Navigator Installation

1.0   Introduction & Planning

The installation and testing of the Navigator Interface involves several steps. These steps will be illustrated with screen shots taken from a PC during installation.   It is recommended that you follow the sequence of this procedure since some steps must be performed before others can be done.   These procedures are found on the Navigator Distribution CD, in the DOCS folder. The procedures are in .pdf format under the names shown below. Follow this sequence when setting up your Navigator.

<u>File Name</u> — <u>Procedure</u>

File Name	Procedure
NavIns1_Intro	Introduction and Planning your configuration
	Do's and Don'ts of USB Connected Devices
	Software COM Port Restrictions
	Recommended Port Assignments
	Inventory of Configuration
NavInst2_Driver	Driver Installation
	Installing the drivers
	Checking COM Assignments
	Re-assigning COM Ports if required
	Uninstalling Drivers
NavInst3_NavOpts	Navigator Options Installation
	Installing NavOpts
	Using NavOpts
NavInst4_MixWInst	MixW Installation
	Installing MixW
	Loading Olivia DLL
	Installing WinKey Config file in MixW DIR
NavInst5_MixWSetup	Setup of MixW
	CAT port setup and test
	Sound Settings
	BPSK Test
	RTTY Setup and Test
NavInst6_WinKeyTest	WinKey Setup and Test
	Using WKMGR to configure WinKey
	Using WinKey with MixW
NavInst7_MMTTYSetup	MMTTY Setup for Navigator
NavInst8_DM780Setup	HRD and DM780 Setup

This procedure may look daunting, but it is exactly what experienced users do as second nature. These detailed procedures are provided for hams who have not been through setup of an interface system on USB interfaced devices. Experienced hams will find the details they need to complete setup of not only MixW, and MMTTY, but other programs as well.

Most of these items require only a few minutes for configuration.   These detailed procedures are provided in individual files so that you can keep them on your screen

while performing the procedure. They can also be printed out on your printer if you need hard copy.

Note that much of the testing is done with the MixW software. A demonstration copy of this program is found on the Navigator Distribution CD, in the MixW folder. This copy is good for 15 days, after which you must register it. If you are not a registered user of MixW, and want to register it, follow the procedure in the MixW Help file file or go to http://www.mixw.net to buy and register your copy. If you are already a user of this program, you may use your existing copy, provided that it is version 2.18 (Feb 19 2007) or later.

1.1.1 DO's and DON'T's of Operating with USB connected interfaces.

Computers of the 21st century provide few if any serial ports built in to the computer. At the same time, most ham radio software for rig control, sound card driven modes, RTTY and CW modes is dependent upon the use of serial ports to interface to radio transceivers. Use of off the shelf USB / Serial converter devices for use with transceiver interfaces has met with mixed success – some converters work fine, others don't – especially in the area of FSK interfacing for RTTY operations.

The need for a stable solution to these conflicts between hardware and software, has led to the architecture and design of the Navigator Interface. This device provides a built in 4 channel USB hub, a USB Audio Codec, Serial Port converters, and microCPU controllers for FSK and CW. These are integrated into a single design to maintain compatibility with both the modern PC and existing software, while providing a stable hardware/firmware platform.

The use of USB connected devices does require some management on the part of the user. USB connections and device assignments are handled by the operating system by assigning virtual COM port numbers to the serial devices, and drivers for the audio codecs. There are a few things to keep in mind when configuring your system that will make your life much easier! These apply to all interface devices using USB as well as Navigator. Here they are:

- **DO - Know the assignments of devices in your computer, before you start installation**

- **DO - Know the COM port assignment limitations of the software that you want to use.** Some have limitations built in regarding the maximum port number that can be used.

- **DO - Re-assign COM port addresses for Navigator if necessary to maintain compatibility with your software**

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- **DON'T – Assign more than one device to a COM port. DO - Check that the operating system has not tried to do this to you.** The operating system will actually allow you to do this. In particular it will assign the same com port number to "real" COM ports and USB com ports. Knowing what your configuration is helps keep this from happening.

- **DON'T – Move the USB cable around to different physical ports on your computer, once you have configured the system. The operating system may try to move your port assignments when you do.** The physical bus location is part of the internal COM port assignment.

- **DON'T UNPLUG your USB cable while application software is running!** Most software does not handle this very well, and the system will run <u>very</u> slowly until you stop the operating program. Usually requires a reboot or turning off of power.   (Spoken from practical experience)

- **DON'T Assign USB ports to COM3 –** for some reason, COM3 can be grabbed by other programs, and even though it looks like it is free, when you go to use it, it will show up as "in use by another program" or is otherwise unavailable. If the operating system assigns this port, move it to another channel.

