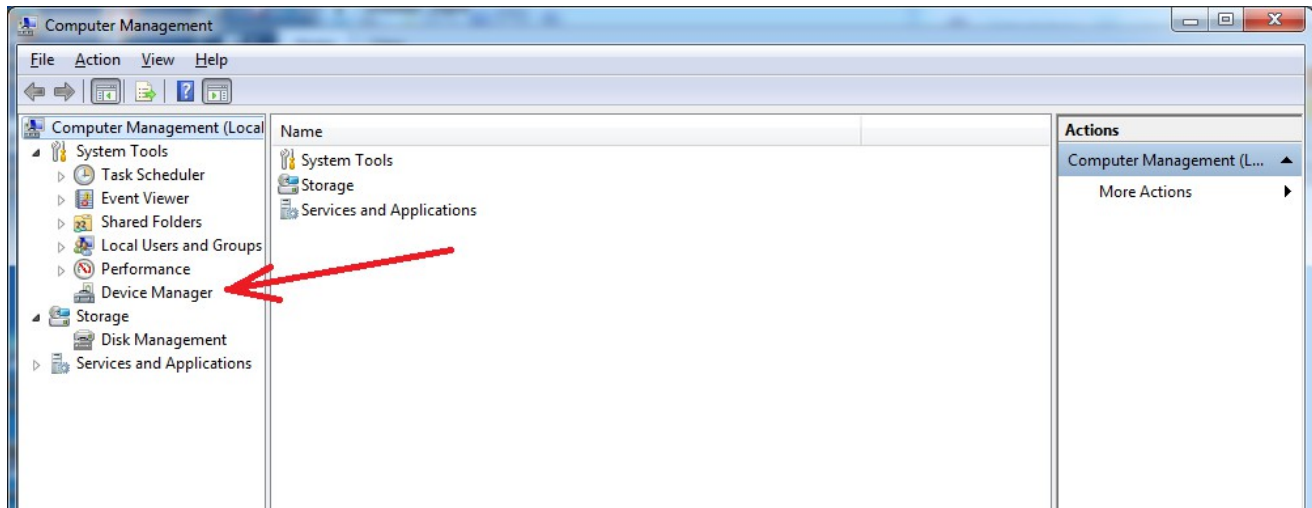
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Click on “Manage”



[Jump back to the top of this document.](#)
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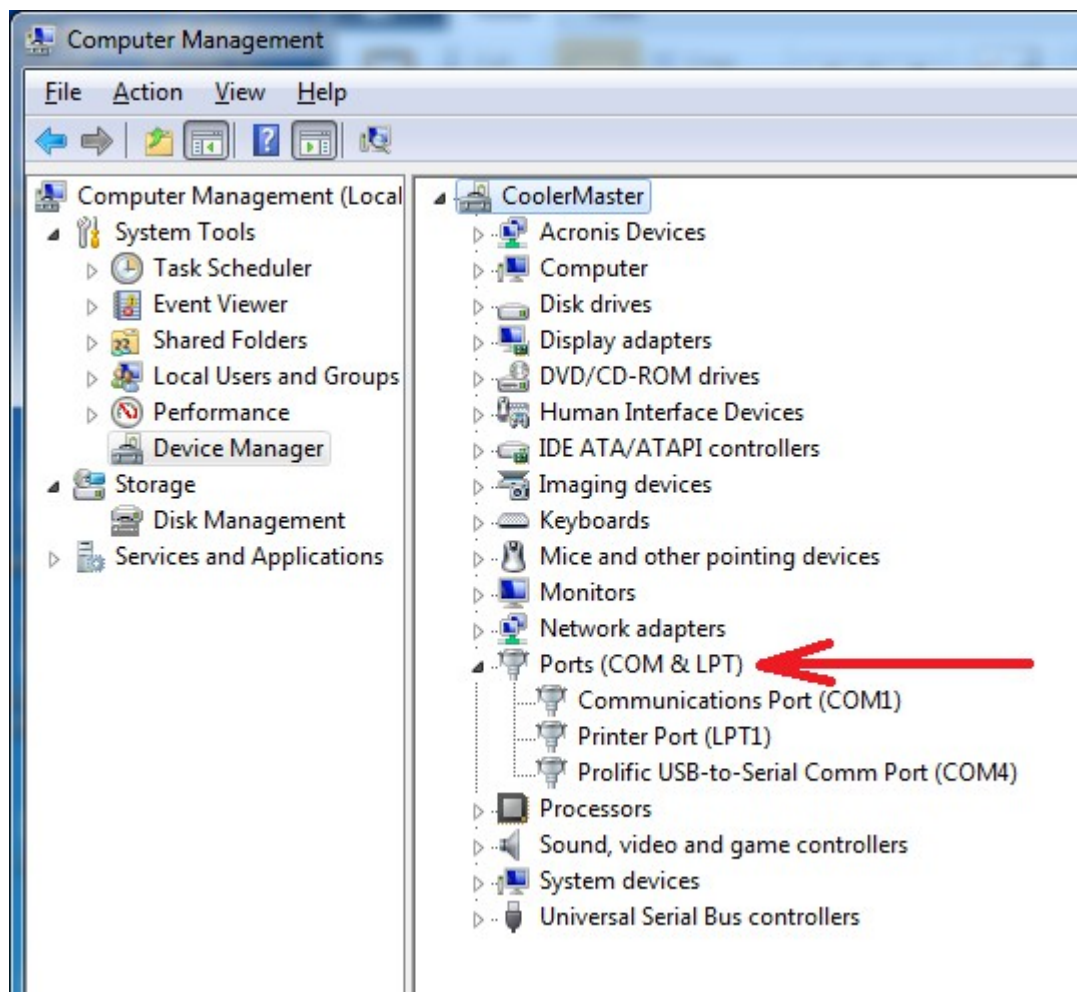
The “Computer Management” window will then appear.
Click on “Device Manager”:



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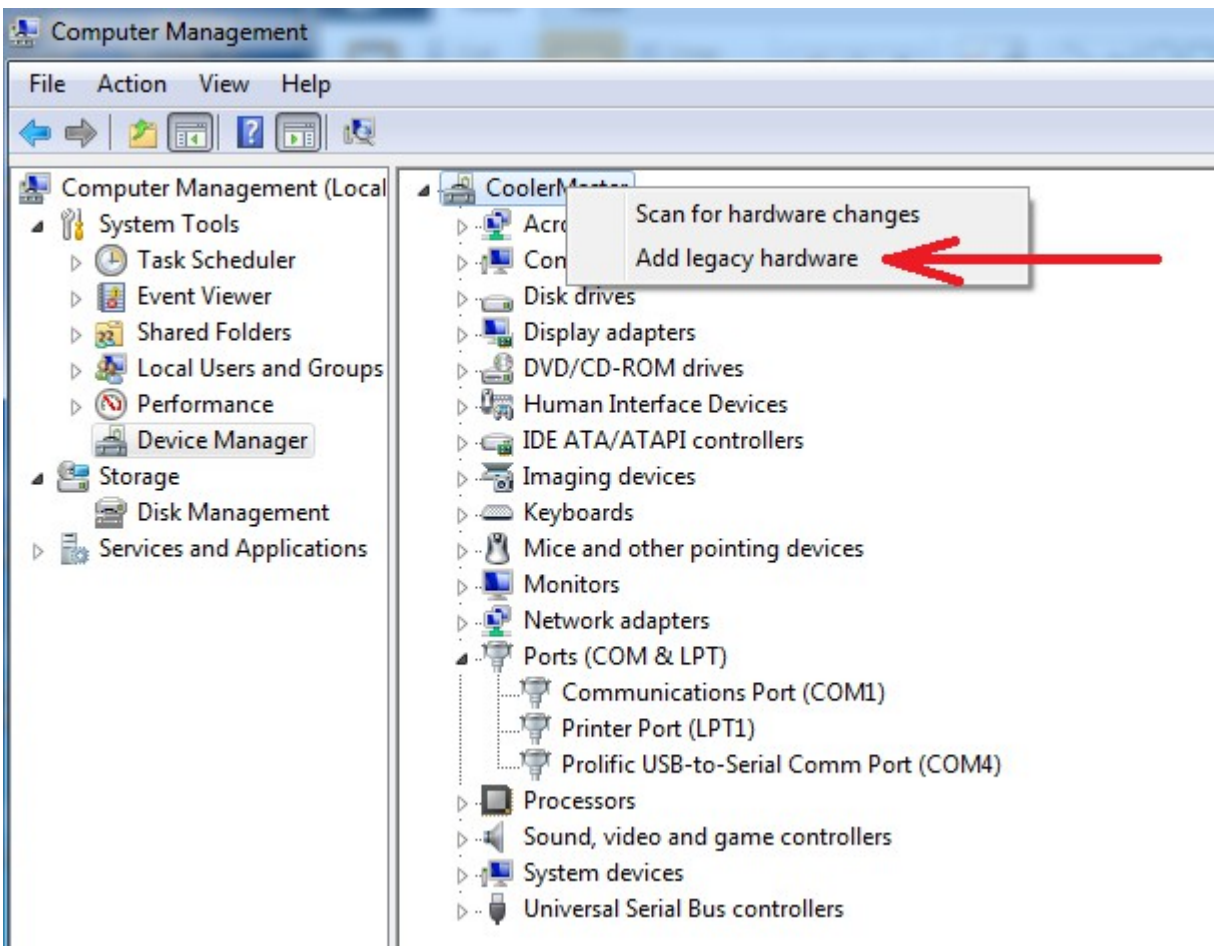
And see something like this.

Expand the “Ports (COM & LPT)” to see its contents. You may be wondering why my two com ports for the IC-7100A are not listed. It is because at the time this screen shot was taken, I had the USB cable disconnected from this computer, and plugged in to my laptop instead. With the radio disconnected, its two virtual com ports do not appear. Also, by the way, there is another entry showing up which you may be wondering about. The “Prolific USB-to-Serial Comm Port(COM1)” has nothing to do whatsoever with what we're doing here. It is related to another USB cable with imbedded electronics to do a conversion to a whole different radio which DOES have a serial port and NO USB port. It is in place, because my computer had no physical RS-232 serial port. And, yes, I could put one in, but I like this solution better. Anyway.... just trying to present all the clarity that I can anticipate which may be needed by whomever.



