N4PY Orion Control Program Version 3.52

Personal Computer

This program is a 32 bit windows program. Your personal computer is
an integral part of the your transceiver. The minimum system
requirements for your PC to operate your radio is a Windows XP
system. Connect one end of the serial cable to the serial port
connection of the radio and connect the other end of the serial
cable to the 9 pin serial port connector on your PC. If your computer
does not have a serial port, almost any USB to serial converter will
work fine.

This program will work on the following Windows versions:
All versions of Windows XP (both 32 and 64 bit)
All versions of Windows Vista (both 32 and 64 bit)
All versions of Windows 7 (both 32 and 64 bit)
All versions of Windows 8 and 8.1 (both 32 and 64 bit)
All versions of Windows 10 (both 32 and 64 bit)
All versions of Windows 11 (both 32 and 64 bit)

Screen resolution of at least 1024 X 768 is recommended.

For some versions of Windows 7 (not home premium), you must run the
program in Windows XP compatibility mode. An indication that this is
necessary is if each time you start the program, you get a different
install number.

PC to Orion Serial Connection

Connect a 9 pin serial port cable between the Orion and an
available COM port on your PC. If your PC has only a 25 pin COM
port available you will need to acquire a 25 to 9 serial port
adapter. When you start the Orion control program for the
first time you will need to tell the program which COM port the
radio will be using. If needed, choose the appropriate
COM port under the INTERFACE section of the SETTINGS panel.

It is also possible to use a USB to SERIAL PORT adapter to operate
the radio over a USB port. Please refer to the adapter documentation
for information on using a USB port as a Serial Port. Some USB
adapters do not work very well and others work great.

Basic Operation

Turn on the Orion using the front panel switch. You must wait until
the Orion is fully operating. The Orion must always be turned on
first before the program is started.

Start the N4PY Orion control program. The control program should
connect to the Orion. If needed you may change the selected serial
port in the INTERFACE section of the SETTINGS screen.

When using the Orion with this control program, do not attempt to
use the controls on the Orion. All the program settings are then
sent to the Orion.

I highly recommend getting the remote tuning pod. It enhances the
use of the program a lot. It gives the user a programmable knob

and 15 programmable buttons that can be configured in lot of ways
to enhance control of the Orion from the program.

The program also supports the LP-100A watt meter and LP-Pan panadapter
from Telepost. See www.telepostinc.com for further details on these
devices.

Direct Frequency Entry

You can entry a frequency for either VFO A or VFO B directly from the
computer keyboard. Mouse click on the displayed frequency. You will
see a flashing cursor on the digit you clicked. Then enter the digits
from the keyboard. Once you have entered the frequency completely,
press the "enter" key on the keyboard to have the frequency take
effect. If you make a mistake, press the "ESC" key to cancel the
entry so you can start over.

Mouse Wheel

There are options for the mouse wheel to be used for Frequency Tuning,
Volume Control, Pod Knob, Frequency Tuning + Slider, and Pod Knob +
Slider.
These option are in the "Call Sign, TopTen" settings window.

You can tune the radio frequency by hovering over a displayed VFO
digit
and moving the mouse wheel. This allows for instant frequency tuning
at almost any tuning rate you want. The supported digits are the
all the digits to the right of the first decimal point in the
displayed
frequency area plus the MHZ digit. This works with both VFO A and VFO
B.

If "Frequency Tuning" is selected, the tuning step size for the mouse
wheel is the selected tuning step size.

The option called "Pod Knob" makes the mouse wheel simulate a Tentec
remote tuning pod knob. If you use a mouse with a mouse wheel that
can spin, this makes an excellent tuning knob. The mouse wheel
can be assigned to any of the functions for the Tentec remote pod.
I am using the Logitech MX 620 mouse as a pod knob with excellent
results. If the mouse wheel seems a little slow, check the setting
for "Tuning Knob Desense Factor" in the "Remote Pod Fkey" settings
window. Set it to at 1 if you are not using the Tentec remote tuning
pod.   You can also make the mouse wheel have a high speed setting.
In "Preferences4", you can set the "Sensitivity" to somewhere around
10
or so. This is the number of mouse wheel pulses received in 150
milliseconds. The higher this number is, the faster you have to spin
the mouse wheel to go into high speed mode. The "High Speed Tuning
Factor" is used as a multiplier for the frequency step. So once high
speed is achieved, this factor says how much faster you move in
frequency. I find a setting of 10 or so for each of these values
works
pretty well.

There are also two options that have "Slider" added to them. These
options will allow any slider on the program radio panel to be moved
with the mouse wheel when the mouse is over that slider. When the

mouse wheel is not over a slider, either "Frequency Tuning" or "Pod Knob" will be in effect.

Remote Operation

There is now a new function called Client-Server. Read the file "CSRemote.txt" that is included in your folder where you installed the program. This describes exactly how to do remote operation.

VFO Receiver Assignment

This Orion Control Program features a special mode called "Smart VFO". "Smart VFO" is an algorithm that dynamically assigns the best possible receiver to each VFO by analyzing the frequency of VFO A and VFO B. This analysis is done everytime either VFO is changed in frequency. When the VFO assignments change, they occur seamlessly with little or no awareness of this from the operator. This results is the most versatility and ease of operation possible from the Orion and RX340. The "Smart VFO" algorithm goes as follows:

If the RX340 is not to be used with the Orion, VFO A and VFO B are assigned as follows:

   If VFO A frequency is within 10 khz of a ham band:

     VFO A - Orion main receiver
     VFO B - Orion sub-receiver

   If VFO A frequency is not within 10 khz of a ham band:

     VFO A - Orion sub-receiver
     if VFO B frequency is within 10 khz of a ham band
        VFO B - Orion Main receiver
     if VFO B frequency is not within 10 khz of a ham band
        VFO B - no assignment

If the RX340 is used with the Orion, VFO A and VFO B are assigned as follows:

   If VFO A frequency is within 10 khz of a ham band:

     VFO A - Orion main receiver

     VFO B - Orion sub-receiver or RX340 (see Interface2)

   If VFO A frequency is not within 10 khz of a ham band:

     VFO A - RX340

     if VFO B frequency is within 10 khz of a ham band
        VFO B - Orion Main receiver
     if VFO B frequency is not within 10 khz of a ham band
        VFO B - Orion sub-receiver

  The "Smart VFO" algorithm is in operation unless you manually override
  it with the "SmtVFO" button. If you click this button, then the
receiver

assignment steps through all the valid choices manually. The current
receiver assignment can be seen just below the "SmtVFO" button. This
will step through all valid combinations and finally return to "Smart
VFO"
being enabled again. This is indicated by the "SmtVFO" key showing
the
selected color.

If at any time "Smart VFO" is not enabled and a frequency is selected
that is not allowed on the main receiver, "Smart VFO" will be
automatically reenabled.

For all normal operation, the "SmtVFO" button should be highlited on.
Only for very unusual situations such as frequency calibration should
you click this button and go to manual receiver assignments.

The current radio assigned to each VFO is shown in small letters just
under the "SmtVFO" button. The first radio listed is for VFO A, and
second radio listed is for VFO B.

                        VFO Transmitter Assignment

If "split" is turned off, the Orion transmitter is always tuned
to VFO A. If "split" is turned on, the Orion transmitter is always
tuned to VFO B. This is, of course, only true if the transmitter
frequency is within 10 khz of a ham band.

                        VFO Assignment Indicators

There is a VFO assignment status indicator in the upper left side
of the program radio panel. It will show "Main", "Sub", or "RX340"
first for the receiver assigned to VFO A, and then show the receiver
assigned to VFO B if there is one.

                        Control Panel Buttons

Special Right Click on Mode Button

All the receive mode buttons (AM, LSB, USB, CW, FM, SAM, RTTY) have
a special function if "DUAL" receive is turned on. If you right click
the mode button, they will send the mode, default filter, and default
AGC to the VFO B receiver instead of the VFO A receiver.

Tx Ant   (Transmit Antenna)

This button controls which antenna the transmitter will use. It has
two values. This key can only be used if the main receiver is using
the receive only antenna. Otherwise, the transmit antenna is the
same as the main receiver antenna.

In the "Tx Ant1", setting, the transmitter uses antenna 1.
In the "Tx Ant2", setting, the transmitter uses antenna 2.

This setting is remembered in the band button settings.

M Ant   (Main Antenna)

This button controls which antenna the main receiver uses.

In the "M Ant1" setting, the main receiver is connected to
antenna 1.

In the "M Ant2" setting, the main receiver is connected to
antenna 2.

In the "M AntR" setting, the main receiver is connected to the
receive only antenna.

Left clicking this button will move the antenna selection from 1 to
R to 2. Right clicking this button will move the antenna selection
from 1 to 2 to R.

This setting is remembered in the band button settings.

There are two selections in "Preferences3" to skip antenna 2 or the
receive only antenna selection if you do not have these antenna
positions connected to the Orion.

S Ant   (Sub Antenna)

This button controls which antenna the sub receiver uses.

In the "S Ant1" setting, the sub receiver is connected to
antenna 1.

In the "S Ant2" setting, the sub receiver is connected to
antenna 2.

In the "S AntR" setting, the sub receiver is connected to the
receive only antenna.

Left clicking this button will move the antenna selection from 1 to
R to 2. Right clicking this button will move the antenna selection
from 1 to 2 to R.

There are two selections in "Preferences3" to skip antenna 2 or the
receive only antenna selection if you do not have these antenna
positions connected to the Orion.

This setting is remembered in the band button settings.

BinRx   (Binaural Receive)

This button toggles the setting of Binaural receive in the receiver
assigned to VFO A.

DUAL

This button controls the dual receive function. If this button is off
the VFO B receiver will always be muted. With this button on, both
the
VFO A and VFO B receivers will be heard. Also, if this button is off,
no data will be sent to the VFO B receiver until DUAL is turned on.

Right clicking the "DUAL" button will turn on "A=B Frequency Tracking".
This mode is indicated by a "DIV" showing up just above the DUAL button.
With this mode on, VFO B will automatically follow VFO A in frequency.
To turn off this mode, left click on the "DUAL" button. The purpose of
this mode is for diversity reception from two receivers at the same time.
For true diversity reception, the two receivers must have separate antennas.

Please note that if "DUAL" is off, all updates to the VFO B receiver will
be saved and not actually sent until "DUAL" is switched on.

ManMD   (Manual Mode)

This button controls whether or not filter and step information
automatically change when a new mode is selected. With this
button off, when a new mode is selected, a new filter and step
will automatically change according to the mode. With this
button on, only the mode will change when a new mode is selected.

Polling

This button turns on Orion frequency polling. The program will
send out frequency, mode, and filter requests for VFO A at 1 second
intervals for version 2 and 2 second intervals for version 1. This
allows the program to keep up with changes made directly on the Orion.
Having "polling" turned on will cause some interference with the
operation of the program front panel buttons. This is because the
buttons cannot be read while a poll request is in progress. The
recommended operation is to do all the control from the program front
panel and have "polling" turned off. But, if you want to use the
Orion controls directly, have "polling" turned on. This will allow
logging programs to get and set information to and from the Orion by
using the Pegasus "Ten-Tec File Interface". You must tell your
logging program you are using a Pegasus. In this mode, you should
never try to set any values to or from the Orion with the N4PY control
program.

If you turn on polling, any frequency correction values will be ignored
while polling is going on. Also, with polling on, the remote tuning pod
will not be under program control but will instead be under direct Orion
control. With polling turned on, the power output level is only changed
when you specifically move the TX slider.

AM

Clicking this button will put the VFO A receiver in AM mode. Right
clicking this button with DUAL on will put the VFO B receiver in AM
mode.

Note that on the Orion, while in AM mode, the true filter bandwidth is
twice the indicated bandwidth. So a reading of 4000 for filter BW
while in AM mode, is really a BW of 8000 for the Orion.

   LSB

   Clicking this button will put the VFO A receiver in LSB mode. Right
   clicking this button with DUAL on will put the VFO B receiver in LSB
mode.
   If the rx340 is assigned to VFO A, right clicking this button with
DUAL
   off will put the rx340 in ISB lower sideband mode.

   USB

   Clicking this button will put the VFO A receiver in USB mode. Right
   clicking this button with DUAL on will put the VFO B receiver in USB
mode.
   If the rx340 is assigned to VFO A, right clicking this button with
DUAL
   off will put the rx340 in ISB upper sideband mode.

   SAM   (Synchronous AM)

   The mode "SAM" is for synchronous AM. It is not really sync AM,
   but the next best thing. This mode simply turns on the BFO and
   sets the step size to 1 Hz. You must carefully zero beat the AM
   carrier by slowly tuning for this mode to be effective. This
   mode is much more tolerant to AM signal fade.

   For the RX-340, if you click the SAM button while in another mode,
   you will first get SAMB which is SAM with both sidebands. If you
   left click again on the SAM button, you will get SAML which is SAM
   in lower sideband. If you then left click the SAM button again, you
   will get SAMU, which is SAM in upper sideband.

   CW

   Left clicking this button will put the VFO A receiver in LCW mode.
   Normal CW mode uses LCW which causes tones to increase as the
frequency
   is increased. CWR mode uses UCW, which causes tones to decrease when
   the frequency is increased. You select CWR by right clicking on the
   "CW" button. An interesting side effect of this mode is you can tell
   when you are tuned directly onto a CW signal by swapping back and
forth
   between CW and CWR mode. If the pitch of the signal does not change,
   you are perfectly tuned to the signal.

   If DUAL is on, right clicking this button will put the VFO B receiver
   in LCW mode.

   There is an option in Preferences4 to reverse the use of LCW and UCW.

   FM

Clicking this button will put the VFO A receiver in FM mode. Right
clicking this button with DUAL on will put the VFO B receiver in FM
mode.
For the RX-340, if DUAL is off and the RX340 is assigned to VFO A,
right
clicking the FM button will setup everything to receive DRM. This DRM
setup will set the mode to USB, the filter to 16 kHz, the AGC to slow,
PBT to +2000 and set the radio frequency down 12 khz from the GUI.

RTTY

This mode is used for any digital mode you may want to run. Its
default setup is for RTTY. It sets a frequency offset of 2125 hertz
and turns on the accessory input for transmit audio, and uses
LSB mode.

You can change the button name, frequency offset, and transmit mode
through the "RTTY, KB Settings" window of the "settings" menu.

You can also reverse the selected sideband. If you click on the
RTTY mode button while RTTY mode is already selected, the selection
for the RTTY sideband will be reversed. This is indicated by the
color of the RTTY key changing from blue to red. The same also holds
true for the second RTTY mode, which is selected by right clicking
the RTTY button.

If you want to use the Orion in true FSK mode, select FSK for the
mode.
The offset has no meaning in this mode and is ignored.

If you store an RTTY mode station in a memory, there are actually
4 RTTY modes. They are named in the memories as follows:

    "RTTY"   = RTTY mode 1
    "RTTY2" = RTTY mode 2
    "RTTYR" = RTTY mode 1 with reversed sideband
    "RTTY2R" = RTTY mode 2 with reversed sideband

There is a way for logging programs to select RTTY mode 1 or RTTY
mode 2 automatically. If a logging program set an SSB mode that is in
the
CW portion of a band, if RTTY 1 real mode matches matches the SSB
mode, then
RTTY mode 1 is selected. If RTTY mode 1 does not match, then RTTY
real
mode 2 is checked for a match. If it matches, then RTTY mode 2 is
selected. In this way, logging programs can now select RTTY mode 1 or
RTTY mode 2.

If DUAL is on, right clicking this button will put the VFO B receiver
in RTTY mode 1.

Sto 1 (Store to Scratch Pad 1)

This button stores the frequency, mode, and filter in temporary
scratch
pad memory 1 for later retrieval.

Rcl 1 (Recall from Scratch Pad 1)

This button first stores the frequency, mode, and filter in temporary
scratch pad memory X and then retrieves the values of frequency, mode,
and filter, last saved with the "Sto 1" button.

Sto 2 (Store to Scratch Pad 2)

This button stores the frequency, mode, and filter in temporary
scratch
pad memory 2 for later retrieval.

Rcl 2 (Recall from Scratch Pad 2)

This button first stores the frequency, mode, and filter in temporary
scratch pad memory X and then retrieves the values of frequency, mode,
and filter, last saved with the "Sto 2" button.

Sto 3 (Store to Scratch Pad 3)

This button stores the frequency, mode, and filter in temporary
scratch
pad memory 3 for later retrieval.

Rcl 3 (Recall from Scratch Pad 3)

This button first stores the frequency, mode, and filter in temporary
scratch pad memory X and then retrieves the values of frequency, mode,
and filter, last saved with the "Sto 3" button.

Rcl X (Recall from Scratch Pad X)

This button retrieves the values of frequency, mode, and filter,
last saved in scratch pad X when Rcl 1, Rcl 2, or Rcl 3 was clicked.

STORE

STORE opens the Store Memory window and prompts you for station
data. You can also add a PBT value to the saved memory. If you
edit the memory window, you can add "PBT=" text to specify a PBT
value to be set when the memory is recalled. For example, if you
want a PBT value of 1000 hertz, anywhere in the "Notes" box add
the following text:

   PBT=1000

For a minus 1000 hertz PBT add the following:

   PBT=-1000

Make sure not to have any spaces on either side of the "=".

RECALL

RECALL brings up the Recall Memory window and allows you to
select stations.

Scan

Clicking the "Scan" key will cause the stored memory file to be
scanned one frequency at a time, beginning at the current entry.
The time spent on each memory is called the dwell time. The dwell
time is specified in the preferences window. It must be between
1 and 99 seconds. The default dwell time is 2 seconds. All the
memories in the loaded memory file will be scanned. When it gets
to the last entry, it will start over at the first memory of the
file. You will most likely make special memory files to use this
scan feature. You can stop the memory scan by clicking again on
the "Scan" button. If you add the word "skip" in lower
case anywhere in the "notes" section of a memory, the memory
will be skipped during the scan function.

The memory scan will be stopped if you transmit while the scan
is in progress. You can configure an automatic resume time.
See the "Preferences4" section.

VFO A

Left clicking this button will cause the main VFO A
frequency to go down by one step amount. Right clicking this
button will cause the main VFO A frequency to go up one step
amount.

VFO B

Left clicking this button will cause the alternate VFO B
frequency to go down by one step amount. Right clicking this
button will cause the alternate VFO B frequency to go up one step
amount. You will not see the frequency change on the Orion unless
DUAL and/or SPLIT is on.

FAST A (Fast tuning for VFO A)

Left clicking this button will cause the main VFO A
frequency to go down by one step amount times the "Fast Tuning Mult".
Right clicking this button will cause the main VFO A frequency to go
up by one step amount times the "Fast Tuning Mult" amount. See
"Fast Tuning Mult" below.

FAST B (Fast Tuning for VFO B)

Left clicking this button will cause the alternate VFO B
frequency to go down by one step amount times the "Fast Tuning Mult".
Right clicking this button will cause the alternate VFO B frequency to
go
up by one step amount times the "Fast Tuning Mult" amount. See
"Fast Tuning Mult" below.

FILTER A

Left clicking this button will cause the main VFO A
filter to go to the next wider filter. Right clicking this button
will cause the main VFO A filter to go to the next narrower filter.

   FILTER B

   Left clicking this button will cause the alternate VFO B
   filter to go to the next wider filter. Right clicking this button
   will cause the alternate VFO B filter to go to the next narrower
filter.
   The VFO B filter setting in displayed in the black area just to the
   right of the S meter. Here, there are three green indicators to show
   VFO B mode at the top, then VFO B filter just below mode, and finally
   VFO B step just below filter.

   LO CUT

   Left clicking this button will cause the next wider filter
   to be selected and move the pass band tuning to keep the high
frequency
   cutoff constant causing the low frequency cutoff to move down by the
   change in filter bandwidth. Right clicking this button has exactly
   the opposite effect. The next narrower filter is selected and the
   passband tuning is moved to keep the high frequency cutoff constant
   causing the low frequency cutoff up by the change in filter bandwidth.
   This button is useful when QRM appears on the low side of the
passband.
   It allows the low side of the passband to be tuned while keeping the
   high side of the passband constant. This button is only active in SSB
   mode.

   HI CUT

   Left clicking this button will cause the next narrower filter
   to be selected causing the high frequency cutoff to move down by the
   change in filter bandwidth and leaving the low frequency cutoff fixed
   (the default low frequency cutoff with PBT off is 200 hertz). Right
   clicking this button has exactly the opposite effect. The next wider
   filter is selected causing the high frequency cutoff to move up by the
   change in filter bandwidth. This button is useful when QRM appears on
   the high side of the passband. It allows the high side of the
passband
   to be tuned while keeping the low side of the passband constant. This
   button is only active in SSB mode.

   PBT (Used with top drag window)

   Clicking this button on enables pass band tuning for the VFO A
receiver.
   Dragging the scale to the right of the button controls the amount of
   PBT used. You can right click on the PBT scale to zero it.

   If DUAL is on, right clicking this button tunrs on PBT control for
   the VFO B receiver. The button will show "PBTb" indicating that the
   PBT drag window will now control PBT for the VFO B receiver.

RIT (Used with lower drag window)

Clicking this button on enables RIT for the VFO A receiver.
Dragging the scale to the right of the button controls the amount of
RIT used. You can right click on the RIT scale to zero it.

XIT (Used with lower drag window)

Clicking this button on enables XIT for the VFO A receiver.
Dragging the scale to the right of the button controls the amount of
XIT used. You can right click on the XIT scale to zero it. The XIT
shares the same drag window as RIT.

A / B

Clicking this button causes the VFO A and VFO B contents to be
swapped.
This includes frequency, mode, filter, PBT, AGC, LOCK status, and
antenna
setting. You will not see the VFO B frequency change on the Orion
unless
DUAL and/or SPLIT is on.

A = B

Clicking this button causes the contents of VFO A to be copied into
VFO B. This includes frequency, mode, filter, PBT, and AGC setting.
You will not see the frequency change on the Orion unless DUAL and/or
SPLIT is on.

SPLIT (Receive on VFO A, Transmit on VFO B)

Clicking this button causes the transmit frequency to shift from the
VFO A frequency to the VFO B frequency.

LOCK

Clicking this button causes VFO A to be locked so that it does not
change
in frequency.

FAST, MED, SLOW, Pgm1, Pgm2, AgcOff

These buttons set the AGC speed. If "DUAL" is on, you can right click
to set the AGC speed of the receiver assigned to VFO B. The AGC values
for all 5 AGC settings are all adjustable. They each have sliders for
setting decay and hang time in the settings menu. There also is a
check
box in each AGC settings window that if checked will use the Orion
factory default AGC for that AGC value instead of the individual
slider
values. Additionally the settings windows for "Prog AGC1" and "Prog
AGC2"
each have an edit box to change the button text on the Pgm1 and Pgm2

AGC buttons on the program radio front panel.

