

Navigator Installation

WinKey2 Controller Setup and Testing

The CW controller for Navigator is the K1EL, WinKey2 v21 keyer. In Section 5, when you installed Navigator on your PC, you defined the COM port for this function. You should have also installed the overlay of the WinKey config file into the MixW directory. If you did not install the overlay, install it per the instructions in Section 4.

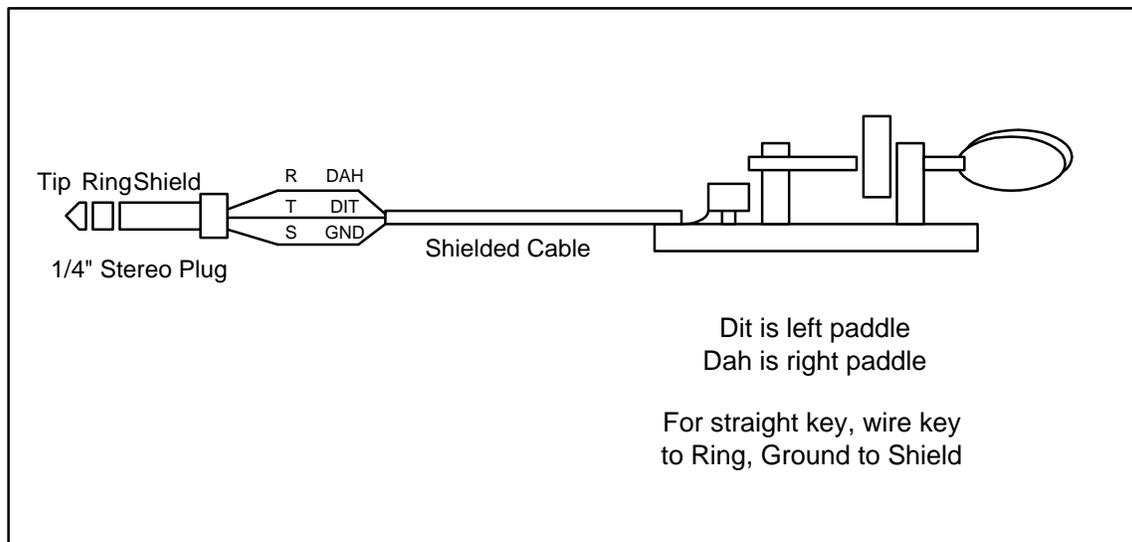
This section deals with the many options available on WinKey. The WK2MGR utility program is provided by K1EL setup the keyer for your application.

WK2MGR is on your Navigator CD ROM, in the WinKey\Apps directory. Click on wk2mgr_setup icon. This will install the program in your machine.

Before performing the following setup and test, either turn your rig off, or disconnect the rig control cable between Navigator and your transceiver.

Wiring your paddle / key for Navigator.

Below is the recommended wiring for your paddle for use with Navigator. If your paddle is already wired, and DIT and DAH are reversed, you can correct for polarity with the SWAP option in the WK2MGR program.

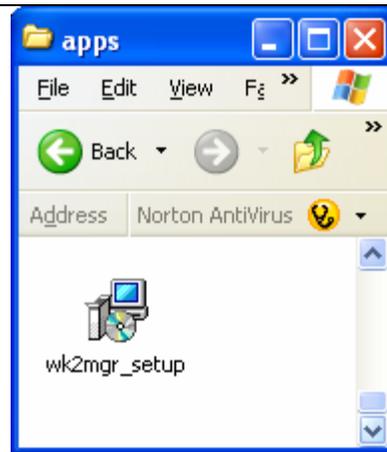


Navigator Installation

Install the WK2MGR program on your computer

Click on the wk2mgr_setup icon. Follow the setup instructions to install WK2MGR on your computer.

Start the program from All Programs on your PC Start Menu.