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1.2 COM Port Restrictions of Popular Ham Software

Many of the software programs used by hams for sound card, RTTY and CW modes have built in limitation of the maximum COM port number which can be used. A partial list of control programs are found in the table below. In general, if you use COM ports 8 and less, you can cover most if not all of the available programs. To do this, you must assign 4 of the 6 COM ports needed for Navigator to COM8 or less to cover all of these programs. The other two ports, the general purpose RS232 port, and the Configuration port can be above COM8, although Rotor controllers and TNC controllers connected to the RS232 port usually require COM numbers below 8.

Program	COM max	Comments
Digipan	COM9	Set PTT to <u>BOTH</u> RTS and DTR
DX4WIN	COM8	
Ham Radio Deluxe (HRD)	COM255	CAT control see PSK Deluxe and DM780 for other control COM port limitations .
DM780	COM255	Multi mode software companion to Ham Radio Deluxe
Log Windows	COM24	
MixW	COM19	CAT max COM31, other ports max COM19
MMTTY	COM8	MMTTY engine is used in many programs for RTTY
MMVARI	COM8	
MultiPSK	COM16	
N1MM Logger	COM8	
PSK Deluxe	COM8	Part of Ham Radio Deluxe
WinWarbler	COM8	
WinPSKse	COM8	COM4-8 available
WriteLog	COM8	4 ports required. Default is COM1-4, these can be reassigned using writelog.ini to change to other port numbers. Recommend moving these to COM5-8
NavOptions	COM255	Navigator Configuration Software
Navigator RS232	COM255	Navigator general purpose RS232 port
WK2MGR	COM12	WinKey2 Manager program, assign same COM port number as used by main program.

If your favorite software isn't listed above, check the PORT assignments in the SETUP section of your program to determine the COM ports required.

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1.2.1 Recommended COM Port Assignments

While the COM ports of Navigator can be assigned a COM port up to 255, software restrictions dictate that they should stay in the first 8 ports. Stay away from using COM1 through 3, since they may be taken up by "real" ports instead of USB assigned ones. The table below shows the assignments to cover as many ham control programs as possible.

Recommended COM Port Assignments

Navigator Function	COM Port	Comments
PTT, CW, Squelch	COM5	PTT control, CW if done by software, Squelch input
WinKey Controller	COM6	CW Using the WinKey Controller
FSK Controller	COM7	RTTY using native FSK instead of AFSK
CAT Control	COM8	Rig Control
Gen Purpose RS232 Port	COM4	Rotor control and TNC generally in first 8 COM ports
NavOptions	COM12	OK to move elsewhere that doesn't conflict with above assignments

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1.3 Inventory of Configuration Prior to Installation of Navigator

Here is the way to find the current port assignment configuration of your computer. Go to Device Manager on your PC as shown in the screen shots below:

Click Start, right click on My Computer, click on Properties – This will bring up the first "System Properties Screen" Click on the "Hardware" tab	Next, Click on Device Manager