AccInp (Accessory Input – mic or soundcard)

  This button will switch the Orion MIC input between MIC and the Aux
Input.
  The Aux Input is the white jack on the accessory cable. This is
normally
  used for digital modes to bring audio in from the soundcard of the
  computer. In order for this button to work in Acc input position, the
  Orion SSB menu must have "Tx Audio Source" set to "BOTH". Note that
this
  will not cause any audio to come in from the MIC, because when this is
  selected, the MIC gain is set to 0. The converse is also true. You
  should leave the Orion setting at "BOTH" all the time. Also, when
  one of the RTTY digital modes is selected from the program, the
program
  will automatically turn on AccInp. Also note, the Mic gain slider
actually
  changes function between Mic and Aux Input gain depending on which one
is
  selected.

Step Buttons

  These buttons set the frequency step size according to their value.
  They are user definable in the "Steps" window of the "settings" menu.
  If a step other the Orion supported steps is used, the Orion will
  be forced to a 1 hertz step. The program will use the step you have
  selected. Left clicking these buttons changes the VFO A step size.
  Right clicking these buttons changes the VFO B step size.

Band Buttons

  These buttons are band register buttons. They return you to the
  last frequency and mode you were using on the appropriate band
  section. The column labelled "CW" is for the normal "CW" section
  of that band. Clicking these buttons will return you to the last
  frequency and mode you were using when in this section of the band.
  The column labelled "SSB" will return you to the last frequency
  and mode you were using when in this section of the band.
  The "SWL" column will return you to the last frequency and mode
  you were using when in this band. The "GEN" band button is a general
  band register that gets used if the frequency is not in any other
  band. The band buttons save the frequency, mode, filter, and antenna
  setting for each band.

  The "60" button under SSB, is a special button. In order to handle
  the unique requirements of this band, this button has a special click
  feature. Once you are on the band, you can toggle through the 5 band
  channels by left clicking to go down one channel or right clicking
  to go up one channel. New priviledges now allow CW on the center
  frequency of each channel. If you set CW mode while on 60 meters,
  then left and right clicking the 60 meter band button will move
  you to each center frequency of each channel for CW.

  Also, you can access the ham band buttons with the function keys.
  Shift F1 to Shift F9 corresponds to the 160 to 10 meter SSB band

buttons and Ctrl F1 to Ctrl F9 corresponds to the 160 to 10 meter
CW band buttons. You can look at the Orion keypad to remember which
band each function key corresponds to. Also, remember "Shift" is for
SSB, and "Ctrl" is for CW.

   AMTN   (Amp Tune)

   The AMTN (AMP TUNE) button is to make tuning an amplifier easier.
   When you click the "AMTN" button, several steps happen
   automatically. They are
      1) The current mode and frequency is saved in the scratch pad
   memory.
      2) The frequency is moved up 5 kHz.
      3) CW mode is set.
      4) A wide filter is selected.
      5) The Step rate is set to 1 kHz.
      6) The remote tuning knob is set to ALC to control power.
      7) The Orion ALC (power) level is set to the previous saved value
         for this band and mode.

   While the "AMP TN" button is "RED", you should first make sure
   the frequency is clear. If it is not, tune to a clear frequency
   with the mouse by clicking the radio panel knob. Once a clear
   frequency is found, key your rig with your PTT or CW key and tune
   your amplifier. Use the remote tuning knob to set the Orion output
   power to correct drive level. When the AMP is tuned, click the
   "AMP TN" to exit this mode. The frequency, mode, and step will be
   restored to original values. The Orion power output value will be
   saved and used anytime "AMP TN" is again clicked. This value
   is kept separate by band and mode. Try this function out. It is a
   real time saver. The more you use it, the more you will like it.
   There is also an option to use amptune to just tune your tuner and
   not key the amplifier. See "AMPTUNE DISABLE KEYING LOOP" below.

   There is also a "pulse tune" method when using Amp Tune.
   This feature is enabled by setting "PTT Amp Tune Pulse" check box in
   the "preferences3" window of the "settings" menu. When "AmTn" is on,
   clicking the "PTT" button will cause a pulsing action to help tune an
   amplifier in a 50 percent duty cycle instead of 100 percent.

   There is also an option in Preferences3 to have the power restored
   to what it was when before amp tune was turned on when amp tune is
   turned off. This is useful if you are using this feature to tune a
   tuner instead of an amplifer.

   TUNE

   The power when the "TUNE" button is clicked is remembered. When
   you click "TUNE", set the power to what you want the tune power
   to be with the Tx slider. When you click "TUNE" off, the power
   will be restored to the previous value. The next time you click
   "TUNE", it will remember the tune power value and set it to this
   value. Try it, it may save your finals! This option may be
   overridden with the "No Tune Save" option described in the
"Preferences3"
   section.

   ID

The ID button is to activate a 10 minute ID timer to assist in
meeting the 10 minute FCC ID requirement. Clicking this button causes
it to turn blue and start a 9 minute timer (The FCC requirement
is 10 minutes, this gives you 1 minute to ID). When this timer
expires, a sound is emitted and the button flashes between red and
blue. The next time you transmit, the button goes back to blue.
To turn the timer off, click the button again and it will go black,
indicating the timer is now off.

There is an option in "Preferences3" called "Auto Cw ID". Setting
this check box on, will cause the ID timer to send your call sign in
CW each time the timer expires if you have transmitted during the
10 minute interval. The call will be sent at a fixed speed of 20
words per minute. You must be in either LSB or USB mode, split must
be off, and the CW keyboard keyer must be off for this to work. If
you are transmitting at the time the ID timer expires, it will wait
until you are finished transmitting before sending out the call sign.

If you right click the "ID" button and you are in SSB mode, it will
send a CW ID immediately.

Transmit Disable

This key is used to enable and disable the transmitter. If the button
red, the transmitter is disabled. This is useful for CW code practice
or when leaving the station to prevent the transmitter from being
accidentally keyed.

Call

This button brings up the call sign window. In order to use this
feature, you must have the BuckMaster CDROM installed. Once you have
installed the BuckMaster database on your hard drive, you can set the
"HamCall Drive Letter or Path" in the "Preferences" window to "c:\ham0
\"
without the quotes. This will allow calls to be looked up without the
BuckMaster CDROM in its drive.

Calibrate

This button is at the very top of the main radio window. This
button allows automatic computation of the Orion's frequency
correction factor. It must be used in the following way:

 1) Make sure Polling is turned off.
 2) Tune in WWV at 10 MHz on VFO A.
 3) Turn on ManMd.
 4) Set a tune step size of 1 hertz.
 5) Alternating between USB and LSB, tune in WWV so that it sounds
    the same between USB and LSB.
 6) Once it is properly tuned, click the "Calibrate" button.

This will cause the display to change to 10.000.000 MHz and
a new frequency correction factor will be saved. Please note
that this function is not available while frequency polling is
being used. The frequency error at 10 mhz is used to compute
the error at all other frequencies.

Additionally, after the calibrate has been done, if you wish to
match the sub-receiver frequency precisely to the main receiver
frequency, proceed as follows:

 1) Make sure Polling is turned off.
 2) Tune in WWV at 10 MHz on VFO A.
 3) Set the step size to 1 hertz.
 4) Set the mode to USB.
 5) Right click on DUAL.
 6) Tune VFO B until the flutter noise beating stops.
 7) Once it is properly tuned, click the "Calibrate" button.
 8) Select "No" for Calibrate.
 9) Select "Yes" to match receivers.

There is an additional calibrate procedure if the RX340 is attached
that allows the Orion to be precisely matched to the RX340. This
procedure should be performed on each band segment that you want
precise matching. The assumption is the RX340 has been adjusted
to be exactly on frequency and this procedure will match the Orion's
frequency to the RX340. I use an old crystal calibrator signal as a
comparison signal to match the two receivers.

With the RX340 either assigned to VFO A or VFO B:

    1) Make sure Polling is turned off.
    2) Tune VFO A to a signal and then click A=B.
    3) Now click "DUAL" receive on.
    4) Now tune the Orion receiver until the received signal sounds
exactly
       the same pitch in both receivers. Use a 1 hertz tuning step.
    5) Click "Calibrate" and answer the message box question with a
"Yes".

 Now the two receivers are exactly matched for that band segment.
 Note that this procedure must be repeated for each band segment
 you want perfect frequency matching between the RX340 and Orion.
 By band segment, this means you have to do this procedure once
 for the SSB band segment for each band, and again for the CW band
 segment for each band.

 In order for this procedure to operate, the two vfo's must be within
 one kHz of each other and you must be on a CW, SSB, or SWL band.

 Please note that this function is not available while frequency
polling
 is being used. Also, once a frequency error is determined and being
 used, the step on the Orion will always be set to 1. Also, if
frequency
 polling is used, the frequency calibrate value will be ignored while
 polling is going on.

 Speech

 This button turns the speech processor and off and on. When
 the speech processor is turned on, you will see the word "Sp xxx",
 where xxx is the level of speech processing, near the main frequency.
 The level of speech processing is set with a slider in the SSB
 settings menu. It has a range of 0 to 100 with 0 being no processing
 and 100 being maximum processing.

TxLoop

This button allows the Tx Loop enable line for your amplifier
to be controlled from the front panel. A "TXL" indicator comes
on to tell you when TxLoop is enabled. This is to allow easy
access to the TxLoop control for amplifiers that do not have a
standby mode. The TxLoop setting is remembered individually by
antenna setting. If you have antenna 1 as the transmit antenna,
the TxLoop setting corresponds to the Amp Key 1 line. If you have
antenna 2 as the transmit antenna, the TxLoop setting corresponds
to the Amp Key 2 line.

Main Display Panel

The main display area contains information about A and B VFO's,
tuning steps, AGC selection and Local/UTC time. The Larger of
the frequency displays is VFO-A; VFO-B the smaller. During
key-down the Transmit VFO will change color.

Mode Selection

Select the mode for the current VFO using the mode buttons. To
set the transmit mode in split mode select A/B, set the mode and
press A/B again. In Simplex the current VFO's mode will be both
the receive and transmit mode.

PTT (Manual PTT)

The PTT button provides manual PTT control. With Manual PTT control
you can place the Orion into transmit mode from the radio panel.
This is equivalent to pushing the PTT control on a microphone
connected
to the front panel. This control is useful for operating digital
modes,
such as PSK-31. This button is either a momentary function of a
toggle
function depending on the setting of "PTT Toggle" in "Preferences3".

Vox

Toggle VOX operation ON and OFF. The button text will change
color whenever VOX is turned ON.

Mon

The mon button allows you to hear your transmit audio. Use it when
adjusting microphone or audio input levels. The Level control
for the monitor is provided in the SETTINGS panel.

Mute

Used to temporarily silence the received audio.

Noise Blanker

The noise blanker slider is labelled "NB". This control operates the
Orion DSP noise blanker.

The noise blanker has values of 0 to 9. Value 0 turns off the noise
blanker. Value 9 is for long pulse noises, value 1 for short pulse
type noise. You should use the lowest value that gives you good
results.

The "NB" label is also a button. If DUAL is on or SWEEP is running,
clicking the button will change its text to lower case and the slider
will then control the VFO B receiver.

HNB   (Hardware Noise Blanker)

The hardware noise blanker is turned on and off with the "HNB" button.
This control operates the Orion hardware noise blanker.

SQ   (Squelch)

This slider is labelled "SQ". It controls the squelch setting of the
VFO A receiver. This slider is shared with the CW sidetone volume
slider.
When in CW mode, the sidetone slider is active. When not in CW mode,
the squelch slider is active.

Stv (Sidetone Volume)

This slider is labelled "Stv". It controls the CW sidetone volume
setting.
This slider is shared with the squelch slider. When in CW mode, the
sidetone slider is active. When not in CW mode, the squelch slider
is active.

Main AGC TH   (AGC Threshold Control)

This slider is labelled "AGC TH". It sets the AGC threshold for the
main receiver for the current band. It's value is remembered by band.
This control will have no effect for slow, medium, or fast AGC if the
box in the corresponding AGC settings window labelled "Use Orion ***
AGC"
is checked. By checking this box, you can defeat use of this control
and use the Orion AGC controls directly.

The slider label for this control is also a button that can toggle
the control between AGC threshold and AGC decay. In the "AGC Dcy"
position, this control will control the AGC decay for the selected
AGC speed.

Sub AGC TH   (AGC Threshold Control)

This slider is labelled "Sub AGC TH". It sets the AGC threshold for
the
sub receiver for the current band. It's value is remembered by band.

This control will have no effect for slow, medium, or fast AGC if the
box in the corresponding AGC settings window labelled "Use Orion ***
AGC"
is checked. By checking this box, you can defeat use of this control
and use the Orion AGC controls directly.

VA   (Volume VFOA)

This slider is labelled "VA". It controls the volume for the VFO A
receiver unless the VFO A receiver is the RX340. The RX340 does not
have a software control for volume.

VB   (Volume VFOB)

This slider is labelled "VB". It controls the volume for the VFO B
receiver unless the VFO B receiver is the RX340. The RX340 does not
have a software control for volume.

RF   (RF Gain)

This slider controls the RF gain for the VFO A receiver. The label
for the slider is "RF". This "RF" label is also a button. If dual
receive is on, clicking this button changes the RF gain control to
control the RF gain for the VFO B receiver. The "RF" label changes
to lower case "rf" to indicate the RF gain control is now controlling
the VFO B receiver.

Atn/Pre   (Attenuator/Preamp, left click=attn, right click= Preamp)

The Atn/Pre button activates the RF attenuator and preamp associated
with
the VFO A receiver. Left clicking this button controls the attenuator
and right clicking this button controls the preamp. The RF attenuator
actually has 4 positions. They are 6 db attenuation, 12 db
attenuation,
18 db attenuation, and off. Off is indicated by just seeing the
letters
"Atn/Pre". The Orion sub-receiver does not have a control for the
preamp.
It is always on. The RX340 only has one attenuator position. It is 15
db.

AtB/Pre   (Attenuator/Preamp for VFOB, left click=attn, right click=
Preamp)

The AtB/Pre button activates the RF attenuator and preamp associated
with
the VFO B receiver. Left clicking this button controls the attenuator
and right clicking this button controls the preamp. The RF attenuator
actually has 4 positions. They are 6 db attenuation, 12 db
attenuation,
18 db attenuation, and off. Off is indicated by just seeing the
letters
"AtB/Pre". The Orion sub-receiver does not have a control for the
preamp.
It is always on. The RX340 only has one attenuator position. It is 15

db.

Filter Buttons

The radio panel provides 12 buttons for quick access to the most
often used filters. Each of these 12 buttons can be programmed
with your choice of filters. To see the filter options
right-click on any filter. Any of the 57 filter choices may be
assigned to any filter button. Note that on the Orion in AM mode,
the actual filter bandwidth is twice the indicated bandwidth. Thus,
in AM mode, a 4000 hertz filter is actually 8000 hertz wide.

If DUAL is turned on, then right clicking a filter button sets the
filter for the sub-receiver.

QSK (Qsk or Semi button)

There is a Qsk/Semi button. Left clicking this button will change
the CW QSK delay value. It will alternate between a QSK value and
a semi-breakin value each time you click this button. If you want
to change the values used by this button for semi and QSK delays
then proceed as follows:

To change the QSK button delay value for Qsk
 1) Set the button so it says "Qsk".
 2) Set the CW Qsk slider in the CW settings window to the desired
    value.
 3) Right click on the Qsk button.
    The button will change to highlighted indicating the Qsk value
    has been changed. It will stay highlighted until the button
    is left clicked again.

To change the QSK button delay value for semi-breakin
 1) Set the button so it says "Semi".
 2) Set the CW Qsk slider in the CW settings window to the desired
    value.
 3) Right click on the Semi button.
    The button will change to highlighted indicating the semi-breakin
    value has been changed. It will stay highlighted until the button
    is left clicked again.

AN (Auto Notch)

The automatic notch depth is set with the "AN" slider. The range is
0 to 9 with 0 being the off position. It will seek out and null all
constant carriers in the receiver passband. This notch works well for
SSB
mode but is not useful in CW as it tends to notch out the desired
signal. The "AN" label is also a button. If DUAL is on or SWEEP is
running, clicking the button will change its text to lower case and
the
slider will then control the VFO B receiver.

NR (Noise Reduction)

The DSP noise reduction is controlled with the "NR" slider. Its range
is 0 to 9 with 0 being the off position and 9 being the most

aggressive.
  This noise reduction system mathematically identifies desired signals
  and tracks them with a set of adaptive filters. The "NR" label is
also
  a button. If DUAL is on or SWEEP is running, clicking the button will
  change its text to lower case and the slider will then control the
  VFO B receiver.

  MN (Manual Notch used with top drag window)

  This button controls turning on and off the manual notch. The PBT
  slider is shared with the manual notch slider. If you click the
  "MNotch" button, the PBT slider becomes a notch slider. There will
  be a little "N" that appears near the slider. If you then select
  "PBT" the slider returns to PBT mode, and a "P" appears near the
slider.
  The manual notch width is controlled with the "NW" slider. 10 hertz
notch
  width corresponds to the bottom of the "NW" slider, and 300 hertz
notch
  width corresponds to the top of the "NW" slider.

  SAF

  For firmware version 3, clicking the "SAF" button will control turning
  on and off the SAF (Selective Audio Filtering) setting. With SAF on,
  the manual notch controls will now control the SAF center frequency
and
  width. The PBT drag window will show an "S" when the SAF center
  frequency is controlled by the PBT drag window. Please note the
  SAF frequency and width setting are remembered by mode.

  Special right click on "Split" key

  Right clicking on the "split" key is used as an automatic FM repeater
  split function. A repeater offset is automatically set in VFO B and
  "split" is turned on when you right click on the "split" key and you
  are in an FM repeater band and in FM mode. The split offsets are
  calculated according to receive frequency as follows:

     29.6 to 29.7 MHz – Down 100 kHz
     53 to 54 MHz   – Down 1 MHz
     144.9 to 147 MHz – Down 600 kHz
     147 to 148 MHz   – Up 600 kHz

  Tuning Selections

  When setting an "F" key on the remote pod to tuning selections,
  it will toggle between VFOA, VFOB, PBT, RIT, ALC, VOL, and RFG. VOL
  is for volume. Also, each key can be defined to expressly set one of
  the tuning knob functions. In addition to the functions that
  were already there you can directly define each function key to
  set the remote tuning knob to go to VFOA, VFOB, PBT, RIT, ALC, VOL, or
RFG.
  This is done on the remote tuning pod configuration box. You can also
  make one of the function keys be a "PTT" key by selecting the "PTT"
entry.

There is also a "RF Gain" entry. When this is selected, the remote
tuning knob will control the RF gain setting. Also, see the
"Remote Pod Keyboard Definition" section.

There are sliders on the main control panel for Transmit Power (TX),
and Keyer Speed (KS).

The keyer speed slider on the CW settings panel is a coarse
adjustment.
It has a range of 40 wpm. The KS slider on the front panel is a fine
adjustment. It has a range of 15 wpm. The intended use is for you to
set the speed on the CW panel one time to set the general range you
want.
When you do this, you should first set the front panel in the middle
and then use the CW panel setting to get the middle of the range you
want. You then use the KS slider on the front panel as a fine
adjustment
of 15 wpm of the coarse range set from the CW panel. This allows
the setting of keyer speed to not be touchy. In addition, if the
keyer is enabled, the keyer speed is digitally displayed below the
keyer slider on the front panel.

You can also change the keyer speed one word per minute at a time. If
you left click the "KS" above the "KS" slider you will go down one
word per minute. If you right click the "KS", you will go up one word
per minute in keyer speed.

The upper of the two front panel offset drag control is for PBT
and Manual Notch setting. The tuning rate of both these drag controls
may be user configured. The lower of the two front panel offset drag
controls is for RIT and XIT. This controls a single offset in hertz
that may be applied to RIT or XIT depending on which is turned on.
This
is similar to the implementation of the offset function in the OMNI
VI.
This allows you while listening to a DX station, to tune in the
station he is working with the RIT control, and then switch to XIT
to actually work the DX station. Note that RIT and XIT only apply
to VFO A.

Frequency Slider Bar

The Frequency Slider displays a coarse view of the band. The
displayed band width of the bar will depend on the selected
tuning steps and the setting of "Variable Frequency Scale" in
"Preferences3".

The radio can be tuned using the Slider. Click and hold the left
mouse button on the Slider Bar display and drag left or right.
The frequency display will show the change and the radio will
follow. Double click within the Slider Bar display to jump to a
new frequency.

If the area in the frequency bar has a blue background, that area
is mainly for CW operation and SSB operation is not allowed. If
it has a green background, that area is for SSB operation and all
modes are allowed. If the area has a red background, then transmit
is not allowed there. See the "License Class" feature for how to
define these areas.

S Meter

   There are two S meters that can display in the S meter area. If
"DUAL"
   is on, there is a lower red meter bar that will come on to show the
   S meter reading the receiver assigned to VFO B. There is also an
   S meter compensation value that you can define to calibrate your S
meter.
   See "S METER COMP" in the "Preferences4" section. This compensation
   affects the main and sub-receiver, and also the sweep sensitivity.

                        Using the Spectrum Display

   The Spectrum Display or Sweep Window provides the operator with
   the ability to quickly scan the radio bands and produce a visual
   representation of station activity. Several user-selectable
   settings are available to control the width of the sweep, sweep
   center frequency and display features.

   Sweep Result Display

   While the radio is sweeping through the selected frequency range
   the display will change to show each new point as it is
   processed. When the sweep is complete the radio will return to
   normal operation and the result window will keep the last data
   displayed until a new sweep is performed or the program is
   restarted.

   The sweep result window provides several types of information.
   The left and right hand boundaries indicate the start and stop
   points for the sweep. The range is determined by the range
   setting. The vertical scale provides a relative comparison
   between different signals. The higher the point the bigger the
   signal.

   Sweep Pulse Width

   This box is used to select how many pixels wide each plotted sweep
   pulse is. Wide pulses yield a fast sweep time but low resolution.
   Narrow pulses yield high resolution but slow sweep times. The first
   selection is called "Default Pulse Width" and lets the program
   decide the width. This box has no effect if "High Resolution" is
   checked since that size uses a fixed 1 pixel width size.

   Sweep Center Frequency

   The operator may choose to let the sweep center frequency be the
   same as the receiver tuned frequency with the TRACK_RECEIVER
   option or select MANUAL and enter the center frequency in the box
   provided. The MANUAL operation allows for the sweep of
   frequencies removed from where the radio is tuned. There is also
   an option called "Band Center". This option puts the center of the
   band you are currently tuned to in the center of the sweep window and
   automatically adjusts the width to match the band segment.

Sweep Range

The amount of spectrum covered in each sweep can be set using the
Sweep Range control. The default range is 300 kHz.

Starting and Stopping a Sweep

Pressing the SWEEP button will begin the sweep acquisition of
data for the sweep display. The process involves tuning the
receiver to each frequency and getting a signal strength reading.
The display is updated with each new point as it is gathered. To
stop a sweep in progress press STOP at any time.

There is a selection for spectrum sweep called "MaxHold".
When this is selected, only signals that are stronger than what
is already displayed at that location will be changed. This allows
the presence of strong signals that come and go to remain on the
sweep screen.