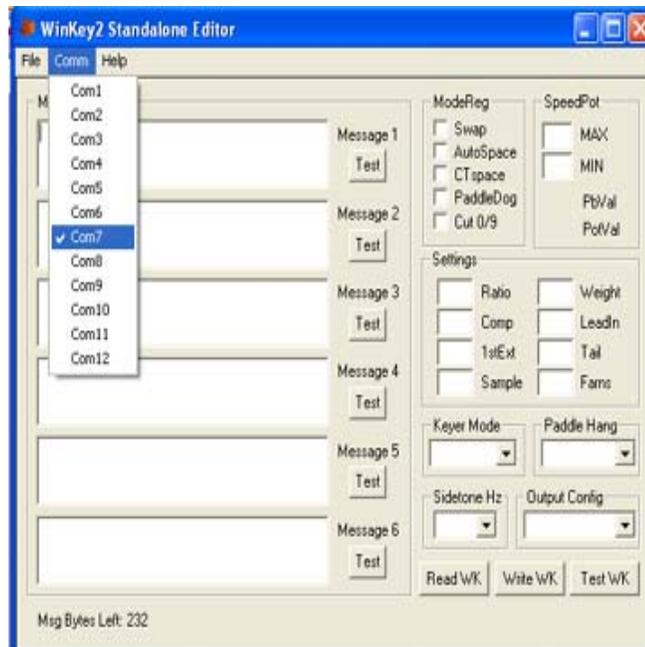
This will bring up an empty editor panel.

Click on the Comm menu at the top of the panel and select the COM port of the Navigator WinKey function. See Section 2 of the manual if you need to review COM assignments.

Next Click on “Test WK” – this will perform a self test of the controller. If you get a response of “WK OK”, then continue on to the next step of the procedure.

If the result is “WK Fail:no echo WK NG” you have selected the wrong COM port.

If the result is “WK Fail:commopen WK NG” and the COM is properly selected, you have another program (like MixW) running which has opened the port and is using it. Close the other program.



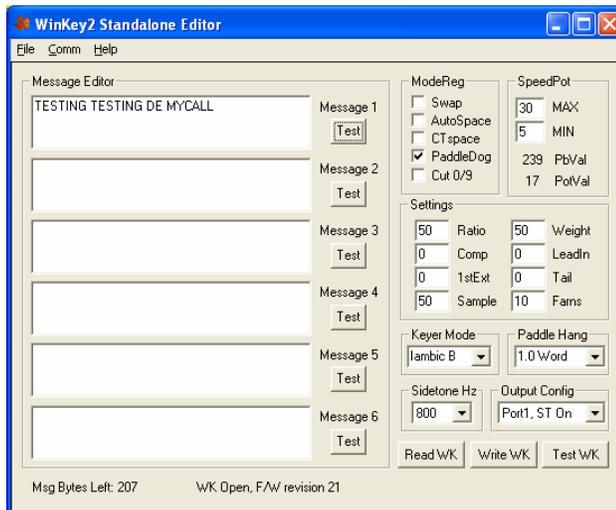
Navigator Installation

Now click on “Read WK”

You should now see a screen similar to the one on the right.

At the bottom, it should say “WKOpen, F/W version 21” (or later).

Enter something in Message 1. Click on Write WK – this saves the message to WinKey2. Then click on “Message 1 Test”. You should hear CW coming from the Navigator audio monitor.



Connect your paddle, and key some CW - you should hear it from the monitor.

If you do not hear the monitor, set your Output Config value to:

“Port1, ST On”

and Click on “Write WK” to save it to the keyer. On the Navigator, adjust the “CW WPM” pot to set the speed, and adjust “Monitor” to set the volume level.

You now have a working Navigator - WinKey system. If you want to make changes to any of the settings, be sure and click Write WK to save the values in the EEPROM memory of the WinKey2 controller.

A review of controls on WK2MGR screen follows. These descriptions were extracted, with permission from K1EL, from the document “Winkeyer2 CW Keyer for Windows”. A copy of that document is on your Navigator CDROM in the WinKey/Docs directory. Also, see the WK2MGR help file for further descriptions of the options and features of this controller. The K1EL document is geared for users who want to write programs to use their controller. The following description is geared for users who use application

Navigator Installation

software like Writelog, or MixW or others to operate CW mode. WK2MGR is used to setup and fine tune options for the keyer.

WK2MGR Option Selection

ModeReg

Swap - Paddle swap: Reverses the dit dah sense of the paddles. This is a nice feature to have when right and left handed ops want to share the same keyer.

AutoSpace - Here is how autospace works: If you pause for more than one dit time between a dit or dah Winkeyer2 will interpret this as a letter-space and will not send the next dit or dah until full letter-space time has been met. The normal letter-space is 3 dit spaces. Winkeyer2 has a paddle event memory so that you can enter dits or dahs during the inter-letter space and Winkeyer2 will send them as they were entered. With a little practice, autospace will help you to send near perfect Morse.