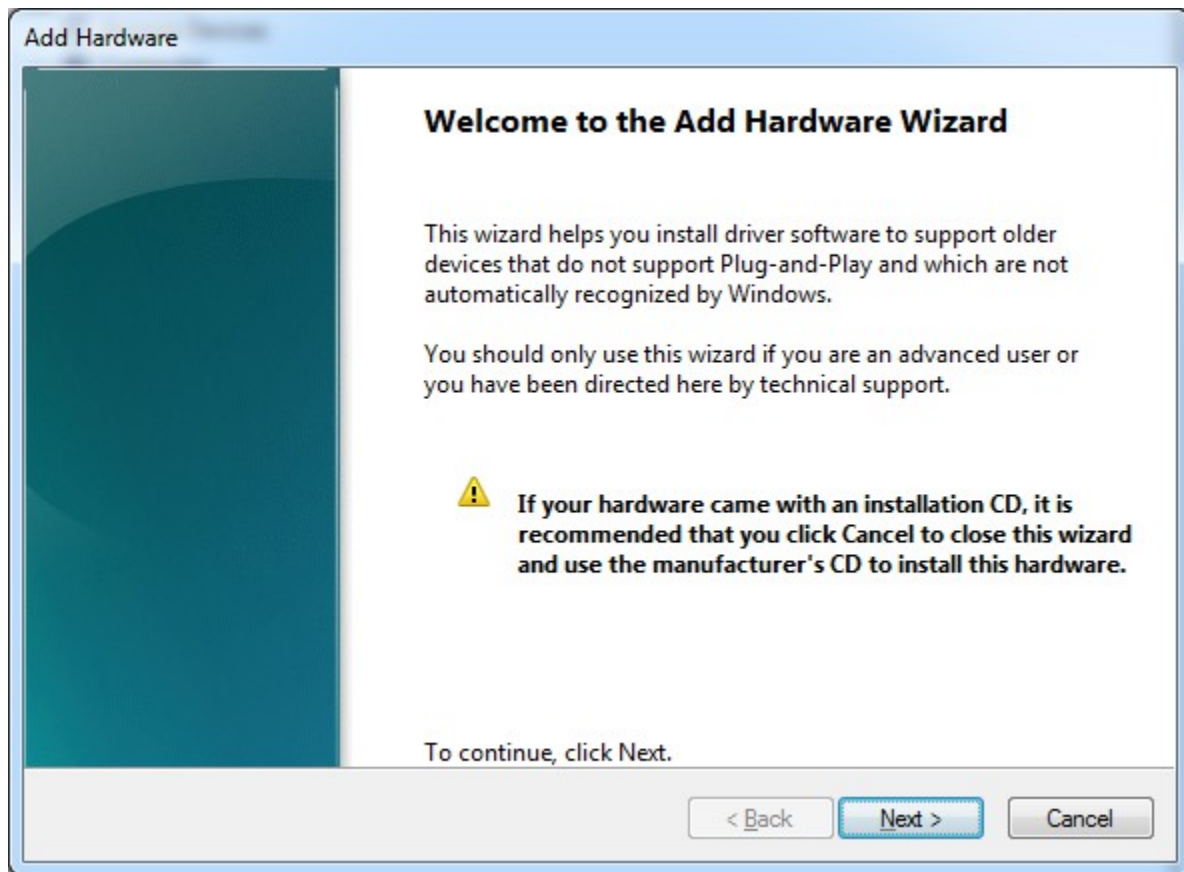
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At the very top of the list in Device Manager, right-click on your computer name. Here, you can see that my computer name is “CoolerMaster”. Then click on “Add legacy hardware”.



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You will then see this window. Click “Next”.

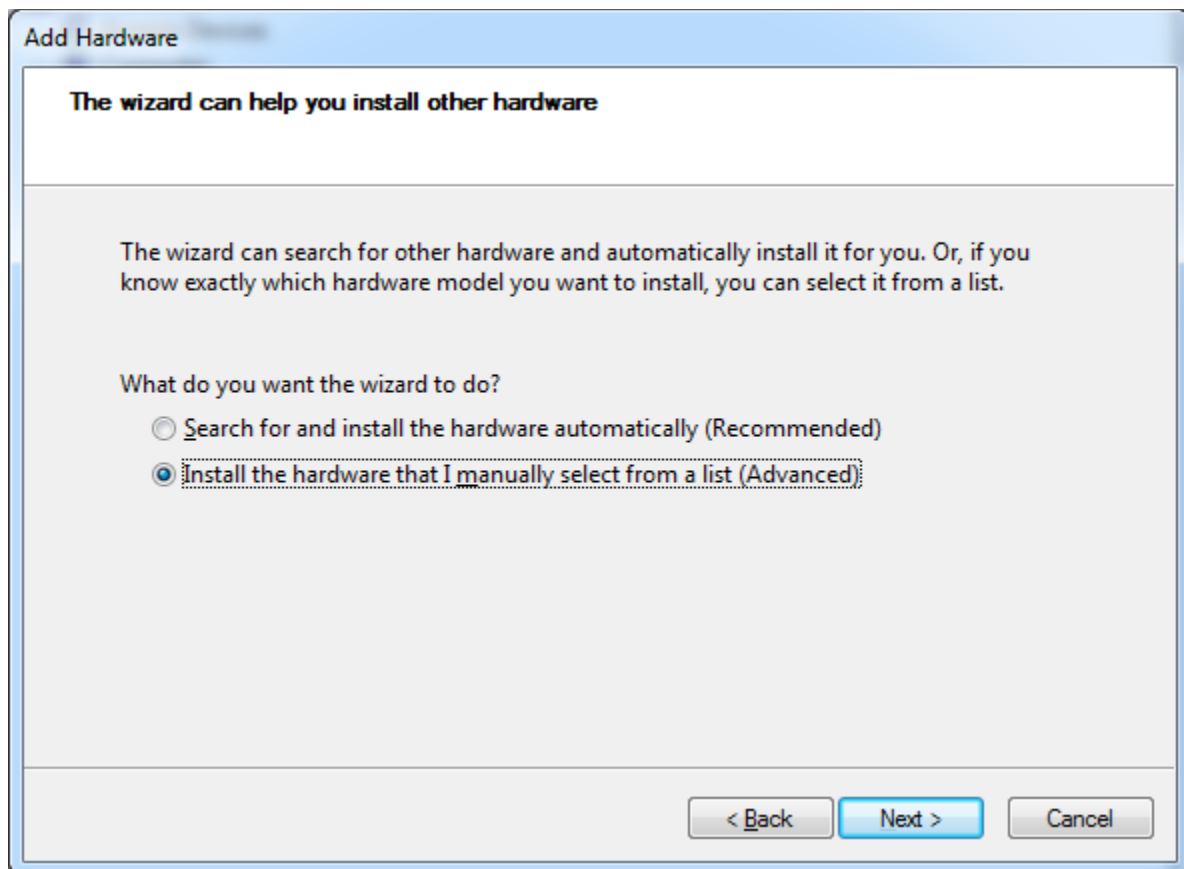


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You will then see this window. Ensure that you have the indicated selection made:

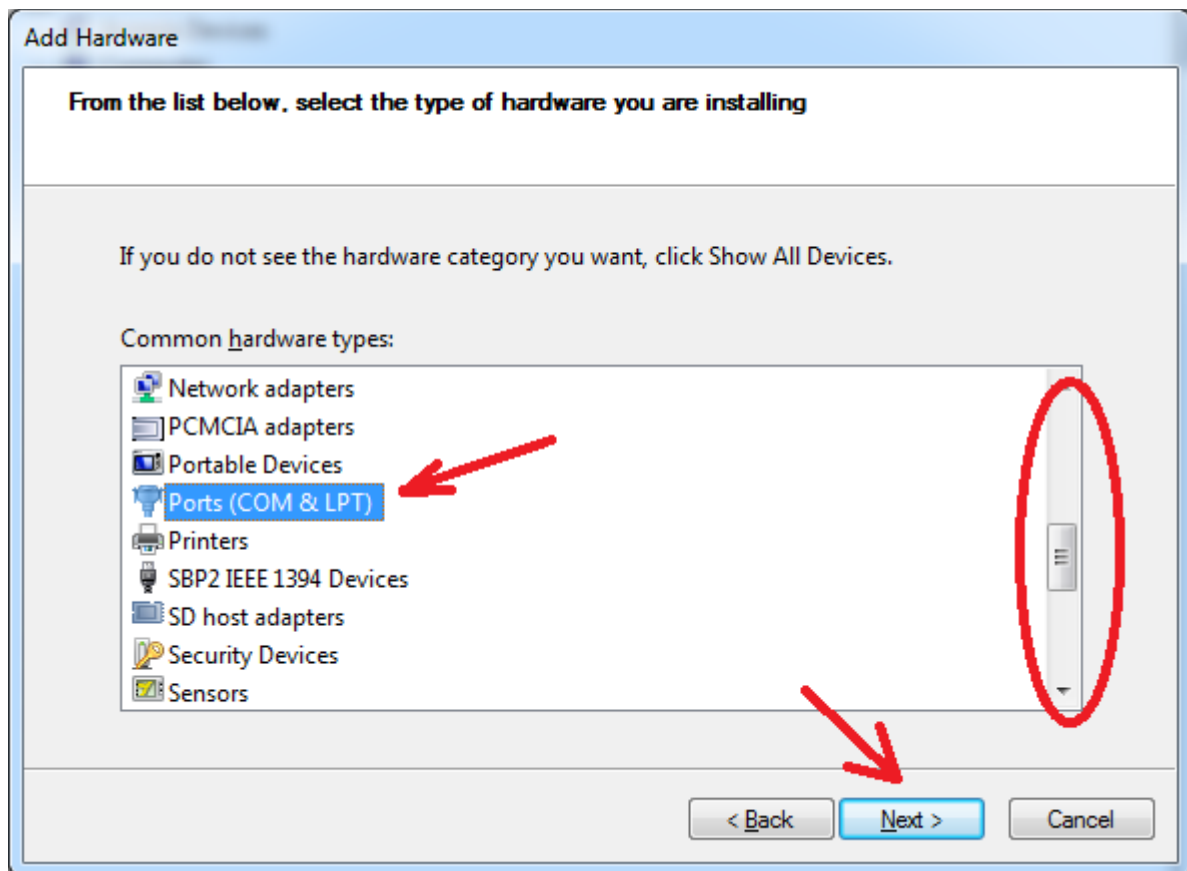
Install the hardware that I manually select from a list (Advanced)

And then click “Next”.



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You will then see this window. You will probably need to scroll down to see “Ports (COM & LPT)”. Click on “Ports (COM & LPT)”, and then click “Next”.