There is a selection for spectrum sweep called "Integrate".
When this is selected, the sweep display is integrated over several
passes with the formula:

 Displayed Value = Previous Value – Previous Value/4 + New Value/4

Thanks to KH7T for this formula.

There is also a "High Resolution" check box on the spectrum sweep.
Selecting it causes the sweep display to show a large increase in
resolution. However, the sweep speed is significantly slowed down
when this is on. You can decide between speed and resolution with
this setting.

There is a "Wide Sweep" check box on the spectrum sweep. Selecting it
causes the sweep display width to double. A program restart is
required for the sweep panel to change size.

There is a "Use Main Receiver" check box. Checking this will cause
the sweep to be performed using the main receiver instead of the
sub-receiver. The audio will be muted while this sweep is running.
Use of the main receiver can produce a greater dynamic range than the
sub-receiver.

Main Window Title

The VFO A frequency is displayed on the main window title.
This allows the frequency to be seen when the radio
control panel window is minimized. This is very useful as
it allows you to tune with the remote tuning knob and see
the frequency while minimized.

Local/UTC time Display

The local time and UTC are displayed in the lower right hand corner
of the black display area to the right of the frequency. There is
a Local/UTC time correction in the Preferences window of the settings
menu. This is the amount of time in hours to be added to local time
to get UTC. There is also a check box for local time to be displayed

in 24 or 12 hour format. Some common time zone values for this Local/
UTC correction are as follows:

```
        ADT   +3
        AST   +4
        EDT   +4
        EST   +5
        CDT   +5
        CST   +6
        MDT   +6
        MST   +7
        PDT   +7
        PST   +8
```

The program calculates local time by first getting GMT from the
windows system time. It then subtracts the above hours to get
local time. You must have your windows time zone set correctly
for this to work properly.

There is also a check box that says "Automatic DST". When you turn
this
check box on, local time and UTC will be calculated automatically.
With
this setting on, the above time zone correction values are ignored by
the
program. For this to work properly, your Windows time zone must be
defined properly. This setting has no effect if you have turned on
the setting "PC Keeps time in UTC".

License Class

You can define your license class and have your transmit
privileges displayed on the frequency scale. You define
your license class in the "preferences" section of the settings
menu. You can also decide to have your transmitter follow your
license class with a check box in this same area. When you define
your license class, the background of the frequency scale will
be blue for CW and digital mode only operation, green for phone
operation, and burgundy for operation not allowed. If you select
to have your transmitter follow your license class selection,
transmit will be blocked when your transmit frequency is tuned to
a non-authorized frequency for your class.

When you select your license class, the last selection is called
"foreign". This selection is for foreign countries that have different
operating privileges than the U.S. It allows you to define your
operating
privileges via an ASCII file called "foreign.dat". Each line of
this file defines a band segment you are authorized to operate in.
There are 3 entries in each line. The first entry should be either
"cw" or "phone". If "cw" is specified, it means the band is
restricted
to CW or digital modes. If "phone" is specified, it means the band
has no bandwidth restrictions. The second entry defines the starting
frequency for the band segment in MHz. The third entry defines the
band segment end in MHz. There is a limit of 29 entries for the
entire "foreign.dat" file. The supplied "foreign.dat" is an example
of how one would define a file for a foreign country that had
privileges identical to a U.S. general class license.

There are also entries in the orion.ini file to control the point
that the band button segments for the 160, 80, 40, 20, 15, and 10
meter
bands switch from CW to SSB. There is also one entry to control the
switchover point between 40 SSB and the 41 meter SWL band.
These entries are as follows with defaults as shown:

160 meter line=1.840
80 meter line=3.750
40 meter line=7.150
4041 meter line=7.300
20 meter line=14.150
15 meter line=21.200
10 meter line=28.300

You can change these values to the appropriate value for your
countries
usage in these bands.

There is also a "SSBRTTY.DAT" file that can be used to define the
frequencies you want RTTY or SSB mode selected automatically when
doing
direct frequency entry. This file can have up to 28 lines for RTTY
and
28 lines for SSB. Each line for RTTY must start with "RTTY", and each
line for SSB must start with "SSB". Follow the mode name with a
comma,
followed by the starting frequency in mhz, followed by the ending
frequency for the mode in mhz. This file can be edited with notepad
or
any ASCII text editor. Examining the file will show the exact format.
The USA SSB and CW band limits are built into the program. This file
is
used to override those values.

Scratch Pad Memory Window

There is a scratch pad memory window. This window is toggled on
and off using Alt-V. This window has a repeat of the Sto and Rcl
buttons to manage the scratch pad memories and also shows you
the frequency memory contents of each of the 3 scratch pad memories.
The "SP Bkgnd" setting in the "Colors" settings window controls
thr background color for this window.

CW Keyboard Keyer

There is a CW keyboard keyer. It is turned on with the "Alt-K" key
sequence. When the keyboard keyer is enabled, the letters "Cw Kb"
will
appear to the right of the frequency scale. Pressing "Alt-K" again
will turn off the keyboard keyer. Some buttons may cause the keyboard
focus to move from the main radio panel causing the keyboard keys
to not send CW. When this happens, either click on the radio front
panel with the mouse or do Alt-K twice to restore the keyboard focus.
Using the CW Keyboard will force the Orion internal keyer to be
enabled.
If you accidently press the "enter" key while using the CW keyboard,
it will put you into "direct frequency entry" mode. Press the "Esc"
key

to get back to CW keyboard mode or key in a frequency and press "enter"
  again.

  The keyed characters will not be sent until a full word is typed. The
  space bar is necessary to define the end of a word. This allows words
  to be transmitted smoothly and also gives you an opportunity to correct
  a keying error before the word is transmitted. This full word feature
  can be turned off by un-checking the check box labelled "Transmit full
  words only" located in the "CW Keyboard" window.

  The setting "Pop Out Window" when turned on allows the CW Keyboard
  window to go outside the main program window. This allows you to place
  it anywhere on the screen. However when this window is a pop out
  window, you will not be able to edit the CW memory text. In order
  to edit this text, you will need to first turn off the pop out
  selection.

  The F12 key will toggle the CW Keyboard buffer between pause and
  transmitting. This key will allow you to type ahead while you are
  receiving. If the buffer is stopped, the "Cw Kb" will appear RED.
  If the buffer is transmitting, it will be black.

  The speed and weight of the keyboard keyer are controlled with CW keyer
  speed and weight controls. Typing at the keyboard will cause the
  appropriate character to be transmitted in CW.

  Special CW characters are as follows:
    BT is sent with the "-".
    SK is sent with the "$".
    AR is sent with the "+".
    KN is sent with the "^".
    AA for traffic handling is sent with the "*".

  The above special character keys can be redefined with orion.ini
  parameters. To redefine these keys, with the program not running,
  find the following lines:

    BT CHAR=(-)
    SK CHAR=($)
    AR CHAR=(+)
    KN CHAR=(^)
    AA CHAR=(*)

  You can then change the key value that is in parentheses to change
  the key for the special character.

  The "escape" key will immediately end sending and empty the CW internal
  keyboard buffer.

  There is a CW Keyboard window for showing the contents of the CW keyboard
  buffer. This window is visible when the CW Keyboard is turned on. It
  may be hidden by clicking the "X" in the upper right hand corner of the
  window. You can make the window visible again by doing Alt-K twice. The

keyboard buffer is 500 characters long.

   There are 5 memories that can be used with the keyboard keyer. The
   memories are loaded with the edit boxes on the "CW Keyboard"
   window. The memories are transmitted by pressing F1 for memory 1,
   F2 for memory 2, F3 for memory 3, F4 for memory 4, and F5 for memory
5.
   There are also 5 mouse buttons at the bottom of the radio panel
labelled
   "M1" to "M5" to transmit the memories. There are also 5 CW Memory Tag
   edit boxes located in the "RTTY, KN Settings" window. These edit
boxes
   will change the labels on the M1 through M5 memory buttons. You can
use
   these tags to help remember what is in each memory. They are limited
to
   3 characters.

   The special character "#" followed by a number from 1 to 5 can be
placed
   in a memory to cause the contents of the memory number to be sent in
   place of the "#" character. This is useful to increase the size of a
   memory for a longer message.

   The special character " (double quote) can be placed at the beginning
   of a memory to send a file instead of the text in the memory. When
   you start a memory with a " (double quote), you directly follow the "
   with the name of the file you want to send text from. The internal
   CW keyboard buffer is limited to 511 characters so the file cannot be
   larger than 511 characters. You can never be more than 511 characters
   ahead of what is being transmitted. The file must be built with an
ascii
   text editor such as notepad. If you build the file with notepad, the
   actual name of the file will have a ".txt" added to it. The basic
name
   itself must be 8 characters or less and not have spaces or special
   characters in it. The file must be located in the c:\n4py folder or
   wherever you have the program installed.

   The special character "%" followed by a number from 1 to 9 can be
placed
   at the end of a memory to cause a delayed repeat of the memory. The
   number 1 to 9 is the delay in seconds before the memory is resent.
When
   the repeat function is active, a capital "R" will show in the keyboard
   display buffer. The repeat function is cancelled when any new
character
   is added to the keyboard buffer or a new memory is selected with the
   F keys.

                          K1EL Keyer

   The program has full support for the K1EL Winkey keyer version 4 or
later.
   Information on getting this keyer can be found at www.k1el.com. There
   is a check box in the CW settings window labelled "K1EL Keyer".
Checking
   this box causes all the CW setting controls to change to the K1EL
settings
   controls. Using this keyer allows the keying to be much smoother,

especially for Windows XP, NT, and 2000. The controls are as follows:

Additionally, if you are using the Winkey 2 keyer, the 4 buttons on
top of the keyer will can be defined to be any function key on the
computer keyboard. See section on modifying the Orion.ini file for
details on how to do this.

"Key Spd" -
   This slider sets the minimum range for the K1EL speed pot. The
speed
   pot low end is set to this value and the high end is set to this
value
   plus 15. Thus the range of the speed pot is always 15 wpm. Note
that
   the actual keying speed of the K1EL is always set with the speed pot
   on the keyer itself. The "KS" slider on the program front panel
will
   show the current speed but the "KS" slider cannot be used to change
   the K1EL keyer speed. If you do not have a speed pot on your keyer,
   check the "No Speed Pot" box and the KS slider will control the
keyer
   speed.

"Wgt" -
   This slider controls the keyer weighting. A value of 50 is no
   weighting.

"Ptt Lead" -
   This slider controls the lead time the PTT line is energized before
   keying begins. The values are in 10 millisecond increments. This
   is useful to control an amplifier to ensure the amplifier relay
comes
   up before RF is applied.

"Ptt Tail" -
   This slider controls how long PTT stays energized after keying
stops.
   The value is in 10 millisecond increments.

"Key Comp" -
   This slider controls the amount of keying compensation applied to
all
   keying elements. It is in milliseconds and adds a fixed amount of
   milliseconds to all character elements.

"Dit Dah" -
    This slider controls the dit/dah ratio and allows you to change it
    from the standard 1:3 ratio. A value of 50 corresponds to the
normal
    1:3 ratio. The range of the control is 33 to 66, with 33 being a
1:2
    ratio and 66 being a 1:4 ratio.

"AutoSpace" -
    This check box enables or disables the keyer's autospace function.

"CT Spacing" -
    This check box enables or disables the keyer's contest spacing
option.

"No Speed Pot" -

Turn this check box on if you do not have or do not wish to use the
speed pot on your WinKey keyer.

"Reverse Paddle" –
This check box allows you to use a paddle with the dit and dah
connections reversed.

"Iambic B" –
This list box selects between Iambic B, Iambic A, Ultimatic,
and Bug operation.

"COM setting box" –
This box allows you to define the correct comport the K1EL keyer
is connected to.

Consult the K1EL manual for more explanation of these controls.
If you have the CW Keyboard turned on, you will get character
echos from the paddle in the CW Keyboard window. This will show
you what you the last 20 characters you have sent with the paddles.

There is a feature where you can save all the paddle echos for the
keyer
to a file. In orion.ini, find the line

CW FILE NAME=

and put in a file name. Then all the paddle characters that K1EL
sends
back will be saved to the file. You can clear out the file with the
check box "Clear File" in the CW Keyboard window.

Using direct entry from the keyboard

Keyboard frequency entry is always active while on the main radio
panel unless the CW keyboard is active. If the CW keyboard is active,
you should first press the "enter" key to get into direct frequency
mode.
Entry works by simply typing in the frequency. You may
also click inside the frequency display to edit the frequency as
in a normal text box. If you enter a frequency that is above 1000,
the program assumes you have entered the frequency in kHz. If the
value is below 1000, the program assumes you have entered the
frequency
in MHz. If you begin the entry with a ".", the program assumes you
are only entering the kHz portion of the current MHz you are tuned to.
To enter a frequency below 1 MHz, start the entry with a "0" followed
by the "." and then the kHz value. To enter 680 kHz, key in "0.680".

Remote Pod Keyboard Definition

All the keys on the remote pod are programmable. There are three
entries
in the settings window to define the keys. The entry "Remote Pod" is
used to define the three function keys. The entry "Remote Pod 4-9" is
used to define the 4 through 9 keys. The entry "Remote Pod 0-3" is
used
to define the 0 through 3 keys and the period key.

Most of the values you can select are self-explanatory. An entry

labelled
  "5" would be for the "5 key" to define it just for direct frequency
entry.
  An entry labelled "up 5" would be for the "5 key" to define it to turn
on
  split and make VFO B be up 5 from VFO A. The entry marked "Band
Bottom"
  takes you to the bottom of the band.

  The entry labelled "AccInp Xmit" is a special one for slow-scan TV
  users. Clicking this button will cause the mike input to switch to
  accessory input, the Orion to go into transmit mode, and the monitor
  audio to come on. Clicking this again, will switch AccInp back to
mike
  input, turn off transmit, and turn off monitor audio. This is
extremely
  useful during slow scan TV sessions when you are changing from
  sending pictures to SSB to describe them. Also, when in this mode,
  the main program title adds additional text to note you are
  transmitting.

  If you have the pod in RIT tune mode and RIT is on, if you press the
  pod RIT button again, it will set the RIT value to zero.

  If you have the pod in PBT tune mode and PBT is on, if you press the
  pod PBT button again, it will set the PBT value to zero.

  The entry marked "Up Numeric" causes that key to set "up numeric
mode".
  When you follow this key with a numeric key it sets VFO B equal to
  VFO A plus the numeric value of the key and then turns on "split".
  Note that the zero key causes you to go up 10. This allows you have
  have a "quick split" ability of 1 to 10 kHz without having to use all
  your numeric key definitions for this feature.

  There are selections to define the pod keys as CW memory keys.
Pressing
  keys defined this way will start the corresponding CW memory.

  The nice part of all this is you do NOT lose direct frequency entry
  from the remote pod when you define the numeric keys for other things.
  All you have to do is press the "E" key first, and the pod is then put
  into numeric mode for direct frequency entry.

  I leave it up to the creativity of the user to come up with a really
  nice remote pod key definition.

  The following example is how I use my remote tuning pod to work a
  Split DX pileup:

  I tune the dx station in on VFO A. I soon find out he is
  listening say up 5. I press the "Up" key on the pod followed by the
  "5" key. Now VFO B is tuned 5 kHz higher than VFO A. This is a
  starting point. Next I press the "dual" button I have defined on
  the pod and I set the pod to tune VFO B only by pressing the
  pod's VFO B key. I don't need to lock VFO A because the pod is
  now only tuning VFO B. I also press the pod's "SPLIT" key at
  this time. Now anytime I tune the pod knob, I am only tuning the
  DX listening frequency and not the DX transmitting frequency. As
  soon as I hear the DX transmitting, I press DUAL to turn it off
  so I don't hear all the callers. When the DX listens to a

calling station, I turn dual back on and tune the pod knob to find the caller. If I find the caller, then I call at the next opportunity. Because I am now transmitting right where the DX station was listening, I have a greatly increased probability of getting through. It works pretty well.

The "Remote Pod Fkey" window also has two entries to control the knob sensitivity for frequency tuning. They are:

"Tuning Knob Desense Factor" – This controls how much the tuning knob pulses are divided by to desensitize the tuning.

"Tuning Knob Desense Step Threshold" – This controls the minimum step size that the desense factor comes into play. I set this at 500 and use a desense factor of 10. The end effect is when I set my step size to 500 or greater, the knob pulses are divided by 10. This results in much easier tuning when using large steps.

"Pod Knob keys are Toggles" – With this check box turned on, all the pod knob functions are toggles. For example, if you press and hold a key defined for RIT, then while holding the RIT button, the pod knob will move RIT. Once the key is released, the pod knob will always return to VFO A control.

Pod Function Keys Without a Pod

There are over 25 pod functions that can be assigned to keyboard keys. You can get pod functions from the keyboard without having a griffin knob or TenTec remote pod. The pod functions for numeric 6 to 9 can be done with F6 to F9 on the keyboard. The pod function for the zero key can be done with F10. The pod function for F1 can be done with F11. You can also use the numeric 1 to 5 for pod functions 1 to
5
if the CW keyboard is turned off and you have defined that you have a griffin powermate. Additionally, if the CW keyboard is off, F1 to F5 will operate as pod functions for 1 to 5. Also, if the CW keyboard is turned on and the memory for the F key is empty, then the F key will work as a pod key. Please note the F keys only work as pod keys when the griffin powermate option is selected.

Preferences Menu Window

Local–UTC Correction – Enter in this box the difference in hours between your local time and UTC. If you are west of Greenwich, the values are positive. If you are east of Greenwich, the values are negative. If you have selected "PC Kepps Time in UTC", these values are reveresed.

Mute Radio on Exit – This box sets what you want the radio speaker to do when you exit the program.

Local time uses 24 hour Format – this box selects if you want local time displayed in 12 or 24 hour format.

HamCall Drive Letter or Path – Use this box to define the location if your Buckmaster ham call data base. It can simply be your CD drive letter or if you have installed the databse on your C drive it should read "c:\ham0\".

Memory Scan Dwell Time – this box defines how long the program
stays on one frequency during a memory scan.

Dual Main in Left – Turn this box on if you want to hear the main
receiver in the left headphone when dual is turned on.

Dual Main in Right – Turn this box on if you want to hear the main
receiver in the right headphone when dual is turned on.

Dual Sub in Left – Turn this box on if you want to hear the sub
receiver in the left headphone when dual is turned on.

Dual Sub in Right – Turn this box on if you want to hear the sub
receiver in the right headphone when dual is turned on.

Note the above 4 audio routing boxes must have both the main
and sub receiver selected somewhere. Also, the left headphone
must have at least one setting and the right headphone must have
at least one setting. Failure to set it this way will force
the main in the left headphone and the sub in the right headphone.

License Class is described in it own section.

Preferences2 Menu Window

  The default SSB PBT value can be used to set a default value of PBT
that
  gets set anytime LSB or USB mode is selected. If this value is 0,
then
  PBT will not be changed on a mode change.

  The default filter positions for each mode are defined with numbers
from
  1 to 12. Number 1 refers to the top left filter button, number 2
  refers to the top center button, and so on to number 12 for the bottom
  right filter button.

  The default AGC setting for each mode is also defined in this window.
  The entry labelled "Do Not Use Auto AGC" simply means to not change
the
  AGC setting when going to that mode.

  The value of the "Fast Tuning Mult" can be set using the
  "Fast Tuning Mult" edit box in this window. This value controls the
  amount of step multiplication used when the "FAST A" and "FAST B"
  buttons are used. The default value is 10. If the step being used
  is 50 hertz and this has a value of 10, then when the "FAST A" and
  "FAST B" buttons are used, the step would become 500 hertz. This
  controls how much tuning speed up is invoked when using these buttons.

Preferences3 Menu Window

The second decimal point in the displayed frequency can be removed.
This is useful is you are doing a lot of cut and paste operations.
Use the "Remove Extra Decimal" check box.

The "Duplicate SAF in Sub" check box will cause the SAF settings
for the main to be duplicated in the Sub if the mode for the main
and sub are the same.

Setting the "Do not Restart Sweep" check box will prevent the spectrum
sweep from restarting after transmit is finished if the sweep was on
before transmit started.

Setting the "No Tune Save" check box will cause the tune power to
always be
whatever the ALC power slider is set to. Setting it unchecked will
cause it to remember the value last set while tune was in progress.

When the "Variable Frequency Scale" check box is checked, the analog
frequency scale will vary with the step size. For steps less than
100 hertz, the scale is multiplied by 100. For steps between 100
and 1000 hertz, the scale is multiplied 0by 10. For steps above 1000
hertz, the scale is unchanged. This scale change is primarily for
people that do not have the remote tuning pod to aid in dragging the
frequency. With this option unchecked, the analog frequency scale
is fixed.

The "PTT Amp Tune Pulse" check box causes a "pulse tune" method when
using Amp Tune. When "AmTn" is on, clicking the "PTT" button will
cause a pulsing action to help tune an amplifier in a 50 percent
duty cycle instead of 100 percent.

The "Amp Tune Restore Power" check box is for using the Amp Tune
feature with a tuner instead of an amplifier. It will restore
the power to whatever it was before amp tune was turned on when you
turn off amp tune.

The "PTT Toggle" check box allows operation of the PTT functions
from the PTT mouse button, space bar, and remote pod PTT button
in 2 different ways. With PTT Toggle on, clicking the PTT button,
pressing the space bar, or pressing the remote pod PTT button causes
transmit. Transmit remains until this button is clicked or pressed
again. With PTT Toggle off, these buttons operate as momentary
functions. The PTT mouse button will cause transmit as long as the
button is clicked, and transmit ends will the button is released.
The space bar and remote pod PTT button when pressed will cause
transmit and transmit will end when the key is released.

The "Cross Band Split" check box when unchecked will stop split from
being
turned on when VFO B is not on the same band as VFO A. When checked
cross band
split operation is allowed.

The "Use Tool Tips" will show tips on buttons as you hover over
them with the mouse. This check box can be used to turn this feature
off or on.

The "Use Space for PTT" check box allows the space bar to be used as
a PTT button. The action of the space bar depnds on the settings of
"PTT Toggle" above.

For the Eagle and Argonaut VI, the "BW Two Ways" check box allows the
BW knob on the radio to be used along with the Filter settings control
in the program. The last one to be changed (i.e., radio BW Knob or
program filter controls) is the BW you get. One word of caution with
this option turned on – once in a while the BW may change to the radio
knob setting if for any reason the knob setting changes value ever so
slightly.

Setting the "Manual MIC AccInp" check box stops automatic changing
between MIC input and acc input when changing between RTTY and other
modes.

Setting the "Amp Tune Power Only" check box causes amp tune to only
change
the power setting. This is only useful for amplifers that do not need
to be
tuned. Note that in order to set the correct power level for each
band, this
option must be turned off. Once all band power settings for the
amplifier
are set, then this option can be turned on giving you a one click
operation
for setting amplifier drive power.

Setting "Antenna 2 Active" off will stop the antenna 2 position from
being
a selection when you click the "M Ant" or "S ant" button. Set this
off
if you do not have an antenna 2 connected to the Orion.