CT Space – Contest Space: Reduces the wordspace time by one dit. Instead of 7 dits per wordspace, Contest spacing selects six dits per wordspace.

PaddleDog – Watchdog counter on continuous paddle input. The paddle watchdog counter will disable the key output after 128 consecutive dits or dahs. This is to guard against the paddles being accidentally keyed continuously. By default the paddle watchdog is on but it can be turned off by un-checking this control.

Cut 0/9 – This feature only applies to standalone operations, not to computer interactive modes. It converts T for 0 and N for 9.

Speed Pot

Note: When using the MixW program, these values are over ridden by values set in the WinKey config file. See the discussion of the use of this file later in this document. Do use the WK2MGR program to set the speed range for most other control programs.

Max – Sets the Maximum WPM for the Navigator CW WPM control.

Min – Sets the minimum WPM for the Navigator CW WPM control.

PbVal - This value applies only to the standalone USB WinKey2 keyer from K1EL, not to the Navigator implementation. On the standalone keyer, there are pushbuttons used for selecting which message to send. This value can be ignored in the Navigator application.

PotVal – Pot value in WPM at the time that Read WK was performed.

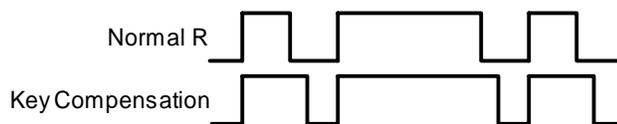
Navigator Installation

Settings

Ratio – Sets the **Dit/Dah Ratio**, where the value is in the range of 33-66. A value of 50 sets the standard 1:3 ratio. The min. value of 33 sets the ratio to 1:2, the max. value of 66 sets the ratio to 2:4.

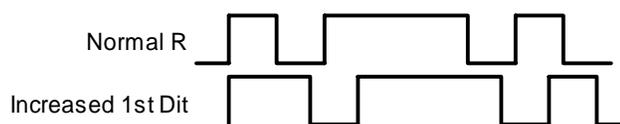
Comp – Keying Compensation allows a fixed amount of time, (nn) to be added to the length of all dits and dahs. QSK keying on modern transceivers can cause shortening of these elements which is especially noticeable at high speeds. WK2 allows the length of the elements to be increased uniformly to compensate for this. The adjustments can be made in one-millisecond steps. The maximum adjustment is 31 mSecs. Key compensation is very similar to Weighting in that any adjustment added to the dits and dahs is subtracted from the spacing so the resulting speed is not changed. The difference between weighting and keying compensation is that compensation is independent of speed, so if 10 mSec of key compensation is selected, 10 mSec will be always be added regardless of speed. So be careful at high speeds with large values of keying compensation, dits and dahs may run together with no spacing at all.

When nn = 00 there is no adjustment while nn=12 will add twelve mSecs.



1st Ext – Winkeyer2 addresses a problem often encountered when keying older transceivers that have a slow break-in response. Due to a slow receive to transmit changeover time, the first dit or dah of a letter sequence can be chopped and reduced in length. Adding a fixed amount to the first element of a sequence can compensate for this. For example, an R would be sent with the first dit elongated but the subsequent dah-dit sent normally. The compensation amount is transceiver dependent and is generally independent of sending speed. Note though that this is usually only a noticeable problem at higher CW speeds >25 WPM.

A challenge in this scheme is to determine when sending has stopped long enough to cause the transceiver to switch back to receive. If it has it'll require a new first element correction on the next sequence. Winkeyer2 uses the PTT tail timer to determine this, set the tail timer to roughly match the transmit to receive changeover time of the transceiver and things will work fine. It takes some trial and error to get it set up right so make sure you preserve the value and load it as a defaults after reset.