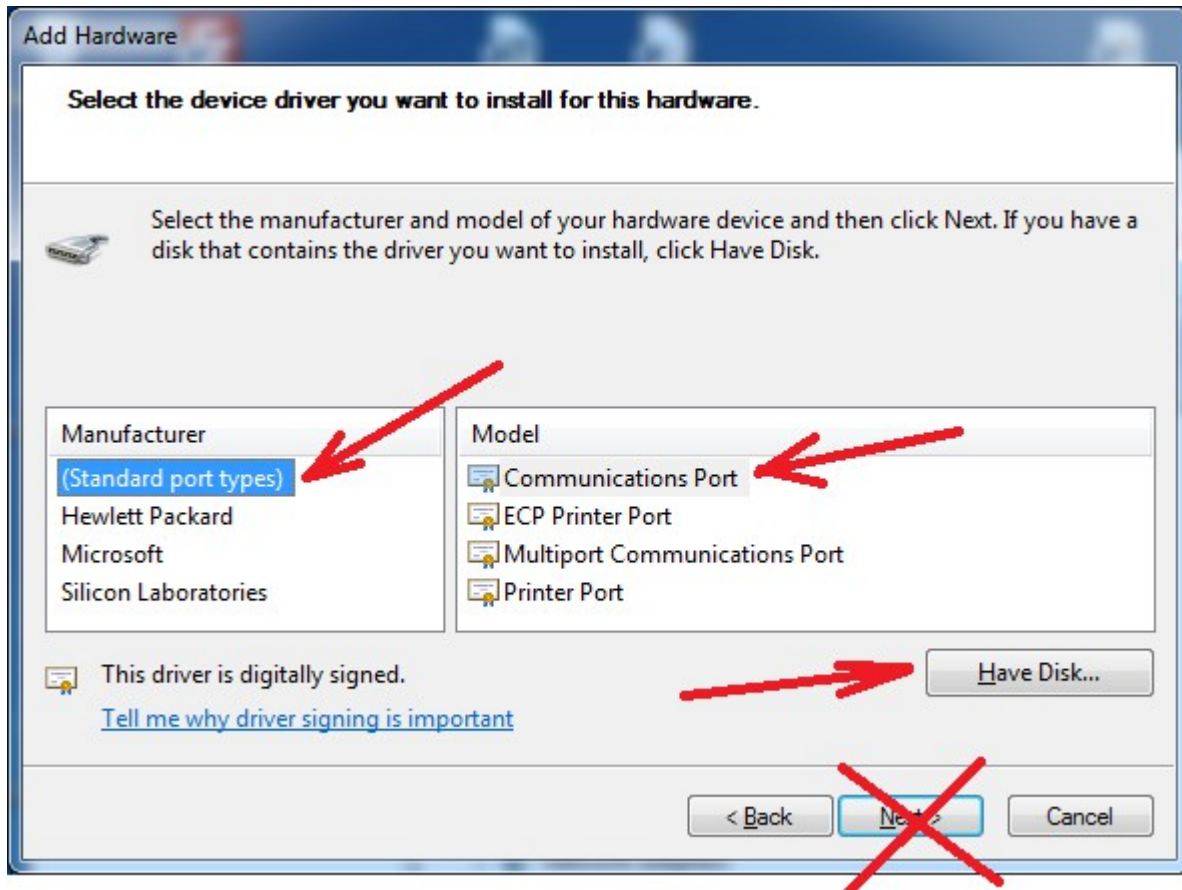


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You will then see the “Add Hardware” window.
Do **NOT** click “Next” on this screen!

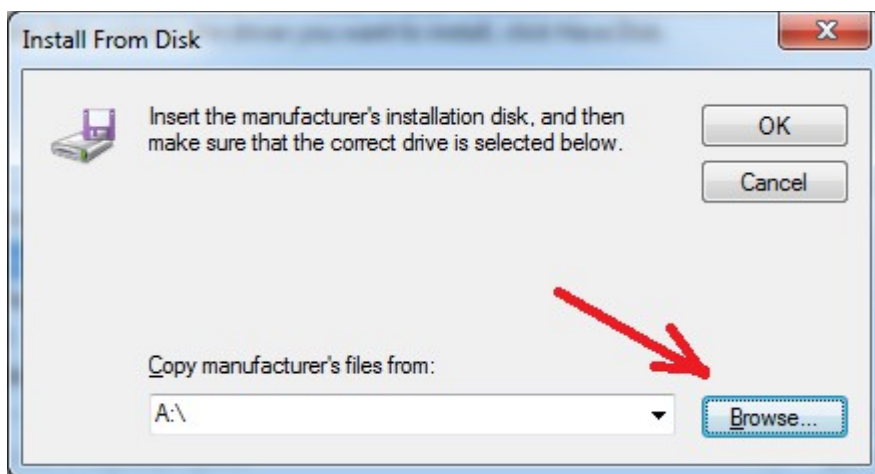
Click on “(Standard port types)” under the “Manufacturer” pane. Then click on “Communications Port” under the “Model” pane.

Then, click on “Have Disk...”

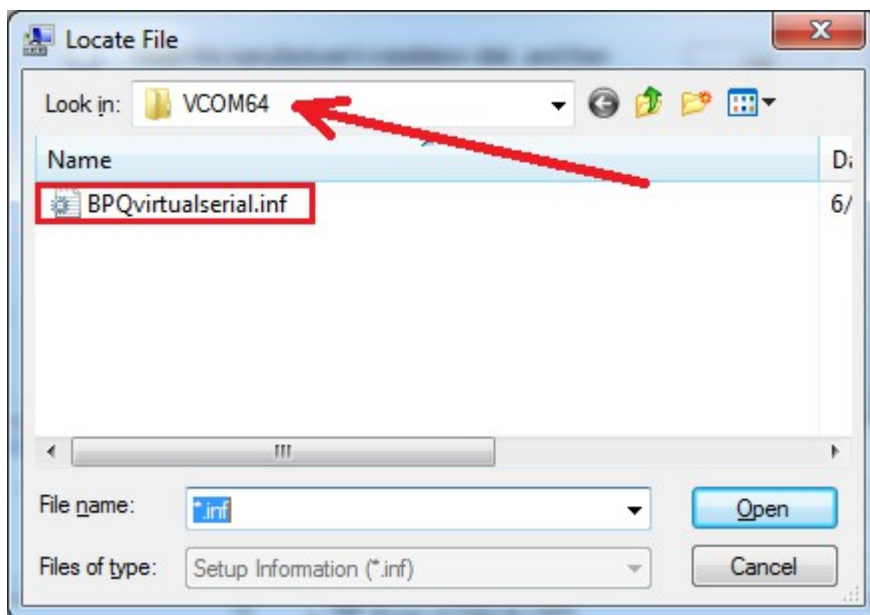


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You will then see this screen. This is where you navigate to the folder which you unzipped earlier, and to the correct sub-folder for your version of Windows 7. Click on the “Browse...” button. The next window will appear for you do your navigation to the appropriate folder as described earlier. Do so, and perform your navigation.



The navigation window completed on my computer:

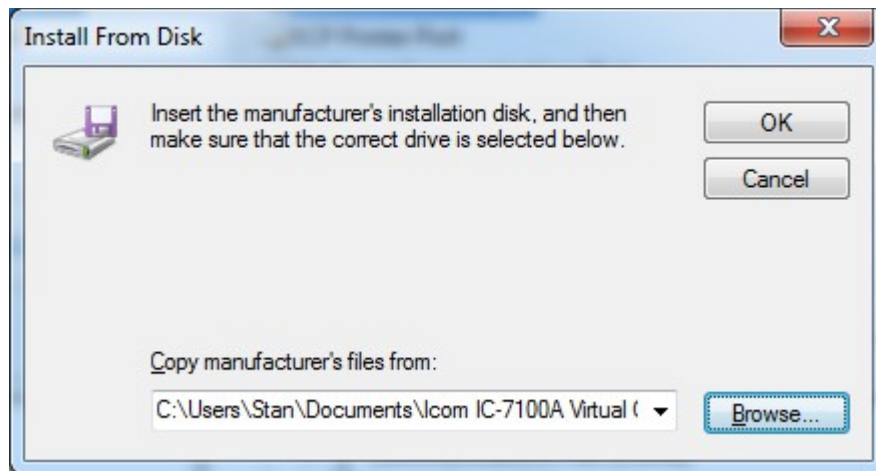


My computer is a 64 bit computer, and thus, I am running the 64 bit version of Windows 7 Pro. Therefore, the correct folder to which I navigated is the “VCOM64” folder. And here you can see the contents of that folder it the driver file, named BPQvirtualserial.inf.

Click on the inf filename to which you have navigated, and then click “Open”.

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You will then be brought back to this window. Click “OK”.

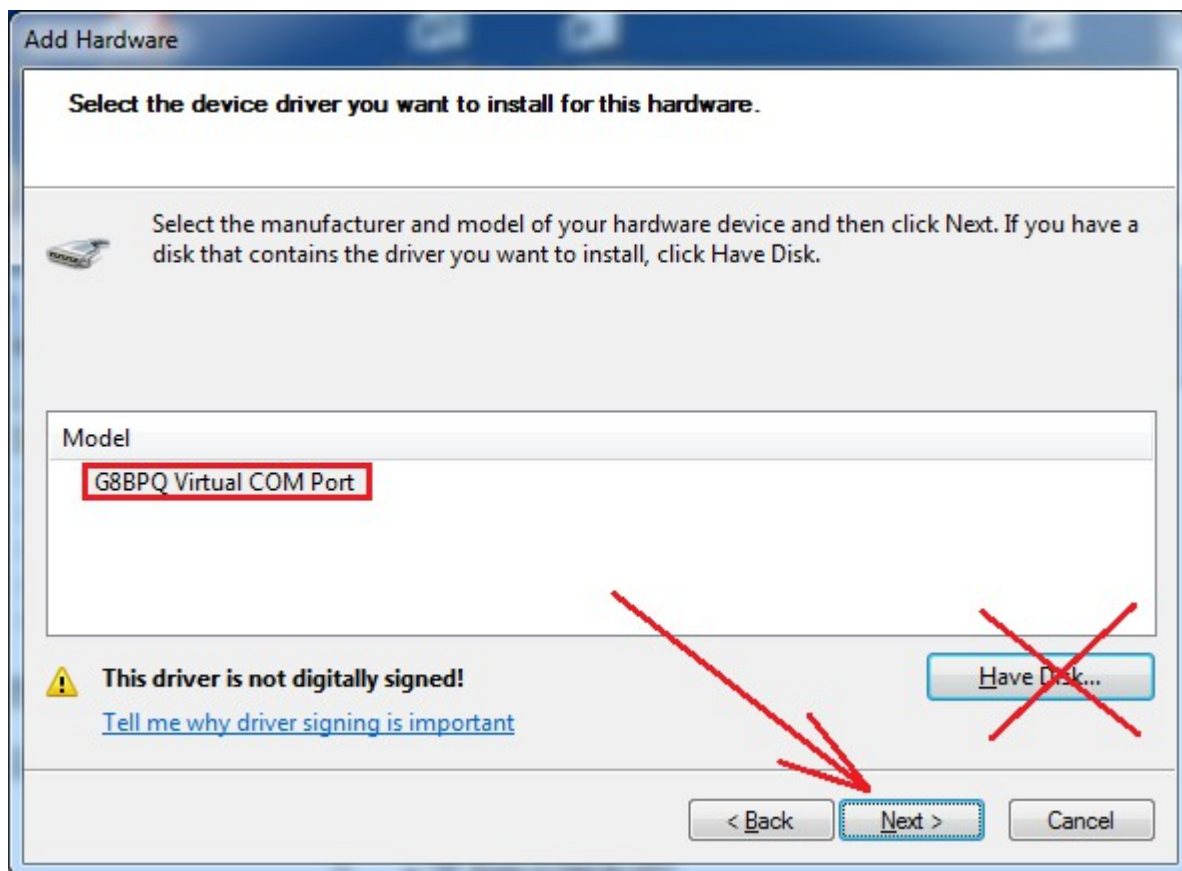


Now you should be seeing this window.