Setting "Receive Ant Only Active" off will stop the receive only
position
from being a selection when you click the "M Ant" or "S ant" button.
Set
this off if you do not have a receive only antenna connected to the
Orion.

Setting the "PC keeps time in UTC" check box assumes time on your PC
is
kept in UTC time. Un-checking this box assumes time in your PC is
kept in local time. This value is used in displaying local and UTC
time in the radio panel.

When the "Using Touch Screen" is checked, the buttons that require a
left and right click such as "VFO A", "VFO B", "FAST A", and "FAST B",
will be split in the center. On a touch screen you cannot quickly
right click, so when you want to right click, instead you press the
right side of a split button. Please note that when turning this
setting on, a program exit and restart is required so the screen can
be redrawn.

Setting "Round off Frequency when Step Changes" causes the frequency
to be set to a multiple of the step size when the step size changes.

Setting "Auto Mode Determination from Transfer File" will cause the
program to determine the mode entirely from the frequency information
supplied in the transfer file when using the tentec file interface
from an external program such as a logging program. This setting
bypasses the mode information in the transfer file and lets the
program
determine the mode from its own frequency to mode algorithm. This
setting is useful when the logging program supplying the input file
does not have the correct mode in the file.

The "Auto Memory File Entry Select" check box, when on, causes an
entry in the memory file that corresponds to the current tuned
frequency
to be automatically selected. This automatic selection only occurs if

the memory file has been sorted by frequency. With this check box off,
  this selection does not occur. The reason for setting this off is a
  performance reason. Under some circumstances, this automatic selection
  can slow down tuning of the radio.

  The option "Frequency Event Timer" is explained in the "Frequency
  Event Timer" section.

  There are scale factors for the main radio windo to control its
  size. For horizontal scaling use the SCALE X edit box. It is a
  multiplier for the horizontal scale.

  For vertical scaling use the SCALE Y edit box. It is a multiplier
  for the vertical scale.

  The scale factors are used as multipliers of all coordinates in the
  program. With these values set to 1, the size of the main radio
  window will be unchanged. To make the window twice as large in both
  axis use a value of 2.0 for each scale factor. You must exit and
  restart the program for the change to take effect. You can also
  make the fonts in the buttons larger in the "Colors" settings window.

  The setting "Use Amp Tune Power on Band Change" is useful for amplifiers.
  If you set the amp tune level for each program band button to match your
  amplifier drive level, this feature will guarantee you will not overdrive
  your amplifier. Anytime you change bands, the amp tune drive level will
  be set automatically.

                   Preferences4 Menu Window

  The "PBT Drag Scale" and "RIT Drag Scale" are used for setting
  the fine tuning rate of RIT/XIT and PBT. You can set the fine tuning
  rates to 1, 2, 4, 8, 16, or 32. Changes to these values do not
  go into effect until the program is restarted.

  The "Transfer Folder" box is used to set the folder for the Ten-Tec
  file interface. Some logging programs using the Ten-Tec file interface
  are not configurable for the location of "pegasus.out" and "pegasus.in".
  This parameter allows you to specify the folder for these files.

  Setting TRANSFER FOLDER   C:\Orion

  would cause the location of the "pegasus.out" and "pegasus.in" files
  to be in the "c:\Orion" folder. The default for this parameter
  is the folder the N4PY control program runs in. The default is in
  effect if the window shows all blanks.

  The "High Speed tuning Factor" box causes the tuning rate when the
  pod tuning knob is turned at a high rate to be multiplied by this
  factor's amount. Legal values for this factor are 1 to 100. Use
  the value of 1 to disable this feature. Once the high speed tuning
  factor kicks in, it will stay in effect until the pod tuning knob

is stopped for 1 full second.

The "High Speed Sensitivity" value controls the point where the high
speed tuning factor kicks in. A low value causes the high speed tuning
factor to easiy kick in. A high value makes the high spped tuning
factor kick rarely and only when the knob is turned very fast. The
default value for this is 3. The legal range is 1 to 90.

The "S Meter Compensation" box is an S meter compensation value that
you can select to adjust the calibration of your S meter. This value
is expressed in + or - dB. Remember each S unit is 6 dB.
For example, to make your S meter always read 12 dB lower (2 S units), you
would set the value as follows:

   S Meter Compensation   -12

To make your S meter always read 12 dB higher (2 S units), you would set the
value as follows:

   S Meter Compensation   12

If the "RED Frequency Display on Transmit" check box is on, when
transmitting the frequency is displayed in RED. If this box is set off,
the frequency is always displayed in yellow. If split is on, the VFO B
frequency box will always display the transmit frequency in red as a
reminder that split frequency operation is being used.

If the "S Meter Display Only" check box is on, the S meter display will
not change when transmitting.

The option "AMPTune Disable Keying Loop" is for people that use the
amptune feature not to tune their amplifier, but instead to set their
antenna tuner. With this option checked on, your amplifier will
NOT be keyed when amptune is on and you transmit.

The Orion "Sweep Delay" setting may be configured. Because the
AGC in the Orion receiver is not extremely fast even in fast mode,
a delay needs to be added when the sweep is running to allow time
for the AGC to react to the new frequency as the frequency is swept.
The normal value for this parameter is 10 millisecond. You can
experiment with increased delays for more sweep resolution.
Valid values are 0 to 500. Watch out for the zero setting!

The box "Use UCW for Normal CW" allows you to set your normal CW
mode to UCW instead of LCW. If checked, normal CW mode is UCW. If
inchecked, normal CW is LCW.

The box "Scan resume after transmit time" allows you to configure
a scan automatic resume time. If the scan was stopped because the
transmitter came on, this value controls how long transmit has to
be off before scan comes back on again. A zero value means no
automatic scan resume is used. The value of the resume time is in
seconds.

VOX Controls

   The VOX controls are in the settings menu in the "VOX Controls"
window.
   The are self explanatory. The Orion Vox gain control works backward
   from normal intuition. The lower the setting, the easier it is to
   trip VOX. This is just the way the Orion firmware is programmed.

Frequency Scan Window

   Selecting this window will show the frequency scan controls. The scan
   will start at the "Frequency Start" setting. When the radio reaches
   the "Frequency Stop" setting, it will loop back to the "Frequency
Start"
   setting. The "Frequency Increment" controls how much is added to
   the scan frequency for each dwell time. The "Dwell Time" setting
   controls how long the radio remains on each frequency. To start
   the scan, "click" the "Start Frequency Scan" button". To stop the
   scan, "click" the "Stop Frequency Scan" button. The scan will not
start
   if a memory scan or spectrum sweep is in progress. The scan will be
   stopped if the radio goes into transmit mode.

   You can control the direction of the scan. If the start frequency is
less
   than the stop frequency, the scan will go up in frequency. If the
start
   frequency is greater than the stop frequency, the scan will go down in
   frequency.

Colors Window

   In order to help out hams with sight difficulties, the color of
   the button text can be configured. There are three settings to
   control the text colors of the buttons. Additionally, you can also
   define the color for local time display and UTC time display. There
   are 8 standard colors that can be selected. They are BLACK, WHITE,
   RED, GREEN, BLUE, YELLOW, PURPLE, and CYAN. There are also 6 low
   intensity colors. They are LO RED, LO GREEN, LO BLUE, LO YELLOW,
   LO PURPLE, and LO CYAN. Additionally, there are also 2 user
   definable colors that can be selected with the names COLOR1 and
   COLOR2.

   Local Time
     This entry sets the color of the text for the display of local time.

   UTC Time
     This entry sets the color of the text for the display of UTC time.

   Button Text
     This entry sets the color of the text for all non-selected buttons.

   Button Sel Text
     This entry sets the color of the text for all selected buttons.

   Special Button Sel Text
     This entry sets the color of the selected text for the five special
     buttons LOCK, TUNE, DUAL, AMPTN, and SPLIT.

CW Bkgnd
  This entry sets the color of the background for the CW keyboard
  window.

Settings Bkgnd
  This entry sets the color of the background for the settings window.

Radio Bkgnd
  This entry sets the color of the background for the radio panel
  window.

SP Bkgnd
  This entry sets the color of the background for the scratch pad
  memory window.

Radio Small Font   (default 14)
Radio Micro Font   (default 12)

  These are font sizes for the radio panel window buttons. You can
  change these values for font sizing to go with the scale factors.
  Experiment with making these numbers a little larger depending on
  your SCALEX and SCALEY size.

CW Text
  This entry sets the color of the text for the CW keyboard window.

To define the user color called COLOR1, three settings are used to
specify the amount of red, green, and blue to make up the color.
The range for the amount of each color is 0 to 255.

Color1 Red
  This entry controls the amount of red in the Color1 color.

Color1 Green
  This entry controls the amount of green in the Color1 color.

Color1 Blue
  This entry controls the amount of blue in the Color1 color.

To define the user color called COLOR2, three settings are used to
specify the amount of red, green, and blue to make up the color.
The range for the amount of each color is 0 to 255.

Color2 Red
  This entry controls the amount of red in the Color2 color.

Color2 Green
  This entry controls the amount of green in the Color2 color.

Color2 Blue
  This entry controls the amount of blue in the Color2 color.

Center Bkgnd
  This entry controls the button background color of the center
  area buttons. If you don't want this area to have a different
  background color, select "White".

Left Right Bkgnd
  This entry controls the button background color of the left
  and right area buttons. If you don't want this area to have a
  different background color, select "White".

SWL Band Assign Window

This window allows the 11 SWL band buttons to be defined to any
frequency range you like. If you do not use the SWL bands and
prefer to make these buttons be RTTY buttons or if you just want
to make these buttons be any band you desire, you can do it here.
The first column is labelled "Caption". The 11 edit boxes in this
column allow you to name the button text for the SWL band buttons.
The second column labelled "Lower Limit", allows you to set the lower
frequency limit for the band you are defining. The third column
labelled "Upper Limit", allows you to set the upper frequency limit
for the band you are defining. Be careful when you set up your band
ranges not to have any bands overlap. The first time you go to the
new band you have defined, you should set the mode you desire for this
band. The button will now remember the frequency, mode, and filter
when you return to this band.

You can change the column name for the SWL band buttons. This is
the box at the bottom labelled "Column Name" in the "SWL Band Assign"
window.

There is a shortcut to instantly change all the SWL band buttons to
FT8 band buttons. Click the "FT8 Values" button to change the buttons
for FT8 usage. You can click the "SWL Values" to chnage them back to
SWL band buttons.

                    Call Sign, TopTen Window

Your call sign can be displayed on the control panel. You set your
call sign in the "Call Sign" box in this window.

You can define the color of the text of your call sign on the
radio panel. They are BLACK, WHITE, RED, GREEN, BLUE, YELLOW,
PURPLE, and CYAN. There are also 2 user definable colors that
can be selected with the names COLOR1 and COLOR2. The default
is BLACK.

You can also define the relative size of the characters by using
the "Call Sign Size" box. You can set the relative size from a
value of 1 (the default), to a value of 15 (probably too large).

For the boxes labelled "TopTen Devices", see the section on
using Top Ten devices antenna control near the end of this file.

There is also a setting to turn on or off mouse wheel frequency
tuning.

                    6 & 2 Transverters Window

6m Crystal Correction
  If you use the Ten-Tec 6 meter transverter, you can get the display
  to show the frequency very accurately by specifying the amount
  of error in the transverter crystal frequency. Specify this
  error in hertz with a plus or minus sign in the edit box.

6M Drive Power Max (0-100)
  You can specify the maximum amount of ALC drive to the transverter

with this parameter. Its range is 0 to 100 with 100 corresponding
to 100 watts. Use caution when setting this. 5 watts is the
recommended setting which corresponds to a setting of 5.
The scale of the TX slider is adjusted so that full scale
corresponds
to this value. If you are going to use the Orion's transverter
output, set this value to zero. This will then automatically toggle
the Orion transverter function in the Orion TX menu.

  6M IF
    This parameter controls the internal IF frequency to the Orion
    will be set at when using the converter. The Ten-Tec transverter
    uses a 14 MHz IF. This is the default value. If you are using
    some other transverter that uses a different IF, you can specify
    it in this edit box.

  2m Crystal Correction
    If you use the Ten-Tec 2 meter transverter, you can get the display
    to show the frequency very accurately by specifying the amount
    of error in the transverter crystal frequency. Specify this
    error in hertz with a plus or minus sign in the edit box.

  2M Drive Power Max (0-100)
    You can specify the maximum amount of ALC drive to the transverter
    with this parameter. Its range is 0 to 100 with 100 corresponding
    to 100 watts. Use caution when setting this. 5 watts is the
    recommended setting which corresponds to a setting of 5.
    The scale of the TX slider is adjusted so that full scale
corresponds
    to this value. If you are going to use the Orion's transverter
    output, set this value to zero. This will then automatically toggle
    the Orion transverter function in the Orion TX menu.

  2M IF
    This parameter controls the internal IF frequency to the Orion
    will be set at when using the converter. The Ten-Tec transverter
    uses a 28 MHz IF. This is the default value. If you are using
    some other transverter that uses a different IF, you can specify
    it in this edit box.

  If the "Suppress Transverter Warnings" check box is on, no warnings
will
  be issued when leaving a transverter band.

                    User Configurable Transverters Window

  There are 5 user configurable transverter setups that the user can
  setup to work with virtually any transverter. These transverters are
in
  addition to the 6 and 2 meter transverter setups that are built in.
  These transverters are configured in the "User 1 & 2 TranV" window,
  the "User 3 & 4 TranV" window, and the "User 5 TranV" window.
  The transverter must not be in the 1.7 MHz to 30 MHz range (the Orion
  can transmit in this range) and the transverter must tune in the same
  direction as the IF frequency. That is to say, as you tune the
  transverter to a higher frequency, the Orion IF frequency must
  also go higher as well. You cannot use an inverting transverter.

  For each transverter, there are 6 parameters to configure. They are:

User N Lower Limit
   This sets the lower frequency limit for the transverter. It also
   enables the transverter and makes its band button appear after
   and program restart.

User N Upper Limit
   This sets the upper frequency limit for the transverter.

User N IF
   This tells the program what frequency to set the Orion to at
   the lower limit of the transverter range.

User N Button Text
   This tells the program what text to display on the band button
   for this transverter. It is limited to 4 characters.

User N Drive Pwr Max (0-100)
   This sets the maximum drive power the Orion will run at to drive the
   transverter. Its range is 0 to 100. 100 corresponds to 100 watts.
   5 is the default which corresponds to 5 watts. Great care should
   be used in setting this value. The scale of the TX slider is
adjusted
   so that full scale corresponds to this value. If you are going to
use
   the Orion's transverter output, set this value to zero. This will
   then automatically toggle the Orion transverter function in the
   Orion TX menu.

User N Crystal Correction
   You can get the display to show the frequency very accurately by
   specifying the amount of error in the transverter crystal frequency.
   Specify this error in hertz with a plus or minus sign in the edit
box.

   The band buttons for these transverters only appear when the
particular
   transverter is configured. The buttons are in the lower right corner
   of the radio window. Care must be taken when setting up these
parameters,
   as bad values can cause strange problems.

                    RTTY, KB Settings Menu Window

   The "RTTY, KB Settings" window of the "settings" menu contains options
   to control the RTTY and digital mode operations. The RTTY button
   is configurable. The label for the button can be specified, the
   actual operating mode can be set to USB or LSB, and the frequency
   offset in hertz can be specified. If an offset of zero is specified,
   the mode will operate just like USB or LSB. For example, you can
   define this button for use for PSK31 as follows:

      RTTY Label   PSK31
      RTTY Mode   USB
      RTTY Offset   0

   You can also define a second RTTY mode. You select your second
   RTTY mode by right clicking on the "RTTY" button. To define a
   second RTTY mode set the following settings:

      RTTY Label 2   RTTY

```
RTTY Mode 2      LSB
RTTY Offset 2    2100
```

The RTTY Label 2 parameter being defined activates RTTY mode 2.
The bottom line is if you are using any of the newer digital
modes, use the PSK31 example above. If the are using the older
RTTY standard RTTY, use the example above for RTTY Mode 2.

When the "Output RTTY Mode is RTTY Label" check box is set, the
text for the mode in the pegasus.out file for the RTTY modes will
show as the value you have defined for your RTTY label.
With this check box set to off (the default), either USB or LSB
will show as the mode text for the RTTY modes in the pegasus.out
file.

If you are using RTTY in real FSK mode, the offsets above are not
used. But if you have a need for an offset value that will move
both PBT and RIT in equal amounts to change the pitch of the RTTY
signal, you can put in an offset value in the RTTY offset field.
To enable RTTY offsets in real FSK mode, open the orion.ini
configuration settings file and find the line:

```
USE FSK OFFSET=0
```

and change it to

```
USE FSK OFFSET=1
```

and save the change.

                        Step Window

The "step buttons" are user configurable to any step
between 1 and 10000. They are configured in the "step" window
of the "settings" menu.

The default values for the operating modes can be configured to any
step between 1 and 10000. They are also configured on the "step"
window of the "settings" menu.

Note that MW Step defines the step value for the American AM
broadcast band.

The actual step that is used in the Orion will always be set to 1
unless frequency polling is turned on.

                     Transmitter Window

This window contains the sliders to control the delay for the Amp Key1
line and Amp Key2 line. These sliders actually remember a separate
setting for CW mode verses all other modes. If you are in CW mode
when they are set, this will not effect the setting while in other
modes. The converse is also true. The range is zero delay at the
bottom and 1 second delay at the top.

See sections on "Internal Tuner" and "External LDG Tuner" later in
this
document.

There is also a check box labelled "Extended Main Receiver Coverage".
When this box is checked, the main receiver is selected for VFO A
when "Smart VFO" is selected anytime it is possible for the main
receiver to be used on that frequency. The main receiver is capable
is being used on many more frequencies than just the ham bands and
this option exploits this as much as possible. This setting has
nothing to do with transmit coverage and is only in this window
because there is plenty of room for it here.

With "Extended Main Receiver Coverage" selected, the main receiver
covers the following ranges:

        1.780 to 2.017 mhz
        2.100 to 4.074 mhz
        4.790 to 7.429 mhz
        8.800 to 10.167 mhz
        13.899 to 15.030 mhz
        17.999 to 30.000 mhz

                        SSB Settings Window

This window allows you to set mic gain, speech processor value,
monitor volume, and mic gain when in AM mode. The AM mic gain
slider is only used when in AM mode. This value is remembered by
band. The Mic Gain slider is used for mic gain in all other modes
and is also remembered by band.

                        Interface Window

This window allows you to configure your primary comport.
The listbox on this window defines the comport number used as the
primary radio port for the Orion.

If you check the box labelled "Get Orion at Start", the program will
get the Orion VFO A and VFO B frequency, mode, filter, PBT setting,
RIT setting, antenna setting, and output power setting at startup and
use these as initial values instead of the last used settings by the
program. This check box is not available if you have the RX-340
configured with the Orion.

"Using Tentec Eagle"
    Turning this setting on says you are using a Tentec Eagle
transceiver
    instead of an Orion. Once you turn on this setting, you
    must exit and restart the program for the change to take effect.
    If you already have the program configured for your Orion or Orion
II,
    Install the program a second time in a different folder. Do not
use
    the same copy of the program for both the Orion and Eagle.
    The command set in the Eagle is limited and not as complete as the
    Orion.

    Only the following functions will work with the Eagle:

      Frequency setting from the radio or program.
      Split setting from the radio or program.
      AGC setting from the program.
      Preamp setting from the program.

Auto notch setting from the program.
Noise reduction setting from the program.
Attenuator setting from the program.
Power output setting from the program.
Transmit Disable from the program.
Sweep
Filter setting from the radio or program.

The Eagle does not have any software volume control.
There are no software RIT or PBT controls avalable
with the current Eagle firmware.

"Using Tentec Agronaut VI"
Turning this setting on says you are using a Tentec Argonaut
transceiver
instead of an Orion. Once you turn on this setting, you
must exit and restart the program for the change to take effect.
If you already have the program configured for your Orion or Orion
II,
Install the program a second time in a different folder. Do not
use
the same copy of the program for both the Orion and Argonaut VI.
The command set in the Argonaut VI is limited and not as complete
as the
Orion.

Only the following functions will work with the Argonaut VI:

Frequency setting from the radio or program.
Split setting from the radio or program.
AGC setting from the program.
Preamp setting from the program.
Auto notch setting from the program.
Noise reduction setting from the program.
Attenuator setting from the program.
Power output setting from the program.
Transmit Disable from the program.
Sweep
Filter setting from the radio or program.

The Argonaut VI does not have any software volume control.
There are no software RIT or PBT controls avalable
with the current Argonaut VI firmware.

"WriteLog Multiple Radio Interface" -
This feature should only be turned on when using WriteLog and
running
multiple instances of the N4PY program with each instance
controlling
a separate Orion. This feature allows WriteLog to log each
instance
of each N4PY program to a separate log file in WriteLog. Each
instance is associated with the primary comport number the N4PY
program is using.

"Using Microham Band Decoder or USB Router" -
Set this checkbox when you are using the Microham band decoder or
their USB router. It causes the Orion to be polled for frequency
and mode once every 2 seconds even if POLLING is off so the band
decoder or router can keep track of settings.

"Using SteppIR Controller" –
      Set this checkbox when you are using the SteppIR controller.
      It causes the Orion to be polled for frequency once every 2
seconds
      even if POLLING is off so the SteppIR can keep track of the
current
      frequency.

      If you are using the Tentec Eagle or TenTec Argonaut VI, since
      there is no comport on these radios, Steppir control must be done
      from a separate comport dedicated to Steppir. First, do not turn
      on the "Using SteppIR Controller" check box. Instead, go to the
      special Steppir settings in the "Usr5 TrnsV" settings window.
Here
      you will find a "Separate Steppir Comport" check box and comport
list
      box. If you are using the Steppir and need to use a separate
comport
      for Steppir, this is where you define the comport number for the
      Steppir controller. The program will run the Steppir comport at
      57600 baud and use a TenTec Orion interface to communicate with
the
      Steppir controller. Connect the serial cable to the steppir "data
in"
      port, not the data out port.

                        Interface2 Window

   This window allows you to configure your secondary comport for the
   RX340. The listbox on this window defines the comport number used as
the
   secondary radio port for the RX340. If you do not have an RX340
   attached, select "NONE" for the comport.

   Use RX340 for VFO B in Ham Bands –
     Checking this box will cause the RX340 to be used as VFO B when VFO
A
     is tuned to the ham bands. Not checking this box will cause the
Orion
     sub-receiver to be used as VFO B when VFO A is tuned to the ham
bands.

   Use RX340 for VFO A in Ham Bands –
     Checking this box will cause the RX340 to be used as VFO A all the
time.
     This allows the Orion just to be used as the transmitter and the
Orion
     main receiver to be used as the VFO B sub-receiver in the ham bands.

   Reinitialize RX340 –
     Checking this box will cause a full reinitialize of the rx340. I
have
     seen times when serial communication with the rx340 is lost. This
button
     will restore serial communication. If DUAL is on when this is run,
     DUAL needs to be shut off and then back on.