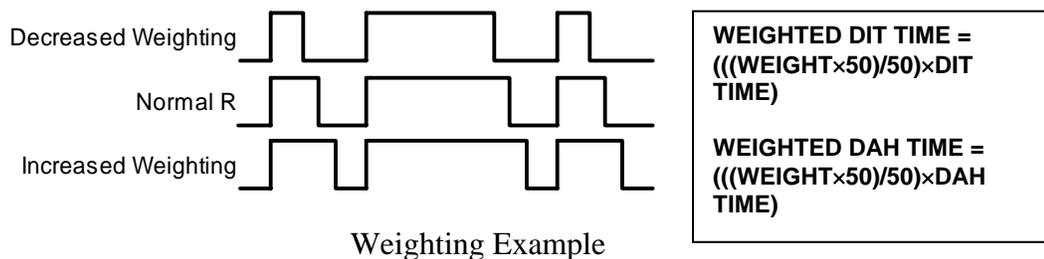
Navigator Installation

Sample – Sample adjust / paddle sensitivity. This controls when Winkeyer2 will start looking for a new paddle press after sensing the current one. If there is not enough delay the keyer will send unwanted dits or dahs, if there is too much delay it bogs you down because you can't get ahead of the keyer. The default value is one dit time (50) and is adjustable in percent of a dit time. Faster operators report a setting somewhat less than default is more pleasing. The delay is calculated with this formula:

$$\text{DELAY_TIME} = (\text{SWITCHPOINT} \times \text{DIT_TIME}) / 50 \text{ where}$$

Switchpoint is a value between 10 and 90.

Weight – This setting allows a proportional amount to be either added or subtracted from the length of all dits and dahs sent. A value of 50 selects no weighting adjustment. Values less than 50 reduce weighting and values greater than 50 increase weighting. Note that weighting does not affect sending speed because any increase in keyed time is subtracted from spacing time. Reduction in weighting results in a thinner sounding keying while increased weighting results in a heavier sound. Since weighting tracks speed, a given weighting will sound the same at all speeds.

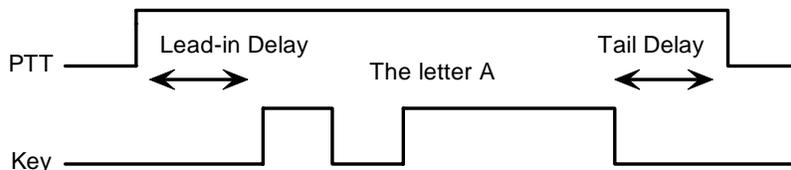


Leadin and Tail - PTT is normally not used with your transceiver CW operations except when an external amplifier is used with the transceiver. These two settings allow the amplifier to be turned on prior to keying, and to stay on after keying has ended.

Winkeyer2 controls the PTT output that can be used to switch a transmitter or linear amplifier over to transmit mode in advance of actual CW keying. You have control over the time delay between when PTT is asserted and when CW keying will start, this is lead-in. You also have control over how long the transmitter will stay in transmit after keying has stopped; this is the tail delay.

When this function is used, the PTT output from Navigator may need to be disconnected from the transceiver, and connected to the linear amplifier instead. This is because most rigs will key if in CW mode and a PTT is issued.

Navigator Installation



PTT Lead-in and Tail Example

Farns – Farnsworth: value in WPM, in the range of **nn** = 0, or 10-99. Farnsworth spacing is useful for CW practice because it encourages you to learn characters by sound not individual dits and dahs. In Winkeyer2, Farnsworth is implemented by sending letters at a fixed rate of **nn** WPM regardless what the WPM sending rate is. Spacing between characters is determined by the sending rate. When the WPM rate is set above the Farnsworth WPM, Farnsworth is automatically disabled. A setting of 0 disables the Farnsworth feature.

Note: Farnsworth is not implemented in the MixW software. Keying rate of computer output follows the setting of WPM, and ignores Farnsworth setting. Keying rate of paddle input has a minimum of the Farnsworth setting, and ignores any speed settings below Farnsworth.

Other application software does allow the use of the Farnsworth setting.

Keyer Mode - There are six different keying modes supported by WK2:

Iambic mode A and B

In either Iambic mode, alternating dits and dahs are sent while both paddles are held closed. In mode B an extra alternate dit or dah is sent after both paddles are released

Ultimatic

In Ultimatic mode when both paddles are pressed the keyer will send a continuous stream of whichever paddle was last pressed

Ultimatic Dit

If both paddles are pressed, dit has priority.

Ultimatic

If both paddles are pressed, dah has priority

Vibrobug

Bug mode directly keys with the dah paddle and generates dits automatically when the dit paddle is pressed.