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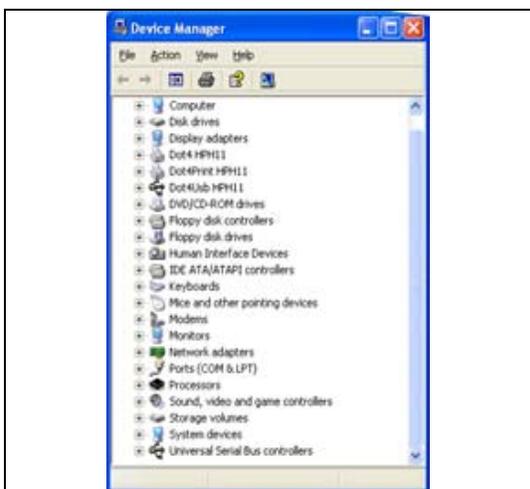
Click on Ports (COM & LPT)	This screen shows that there are two COM port assigned (COM1 and COM5). (The Prolific Converter on COM5 is a general purpose adapter, installed in this computer. It is NOT part of the Navigator system.) Write down the COM ports assigned on your computer.
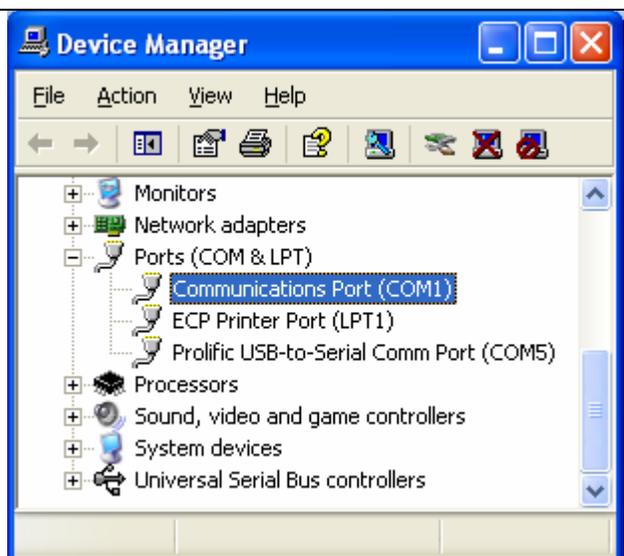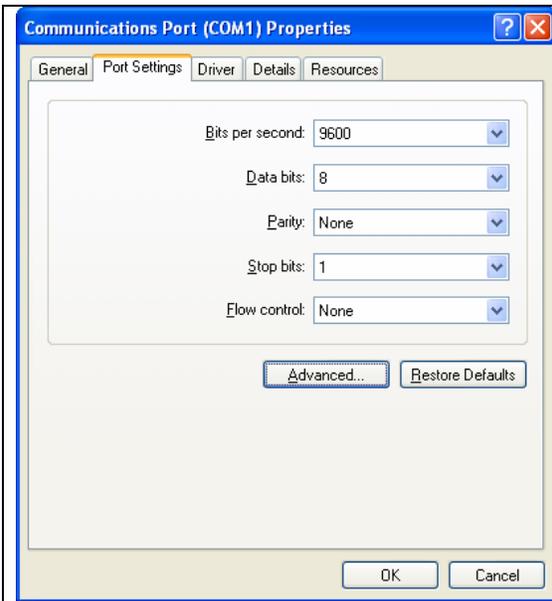
Double Click on the COM1 entry, then click the "Port Settings" Tab and then Click on "Advanced Settings"	On the "Advanced Settings" screen, click on the dropdown menu for COM Port Number. This shows that there are three COM ports "In Use" besides the COM1 currently assigned. Note that only COM5 appeared in the Ports Display of Device Manager. The other two, COM3 and COM4 are shown "In Use" because they have been previously assigned as USB ports, but are not currently plugged in. These COM ports are "reserved" by the operating system, and the Prolific Serial Port was given the next assignment available. When Navigator is installed in this machine, ports will most likely be assigned starting with COM6. Write down all of the "In Use" assignments as well as the ones currently on the machine.
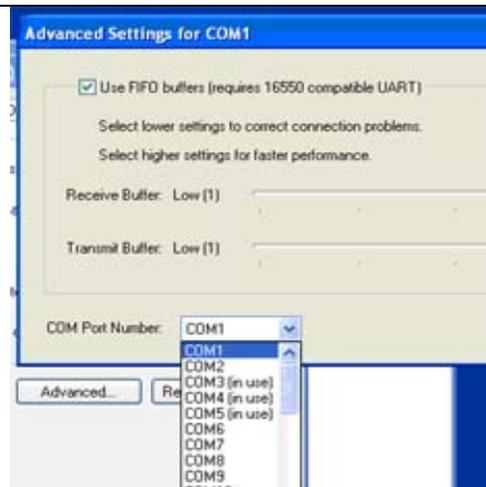
The recommended COM port assignments for Navigator use ports 5 – 8 plus two other ports above COM8. The Prolific Converter is currently assigned to COM5. It should be moved to another slot to free up COM5. The procedure for re-assigning COM devices is covered in section 2 – Driver Installation.

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After the other USB / Serial Converter has been moved to COM2, the desired configuration with Navigator connected will look like the table below. During the driver installation process, you may have to move the ports assigned by the operating system to match these assignments.

Note: After your configuration is complete, if you disconnect the Navigator, the "In Use" reservations for COM5 through COM9 will stay in effect, reserving these ports for Navigator. When you plug in the USB cable again, they will return to these assignments.

PORT ASSIGNMENTS for EXAMPLE COMPUTER

PORT	ACTIVE	IN USE (Reserved)	DEVICE
COM1	√		Computer Serial Port
COM2	√	√	Prolific USB / Serial Converter (moved from COM5)
COM3		√	Unknown, but reserved by operating system
COM4		√	Unknown, but reserved by operating system
COM5	√	√	Navigator PTT
COM6	√	√	Navigator WinKey CW
COM7	√	√	Navigator FSK Controller
COM8	√	√	Navigator CAT Controller
COM9	√	√	Navigator General Purpose RS232 Controller
COM10			
COM11			
COM12	√	√	Navigator Configuration - NavOptions
COM13			
COM14			
COM15			

A blank copy of this form is on the next page, for your use when configuring your system. Print out a copy of the next page.

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PORT ASSIGNMENTS of YOUR INSTALLATION

PORT	ACTIVE	IN USE	DEVICE
COM1			
COM2			
COM3			
COM4			
COM5			
COM6			
COM7			
COM8			
COM9			
COM10			
COM11			
COM12			
COM13			
COM14			
COM15			