   When VFO A is not tuned to the ham bands, the RX340 will always be
used

for VFO A and the Orion sub-receiver or main receiver will be used
for VFO B.

                     Button Setup Window (Argonaut VI Only)

  This settings window allows you to configure the Argonaut VI
  programmable buttons. At program startup it will read the current
  settings from the Argonaut VI and show them on the six list boxes
  for the buttons.

  You can then change them to any values you wish.

                            Frequency Event Timer

   This option is selected with a check box in "Preferences3". This
feature
   allows you to define frequency events and have the radio go to those
   frequencies when the time for the event occurs. This is very useful
for
   unattended operation with a receiving radio on the internet. The
frequency
   events are defined in a special file called "events.txt". This file
is
   created the first time you turn this option on with its check box. The
file
   is located in the c:\n4py folder or wherever you have the program
   installed.

   Once you have turned on the option the first time, exit the program,
   and edit the "events.txt" file to create frequency events. Do not
edit
   the file with the program running. The file is column sensitive. Each
   time must be 2 numeric characters followed by a colon, followed by 2
   numeric characters. There should then be one space followed by a
   frequency expressed in megahertz.

   The events are defined by the day of the week. There can be up to 24
   events for each day of the week. The file has a section for each day
   of the week and 24 events for each day. You should carefully edit the
   default lines with the values you want. All the default lines have
   a time of 00:00 and a frequency of 00.000. These times are in the
   local time of your computer and not in UTC. The times must be in 24
hour
   time with a range from 00:00 to 23:59. When program finds a match
   with the day of the week, hour, and minute, the program will change
   to the indicated frequency and set the corresponding default mode
   and filter.

                               Internal Tuner

  Setting the "Enable Intrnl Tuner" check box in the "Transmitter"
window
   of the "settings" menu will cause the Orion internal tuner
   controls to appear at the lower left side of the radio panel.
   There are 2 buttons. They are:

     1) "Auto Tnr" - Left clicking this button will cause the internal
        tuner to go into auto tune mode. When the SWR stabilizes or 8

seconds go by, it will automatically stop.

   2) "Bypass" - Left clicking this button will put the internal tuner
      into bypass mode, thus removing it from the output circuit.

There is also a slider in the "transmitter window" of the settings
window. This slider is labelled "Tuner Pwr" and controls the amount
of power used when the internal tuner is tuning. The range is 10 to
50 watts.

Please note that you must have purchased the Orion internal tuner
from Ten-Tec for this to work.

                    LDG Electronics AT-200PC Autotuner

Setting the "Enable AT-200PC" check box in the "Transmitter" window
of the "settings" menu will cause the memory tuner
controls to appear at the lower left side of the radio panel.
You must also set the correct comport for the AT-200PC.
When using the Jupiter with the AT-200PC, you must be in pegasus
emulation mode. The Jupiter cannot be keyed from the program while
in front panel mode.

The LDG AT-200PC must be at firmware version 1.9 or later for correct
operation. See the LDG website for how to upgrade your tuner to this
version.

When using this tuner, the program will remember the tuner antenna
settings by band. In addition, when changing bands with the program
band buttons, the last tuner setting for that band will be recalled
automatically without transmitting. If for some reason, it is ever
necessary to clear out the EEPROM in the LDG tuner, the "Clear Mem"
button in the "Transmitter" section of the settings menu can be used
for this purpose. This will clear out all tuner memories. This is
necessary if you have changed antennas and want to setup new tuner
memories. Also, it is recommended that you perform an "Auto Tnr"
on each band you will operate. For bands 7 mhz and up, you should do
one "Auto Tnr" in the CW portion and another one in the SSB portion
for the band you use. For 80 meters, you should do an "Auto Tnr" for
at each 100 khz interval. For 160 meters, you should do one at each
50 khz interval for the portion of the band you intend to use. All
these "Auto Tnr" operations must be done with the correct antenna
selected. Once these "Auto Tnr" functions have been done, it will
not be necessary to do them again unless your antennas change.

   There are 8 buttons. They are:

   1) "Auto Tnr" - Left clicking this button will cause the
      memory tuner to go into auto tune mode. When the tune completes
or
      20 seconds go by, it will automatically stop. When it completes,
the
      store memory routine will automatically run to save the current
      settings for the particular memory range you are in. If the
      "Auto Tnr" button turns red after the tune operation is over,
      it indicates the tune operation failed and the tune needs to
      be done again. Also, if the "Auto Tnr" button remains blue,
      it indicates the program 20 second timer timed out without
      getting a response from the tuner. If you click the "Sto"
button,

the program will accept the settings from the failed tune.

    2) "Bypass" - Left clicking this button will put the memory
        tuner into bypass mode, thus removing it from the output circuit.
        Click the "Rcl Tuner" button to put the tuner back in use.

    3) "Ant1" - Left clicking this button will toggle between the
        tuner's antenna 1 and antenna 2 connection.

    4) "Cap" - Left clicking this button will tweak the capacitor
setting
        of the tuner "down" in value. Right clicking this button will
        tweak the capacitor setting "up" in value.

    5) "Ind" - Left clicking this button will tweak the inductor setting
        of the tuner "down" in value. Right clicking this button will
        tweak the inductor setting "up" in value.

    6) "HiZ" - Left clicking this button will cause to tuner to
        go to its "Lo Z" or low impedance setting. Left clicking again
        will cause the tuner to go to its "Hi Z" or high impedance
setting.
        The descriptor on the button indicates the current impedance
        setting of the tuner.

    7) "Sto" - Left clicking this button will cause to memory tuner
        to save its current settings for this frequency to memory. It
is
        only necessary to use this button if the "touch up" cap and ind
        buttons have been used.

    8) "Rcl Tnr" - Left clicking this button will cause the memory
        tuner to recall the last settings for this frequency from the
tuner's
        memory. If the SWR is greater than 2.0, the "Auto Tnr"
procedure
        will automatically be started to try and find a better match. If
the
        "Auto Tnr" button turns red after the tune operation is over,
        it indicates the tune operation failed and the tune needs to
        be done again. If you click the "Sto" button, the program will
        accept the settings from the failed tune.

  There is a tuning paramter in the orion.ini file to set the SWR
  threshold. Look for the line that says:

    LDG SWR THRESH=50

  To change the SWR threshold, change the value to one of the following:

    50 = 1.1
    51 = 1.3
    52 = 1.5
    53 = 1.7   This one seems to work the best for me
    54 = 2.0
    55 = 2.5
    56 = 3.0

  The default is 53 for 1.7 to 1 threshold.

External LDG Model AT-11MP Tuner

   Thanks go to Mark Erbaugh, N8ME, for information on this feature.

   Please note that some computer's serial port will not work with
   the DTR line turned off. Turn on the external tuner feature and
   then exit and restart the program. If the program still communicates
   properly with the radio, then you can use the external tuner feature.

   You can now use the LDG external tuner model AT-11MP by making a
simple
   wiring change to your serial port cable for the Orion. If you wire
   the DTR line (pin 4) of the serial cable to the "Tune" line of
   the LDG external tuner, automatic tuning is possible. This is done
   as follows:

   You must modify the serial cable for your Orion. You will need the
   extra following parts:

     a female DB9 connector to plug into the tuner
     2N2222 transistor
     1000 ohm 1/4 watt resistor
     5 feet of RG-174 thin coax (RG-58 will work also)

   Carefully remove the insulation from the cable to expose the
individual
   wires inside the cable. You need to determine the wire that goes to
   pin 4. This is the DTR line. You can use a small pin and an ohm
meter to
   determine this. You also need to find the wire that goes to pin 5.
   This is ground on the serial cable.

   Solder the pin 4 wire the 1000 ohm resistor.

   Solder the other end of the resistor to the base of the 2N2222
transistor.

   Solder the pin 5 wire to the emitter of the transistor.

   Now take the RG-174 coax and solder the center lead of the coax to the
   collector of the transistor.

   Solder the shield of coax to the emitter of the transistor.

   Now, using the DB9 female connector, solder pin 2 (tune) of the DB9
   to the other end of the coax.

   Solder the shield of the coax to pin 4 of the DB9.

   This is shown schematically below.

    serial cable   coax
                                          -------- to pin 2 (tune) of tuner
DB9
                                         /
    DTR PIN 4 --------1000 ohms---- | 2N2222
                                         \
                                          >
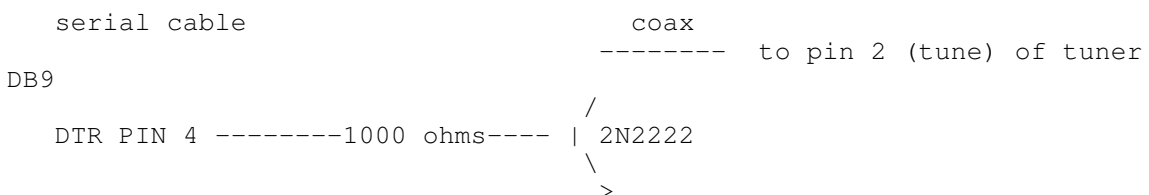
```
   GND PIN 5 ------------------------|------   to pin 4 (GND) of tuner
DB9
```

  The above will allow DTR of the serial cable to control the
  "Tune" function of the tuner.

  Program settings:

  Setting the "Enable Extrnl Tuner" check box in the "Transmitter"
window
  of the "settings" menu will cause the Orion external tuner
  control to appear at the lower left side of the radio panel.
  There is 1 button for this. It is labelled "Auto Tnr".
  Left clicking this button will cause the external tuner to go into
auto
  tune mode. When the SWR stabilizes or 8 seconds go by, it will
  automatically stop.

  There is also a slider in the "transmitter window" of the settings
  window. This slider is labelled "Tuner Pwr" and controls the amount
  of power used when the external tuner is tuning. The range is 10 to
  50 watts.

                        Alpha 87A Amplifier

  There are special settings in the orion.ini file for using an
  Alpha 87A amplifier. If you have an this amplifier, with the program
  NOT running, open the orion.ini configuration settings file and
  find the line that says:

    ALPHA 87A COMPORT=NONE

  and change it to

    ALPHA 87A COMPORT=COMx

  where COMx is the actual comport number for the amplifier.
  Then save the change.

  Now when you start the program, use "Alt-J" to bring up the Amp
  Window. Here you will see a line that is labelled "Alpha 87A".

  There is an "Off" button, Clicking this button will change the button
  text to "On" and turn on the amplifier. Clicking this button button
  again will change the button text to "Off" and turn the amplifier off.
  If the amplifier is already on at program start, you can click this
  button to the on state and the amplifier will just stay on.

  There is a "Oper" button. Clicking this will cause the button to turn
  red and set the amplifier in operate mode. Clicking it again will
  cause the button to go back to black and put the amplifier back in
  standby mode.

  The amplifier will be polled once a second for power output. This
  value will be displayed just to the right of the "Oper" button.

  The default baud rate for the amp is 4800. This can be change in the
  orion.ini configuration setting file by change the line

ALPHA 87A BAUD=4800

with the program NOT running.

                      Elecraft KPA500 Amplifier

There are special settings in the orion.ini file for using an
Elecraft KPA500 amplifier. If you have an this amplifier, with
the program NOT running, open the orion.ini configuration settings
file and find the line that says:

   KPA500 COMPORT=NONE

and change it to

   KPA500 COMPORT=COMx

where COMx is the actual comport number for the amplifier.
Then save the change.

Now when you start the program, use "Alt-J" to bring up the Amp
Window. Here you will see a line that is labelled "KPA500".

There is an "Off" button, Clicking this button will change the button
text to "On" and turn on the amplifier. Clicking this button button
again will change the button text to "Off" and turn the amplifier off.

There is a "Oper" button. Clicking this will cause the button to turn
red and set the amplifier in operate mode. Clicking it again will
cause the button to go back to black and put the amplifier back in
standby mode.

The amplifier will be polled once a second for power output. This
value will be displayed just to the right of the "Oper" button and
also on the S meter display during transmit.

The KPA500 must be set to 38400 baud. This is the only baud rate that
allows the amp to be powered on.

There is a fault button at the end of the KPA500 line. If the
KPA500 sends any faults, they will be displayed in this button. You
can click this button to clear the fault condition.

The temperature of the KPA500 power output section is displayed just
to the left of the fault button. The temperature is displayed in
degrees C.

                      Acom 2000 Amplifier   (using old Acom control box)

There are special settings in the orion.ini file for using an
ACOM 2000 amplifier that has the older control box. If you have
an this amplifier, with the program NOT running, open the orion.ini
configuration settings file and find the line that says:

   ACOM COMPORT=NONE

and change it to

   ACOM COMPORT=COMx

where COMx is the actual comport number for the amplifier.
Then save the change.

The program will send frequency information to the Acom 2000
amplifier.
Connect the serial cable to the Acom amplifier serial connection. The
serial cable must be a null modem cable and only use pins 2, 3, and 5.
That is to say that pin 2 on one end goes to pin 3 on the other and
vice versa. This will cause the Acom 2000 to follow the frequency of
the radio without the need to transmit to set the frequency. Once you
have made these changes to the program settings, exit and restart the
program for these changes to take full effect.

Now when you start the program, go to the "Call Sign, TopTen" settings
window. Here you will see a line that is labelled "ACOM 2000".

There is a "Oper" button. Clicking this will cause the button to turn
red and set the amplifier in operate mode. Clicking it again will
cause the button to go back to black and put the amplifier back in
standby mode.

The amplifier will be polled once a second for power output. This
value will be displayed just to the right of the "Oper" button.

The default baud rate for the amp is 1200. This can be change in the
orion.ini configuration setting file by change the line

    ACOM BAUD=1200

with the program NOT running.

                    Yaesu Quadra VL-1000 Amplifier

  The Yaesu Quadra can be automatically controlled for band settings.
  To set this up you need to use two serial ports and make a spcial
cable.

  The cable is made from two female DB9 connectors that connect to the
two
  serial ports and 1 Din plug that connects to the Yaesu Quadra din plug
for
  band information.

  The cable itself is two rg-174 lengths of wire long enough to go from
the
  Yaesu Quadra to the two serial ports.

  Connect the cable as follows:

      VL1000   Serial DB9's
        DIN
    pin 4   A   Serial AB pin 7 for the Serial AB port
    pin 5   B   Serial AB pin 4 for the Serial AB port
    pin 6   C   Serial CD pin 7 for the Serial CD port
    pin 7   D   Serial CD pin 4 for the Serial CD port
    pin 3   Gnd   Serial pin 5   for both port grounds

  Once the cable is made, you need to put settings in the orion.ini

configuration settings file as follows:

   With the program NOT running, open the orion.ini configuration
settings
   file and find the line

      SERIAL AB COMPORT=NONE

   and change it to

      SERIAL AB COMPORT=COMx when COMx is the comport for the AB lines

   and for the CD port find the line

      SERIAL CD COMPORT=NONE

   and change it to

      SERIAL CD COMPORT=COMx when COMx is the comport for the CD lines

   and save the changes.

   Now when you run the program with the amp, the amp will automatically
   follow the band the radio is on.

                     Palstar AT-Auto Tuner

   The Palstart AT-Auto tuner can be controlled from the program. Set it
   up as follows:

   With the N4PY Orion program NOT running, open the orion.ini
   configuration file. It is in the c:\n4py folder or wherever you
   installed the program.

   Find the line

   BOB COMPORT=NONE

   and change it to

   BOB COMPORT=COMx where COMx is the physical comport that is connected
   to the Palstar AT-Auto Tuner

   Find the line

   PALSTAR=0

   and change it to

   PALSTAR=1

   Find the line

   PALSTAR BAUD=4800

   and change it to the actual baud rate you have selected in the tuner.
   Also, in the tuner make, set it to Kenwood CAT only. Save the
changes.

   The program will send out the operating frequency to the amplifier

once a second.

   The serial cable for the tuner needs to be a standard straight through
   cable. That is pin 3 (transmit data) on the computer end needs to go
   to pin 3 (receive data) on the tuner end. Also pin 5 for ground on
the
   computer end needs to go to pin 5 on the tuner end.

                    External Ports for other Programs Overview

   The N4PY Control program has 5 external ports for hooking up digital
   programs, logging programs, panadapter programs, and CW skimmer.
These
   external ports are called THP ports. The name "THP" comes from the
first
   use of external ports for the Tokyo High Power amplifiers. The idea
   on hooking up programs through these ports is to simulate a Kenwood
   radio operating on a different comport. The ports are actually
connected
   with a software cable called a virtual comport pair. Don't let the
name
   scare you, it's just a fancy word for programs to share memory and
   communicate with each other. Virtual comports will work with any baud
   rate and serial settings so don't worry about the comport settings.
   Again this is simply because they are just memory transfers and not
real
   serial ports at all. Anyway, all you need to make them is a program
   called VSPManager. This is a free program and there's a link on my
   "Previous Versions" page to send the author an email and ask him for
it.
   Once you create a virtual comport pair (again it's really a software
   cable with a comport on each end), you put one of the comports as the
radio
   comport in one program and the other comport in the N4PY control
program
   as a THP port.

                        Third Party Logging Programs

   The easiest way to interface a logging program with an N4PY control
program
   is to use the Tentec File Interface. This can be done with any
logging
   program that has a Tentec Pegasus listed as a supported radio. What
   you do is in the logging program, select the Tentec Pegasus as the
radio type.
   Also, in the logging program you must set its transfer folder to c:
\n4pyor
   of wherever you installed the N4PY control program. Once you do this,
the
   logging program will no longer use a comport to communicate to the
radio.
   Instead, it will communicate with the N4PY control program via a file.
   This is a very easy way to connect logging programs.

   DXLab uses the tentec file interface. In DXLab, select "Pegasus-
N4PY" for
   the radio type and set the "Control Folder" to the folder where the
N4PY program

is installed.

If the logging program does not support the Tentec Pegasus, then you
can still hook up the logging program to the N4PY control program via
a virtual comport pair. There is where for the Tokyo HP comport
comes in.
If you have a logging program such as N1MM or a digital program such
as
FLDigi that does not support the Tentec file interface, you can use
this
port in conjunction with the VSP Manager virtual comport driver to get
the
third party program to work with your radio and the N4PY control
program at
the same time. First, you need to install the virtual comport driver.
You
can get it on my website at www.n4py.com. Go to the "Previous
Versions"
page and there is a link to ask the author for it. For FLDigi, see
the next
section.

Please note VSPManager and MicroHam are not compatible. If you are
using
MicroHam, see the section "MicroHam and VSPManager".

Once this virtual comport driver is installed, it will give you a pair
of comports to use. Use VSP Manager to define
these comport pairs. In your logging program, set it for one of these
comports and select a radio type of Kenwood TS-570 (Kenwood TS-50 for
HRD,
just "Kenwood" for N1MM). Set the other comport in the External Ports
settings
window for the THP comport 1. Also turn on the check box
"Tokyo HP Comport 1" and "Use THP Comport for EXT Logging Program".
After
these changes are made, exit and restart the program. Your third
party
logging program should now see the N4PY Orion program as though it was
a
Kenwood radio, regardless of the actual radio you are using.

If your third party logging program supports the K1EL winkey keyer,
you can get it to send its CW messages to the N4PY program.
This is done through K1EL keyer emulation in the N4PY program.
First you make a virtual comport pair for this function. You can
use any virtual comport program. If you don't have one, there is
a link to VSP Manager on the "Previous Versions" page of the N4PY
website. This is an excellent virtual comport program.

Once you have the virtual comport pair, define one of the pairs in
the third party logging program as the K1EL keyer comport. Then
with the N4PY program NOT running, open the orion.ini configuration
file.

Find the line that says

EMUL K1EL=0

and change it to

EMUL K1EL=1

Next find the line that says

BOB COMPORT=NONE

and change it to

BOB COMPORT=COMx where COMx is the other half of the virtual comport
pair. Then save the changes.

Now when you run the N4PY program, the CW messages sent in the
third party logging program will come to the N4PY program. This is
very useful when running remotely using the Client-Server function
since this will cause the CW message characters to get sent to the
N4PY server for transmission.

                        FLDigi Setup

This assumes you have run VSPManager and created a virtual comport
pair using COM14 and COM15. This makes a software cable with COM14
on one end and COM15 on the other end. The pair can be anything but
COM14 and COM15 is used in this example.

In N4PY, select the External Ports settings window from the yellow
settings window.

Turn on "THP Comport 1" check box.
Below it select COM14, one end of the software cable.
Turn on "Use THP Comport for Ext Logging Program".

Exit and restart N4PY.

Now start FLDigi.
Select "Configure"
In the list box you get select "Rig Control".
In the new window, select "RigCAT".
There is a rig description file in the folder where you installed
the N4PY program called TS-570.xml. Set this as the rig description
file.
Turn on "CAT command for PTT".
For Device select COM15, the other end of the software cable.
Turn on "Use RigCAT".
Click "Initialize"
Click "Save", then "Close".
FLDigi should now show the same frequency as N4PY and your radio.

                    MicroHam and VSPManager

MicroHam and VSPManager are not compatible with each other. If you
are
using MicroHam you cannot create virtaul comport pairs with
VSPManager.
Instead, you create a "virtual cable" and turn on the TX check box in
the "Create Virtual Cable" dialog of MicroHam. This action will give
you a virtual comport pair just like VSPManager. You may need to
reboot
your computer after doing this so that Windows can get everything
straight.

Using LP-Pan and NaP3 with your Radio

  The Tokyo HP comport can also be used with your radio and N8LP's
  panadaptor. To use the N8LP panadaptor, several steps must be done.
  This setup interfaces the N4PY program directly to NaP3. The N4PY
  program will emulate a K3 and appear as a K3 to NaP3.

  They are as follows:

  1) Install the hardware mod to bring out the Orion 9 mhz wide band
     IF to the spare jack. Details for this mod can be found at

       http://www3.telus.net/ve7tk/9MHz_IF.pdf

  2) Install VSP Manager. I have a link on my "Previous Versions" page
  for it.

  Please note VSPManager and MicroHam are not compatible. If you are
  using
  MicroHam, see the section "MicroHam and VSPManager".

  3) Use VSP Manager to define these comport pairs.

  4) Install NaP3. Configure its setup comport for one half of the
     virtual comport pair defined in VSP Manager. Also, configure
     NaP3 for a K3, regardless of the radio you are using.

  5) Configure the N4PY Orion program's Tokyo HP comport for the
     other virtual comport in the External Ports settings window for the
     Tokyo HP comport. Also turn on the check box "THP Comport 1",
     "Use THP Comport for EXT Logging Program", and "NaP3 Panadapter".
     After these changes are made, exit and restart the program.

  The THP comport will now communicate with NaP3 and act as a K3
  radio. This will allow the N8LP panadaptor to work very nicely
  with the radio and run the N4PY program at the same time.

          Using LP-Pan and TRX-Pan with your Radio

  If you have LP-Pan, there is a much simpler panadapter program
  that can be used with it. TRX-Pan is available with direct interface
  from N4PY that does not use any virtual comport or LP-Bridge. This
  interface does not use any virtual comports at all. Instead, it uses
  a unique interface through the Windows Registry.