Notes:

Straight Key – use the Vibrobug mode, and wire your key to the DAH connection on the KEY jack on the back of Navigator. For right handed operators, DAH is the RING connection on a stereo ¼” plug. See the drawing for paddle / key wiring at the beginning of this document.

Swapping sense of Dit and Dah – check the “Swap” option in the ModeReg group.

Navigator Installation

Paddle Hang – Sets the transmit PTT hang delay time. You can select one of four delays:

HangTime = 0 Wait 1.0 wordspace before ending paddle insertion

HangTime = 1 Wait 1.33 wordspace before ending paddle insertion

HangTime = 2 Wait 1.66 wordspace before ending paddle insertion

HangTime = 3 Wait 2.0 wordspace before ending paddle insertion

Sidetone Hz - This value sets the audio frequency of the CW sidetone heard in the Navigator Monitor. Selection is one of: 4000, 2000, 1333, 1000, 800, 666, 571, 500, 440, and 400 Hz. The CW sidetone is enabled or disabled in the Output Config option.

Output Config – Select Port, Sidetone, and PTT. Select one of the following:

Port1 - Port 1, no Sidetone, no PTT

Port1, ST Port 1, Sidetone but no PTT

Port1, PTT - Port 1, no Sidetone, PTT

Port1, ST, PTT - Port 1, Sidetone and PTT

Note: Only use Port 1 with Navigator, Port 2 is not connected. If Port 2 is selected, you will hear side tone, but no CW keying will occur.

Read WK - Reads the configuration from EEPROM of the WinKey2 controller.

Write WK - Writes any changes made back to the WinKey2. This must be done before they will be active.

Test WK - Performs a self test of the WinKey2.

- A result of WK OK means the test was successful.

- A result of WK NG means the test failed.

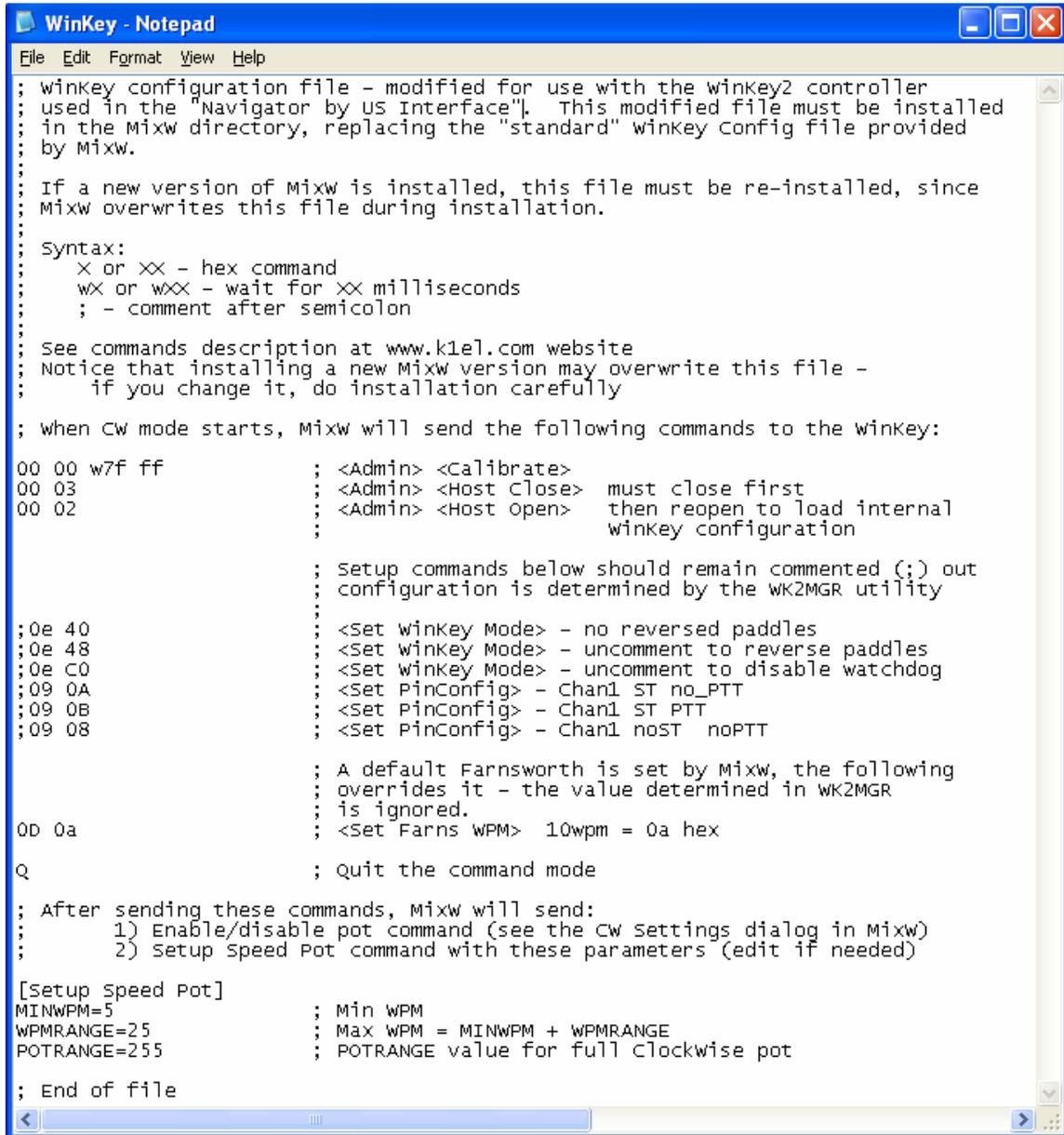
It the result is “WK Fail:no echo WK NG” – you have selected the wrong COM port.