Do ***NOT*** click on “Have Disk...” in this window.

Verify that you see “G8BPQ Virtual COM Port” listed in the “Model” pane.

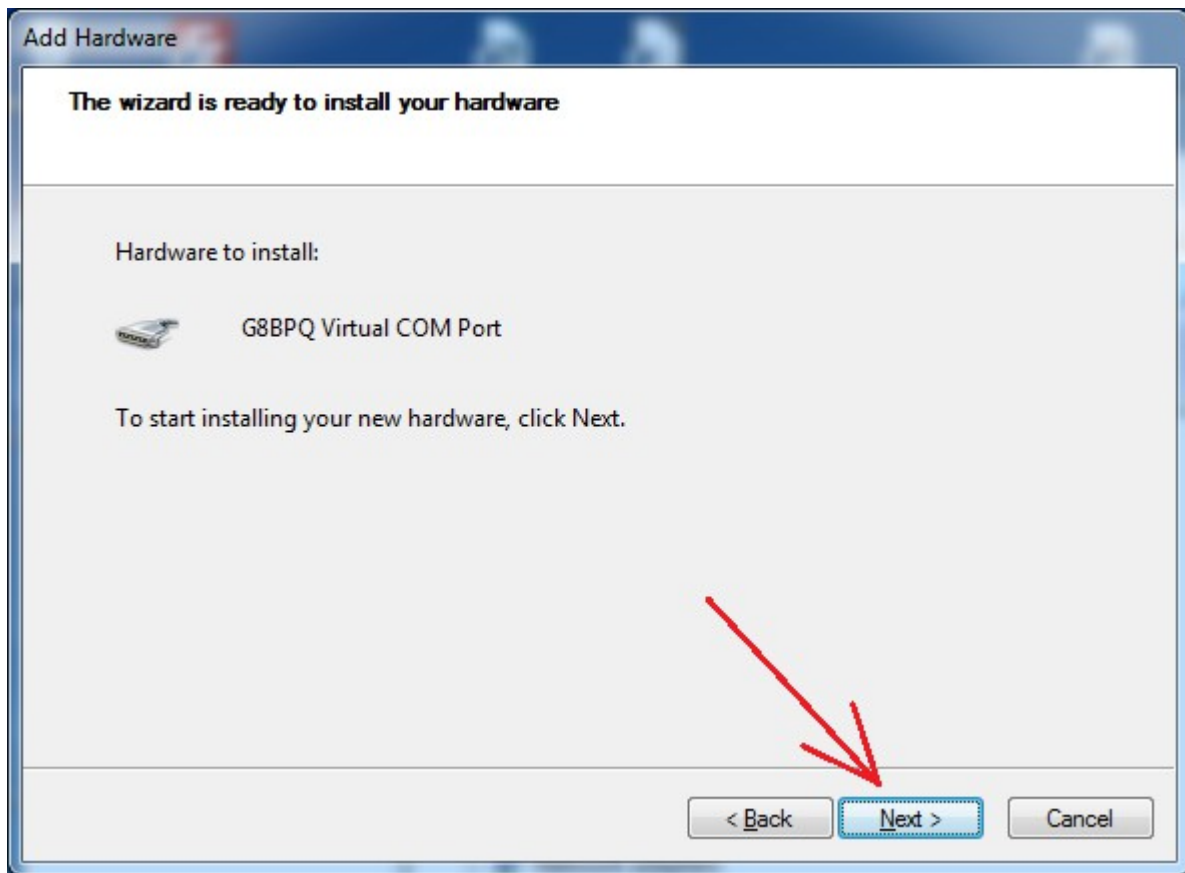
Then click “Next”.



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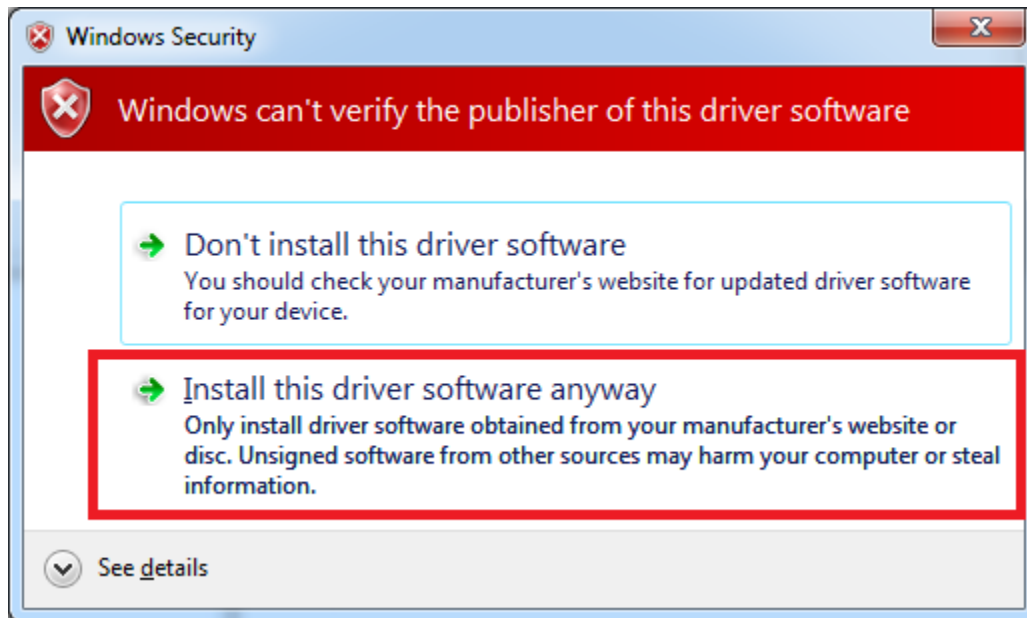
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You should now see this window. Look at it, and just click “Next”.



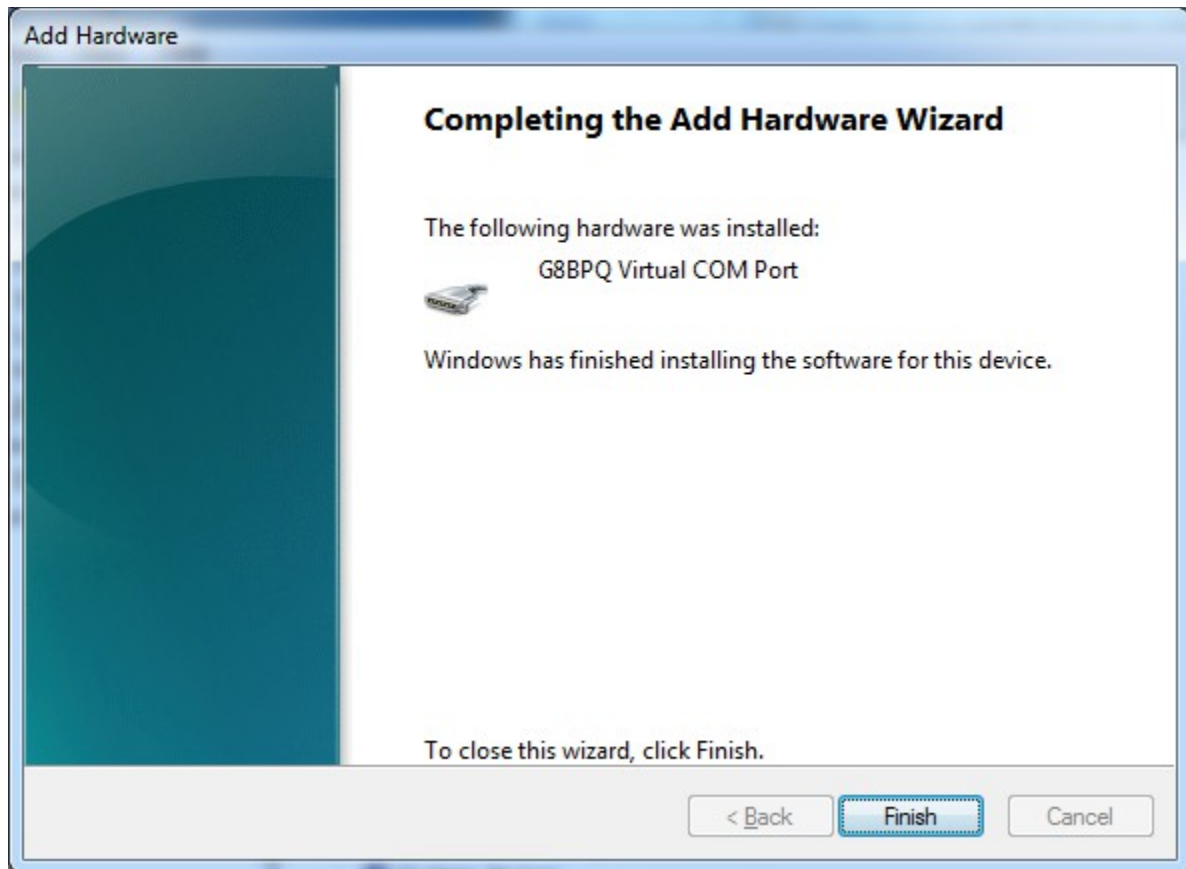
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You will now see this warning window. This is where many of us will squench our butt cheeks and take a pause. I chose to push past my natural fears and trust John's software. If you do not here choose to "Install this driver software anyway", then you will not be able to use this critical software, and thus be unable to key your transmitter over the USB port on the radio. Obviously, this is your call, your decision. I personally chose to push past my fear, and I have not looked back or regretted that decision.