  If you have TRX-Pan installed, all you need to do in N4PY is go to
  the "External Ports" settings window and turn on the check box
  labelled
  "TRX-Pan Panadapter". This will cause frequency, mode, and filter
  settings to be sent to TRX-Pan and also allow clicking on signals
  in TRX-Pan to change the radio frequency.

  In the TRX-Pan program, turn on the "N4PY" for CAT control setting.
  You must have TRX-Pan V2.0.5 or later for N4PY. TRX-Pan does not
  run on Windows Vista.

Using LP_Pan directly with NaP3 or TRX-Pan and also using N1MM
                      and CW Skimmer all at the same time

The program has 4 additional THP comports that can be configured
along with the main THP comport described above to allow other
programs to operate with the N4PY program. These 2 additional
comports can be used to run N1MM and CWSkimmer. These comports
emulate a K3 radio to the other programs.

After you have setup the main THP comport for NaP3 or TRX-Pan,
create a second virtual comport pair. Configure one of these
pairs in the N1MM comport setting. Configure the other half of
this second comport pair in N4PY as follows:

With the N4PY program NOT running

1) Open the orion.ini configuration file
2) Find the line that says

 THP2 COMPORT=NONE

and change it to

 THP2 COMPORT=COMx where COMx is the other half of this second
 comport pair.

Then save the change.

If you then also want to use CWSkimmer, create a third virtual
comport pair. Configure one of these pairs in the CWSkimmer
comport setting. Configure the other half of this third comport
pair in N4PY as follows:

With the N4PY program NOT running

1) Open the orion.ini configuration file
2) Find the line that says

 THP3 COMPORT=NONE

and change it to

 THP3 COMPORT=COMx where COMx is the other half of this third
 comport pair.

Then save the change. You will now be able to run the N4PY Orion
program along with NaP3 or TRX-Pan, N1MM, and CWSkimmer all at the
same time with the no need to use LP Bridge.

There is also THP4 COMPORT=NONE and THP5 COMPORT=NONE that
can be setup for more combinations.

Also if you want a THP port to send out VFO B frequency information
for a THP port, find the line

THP VFOB PORT=0

and change it to

THP VFOB PORT=X where X is 1 to 5 depending on which THP port you
want to follow VFO B. This is useful if you have a radio that has

two receivers and you want CW Skimmer to follow the second receiver.
Setting this to 0 turns this feature off.

VE7TK has done a great writeup at putting this all together. It
is at <http://www3.telus.net/ve7tk/LP_PAN.pdf>

    Using any Flex Radio or SDR-IQ with your Orion or Orion II as a
Panadapter

The Tokyo HP comport can also be used with your radio and Flex Radio's
Flex 1500 (or any other Flex radio, or SDR-IQ) as a panadaptor and
sub-receiver. This radio is a great one to use because the Flex-1500
is only $579 from Flex Radio. To use the Flex-1500 as a panadaptor,
several steps must be done. This setup is built around the current
version PowerSDR version from Flex Radio. Please note all panadapters
are muted unless Dual receive is turned on.
They are as follows:

1) Install VSP Manager. I have a link on my "Previous Versions" page
to it.

Please note VSPManager and MicroHam are not compatible. If you are
using
MicroHam, see the section "MicroHam and VSPManager".

2) Use VSP Manager to define these comport pairs.

for Flex radios:
  3) Install the Flex radio with all its supporting software.

     Configure PowerSDR for CAT using one of the comport pairs.
     In PowerSDR, turn on "Allow Kenwood AI Command".
     When running with PowerSDR, changing the mode or filter from
     the PowerSDR program does not change anything in the N4PY
program.
     Mode changes in the N4PY program are sent to PowerSDR. Filter
     values are not sent to PowerSDR.

 Or for SDR-IQ
   3) Install all the SDR-IQ supporting software. This is the SDR-
RADIO
       program from SDR-RADIO.COM

       Configure the SDR-IQ software for HF Tracking using one
       of the VSP Manager comport pairs.

       OR

       Use Spectravue with "External Radio Setup"as Kenwood
TS850/870/950.
       Keep Same Center Frequency, HF Tracking Mode, and
       Mode Tracking are check/enabled.

  4) Configure the N4PY program's Tokyo HP comport for the
     other virtual comport in the External Ports settings window for the
     THP comport 1. Also turn on the check box "THP Comport 1",
     and "Use THP Comport for EXT Logging Program".
     For Flex Radios also turn on "PowerSDR Panadapter".
     For SDR-IQ radios, also turn on "SDR-IQ/HDSDR Pan".

After these changes are made, exit and restart the program.

The THP comport will now communicate directly with powerSDR or SDR-IQ.
This will allow the Flex or SDR-IQ radio panadaptor to work very nicely
with your Orion.

Using any HDSDR Radio with your Radio as a Panadapter

The Tokyo HP comport can also be used with your radio and any radio
controlled with HDSDR as a panadaptor and sub-receiver. The setup
requires several steps.

They are as follows:

1) Install VSP Manager. I have a link on my "Previous Versions" page
for it.

Please note VSPManager and MicroHam are not compatible. If you are using
MicroHam, see the section "MicroHam and VSPManager".

2) Use VSP Manager to define a comport pair. Let's assume you define
   COM10 and COM20. They can be anything as long as they are not used
   by anything else.

3) Install HDSDR and the panadapter radios drivers.

    In HDSDR, in F7 Options, select "CAT to HDSDR".
    Set the PORT to one of the comport pairs (like COM10 in this
example).
    Select "Activate". Make sure it shows a check mark.
    The baud rate does not matter with a virtual comport.

4) In "External Ports", configure the N4PY Orion program's Tokyo HP
comport for the
   other half of the virtual comport pair (like COM20 in this example)
   for the Tokyo HP comport. Also turn on the check box
   "Tokyo HP Comport",
   "Use THP Comport for EXT Logging Program".
   If you are using an antenna connection to the SDR radio, turn on
"SDR-IQ/HDSDR Pan".
   If you are using a a fixed IF output to the SDR radio, turn on
"HDSDR Fixed IF".
   After these changes are made, exit and restart the program.

The THP comport will now communicate directly with HDSDR.
This will allow the HDSDR radio panadaptor to work very nicely
with your radio.

Using WSJT-X with N4PY Software

1) Install VSP Manager. I have a link on my "Previous Versions" page
for it.

Please note VSPManager and MicroHam are not compatible. If you are using
MicroHam, see the section "MicroHam and VSPManager".

2) Use VSP Manager to define a comport pair. Let's assume you define
   COM10 and COM20. They can be anything as long as they are not used
   by anything else.

3) Download and install OmniRig.

4) In OmniRig, set the radio type to "Kenwood".

5) Set the PORT to one of the comport pairs (like COM10 in this
example).

6) Set RTS to High.

7) The other OmniRig parms do not matter for virtual comports.

8) In "External Ports", configure the N4PY Orion program's Tokyo HP
comport for the
   other half of the virtual comport pair (like COM20 in this example)
   for the Tokyo HP comport. Also turn on the check box
   "Tokyo HP Comport",
   "Use THP Comport for EXT Logging Program".
   After these changes are made, exit and restart the program.

9) In WSJT-X, set the radio to "OmniRig Rig 1".

10) Use CAT PTT for keying.

The THP comport will now communicate directly with OmniRig and OmniRig
will
communicate with WSJT-X.

          Using any SDRConsole Radio with your Radio as a Panadapter

The Tokyo HP comport can also be used with your radio and any radio
controlled with SDRConsole as a panadaptor and sub-receiver. The
setup
requires several steps.

They are as follows:

1) Install VSP Manager. I have a link on my "Previous Versions" page
for it.

Please note VSPManager and MicroHam are not compatible. If you are
using
MicroHam, see the section "MicroHam and VSPManager".

2) Use VSP Manager to define a comport pair. Let's assume you define
   COM10 and COM20. They can be anything as long as they are not used
   by anything else.

3) Install SDRConsole and the panadapter radios drivers.

     In SDRConsole, in "Options", select Controllers and then "CAT"
and then
        Port Selection.
     Set the PORT to one of the comport pairs (like COM10 in this
example).
        The baud rate does not matter with a virtual comport.

4) In "External Ports", configure the N4PY Pegasus program's Tokyo HP
comport for the
     other half of the virtual comport pair (like COM20 in this example)
     for the Tokyo HP comport. Also turn on the check box
     "Tokyo HP Comport",
     "Use THP Comport for EXT Logging Program".
     If you are using an antenna connection to the SDR radio, turn on
"SDR-IQ/HDSDR Pan".
     If you are using a a fixed IF output to the SDR radio, turn on
"HDSDR Fixed IF".
     After these changes are made, exit and restart the program.

   The THP comport will now communicate directly with SDRConsole.
   This will allow the SDRConsole radio panadaptor to work very nicely
   with your radio.

        Using the Microtelecom Perseus Receiver your Radio as a Panadapter

   The Tokyo HP comport can also be used with your Orion and
Microtelecom's
   Perseus receiver as a panadaptor and sub-receiver. This radio is a
   great one to use because of its excellent receive characteristics. To
   use Perseus as a panadaptor, several steps must be done. They are as
   follows:

   1) Install VSP Manager. I have a link on my "Previous Versions page
to it.

   Please note VSPManager and MicroHam are not compatible. If you are
using
   MicroHam, see the section "MicroHam and VSPManager".

   2) Use VSP Manager to define a comport pair.

   3) Install the Perseus radio with all its supporting software.

     Configure the Perseus program for one of the virtual comport pairs.
     When running with Perseus, changing the mode or filter from
     the Perseus program does not change anything in the N4PY program.
     N4PY only picks up the frequency from the Perseus program.
     Frequency, mode, and filter changes in the N4PY program are sent to
     the Perseus program.

   4) Configure the N4PY Orion program's Tokyo HP comport for the
     other virtual comport in the External Ports settings window for the
     Tokyo HP comport. Also turn on the check box "THP Comport 1",
     "Use THP Comport for EXT Logging Program", and "Perseus
Panadapter".
     After these changes are made, exit and restart the program.

   The THP comport will now communicate directly with the Perseus
program.
   This will allow the Perseus program panadaptor to work very nicely
with
   your radio. Please note when split or dual is turned on in N4PY, the
   VFO B frequency will be sent to the perseus program. Likewise, with
   split or dual on in N4PY, N4PY will get the frequency from Perseus and
   put it in VFO B.

SPE 1.3K, 1K-FA and 2K-FA Amplifiers

   There are special Tokyo High Power settings in the "External Ports"
   settings window. Here you will find a "THP Comport 1" check
   box and comport list box. Also turn on the setting "Use THP Comport
for
   EXT Logging Program. If you are using the SPE amps, this is where you
   define the comport number for the amplifier. The program will run the
   comport at 9600 baud and use a Flex radio interface to communicate
with
   the amplifier. Connect the serial cable to the amplifier serial
   connection and set the band control on the amplifier to "Flex". The
   program will send out the operating frequency to the amplifier once a
   second. Using the Flex radio interface allows the amplifier the send
   the radio power drive level. This drive level is received from the
   amplifier and sent to the radio. This allows the drive level to be
   automatically set for those radios that do not have and ALC input from
   the amplifier. If your radio does use ALC for the amplifier, then set
   the band control in the amplifier to "Kenwood".

   Make a special cable with just 3 wires in it. The cable will have a
   female DB9 and a male DB15.
   Connect the pins together as follows:

      DB9   DB15
      pin 2   pin 9
      pin 3   pin 1
      pin 5   pin 4

   The program will run the comport at 9600 baud and use a Kenwood radio
   interface to communicate with the amplifier. The program will respond
   to queries from the amplifier as though the radio were a Kenwood radio
   no matter what radio you are actually using.

   If you use this program with more than one radio, there is a method
   whereby you can use the same amplifier power input settings with
   different radios. There are two ways to use this.

   Method 1 (One global multiplier for all bands) - This method allows
   you to set one percentage mutilpier for the second radio. The idea
   is the expert amp has been set to change the power out from the radio
   for each band. Now with a second radio, you may find that every band
   is a little high or a little low.

   Go to the settings window and select the "Transmitter Settings".
   Turn off the check box "Expert Amp Drive by Band". Put the multiplier
   in the "Expert Amp Drive Factor" edit box for the correct drive level.

   Change this to a little higher of a little lower depending on whether
power
   output is high or low. This value will be the same for all bands.

   Method 2 (A different multiplier for each band segment) - This method
   allows you to set a percentage mutilpier for the second radio for each
   band. The idea is the expert amp has been set to change the power out
   from the radio for each band. Now with a second radio, you may find
   that each band is either a little high or a little low.

   First, with the amp runing and connected to Pegasus Plus, open the
settings
   window and in the "Transmitter Settings" window, turn on the check box

"Expert Amp Drive by Band". Then go to each band and adjust the edit
box
  "Expert Amp Drive Factor" for the correct drive level to the amp for
that
  band segment.

                      Tokyo High Power Amplifier HL-1.5KFX and
                      Acom 2000 Amplifier (using Newer Acom Kenwood command
set)
                      Ameritron ALS-1306

  There are special Tokyo High Power settings in the "External Ports"
  settings window. Here you will find a "THP Comport 1" check
  box and comport list box. If you are using the Tokyo High Power
  Amplifier HL-1.5KFX or the newer Acom 2000 amp, or any of the SPE
amps,
  this is where you define the comport number for the HL-1.5KFX
amplifier.
  The program will run the comport at 9600 baud and use a Kenwood
interface
  to communicate with the amplifier. Connect the serial cable to the
  amplifier serial connection and set the band control on the amplifier
to
  "Kenwood". The program will send out the operating frequency to the
  amplifier once a second.

  The serial cable for the Tokyo High Power SPE, and Acom amp needs to
be
  a null modem cable. That is pin 3 (transmit data) on the computer end
  needs to go to pin 2 (receive data) on the amp end. Also pin 5 for
  ground on the computer end needs to go to pin 5 on the amp end.

  For the Ameritron ALS-1306, you can use the Ameritron Kenwood cable
  with a null modem adapter on the serial port end. Or you can make
  your own cable which is what I did. I made a cable with two female
  DB9's. I connected them as follows:

        PC END   ALS-1306 END

      pin 3   to   pin 3
      pin 2   to   pin 4
      pin 5   to   pin 6

  Nothing else should be connected.

  The setting "Use Amp Tune Power on Band Change" is useful for
amplifiers. See the
  description of this in Preferences3. Also see the Amp Tune
description to
  prevent amp overdrive.

                      B26-PA RF2K5 Amplifier

  Frequency control via Ethernet is now available.

  To configure the RFKit, go to the Usr5, TransV settings window and
type
  in the RFKit IP address. If you are then using the original RFKit

that
  was a true kit, turn on "RFKit Original". If you are using the S
model,
  turn on "RFKit S Model".

  The program will then send the transmit frequency to the amp and allow
  automatic band switching for the amp.

  In the B26 amp, set the rig control to UDP-SRV. I also set a static
IP
  in the amp so it would not change.

  The setting "Use Amp Tune Power on Band Change" is useful for
amplifiers. See the
  description of this in Preferences3. Also see the Amp Tune
description to
  prevent amp overdrive.

                    Elecraft KPA1500 Amplifier

  Frequency control via Ethernet is now available.

  To configure the KPA1500 for ethernet control, go to the Usr5, TransV
settings window and type
  in the KPA1500 IP address. Also turn on the "KPA1500" checkbox.

  The program will then send the transmit frequency to the amp and allow
  automatic band switching for the amp.

  The setting "Use Amp Tune Power on Band Change" is useful for
amplifiers. See the
  description of this in Preferences3. Also see the Amp Tune
description to
  prevent amp overdrive.

                B26-PA RF2K5 Amplifier for SO2R with N1MM

  The RF-Kit can be setup with N1MM and be shared with 2 radios using
  a 4O3A 1 amp 2 radio switch. N4PY software can then be setup to send
  frequency information to RF-Kit according to which radio is the
  active radio.

  In N1MM, set 2 broadcast addresses using 2 different ports in the
  Radio broadcast section of N1MM.

  In N4PY, use 2 copies of the N4PY program and set the following
  in the N4PY INI file for each radio.

  N1MM RADIO=X where X corresponds to the active radio selected
  in N1MM. Setting this to 1 or 2 turns this feature on. Setting
  this to 0 turns this feature off.

  N1MM PORT=13060 set this to the correct value for the port the
  receive the radio information from N1MM to match the port values
  set in the Rdaio broadcast section of N1MM configuration.

  Once all these settings are in place, the RF-Kit frequency will
  follow the active radio.

FlexRadio PGXL Amplifier

  The FlexRadio PGXL amplifier can be controlled from the program.

  To configure the PGXL amp, go to the Usr5, TransV settings window and turn
  on the check box "Using Flex PGXL". Make sure the IP Address edit box on the
  bottom of this window is completely blank. Then exit and restart the program.
  The program will automatically find the amplifier via its ethernet connection.

  Also in the Usr5, TransV settings window is a check box to control Auto
  Fan Mode based on temperature. If the temperature goes above 60C, the fan
  mode is automatically changed to contest mode. If the temperture drops
  below 50C, the fan mode is automatically changed to standard mode.

  The MEFFA setting will now be remembered by band button. As you change
  bands, if you change the MEFFA setting for each band as you go there,
  that setting will be remembered by band button. So if you don't want
  MEFFA on 6 meters for example, you turn it off when you are on 6 meters.
  Then next time you will come back to 6 meters it will be turned off.

  Also if you want the PGXL to automatically follow the radio band, put the
  PGXL comport in one of the 5 external ports. The frequency and mode will
  be sent to the PGXL at 9600 baud over this port. You will need to use
  a null modem cable adapter for this. Set the PGXL to "Kenwood 2" at
  9600 baud, 8N1.

  Also there is an AMP THP setting in the pegasus.ini file to identify this
  external port as an amplifier port. Set AMP THP to the external port
  number (1 to 5, not the comport name) that you are using for the amp.

                            Bob S Meter

  Woodbox radio at www.woodbox.com has a little program that produces
  a very nice looking analog S meter. This program can be run with
  N4PY software.

  To use this Bob Smeter software, first go to www.woodbox.com (the
  exact link is on my website on the "Previous Versions" page) and
  download and install this program.

  Then using any virtual comport program such as VSPManager, make
  virtual comport pair for the Bob Smeter. Set one of these pairs in
  the Bob Smeter program.

  With the Orion program not running, go to
  the c:\n4pyor folder or wherever you installed the program and open
  the orion.ini configuration file.

Find the exact line that says:

BOB COMPORT=NONE

And change it to

BOB COMPORT=COMx

where COMx is the other comport for the virtual comport pair.
Then save the change.

You start and stop the Bob Smeter with the second button from the
left on the Bob Smeter window. Always start N4PY before starting
the Bob Smeter. Always stop the Bob Smeter before stopping N4PY.

Change the timeout of 20 milliseconds in the Bob Smeter to 100.

                            S Meter Lite

   There is also an interesting S meter program provided by W8WWV.
There's
  a link for this on my previous versions page.

   To use this S Meter software, first from my "Previous Versions" page
  download and install this program.

   Then using a virtual comport program such as VSPManager, make virtual
  comport pair for the S Meter Lite. Set one of these pairs in the S
Meter
  Lite program. Configure S Meter Lite for an Icom 756Pro, regardless
of
  what radio you are actually using.

   With the orion program not running, go to
  the c:\n4pyor folder or wherever you installed the program and open
  the orion.ini configuration file.

   Find the exact line that says:

  BOB COMPORT=NONE

  And change it to

  BOB COMPORT=COMx

  where COMx is the other comport for the virtual comport pair.

  Find the Line

  SMETER LITE=0

  and change it to

  SMETER LITE=1

  Then save the change.

  The S Meter Lite program will now work with the N4PY program.

4O3A Antenna Genius

The 4O3A Antenna Genius can be used as a software controlled
antenna switch.

To setup the program for the 4O3A Antenna Genius:

1) With the program NOT running, open the orion.ini file and find
the line that says:

    4O3A AG=0

and change it to

    4O3A AG=1

Also set the following line to the correct port and IP Address

    4O3A AG PORT=9007
    4O3A IP AG=192.168.1.250

Save the changes to the orion.ini file.

In the transmitter setting window, there is also a drop down box
for Radio 1 and Radio 2. Use this to select which side of Antenna
Genius is connected to a radio.

The N4PY program will send the active band to the Antenna Genius.
This requires that the application for Antenna Genius be properly
defined so that Antenna Genius knows what antenna to select by band.

              LDG Electronics DTS-4 and DTS-6 Coax Antenna Switch

The LDG DTS-4 and DTS-6 coax antenna switches are supported
To setup the program for LDG coax switch:

1) With the program NOT running, open the orion.ini file and find
the line that says:

LDG COAX COMPORT=

And change it to

LDG COAX COMPORT=COMx where x= the com number from 1 to 20

2) Find the lines that say:

ANT 1 LOW=0
ANT 1 HIGH=0
ANT 2 LOW=0
ANT 2 LOW=0
Etc.,
and set the ranges for each antenna in mHz. For example if
antenna 3 was to cover the 20 meter band, you should put

ANT 3 LOW=14.0
ANT 3 HIGH=14.3

Save the changes to the orion.ini file.

The controls for the switch will show up in the "transmitter" window
of the settings menu. With "Auto" selected, the frequency ranges
above will cause the particular antenna for that range to be selected.
If you select any antenna by clicking on its button, the auto
function is turned off and that antenna will remain selected even
if you change frequencies. Just click the auto button again to
restore automatic antenna selection back.

                   LDG 1000Pro Automatic Tuner

  The LDG 1000Pro Auto Tuner setting for antenna 1 or 2 can be
controlled
  if you are using my LDG tuner program version 1.02. This version is
  available for free on my test page on my website.

  To setup the Orion program for LDG 1000Pro Tuner:

  1) With the program NOT running, open the orion.ini file and find
  the line that says:

  LDG1000=0

  And change it to

  LDG1000=1

  2) Find the lines that say:

  ANT 1 LOW=0
  ANT 1 HIGH=0
  ANT 2 LOW=0
  ANT 2 LOW=0
  Etc.,
  and set the ranges for each antenna in mHz. For example if
  antenna 2 was to cover the 20 meter band, you should put

  ANT 2 LOW=14.0
  ANT 2 HIGH=14.3

  ANT RANGE 1=1
  ANT RANGE 2=2
  ANT RANGE 3=3
  ANT RANGE 4=4
  ANT RANGE 5=5
  ANT RANGE 6=6
  ANT RANGE 7=7
  ANT RANGE 8=8

  A selection for ANT3 will select ANT 1 with bypass enabled.
  A selection for ANT4 will select ANT 2 with bypass enabled.

  These lines assign the same range to the corresponding antenna
  by default. If for example you wanted both range 3 and range 6
  to control antenna 2, you would change

  ANT RANGE 3=2
  ANT RANGE 6=2

Save the changes to the orion.ini file.