If the result is “WK Fail:commopen WK NG” - and the COM is properly selected, you have another program (like MixW) running which has opened the port and is using it. Close the other program.

Navigator Installation

WinKey Configuration File in MixW

The MixW program has a configuration file in it's directory, which performs certain functions necessary to the operation of WinKey2 controller. A copy of the file which you installed in the MixW directory in Section 4 is shown below. **Remember to re-install this file if a new version of MixW is installed.**



```
; winkey configuration file - modified for use with the winkey2 controller
; used in the "Navigator by US Interface". This modified file must be installed
; in the Mixw directory, replacing the "standard" winkey config file provided
; by Mixw.
;
; If a new version of Mixw is installed, this file must be re-installed, since
; Mixw overwrites this file during installation.
;
; Syntax:
; X or XX - hex command
; wx or wXX - wait for XX milliseconds
; ; - comment after semicolon
;
; See commands description at www.k1el.com website
; Notice that installing a new Mixw version may overwrite this file -
; if you change it, do installation carefully
;
; when CW mode starts, Mixw will send the following commands to the winkey:
00 00 w7f ff ; <Admin> <Calibrate>
00 03 ; <Admin> <Host Close> must close first
00 02 ; <Admin> <Host Open> then reopen to load internal
; winkey configuration
;
; Setup commands below should remain commented (;) out
; configuration is determined by the WK2MGR utility
;
;0e 40 ; <Set winkey Mode> - no reversed paddles
;0e 48 ; <Set winkey Mode> - uncomment to reverse paddles
;0e C0 ; <Set winkey Mode> - uncomment to disable watchdog
;09 0A ; <Set PinConfig> - Chan1 ST no_PTT
;09 0B ; <Set PinConfig> - Chan1 ST PTT
;09 08 ; <Set PinConfig> - Chan1 NOST noPTT
;
; A default Farnsworth is set by Mixw, the following
; overrides it - the value determined in WK2MGR
; is ignored.
0D 0a ; <Set Farns WPM> 10wpm = 0a hex
Q ; Quit the command mode
;
; After sending these commands, Mixw will send:
; 1) Enable/disable pot command (see the CW Settings dialog in Mixw)
; 2) Setup Speed Pot command with these parameters (edit if needed)
;
[Setup Speed Pot]
MINWPM=5 ; Min WPM
WPMRANGE=25 ; Max WPM = MINWPM + WPMRANGE
POTRANGE=255 ; POTRANGE value for full Clockwise pot
; End of file
```

Navigator Installation

Other WinKey Software

A copy of the standalone CW program “WinKeyer 2” from K1EL is also provided on the Navigator CDROM. This program is useful for demonstrating Farnsworth, doing code practice, and otherwise exploring the features of WinKey2.

See the help file for explanation of the setup and use of “WinKeyer 2”

A copy of WKTest is also included. A complete help file explains this program. It can be used to test and demonstrate the features of WinKeyer2.

Install this software from their setup programs on the CDROM.