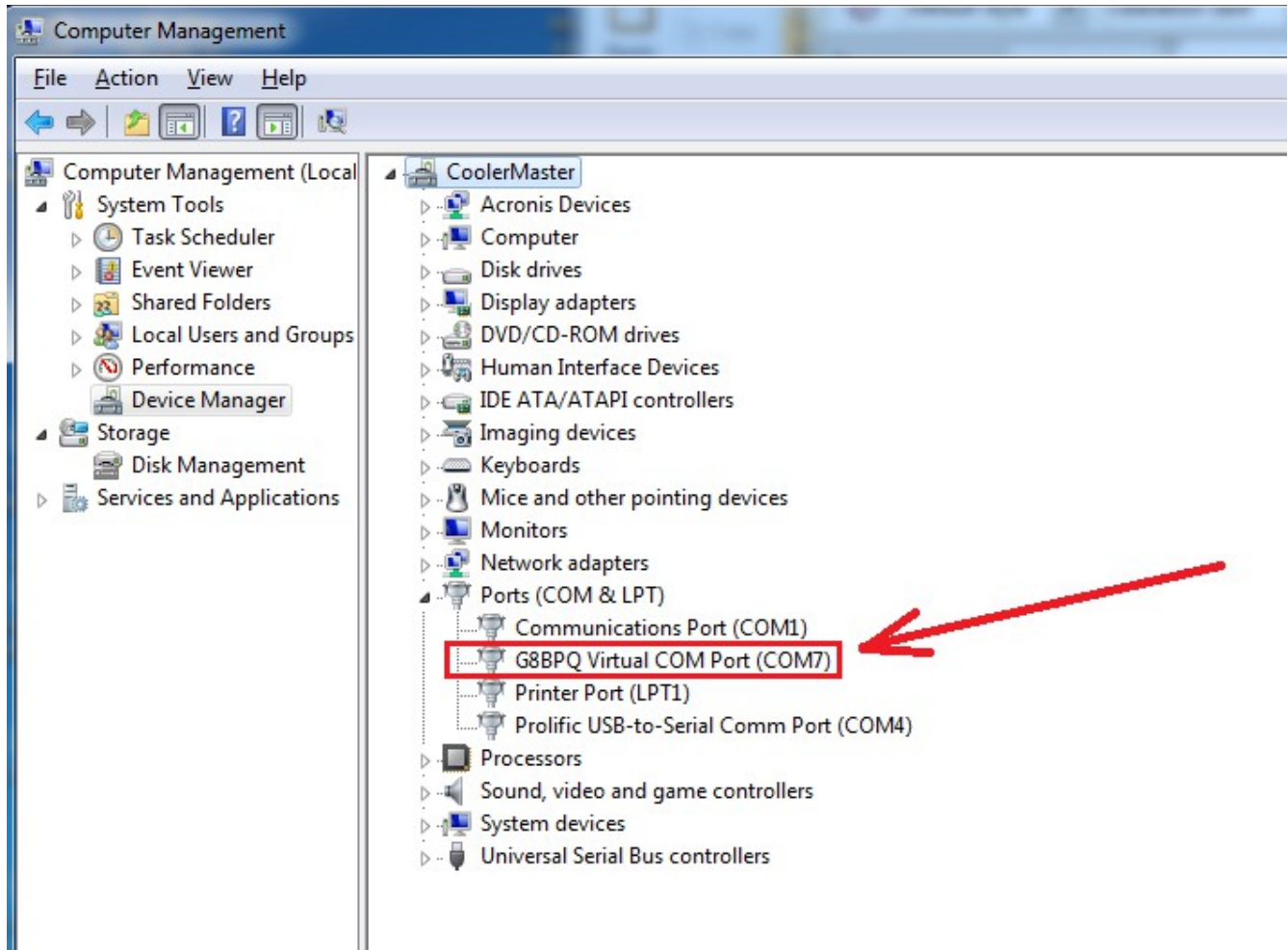
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If you chose to push forward from the previous screen, then you will see this window indicating success. Click “Finish”.



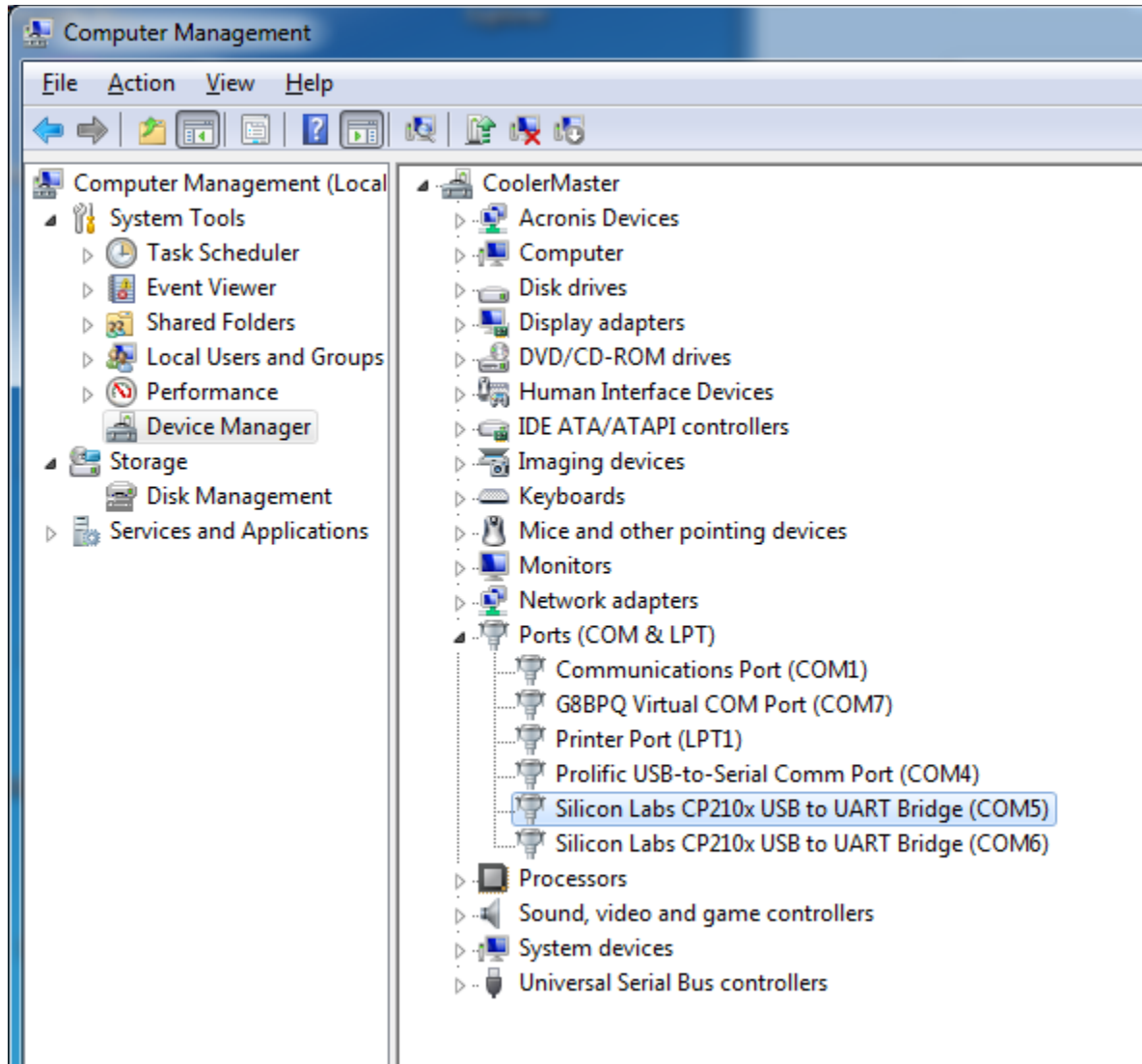
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If you kept your Device Manager window open, you will now see a new entry under “Ports (COM & LPT)” as indicated below. This is what the CAT7200.exe application program needs to have in place before it can function as needed.



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Here is another screen shot taken while the USB cable is connected. By the way, you will see the two radio virtual com ports showing up even if the radio is turned off. But if you disconnect the DC power to the radio, they will disappear just like they do with the USB cable disconnected.



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Ok... Now we're ready to configure the software to begin work together.

The screen shots are all taken on Windows 7 Pro.

Verify the following:

- USB cable connected between computer and radio.

- USB driver from ICOM installed, carefully following their instructions.

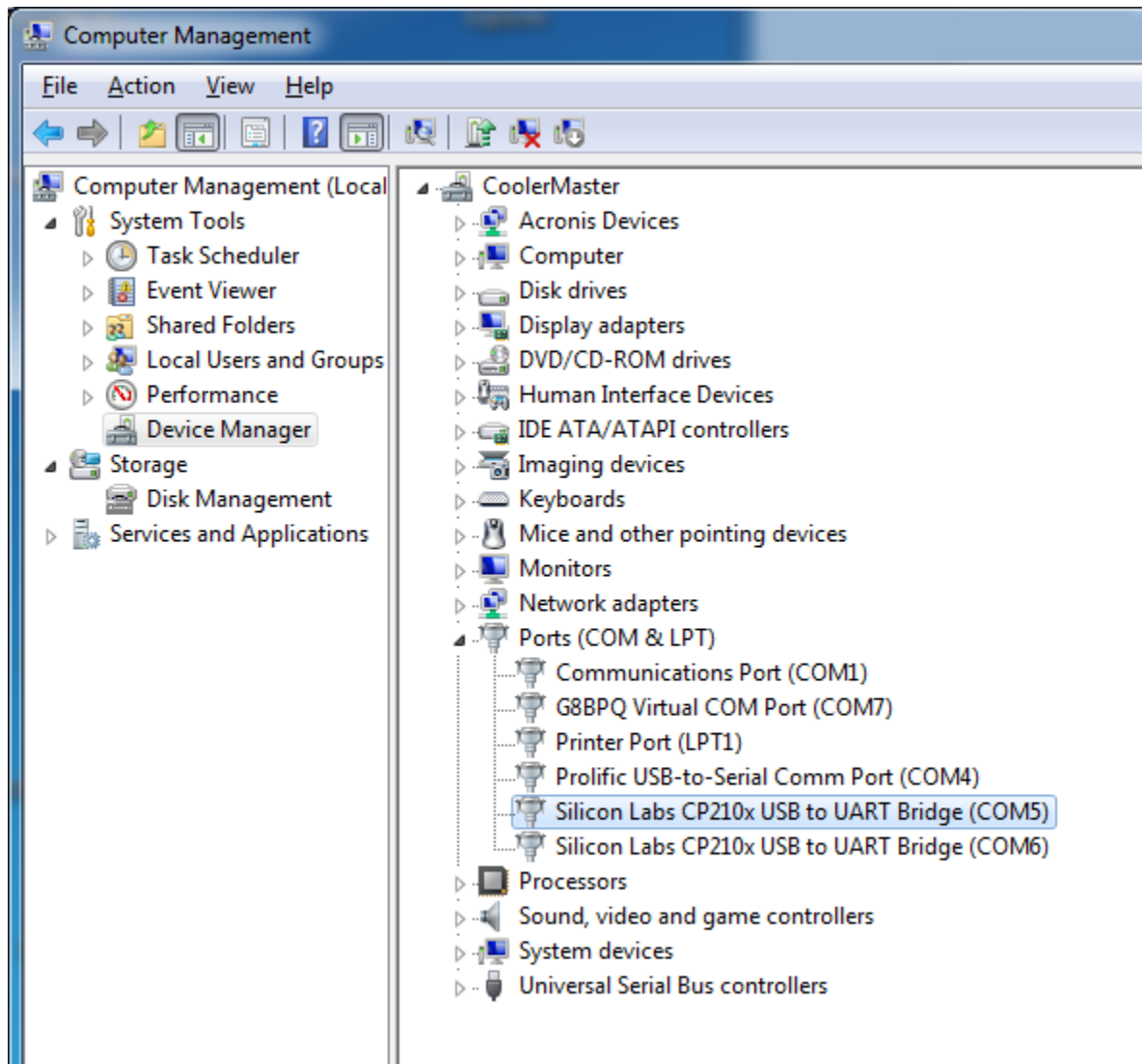
- DC Power connected to Icom IC-7100A, and radio turned on.