The controls for the switch will show up in the "transmitter" window
of the settings menu. With "Auto" selected, the frequency ranges
above will cause the particular antenna for that range to be selected.
If you select any antenna by clicking on its button, the auto
function is turned off and that antenna will remain selected even
if you change frequencies. Just click the auto button again to
restore automatic antenna selection back.

    Orion.ini file Parameters for the [OPERATING STATUS] section

The value for each parameter below is set to the default value.
This is the value you get when the parameter is not defined. The
text will indicate what other values are legal.

LP100 COMPORT=COM2

If you have the Telepost LP-100A watt meter and want to use it,
you can use this option. Find the line "LP100 COMPORT=NONE"
in the "Interface" section of the orion.ini file. Set this line
for the comport you are going to use for the LP-100A watt meter.
The program will read this watt meter during transmit and display
the results in the S meter window during transmit. If you have the
older LP-100, in addition to this comport setting, change LP100=0 to
LP100=1.

LP500=1

If you have the Telepost LP-500 or LP-700 watt meter and want to use
it, you can use this option. Find the line "LP500=0" in the
orion.ini file. Set this line to LP500=1 and save the change.
The program will read this watt meter during transmit and display
the results in the S meter window during transmit.

POWERMASTER COMPORT=COM2

If you have the PowerMaster watt meter and want to use it,
you can use this option. Find the line "POWERMASTER COMPORT=NONE"
in the "Interface" section of the orion.ini file. Set this line
for the comport you are going to use for the PowerMaster watt meter.
The program will read this watt meter during transmit and display
the results in the S meter window during transmit. Make sure the
watt meter is set to 38400 baud.

AUTO PROGRAM START=
AUTO PROGRAM START FOLDER=

These two parameters are used to define a program that you want
started each time the program starts. For AUTO PROGRAM START,
set this to the full path and file name of the executable you
wish to start. Set AUTO PROGRAM START FOLDER to the full path
name of the folder to be the default folder for the program.

  Example:
  AUTO PROGRAM START=c:\abc\def.exe

```
     AUTO PROGRAM START FOLDER=c:\abc

     The above example starts a program called def.exe in the c:\abc
     folder


   K1EL F1=1
   K1EL F2=2
   K1EL F3=3
   K1EL F4=4

   These 4 entries define the function of the four K1EL winkey 2 buttons.
   Each of these 4 buttons will call the pod function assigned to
   corresponding computer function key.  For example to make the left
   most keyer button (K1EL F1) perform the pod function assigned to the
   computer keyboard F8 key set

   K1EL F1=8

   This allows 4 functions to be performed even if the N4PY program does
   not have the keyboard focus.


   SUB AS VFOA=0

   Set this to "1" when you have the 366 sub-receiver and are using the
   366 sub-receiver for a 9 mhz IF with LPPan.  When this on, VFO A will
   be set to the 366 sub-receiver by the Smart VFO function.


     ADJUST CWSSB=1

   This setting controls whether or not to adjust the frequency by the
   CW offset when changing between CW and SSB using the mode buttons.


                    Syncing CW Sidetone Volume with Main Volume

   The CW sidetone volume can now be synced with the main volume control.
   This is the "VA" slider.  This is accomplished by first going to the
   CW settings window.  There's an edit box there called "Sidetone
Factor".
   If this is zero, this feature is turned off.  To turn it on, first
   try 100 for this factor.  Now when you move the VA slider, the
sidetone
   volume slider (Stv) will move in the opposite direction.  This is
   to give you a constant sidetone volume as you move the main volume.
   Experiment with this sidetone factor to find the correct value to give
   you a nice constant volume for your headphones or speaker.  Each
   different headphones or speaker that you use will require a different
   sidetone factor.


                              Memory File Usage

   Memories are saved in files that are "RMY" file types.  RMY files are
   binary files and are not editable with an editor.  They save all the
   significant parameters for the station including "split status" and
the
   transmit frequency.  If you want to edit an RMY file, you must first
   export the file.  See "Importing and Exporting Files" below.  The
```

"File"
  menu has several entries to control memory file usage. The memory
file
  entries in the "File" menu are as follows:

    New – Clicking this entry will allow you to start a brand new memory
    file. If the current memory file has not been saved to disk, you
will
    be asked if you want to save it before the current memory is
cleared.

    Open – Clicking this entry will allow you to open a memory file that
    has been previously saved. You will be shown all the RMY file types
    that exist in the program working folder.

    Close – Clicking this entry will save the current memory file
contents
    to disk and end usage of this memory file.

    Save – Clicking this entry will save the current memory file
contents
    to disk but still keep the memory contents in memory. This is
useful
    to do just after you add a memory and want the disk to be updated
with
    the new entry.

    Save As – Clicking this entry will save the current memory file
contents
    to disk but still keep the memory contents in memory. This is
useful
    to do just after you add a memory and want the disk to be updated
with
    the new entry. It also allows you to give the disk file a new file
name.

                    Importing and Exporting Files

  On the file menu, there is an Import and Export.
  These functions allow the ability to import and export files that are
  text files. This allows you to export the current memory files as a
  text file and then add more stations to it. You may get these files
  from any source and simply combine them by following the file format.
  Later, you may import this file back into memory and assign an RMY
file
  name to it.

  The format of the file is straight forward. An entry simply occupies
  a single line. Each line has ASCII text for the station name, station
  frequency in MHz, station mode, filter in hertz, country, language and
  optionally split frequency. Each value is separated by a comma with
  no extra spaces. Inspection of an existing file will show the format
  clearly.

  To export an RMY file, first open the RMY file as follows:
  1) Click on "File"
  2) Click on "Open"
  3) Select the RMY file you wish to open
  4) Select OK

The above opens and loads the RMY file in memory.
To export the RMY file, proceed as follows:
1) Click on "File"
2) Click on "Export"
3) Type in the name you wish for the CDF file
4) Select OK

To import a CDF text file, proceed as follows:
1) Click on "File"
2) Select "Import"
3) You should see the files of type CDF.
4) Select the file you wish to import and click OK.

If you then want to create an "RMY" file so that when you run the
N4PY program next time you can get this file automatically selected,
proceed as follows:

1) With the CDF loaded into memory as above, click "File".
2) Select "Save As"
3) Type in the name such as "NEWFILE.RMY"
4) Select OK

This will save the data in the RMY format. You can now make
this file name the default memory file as follows:

1) Select "File"
2) Select "Open"
3) You should see "NEWFILE.RMY"
4) Select this file as click OK.

If you are a member of the ILG database (www.ilgradio.com), you can
download an ASCII text version of their data. This is a file called
"ilgstext.zip". I have a DOS utility program that can convert this
database to a "CDF" file which can then be imported into the Orion
control program. Send me an email if you would like to have this
file converting program.

                 Saving and Restoring Orion Memories

  On the file menu, there are three entries for saving and restoring the
  Orion memories. They are as follows:

    Save Orion Memories – Clicking this button will allow you to select
    a "CDF" file to save the memories in. The memories will be saved in
    a standard CDF file that can be used later to import files. It
takes
    about 2 minutes to save the 200 memories. The Orion memories are
    numbered 1 to 200. Please note that because the Orion returns a
    frequency of 15.0 mhz if a memory is empty, you can use 15.0 mhz
    for an Orion memory and have it saved in the "CDF" file.

    Restore Orion Memories – Clicking this button will allow you to
    select a "CDF" file to restore memories from the file to the Orion.

    Abort Sav/Res Mems – Clicking this button while a "save memory" or
    "restore memory" operation is underway will abort the save or
restore
    memory operation.

    During the Save and Restore memory operations, the current memory

will show as the text on the "Store" below, just to the left of the
"Recall" button.

        Using the RX-340 or Panadapter (such as SDRplay) with the Orion

  If you wish to run the RX-340 as an AUX receiver for the Orion, or
  use a panadapter such as SDRplay that runs in parallel to the Orion
with
  a shared antenna connection to the Orion, you need to add an AUX
receiver
  output to the Orion.

  To modify the Orion to have an AUX receiver output at the "spare"
  jack:

    1) Remove the Orion top cover.

    2) Prepare a 5 inch piece of RG-174 cable. On one end, make a
center
      and ground pair of connections. On the other end, remove all the
      shield and just make a center pin connection.

    2) With the top cover removed and viewing from the top rear of the
Orion,
      locate the board that has the 12 phono connectors coming out of
the
      rear of the Orion. On this board, you will see a small coax
connector
      labeled "1" near the left top of the board. The female part of
      the connector is soldered to the board with 3 very small pins.
The
      outside 2 pins are ground, and the center pin is the antenna
output
      to the sub-receiver.

    3) With the 5 inch piece of RG-174 coax cable, tack solder one end
of the
      center conductor to the center pin for coax connector "1".

    4) Solder the shield of the RG-174 to either one of the ground pins
of
      coax connector "1". Make these connections as short as possible.

    5) Locate the "spare" jack on the back of the Orion. On this same
board
      you will find a pin from the spare jack that comes right through
the
      board. Tack solder the other end of the RG-174 5 inch cable to
this
      spare pin. There is no connection of the shield of the 5 inch
coax
      on this end.

    6) Check your connections with an ohm meter. With coax "1" removed,
you
      should now see continuity between the female "1" connector and
the
      spare jack. Make sure this is not shorted to ground.

    7) Replace the Orion top cover.

The spare jack on the Orion is now an AUX receiver output that is
connected to the sub-receiver antenna. This can be run to the antenna
input of the RX-340 or Panadapter SDR. This jack is fully protected
from
high transmit power when transmitting.

To mute the RX-340 when the Orion transmits, connect the Amp Key 1
line of
the Orion to pin 11 of the DB-15 on the RX-340. Use coax cable for
this connection and connect the shield to pin 1 of the DB 15. Set an
SSB
delay for AMP KEY1 in the program to zero and use about 50 for CW
setting
of the AMP KEY1 line.

For a serial cable for the RX-340, I made a cable with a male DB 25
that plugs into the RX-340 and a female DB 9 on the other end that
plugs
into the PC serial port. The cable is 2 RG/174 cables. The first
cable has the center lead going to pin 2 on the DB 25 and pin 3 on
the DB 9. The second cable has the center lead going to pin 3 on the
DB 25 and pin 2 on the DB 9. The shields on both cables are connected
together and go to pin 7 on the DB 25 and pin 5 on the DB 9.

                    RX340 Switch Settings

The RX340 jumpers on the back must be set for 9600 Baud,
8 bit, no parity. The receiver address must be set to 1.

Set the jumpers on the back of the RX340 as follows:

        Switch S1

    1   down
    2   up
    3   up
    4   down
    5   up
    6   down
    7   down
    8   down

        Switch S2

    1   up
    2   down
    3   down
    4   down
    5   down
    6   down
    7   down
    8   up

                Modifying the Tentec Eagle for an
                 Aux Receiver Antenna Connection

I have a simple mod to allow a second receiver such as a panadapter

receiver to share the same antenna with the Eagle. The idea is to
simply splice into cable #2 in the Eagle and add an RCA jack that is
an AUX receiver antenna connection.

  1) Splice into cable #2 on the bottom of the Eagle near the point
     where it comes through the chassis by cutting and stripping the
ends
     and soldering the center conductors and braids of the two ends of
the
     cut cable to the stripped ends of the extra provided cable that
came
     with the Eagle.

  2) Note how the cable for AUX 1 is routed to the rear panel AUX 1
jack.

  3) There is an extra square hole in the bulkhead where the cable for
     AUX 1 goes through. Use the provided rubber grommet and run the
cable
     spliced into #2 through this hole to the rear panel AUX hole.

  4) Remove the plug from the AUX 2 hole and install the provided RCA
jack.

  5) Cut the cable to length. Strip the leads and solder to the AUX 2
jack.

  Now the Aux 2 jack is an Aux Receiver connection that will allow
antenna
  sharing with the Eagle. This connection is fully protected from Eagle
  transmit power. Because this is in parallel with the Eagle antenna
  connection, there will be a 3 DB drop in signal level. This will not
  affect performance because both the signal and noise drop 3 DB,
resulting
  in the same signal to noise ratio.

                        Antenna Rotor Control

  Rotor control is available for all antenna rotors that use the HyGain
  DCU-1 serial protocol and also the M2 Rotor series. This includes the
  following rotors:

     Green Heron Engineering RT-20 and RT-21
     HyGain DCU-1
     Idiom Press - RotorCard DXA
     Idiom Press - RotorCard SDX
     Idiom Press - RotorEZ
     MDS RC1 series digital rotor control box
     M2 Rotor series
     4O3A Rotator Genius

  For the 4O3A Rotator Genius see the next section "4O3A Rotator Genius"
  and disregard the rest of this section.

  To turn on rotor control, with the program not running, open the
  "orion.ini" configuration settings file. Find the line that says:

     ROTOR COMPORT=NONE

  and change it to

```
     ROTOR COMPORT=COMx
```

where COMx is the serial port that is connected to the rotor control
box.

If you have the M2 rotor series, find the line that says:

```
     M2 ROTOR=0
```

and change it to

```
     M2 ROTOR=1 for the older M2 rotors and M2 ROTOR=2 for the newer
ones.
```

also there are two lines to set software rotor limits. They are

```
   ROTOR LOW LIMIT=0
   ROTOR HIGH LIMIT=359
```

You can change these lines if you need to have a different range.

There is also a setting for rotor polling. It is

```
   ROTOR POLL=1
```

Set this to 0 if rotor polling causes a calibration problem with
your rotor.

There is an edit box in the "Call Sign, TopTen" configuration settings
window that is labelled "Rotor Bearing". You can key in the value
for the rotor bearing that you want here. Once you key this in, the
rotor will turn to that location. If your rotor supports bearing
feedback, the rotor display box (just to the right of the edit box)
will always show the current rotor bearing. The edit box will show
the last target bearing you typed in. This value is updated once
every
5 seconds.

You can stop the rotor at any time by clicking on the "Stop" check
box. This box is located to the right of the Rotor Bearing edit box.
The check mark will go out almost immediately when the stop command is
sent to the rotor.

For the M2 rotor series, there is also a "Moving" label that will
appear to the right of the Rotor Bearing edit box when the rotor
is moving.

If you also use the N4PY DXSpots program, you can click on the
displayed bearing for any country in the DXSpots check window and this
will also cause the rotor to move to that bearing.

             ADR2200 Used as a Coax Antenna Switch

The ADR2200 serial port switch can be used as a software controlled
antenna switch.

To setup the program for the ADR2200 coax switch:

1) With the program NOT running, open the orion.ini file and find

the line that says:

LDG COAX COMPORT=

And change it to

LDG COAX COMPORT=COMx   where x= the com number from 1 to 99

2) Find the line that says:

ADR2200=0

and change it to

ADR2200=1

3) Find the lines that say:

ANT 1 LOW=0
ANT 1 HIGH=0
ANT 2 LOW=0
ANT 2 LOW=0
Etc.,
and set the ranges for each antenna in mHz. For example if
antenna 3 was to cover the 20 meter band, you should put

ANT 3 LOW=14.0
ANT 3 HIGH=14.35

If you have an antenna that needs more than one frequency range such
as using an 80 meter antenna also on 30 meters. you can change the
antenna that is assigned to each range.

Find the series of lines that say:

ANT RANGE 1=1
ANT RANGE 2=2
ANT RANGE 3=3
ANT RANGE 4=4
ANT RANGE 5=5
ANT RANGE 6=6
ANT RANGE 7=7
ANT RANGE 8=8
ANT RANGE 9=9
ANT RANGE 10=10

These lines assign the same range to the corresponding antenna
by default. But if for example you wanted both range 3 and range 6
to control antenna 3, you would change

ANT RANGE 6=3

Save the changes to the orion.ini file.

The controls for the switch will show up in the "transmitter" window
of the settings menu. With "Auto" selected, the frequency ranges
above will cause the particular antenna for that range to be selected.
If you select any antenna by clicking on its button, the auto
function is turned off and that antenna will remain selected even
if you change frequencies. Just click the auto button again to

restore automatic antenna selection back.

Additionally, there is a second range for selecting antennas
that is controlled with the "A Ant"/"B Ant" button under the user
buttons. If this button says "A Ant" then all the ranges as listed
above are used to select the antenna position. If the "A Ant" button
is clicked it will change to "B Ant" and a second set of ranges will
be used. These ranges have names exactly like the above ranges but
have a "B" added to them. The names are as follows:

ANTB 1 LOW=0
ANTB 1 HIGH=0
ANTB 2 LOW=0
ANTB 2 LOW=0
   etc.

ANTB RANGE 1=1
ANTB RANGE 2=2
ANTB RANGE 3=3
ANTB RANGE 4=4
ANTB RANGE 5=5
ANTB RANGE 6=6
ANTB RANGE 7=7
ANTB RANGE 8=8
ANTB RANGE 9=9
ANTB RANGE 10=10

Again, this second set of ranges is used if the "A Ant"/"B Ant"
button is set to "B Ant". The setting for this button is
remembered by band.

            ADR2100 Used as a Coax Antenna Switch

The ADR2100 serial port switch can be used as a software controlled
antenna switch.

To setup the program for the ADR2100 coax switch:

1) With the program NOT running, open the orion.ini file and find
the line that says:

LDG COAX COMPORT=

And change it to

LDG COAX COMPORT=COMx where x= the com number from 1 to 99

2) Find the line that says:

ADR2200=0

and change it to

ADR2200=2

3) Find the lines that say:

ANT 1 LOW=0
ANT 1 HIGH=0

```
ANT 2 LOW=0
ANT 2 LOW=0
Etc.,
and set the ranges for each antenna in mHz.  These settings
will be for port A on the ADR 2100.
For example if antenna 3 was to cover the 20 meter band, you should
put

ANT 3 LOW=14.0
ANT 3 HIGH=14.35
```

If you have an antenna that needs more than one frequency range such
as using an 80 meter antenna also on 30 meters. you can change the
antenna that is assigned to each range.

Find the series of lines that say:

```
ANT RANGE 1=1
ANT RANGE 2=2
ANT RANGE 3=3
ANT RANGE 4=4
ANT RANGE 5=5
ANT RANGE 6=6
ANT RANGE 7=7
ANT RANGE 8=8
ANT RANGE 9=9
ANT RANGE 10=10
```

These lines assign the same range to the corresponding antenna
by default. But if for example you wanted both range 3 and range 6
to control antenna 3, you would change

```
ANT RANGE 6=3
```

Save the changes to the orion.ini file.

The controls for the switch will show up in the "transmitter" window
of the settings menu. With "Auto" selected, the frequency ranges
above will cause the particular antenna for that range to be selected.
If you select any antenna by clicking on its button, the auto
function is turned off and that antenna will remain selected even
if you change frequencies. Just click the auto button again to
restore automatic antenna selection back.

For port B on the ADR 2100, you will find another set of settings
that all end in "PB" for port B. Only port A and port B are
currently implemented in this program. The manual antenna controls
only change the port A settings. The port B settings are always
in automatic mode.

            Denkovi USB 8 Relay Board used as a coax Antenna Switch

The Denkovi USB 8 relay board can be used as a software controlled
antenna switch.

To setup the program for the Denkovi device:

With the program NOT running, open the orion.ini configuration
settings file and find the line that says:

1) Find the line that says:

DENKOVI=0

and change it to

DENKOVI=1

3) Find the lines that say:

ANT 1 LOW=0
ANT 1 HIGH=0
ANT 2 LOW=0
ANT 2 LOW=0
Etc.,
and set the ranges for each antenna in mHz.
For example if antenna 3 was to cover the 20 meter band, you should put

ANT 3 LOW=14.0
ANT 3 HIGH=14.35

If you have an antenna that needs more than one frequency range such as using an 80 meter antenna also on 30 meters. you can change the antenna that is assigned to each range.

Find the series of lines that say:

ANT RANGE 1=1
ANT RANGE 2=2
ANT RANGE 3=3
ANT RANGE 4=4
ANT RANGE 5=5
ANT RANGE 6=6
ANT RANGE 7=7
ANT RANGE 8=8
ANT RANGE 9=9
ANT RANGE 10=10

These lines assign the same range to the corresponding antenna by default. But if for example you wanted both range 3 and range 6 to control antenna 3, you would change

ANT RANGE 6=3

Save the changes to the orion.ini file.

The controls for the switch will show up in the "transmitter" window of the settings menu. With "Auto" selected, the frequency ranges above will cause the particular antenna for that range to be selected. If you select any antenna by clicking on its button, the auto function is turned off and that antenna will remain selected even if you change frequencies. Just click the auto button again to restore automatic antenna selection back.

                        4O3A Rotator Genius

The 4O3A rotator Genius is configured in the Orion.ini configuration settings file. Here's the setup.

Find the line that says:

    4O3A RG=0

and change it to

    4O3A RG=1

Also set the following line to the correct port and IP Address

    4O3A RG PORT=9006
    4O3A IP RG=192.168.1.250

Also ROTOR 4O3A=1 setting can be set to 1 or 2 to control the first
or second rotator used by Rotator Genius.

There is an edit box in the "Call Sign, TopTen" configuration settings
window that is labelled "Rotor Bearing". You can key in the value
for the rotor bearing that you want here. Once you key this in, the
rotor will turn to that location. Bearing feedback is shown in the
rotor display box (just to the right of the edit box) and will always
show the current rotor bearing. The edit box will show the last
target
 bearing you typed in.

There is also a "Moving" label that will appear to the right of the
Rotor Bearing edit box when the rotor is moving.

You can stop the rotor at any time by clicking on the "Stop" check
box. This box is located to the right of the Rotor Bearing edit box.
The check mark will go out almost immediately when the stop command is
sent to the rotor.

There are special considerations for setting this up if Client-Server
operator is used. See "Special Considerations for 4O3A Devices" in
the CSRemote.pdf documentation file.

            Using Top Ten Devices Antenna Control

There is an automatic antenna selection feature provided to allow
users to use the automatic band decoder provided by Top Ten Devices.
This unit allows you to have either an external amplifier or external
antenna switch automatically follow the Orion frequency settings.
This program offers full support for the parallel port with all
windows versions.

Information on this band decoder can be found at

    www.qth.com/topten/bdecoder.htm

Parallel port 1 is used to control the Top Ten device controller.
This is enabled in one of two configurations by going to the
"Call Sign, TopTen" window of the "settings" menu. Selecting
"TopTen Devices Option 1", causes the bands marked on the Top Ten
Devices controller to follow the Orion frequency precisely.

In option 1, the bands are selected as follows:

  Frequency < 2 MHz selects band 1
  Frequency >=2 MHz and < 4 MHz selects band 2

```
   Frequency >=4 MHz and < 8 MHz selects band 3
   Frequency >=8 MHz and < 12 MHz selects band 4
   Frequency >=12 MHz and < 16 MHz selects band 5
   Frequency >=16 MHz and < 20 MHz selects band 6
   Frequency >=20 MHz and < 24 MHz selects band 7
   Frequency >=24 MHz and < 26 MHz selects band 8
   Frequency >=26 selects band 9
```

Selecting "TopTen Devices Option 2" causes
a unique setup for controlling the device.
In option 2, the bands are selected as follows:

```
   Frequency < 200 kHz selects band 1
   Frequency >=200 kHz and < 30 MHz selects band 2
   Frequency >=30 MHz and < 55 MHz selects band 3
   Frequency >=55 MHz and < 149 MHz selects band 4
   Frequency >=149 MHz selects band 9
```

When a frequency change is detected, the new band setting is output
to the parallel port. The Top Ten Automatic Band Decoder is plugged
into this parallel port and responds to the information sent to the
port.