Open your “Device Manager” to gather needed information.

Click on Windows “Orb” at lower left corner of screen, then right-click on “Computer”, then click on “Manage”. Click on “Device Manager” under “System Tools”.

Expand “Ports (COM & LPT)”.

Now see this:



The two entries starting with “Silicon Labs CP210x....” are the two virtual serial ports within the IC-7100A. Your actual COM numbers will be sequential, but probably different actual numbers... here, you see COM5 and COM6. To be absolutely certain that you are choosing the correct com port on the radio, [***read this.***](#)

These two COM ports are the two virtual COM ports presented to your computer from the IC-7100A over the USB cable. Make note of those two COM numbers that are listed on your computer, because you will need them later in this set up procedure.

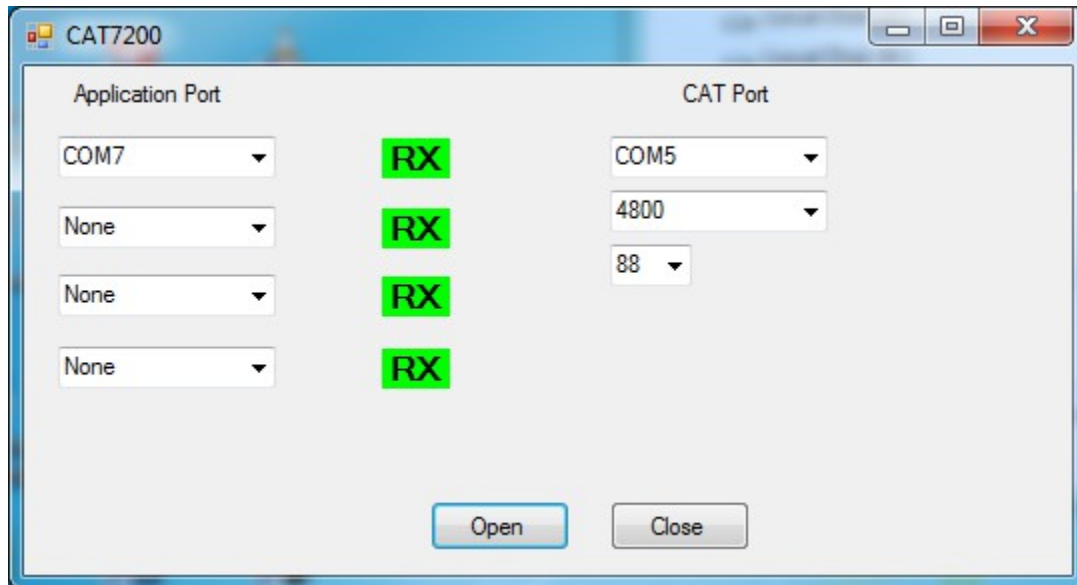
Also, while you are here, write down the com number associated with the G8BPQ Virtual COM Port.

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Using the CAT7200 application:

Run the “CAT7200” application program as “Administrator”.

So that I didn't have to always remember to run this application program as Administrator, I created a shortcut to it, and configured that shortcut to run this application as Administrator, and then put that shortcut on my desktop.



Under “Application Port”, you will only need one COM port, even though this CAT7200 program is capable of creating up to four COM ports, as evidenced by the four possible drop-downs under “Application Port”. Click on the drop-down and select the COM port number that you wrote down while gathering information in your “Device manager” associated with the G8BPQ Virtual COM Port. Later, you will use this very same com port number when configuring your TNC software's “PTT” COM port number. The two will need to match.

In case it is not already clear, the “Application” referenced here will turn out to be the UZ7HO software. And the “CAT Port” is the virtual com port presented over the USB cable by the radio.

Under “CAT Port”, click on the drop-down and select the COM port number associated with the FIRST COM port number as you discovered above in your computer's “Device Manager”.

In the second drop-down below that, choose a baud rate. The exact baud rate speed is not critical. What matters is that it is identical to the speed that you configured in your IC-7100A [at this earlier](#) point while configuring the settings in the radio.

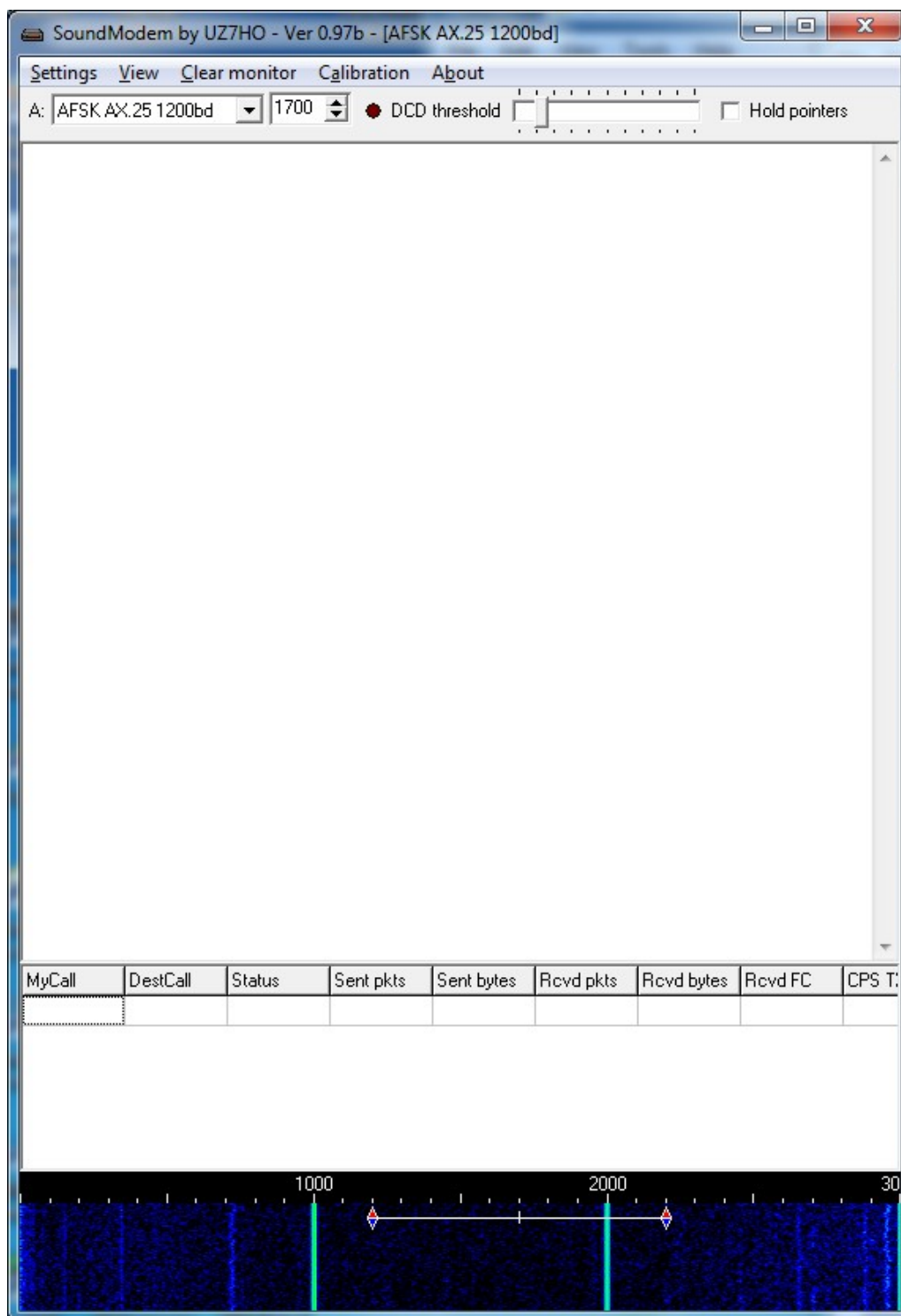
In the third drop-down box, choose “88”. This is the default which the IC-7100A is listening on. Note that the IC-7100A can be changed to something other than 88. That should not be necessary, but if done, this number needs to match exactly that as configured in the radio. If following this document, you would have configured this setting you your radio [here](#) .

Click “Open”..... You will see NO response of any kind, but clicking “Open” creates the needed virtual COM port that your TNC will be talking to.

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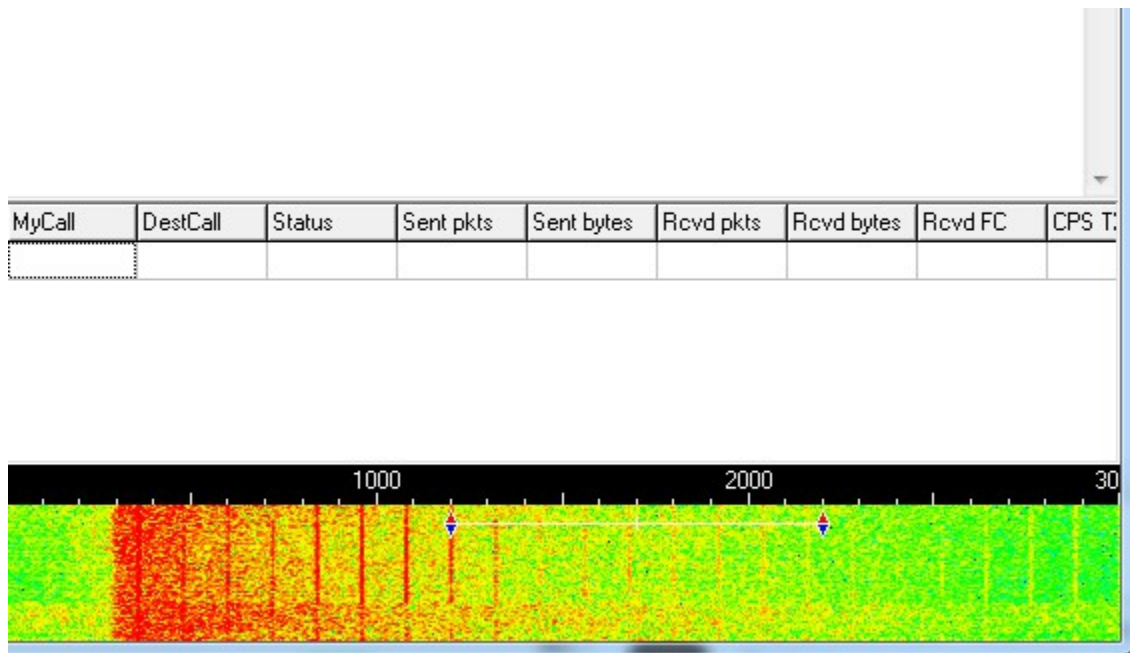
Now run your UZ7HO soundmodem.exe application program:



If your waterfall looks like this, then the UZ7HO software is not seeing the audio from the radio.

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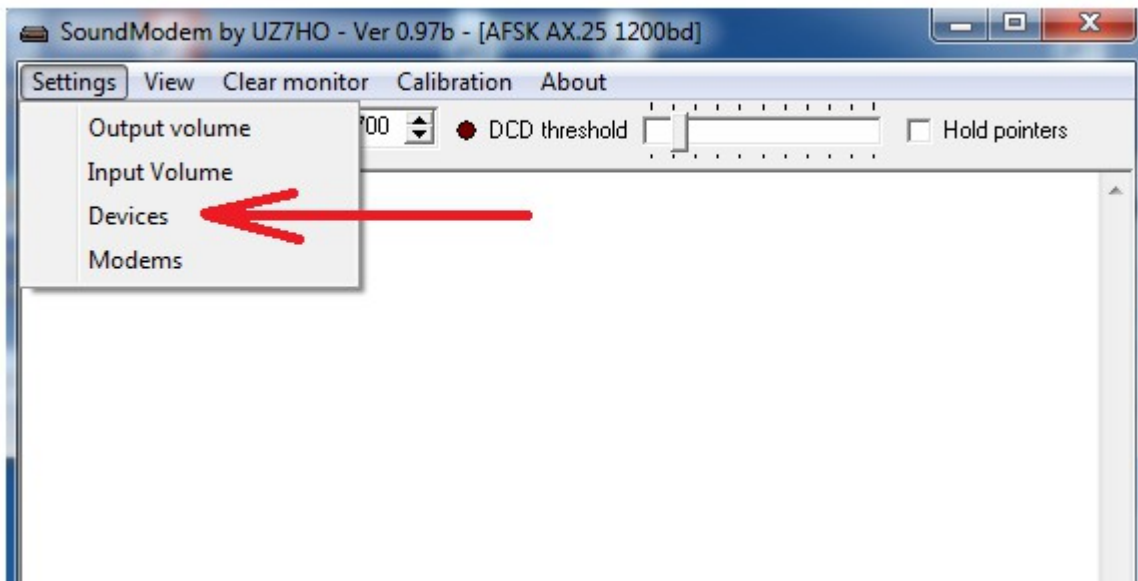
When the UZ7HO software is seeing the audio from the radio, it should look more like this:



Here's the UZ7HO set up to which this document is directed. There are numerous configurations in this software, but most will not be addressed in this write-up. (Primarily, because I don't yet know how!!) Here, I am only concerning myself with the fundamentals to get the radio sending and receiving packet data.

Leave all the settings untouched except the ones explained here, unless you want to venture out on your own with some of them.

At the top of the window, click on “Settings” and then click on “Devices”.



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The following window now opens (screen shot on next page):

Notice that there are three sections to this window: “Sound Card”, “Server setup”, and “PTT Port”.

In the “Sound Card” section:

For both the “Output device” and the “Input device”, click on their respective drop-downs and select the choice which has the phrase in it “USB Audio CODEC”.

Ensure these two checkboxes are checked, and no other settings disturbed:

Single channel output

Color waterfall

In the “Server setup” section, verify or set:

“AGWPE Server Port” is set to 8000 and “Enabled” is checked.

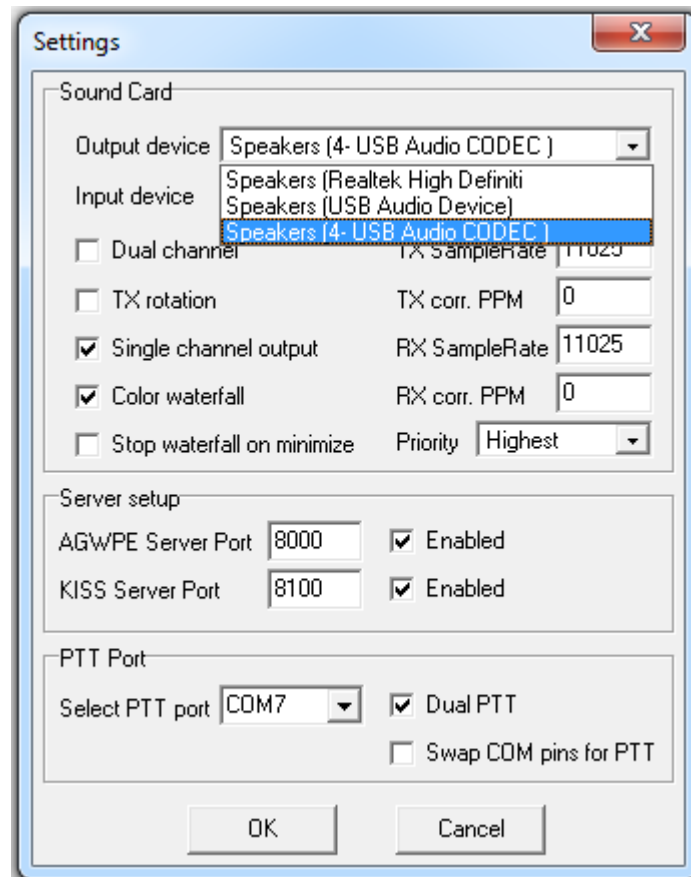
“KISS Server Port is set to 8100 and “Enabled” is checked.

In the “PTT Port” section:

Set “Select PTT port to the exact same port number as you set in the CAT7200 software under the “Application Port” heading. This is also the same COM port that you wrote down earlier while gathering information in your “Device Manager” associated with the G8BPQ Virtual COM port number.

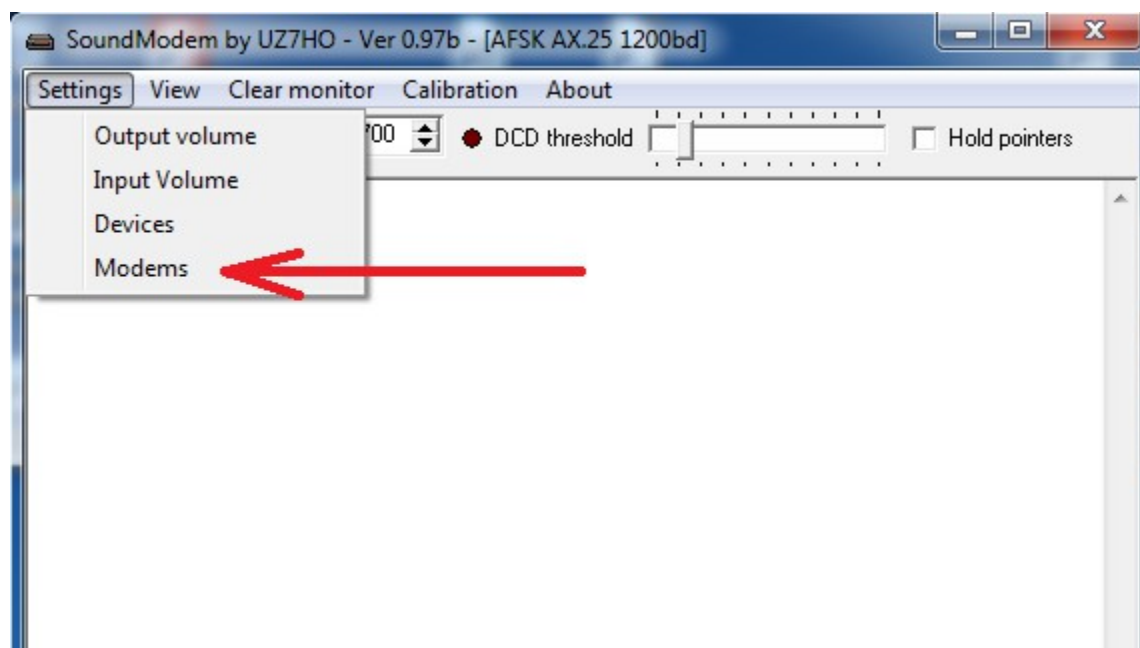
I have never disturbed the two check boxes in this section. I don't know what they do, but my system works with them set this way.

Click OK.



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Go back and click on “Settings” again.
This time, click on “Modems”.

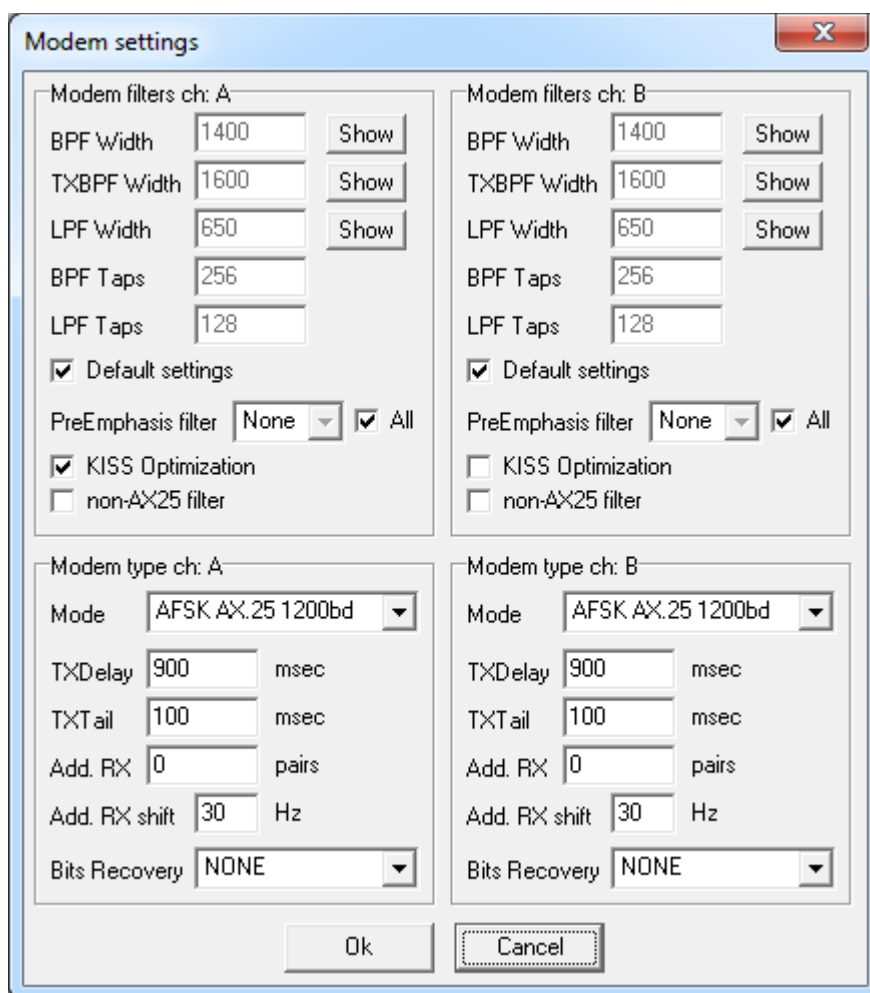


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Notice that there are four sections to this window. The two on the left side are associated with channel A, while the two on the right are associated with channel B. We have no channel B capability here, so you may just ignore those two.

Ensure that your settings are as you see them here, but I will draw your attention to two in specific. On the bottom-left section, labeled “Modem type ch:A”, click the drop down and choose “AFSK AX>25 1200bd”. This is your audio set up for 2 Meter operations. In that same section notice the setting for “TXDelay” is set to 900. This is not the default. I set this to 900 on advice of one of my mentors, and have not disturbed it since that time. If you wind up having issues with your data QSOs, this might be a setting that you could tweak and experiment with.

The use and meaning of most of the settings in this window are currently beyond my personal knowledge base. I have been previously coached by mentors in making the changes from the defaults, and I am simply passing them on here to hopefully help you get going with packet radio.



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And finally, let's get Winlink Express set up to work with all of this, so now launch that application.

Note, however, that whenever you want to use Winlink Express over the RF airways, you must open the other applications first, and in proper order:

First ensure that your radio is turned on and the USB cable is connected to the computer.

Then launch your CAT7200 software confirming previously configured COM port settings.

Then, launch the UZ7HO software and confirm the previously configured settings.

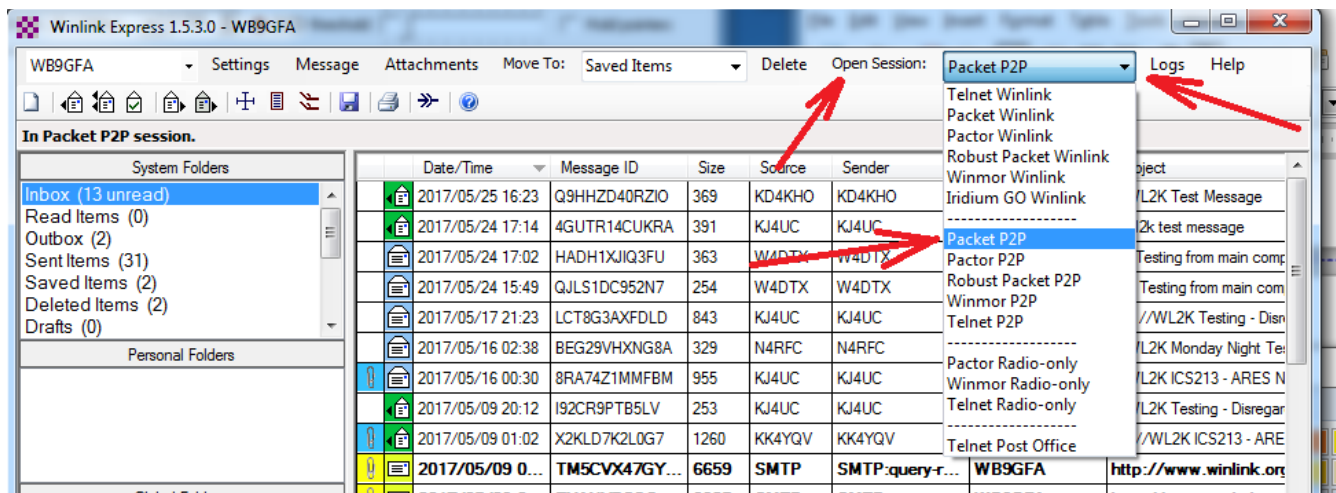
And lastly, launch Winlink Express.

I am only addressing the configurations of Winlink Express associated with using the UZ7HO TNC modem. If you are just now installing Winlink Express, then you have a bunch of other settings to configure also. Consult your local mentor(s) on that. I'm not sure I even remember how to do it from scratch.

Ok.... launch Winlink Express.

Click on the drop-down between "Open Session" and "Logs", and then click on "Packet P2P".

Then click on "Open Session". Note that "Open Session" does not look like a mouse button which can be clicked on.... but it is..... Click on the actual text of "Open Session".



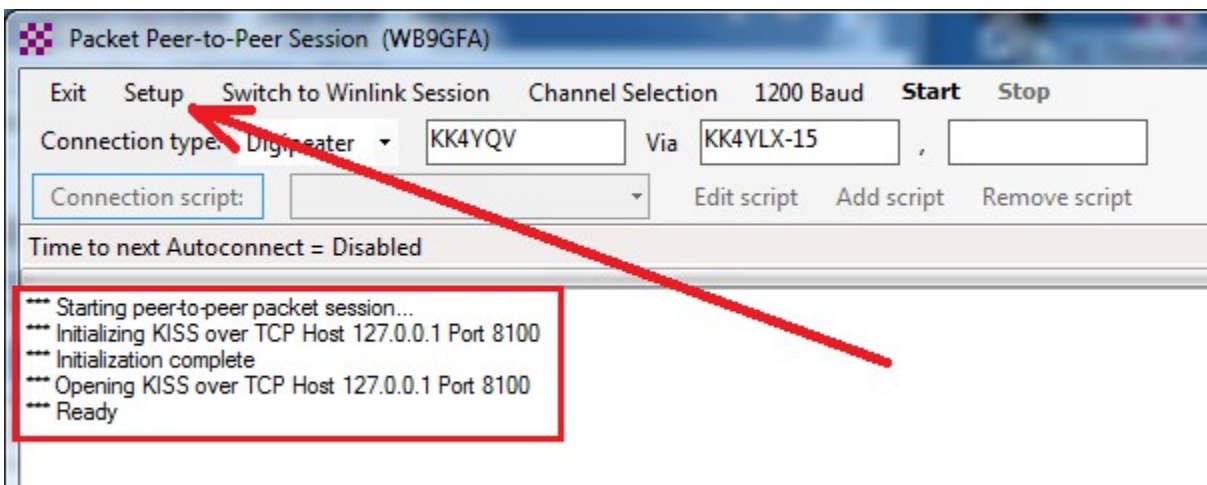
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You will then see this window.

You are probably not yet configured in Winlink Express, so you will probably not see the nice, warm, fuzzy information displayed here inside the red box.

So, click on “Setup”.



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When you click “Setup”, you will see this window.

Notice that there are two sections to this window, labeled “TNC Connection”, and “TNC Parameters”.

In the top section, ensure that your settings are made to look like these here. This is where you are setting up Winlink Express to send its data over to the UZ7HO software to be handled and sent on to your radio.

In the bottom section, ensure that the bullet is in “1200 Baud”. Otherwise, these are all default settings, as I recall, except for, again, the setting for “TX Delay (Milliseconds):”, which on advice of a mentor has been changed from the default to 900.

When you have made your settings to look like this, then click “Update”.

Packet Winlink/P2P Setup

TNC Connection

Packet TNC Type: **KISS**

Packet TNC Model: **ACKMODE**

Serial Port: **TCP**

TCP Host/Port: **127.0.0.1** **8100**

AutoConnect Time: **Disabled**

TNC Parameters

☒ **1200 Baud** ☐ **9600 Baud**

TX Delay (Milliseconds): **900**

Maximum Packet Length: **128**

Maximum Frames: **4**

Frack: **2**

Persistence: **160**

Slot time: **30**

Maximum Retries: **5**

Disable Xmt Level Adjust ☐

Transmit Level: **100**

Enable IPoll ☒

Update **Cancel**

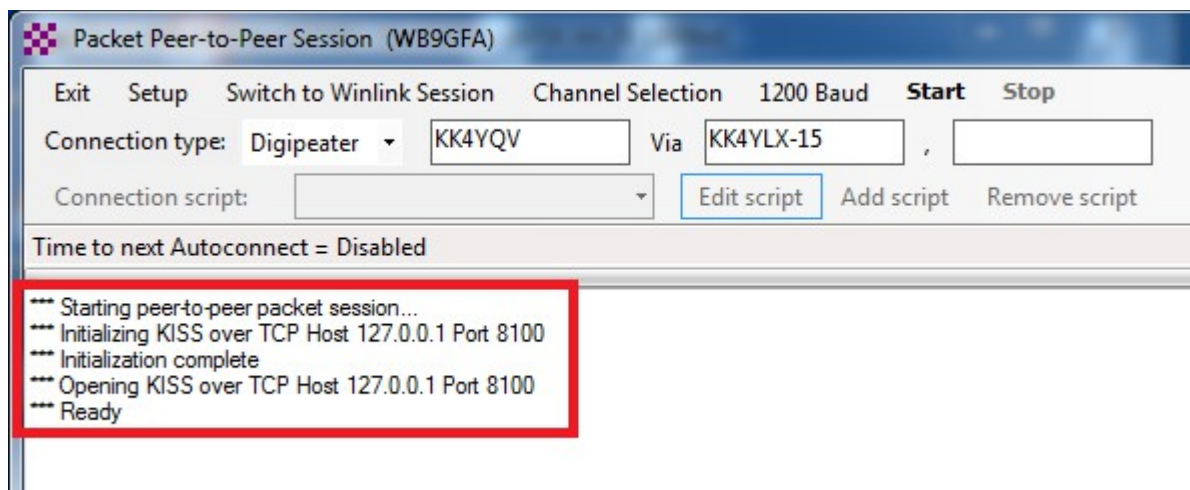
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You will then be returned to this window.

If all has gone well, you should now see the warm, fuzzy text as indicated in the red box this time.

If not, you need to go back through your steps to determine what's wrong.

The most common error that I make is when launching the CAT7200 software. I frequently forget to click on “Open” after launching it. It is a bit disconcerting there, because you can see absolutely nothing that has happened. But when you do click on “Open” the bridge between the UZ7HO software and your radio's PTT operation is activated. If you forget, you get no keyed transmitter, but yet the display of the UZ7HO software is indicating transmissions. There is no feedback to let the UZ7HO software know when the transmitter did not get keyed, so it just merrily goes about pushing audio toward your sound card.



Good luck to all. I truly hope this write-up is useful to somebody.

73's,

Stan

WB9GFA

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