                    Woodbox Radio Tmate 2

Woodbox radio sells a very nice 3 knob pod with 6 buttons that
is now supported in N4PY programs. To configure this pod, go
to the "Remote Pod Fkeys" settings window and turn on the check
box "Using Woodbox Radio Tmate2".   Assuming the Tmate2 is
already plugged into a USB port and it's drivers are installed,
that's all you have to do.

Once the knob is configured and working, you can now customize
the N4PY program to your liking. There are 3 pod setup windows
to allow you to define the actions of the FlexControl buttons.

There are 9 buttons on the Tmate2 device. They are F1, F2, F3,
F4, F5, F6, and the 3 knobs themselves.

The 3 pod settings windows allow you to select the actions for
these buttons. These 3 pod settings windows are named "Knob
Settings",
"Function Keys", and "Knob Buttons". The main right knob, and the
center
knob are setup for single function. You define these single functions
in their settings list box in the "Knob Settings" settings window.
The left hand knob is meant to be a multi use knob. It's initial
function is set with the "Left Multi Knob" list box. The current
setting
for the multi knob is always shown in the upper right hand corner of
the
black frequency area.

The "Function Keys" settings window contains the settings for the
six F1 to F6 keys. Any knob function setting set from an F key
will be assigned to the left multi knob only.

The "Knob Buttons" settings window contains the settings for the
3 knob buttons. Any knob function setting set from a knob button
will be assigned to the left multi knob only. Please not that I

found that the right Main tuning knob is very easy to accidentally
push its button. I added a new pod setting called "No Op". Selecting
this setting causes no operation to be be done. That's what I now use
for the Main knob button.

The selections "UP B+1" and "UP B+5" are very nice for split DX
pileups.
"UP B+1" and "UP B+2" selections work together to give you a very nice
UP frequency function. By setting say "F6" to "UP B+1" and "F5" to
"UP B+2" (these are the default settings), when a DX station annouces
he is listening say "up 3", you can simply press the "F6" button 3
times
and VFO B will now be VFO A plus 3 and Split will now be on.
Therefore,
you can instantly set split operation for an exact amount by how many
times you rapidly click "F6".

The exact action for "UP B+1" is if SPLIT is off, perform an
A equal B and then add 1 to VFO B. If SPLIT is already on,
then just add 1 to VFO B. And the "UP B+5" also does
the same thing except it adds 5.

The "Tune Lock" LED on the pod is used as a "Split" indicator.
When on "Split" is on. When off, "Split" is off.

There's an option in the "Knob Buttons" settings window to have
the Tmate 2 S meter just read Peak readings.

There are also tuning parmameters in the Orion.ini configuration
settings file. They are as follows:

   TM2 RED=255   This controls how much red color is in the backlight.
                    The range is 0 to 255.

   TM2 GREEN=255   This controls how much green color is in the
backlight.
                    The range is 0 to 255.
   TM2 BLUE=255   This controls how much green color is in the
backlight.
                    The range is 0 to 255.
   TM2 CONTRAST=0 This controls how much contrast is on the screen.
                    The range is 0 to 255 with max contast at 0.
   TM2 SPEED 1=1 This controls the speed of the main tuning knob. It
should always
                    be set to 1.
   TM2 SPEED 2=20 This controls the multiplier when turning the main
knob at speed 2.

   TM2 SPEED 3=100 This controls the multiplier when turning the main
knob at speed 3.

   TM2 THRESH 1 2=5 This controls the amount of counts that occur
during the
                    evaluation time period to where speed 2 kicks in.
   TM2 THRESH 2 3=10 This controls the amount of counts that occur
during the
                    evaluation time period to where speed 3 kicks in
when
                    already at speed 2.
   TM2 EVAL MS=100   This sets the evaluation time in milliseconds to
decide on

changing the knob speed to speed 2 or speed 3.

                    FlexControl Knob

Flex Radio sells a very nice knob that can be used to control
any N4PY supported radio. This knob has a big advantage over
the Griffin and Shuttle Pro knob because it tunes much nicer
and does not have the "Focus" problem. That means this knob
will still control the radio even when N4PY is running in the
background. You can purchase this knob on the Flex radio
website. Go to the Online Store and select "Accessories" to
find it. N4PY Software has no connection with Flex Radio.

To install this FlexControl Knob Software Driver from the CD –
   1) Insert the CD that canme with the FlexControl device.
   2) When it asks what you want to install, uncheck all the boxes
      except "FlexControl". This is the only selection you want
      to make.
   3) Run this installer to its completion.

OR

To install this FlexControl Knob Software Driver from the Internet –

   1) Go to www.flex-radio.com
   2) Scroll down and find "SmartSDR Installer" and version.
   3) Download and run this installer.
   4) When it asks what you want to install, uncheck all the boxes
      except "FlexControl". This is the only selection you want
      to make.
   5) Run this installer to its completion.

Now plug in the FlexControl USB connection to any USB connector
on your computer.

For Windows Vista or 7, the computer should display a message saying
"Installing Device Driver." A few moments later a message will appear
that says "FlexControl Driver is successfully installed" and "The
device is ready for use."

For Windows XP, after plugging in the FlexControl for the first time,
(or anytime in the future that a new USB port is used) the "Welcome
to the Found New Hardware Wizard" will appear explaining that the
"Wizard helps you install software for: FlexControl USB Control Knob".

Check "Install the software automatically." Then press "Next." This
will result in a message that the "Wizard has finished installing
the software for FlexControl USB Control Knob." Now press "Finish"
to close the Wizard.

Once the Wizard completes the install, you must check to make sure
there are no comport conflicts. You do this as follows.

   1) Double click on "My Computer"
   2) Click "View System Information".
   3) Click the "Hardware" tab.
   4) Click the "Device Manager" button.
   5) Slide down to ports and see what comport was assigned
      for "FlexControl USB Control Knob".

6) If this comport conflicts with anything else you have installed
           previously, you must change it.
        7) To change the FlexControl comport,
           A) Double click on "FlexControl USB Control Knob"
           B) Click the "Port Settings" tab.
           C) Click the "Advanced" button.
           D) Click the down arrow next to "COM Port Number".
           E) Select an unused comport. A high one is a good one to select.
           F) Click "Ok" on all opened windows.
           G) Reboot your computer and all shoule be well.

     Operation of the FlexControl Knob in the N4PY program -

     Once the driver and Flex knob are fully installed, start the N4PY
     program. Go to the settings window and then select "Remote Pod
Fkeys".
     Check the box "Using FlexControl Knob".

     Once you select this box, the N4PY program will search for the
     FlexControl device. If it finds it, the knob will now control
     your radio. If you get the error "FlexControl Knob not found"
     something is wrong with the software driver setup above.

     Once the knob is configured and working, you can now customize
     the N4PY program to your liking. There are 3 pod setup windows
     to allow you to define the actions of the FlexControl buttons.

     There are 4 buttons on the FlexControl device. They are Aux1,
     Aux2, Aux3, and the knob itself. Each button can be used with 3
     different actions. A single click, a double click (like a mouse),
     and a long click (greater than a half second).

     The 3 pod settings windows allow you to select the actions for
     these buttons. These 3 pod settings windows are named "Aux Single",
     "Aux Double, Long", and "Knob Clicks". The default action for the
     knob itself is a single click will set the knob to control VFO A.
     A double click will set the knob to control VFO B. A long click
     will set the knob to control pass band tuning. You can see the
     action for the knob in the upper right hand corner of the black
     frequency area.

     There are special selections for the Aux Single, Double, and Long
     selections. These are "UP B+1", "UP B+2", and "UP B+5". The
     "UP B+1" and "UP B+2" selections work together to give you a
     very nice UP frequency function. By setting Aux3 Single to "UP B+1"
     and Aux3 Double to "UP B+2" (these are the default settings), when
     a DX station annouces he is listening say "up 3", you can simply
     press the Aux3 button 3 times (fast but not so fast as to get a double
     click) and VFO B will now be VFO A plus 3 and Split will now be on.
     Therefore, you can instantly set split operation for an exact amount
     by how many times you rapidly click Aux3.

     The exact action for "UP B+1" is if SPLIT is off, perform an
     A equal B and then add 1 to VFO B. If SPLIT is already on,
     then just add 1 to VFO B. The "UP B+2" does the same thing
     except it adds 2 instead of 1. And the "UP B+5" also does
     the same thing except it adds 5. Once the "UP" operation is
     complete, the knob action is automatically set to VFO B. A
     single click of the knob itself get the knob action back to
     VFO A.

I recommend you use a label maker and label the 3 Aux buttons
on the FlexControl device as an aid to remember their settings.

The 3 lights on the FlexControl knob are used to show the status
for the single click actions for Aux1, Aux2, and Aux3. They will
light only if Split, Dual receive, RIT, or PBT is on for that
button. For example, if you have Aux1 Single defined for Split,
the light above Aux1 will be on when Split it on and off when Split
is off.

Ignore the text on these 3 lights as it is meaningless for this
program.

You can also setup a fast tuning increase in step size to allow for
very fast tuning.

To set this up, do the following:
   1) In "Aux Single", make sure "Tuning Knob Desense Step Threshold"
is
      at least 500.
   2) In "Preferences4", set the "High Speed Tuning Factor" to a
      value that you want the step size increaded to. If you step size
      is normally 10, a value of 50 would increase the step size to 500
      for very fast tuning.
   3) In "Preferences4", set the sensitivity for how fast you move the
      knob before high speed kicks in. Normally, you will set this to
      a value between 2 and 20. The higher numbers are lower
      sensitivity.

                    Behringer CMD Micro MIDI DJ Controller

  Behringer has a very nice DJ controller that is well suited as a ham
  radio controller. This device has 10 knobs and 20 buttons. To
configure
  this pod, go to the "Remote Pod Fkeys" settings window and turn on the
check
  box "Using MIDI DJ Controller".   Assuming the device is
  already plugged into a USB port, that's all you have to do.

  Once the device is working, you can now customize the N4PY program to
your
  liking. All the control setup is done using the cmdmicro.ini
configuration
  settings file. This file is located in the folder where you installed
the
  N4PY program and is not built until you turn on the "Using Behringer"
option
  the first time. This file can be setup with the N4PY program either
running
  or not running. If changes are made to the cmdmicro.ini file while the
N4PY
  program is running, you can click the button "Reload DJ Controller
Settings"
  once the changes have been saved in the file.

  You can edit this file with notepad. The sliders are defined
  as "SLIDER1" being the left most slider and "SLIDER5" being
  the right most slider. All the other controls use the text as
  shown on the device itself. You can use a label maker and add

labels to the controls as you like. I have provided a picture
of an unmodified controller to allow you to see the original
names on the controller. It is "picturecmemicro.jpg" and is in
the folder where you installed the N4PY program.

The settings text must be exact from the list below for buttons
but upper or lower case can be used freely.

    Tuning Selections
    Tuning Steps
    Reverse Steps
    Split Reverse
    A/B Toggle
    Knob A/B Toggle
    A = B
    VFOA
    PBT
    TX POWER   This controls the TX slider for power output
    RIT
    XIT
    VOL
    SUB VOL
    VFOB
    PTT
    VOX
    Bin RX
    RF Gain
    NB
    Split Key
    Amp Tune
    Band Bottom
    Up Numeric
    Down Numeric
    Keyer Speed
    Up Filter
    Down Filter
    Filter Tune
    AccInp Xmit
    Mute
    Dual Receive
    UP B+1
    UP B+5
    Freq Scan
    ST Volume
    CW Mem1
    CW Mem2
    CW Mem3
    CW Mem4
    CW Mem5
    Tune
    SAF/NOTCH
    Speech Proc

   For the large left knob, large right knob, and the browse knob, the
settings text is below.

    * VFOA
      PBT
      ALC   This controls the TX slider for power output
    * RIT

```
     * XIT
       VOL
       SUB VOL
     * VFOB
       RF Gain
       Keyer Speed
     * Filter Tune
       ST Volume
       Speech Proc
       NB
```

   * Only the large left knob, large right knob, and browse knob can do
    these functions.

   The browse knob is actually used as a multi function knob. If you
define
   a button with a knob function setting, the browse button function will
   change to that function. The browse button current function is shown
   as small text in the upper right hand corner of the black frequency
area.

   The 5 sliders, the main level knob, and cue level knob cannot do all
the
   above functions. They cannot do the ones labelled with as asterick
above.

   Not all functions above are available on all radios.

   The selections "UP B+1" and "UP B+5" are very nice for split DX
pileups.
   "UP B+1" and "UP B+5" selections work together to give you a very nice
   UP frequency function. By setting say "-" to "UP B+1" and "+" to
   "UP B+5" (these are the default settings), when a DX station annouces
   he is listening say "up 3", you can simply press the "-" button 3
times
   and VFO B will now be VFO A plus 3 and Split will now be on.
Therefore,
   you can instantly set split operation for an exact amount by how many
   times you rapidly click "-".

   The exact action for "UP B+1" is if SPLIT is off, perform an
   A equal B and then add 1 to VFO B. If SPLIT is already on,
   then just add 1 to VFO B. And the "UP B+5" also does
   the same thing except it adds 5.

                 Behringer Studio 2A MIDI DJ Controller

   Behringer has a very nice DJ controller that is well suited as a ham
   radio controller. This device has 54 controls consisting of knob and
   buttons. To configure this pod, go to the "Remote Pod Fkeys" settings
   window and turn on the check box "Using MIDI DJ Controller".
   Assuming the device is already plugged into a USB port, that's all you
   have to do.

   Once the device is working, you can now customize the N4PY program to
your
   liking. All the control setup is done using the studio2a.ini
configuration
   settings file. This file is located in the folder where you installed
the

N4PY program and is not built until you turn on the "Using MIDI DJ" option
the first time. This file can be setup with the N4PY program either running
or not running. If changes are made to the studio2a.ini file while the N4PY
program is running, you can click the button "Reload DJ Controller Settings"
once the changes have been saved in the file.

You can edit this file with notepad. You can use a label maker and add
labels to the controls as you like. I have provided a picture
of an unmodified controller to allow you to see the original
names on the controller. It is "picturestudio2a.jpg" and is in
the folder where you installed the N4PY program.

The settings text must be exact from the list below for buttons
but upper or lower case can be used freely.

```
Tuning Selections
Tuning Steps
Reverse Steps
Split Reverse
A/B Toggle
Knob A/B Toggle
A = B
VFOA
PBT
TX POWER        This controls the TX slider for power output
RIT
XIT
VOL
SUB VOL
VFOB
PTT
VOX
Bin RX
RF Gain
NB
Split Key
Amp Tune
Band Bottom
Up Numeric
Down Numeric
Keyer Speed
Up Filter
Down Filter
Filter Tune
AccInp Xmit
Mute
Dual Receive
UP B+1
UP B+5
Freq Scan
ST Volume
CW Mem1
CW Mem2
CW Mem3
CW Mem4
CW Mem5
Tune
```

```
     SAF/NOTCH
     Speech Proc


   For the large left knob, large right knob, and the two pitch bend
knobs, the settings text is below.

   * VFOA
     PBT
     ALC       This controls the TX slider for power output
   * RIT
   * XIT
     VOL
     SUB VOL
   * VFOB
     RF Gain
     Keyer Speed
   * Filter Tune
     ST Volume
     Speech Proc
     NB

    * Only the large left knob, large right knob, and the 2 pitch bend
knobs can do
     these functions.

   The left pitch bend knob is actually used as a multi function knob.
If you define
   a button with a knob function setting, this button function will
   change to that function.  The left pitch bend button current function
is shown
   as small text in the upper right hand corner of the black frequency
area.

   The 3 sliders and the knobs that have limits on how far they can turn
cannot do all the
   above functions.  They cannot do the ones labelled with as asterick
above.

   Not all functions above are available on all radios.

   The selections "UP B+1" and "UP B+5" are very nice for split DX
pileups.
   "UP B+1" and "UP B+5" selections work together to give you a very nice
   UP frequency function.  By setting say pitch bend minus to "UP B+1"
and
   pitch bend plus" to "UP B+5" (these are the default settings), when a
DX
   station annouces he is listening say "up 3", you can simply press the
"-"
   button 3 times and VFO B will now be VFO A plus 3 and Split will now
be on.
   Therefore, you can instantly set split operation for an exact amount
by how
   many times you rapidly click "-".

   The exact action for "UP B+1" is if SPLIT is off, perform an
   A equal B and then add 1 to VFO B.  If SPLIT is already on,
   then just add 1 to VFO B. And the "UP B+5" also does
   the same thing except it adds 5.
```

Hercules DJ Control MP3 E2 and MP3 LE

   Hercules has a very nice DJ controller that is well suited as a ham
   radio controller. This device has 55 controls consisting of knob and
   buttons. To configure this pod, go to the "Remote Pod Fkeys" settings
   window and turn on the check box "Using MIDI DJ Controller".
   Assuming the device is already plugged into a USB port, that's all you
   have to do.

   Once the device is working, you can now customize the N4PY program to
your
   liking. All the control setup is done using the hercules.ini
configuration
   settings file. This file is located in the folder where you installed
the
   N4PY program and is not built until you turn on the "Using MIDI"
option
   the first time. This file can be setup with the N4PY program either
running
   or not running. If changes are made to the hercules.ini file while the
N4PY
   program is running, you can click the button "Reload DJ Controller
Settings"
   once the changes have been saved in the file.

   You can edit this file with notepad. You can use a label maker and add
   labels to the controls as you like. I have provided a picture
   of an unmodified controller to allow you to see the original
   names on the controller. It is "picturehercules.jpg" and is in
   the folder where you installed the N4PY program.

   The settings text must be exact from the list below for buttons
   but upper or lower case can be used freely.

     Tuning Selections
     Tuning Steps
     Reverse Steps
     Mode Selections
     FAST Tuning
     Split Reverse
     A/B Toggle
     Knob A/B Toggle
     Swap A/B Assign
     A = B
     VFOA
     PBT
     TX POWER   This controls the TX slider for power output
     RIT
     XIT
     NB
     NR
     VOL
     VOLB
     VFOB
     PTT
     VOX
     SPOT
     RF Gain
     RF GainB

```
           Split Key
           Amp Tune
           Band Bottom
           Keyer Speed
           Enable Keyer A
           Up Filter
           Down Filter
           AccInp Xmit
           Mute
           Band Up
           Band Down
           Auto Tuner
           Freq Scan
           Mic Gain
           Side Tone
           Notch
           NOISE
           NB
           Squelch
           Tune
           Attn
           Preamp
           USB
           LSB
           CW
           FM
           AM
           RITCLEAR
           Sweep
           UP B+1
           UP B+5
           No Op
           Lock
           Dual Receive
           CW MEM1
           CW MEM2
           CW MEM3
           CW MEM4
           CW MEM5
           ESC
           Dump AGC
```

   For the large left knob, large right knob, and the two pitch knobs,
the settings text is below.

```
    * VFOA
    * PBT
      ALC       This controls the TX slider for power output
    * RIT
    * XIT
      VOL
      VOLB
      NOISE
      NB
    * VFOB
      SPOT
      RF Gain
      RF GainB
      Keyer Speed
    * Filter Tune
      Mic Gain
```

```
     Side Tone
     Vox Delay
     NB


   * Only the large left knob, large right knob, and the 2 pitch knobs
can do
   these functions.

  The left pitch knob is actually used as a multi function knob.  If you
define
  a button with a knob function setting, this button function will
  change to that function.  The left pitch button current function is
shown
  as small text in the upper right hand corner of the black frequency
area.

  The 3 sliders and the knobs that have limits on how far they can turn
cannot do all the
  above functions.  They cannot do the ones labelled with as asterick
above.

  Not all functions above are available on all radios.

  The selections "UP B+1" and "UP B+5" are very nice for split DX
pileups.
   "UP B+1" and "UP B+5" selections work together to give you a very nice
  UP frequency function.  By setting say pitch bend minus to "UP B+1"
and
  pitch bend plus" to "UP B+5" (these are the default settings), when a
DX
  station annouces he is listening say "up 3", you can simply press the
"-"
  button 3 times and VFO B will now be VFO A plus 3 and Split will now
be on.
  Therefore, you can instantly set split operation for an exact amount
by how
  many times you rapidly click "-".

  The exact action for "UP B+1" is if SPLIT is off, perform an
  A equal B and then add 1 to VFO B.  If SPLIT is already on,
  then just add 1 to VFO B. And the "UP B+5" also does
  the same thing except it adds 5.



               Hercules Compact DJ Controller

  Hercules has a very nice compact DJ controller that is well suited as
a ham
  radio controller.  This device has 26 controls consisting of knob and
  buttons.  To configure this pod, go to the "Remote Pod Fkeys" settings
  window and turn on the check box "Using MIDI DJ Controller".
  Assuming the device is already plugged into a USB port, that's all you
  have to do.

  Once the device is working, you can now customize the N4PY program to
your
  liking. All the control setup is done using the hcompact.ini
configuration
  settings file.  This file is located in the folder where you installed
the
  N4PY program and is not built until you turn on the "Using MIDI"
```

```
option
  the first time. This file can be setup with the N4PY program either
running
  or not running. If changes are made to the hercules.ini file while the
N4PY
  program is running, you can click the button "Reload DJ Controller
Settings"
  once the changes have been saved in the file.

  You can edit this file with notepad. You can use a label maker and add
  labels to the controls as you like.

  The settings text must be exact from the list below for buttons
  but upper or lower case can be used freely.

  The left 1 to 4 buttons and the right 1 to 4 buttons have 4 modes
  which are LOOP, FX, SAMPLE, and CUE. There are separate settings
  by mode for these 8 buttons.

      Tuning Selections
      Tuning Steps
      Reverse Steps
      Mode Selections
      FAST Tuning
      Split Reverse
      A/B Toggle
      Knob A/B Toggle
      Swap A/B Assign
      A = B
      VFOA
      PBT
      TX POWER        This controls the TX slider for power output
      RIT
      XIT
      NB
      NR
      VOL
      VOLB
      VFOB
      PTT
      VOX
      SPOT
      RF Gain
      RF GainB
      NB
      Split Key
      Amp Tune
      TXLOOP
      Band Bottom
      Keyer Speed
      Enable Keyer A
      Up Filter
      Down Filter
      AccInp Xmit
      Mute
      Band Up
      Band Down
      Auto Tuner
      Freq Scan
      Mic Gain
      Side Tone
```

```
Notch
Squelch
Tune
Attn
Preamp
USB
LSB
CW
FM
AM
KW NB2
KW ANT
KW RANT
RITCLEARB      only for F6000
RITCLEAR
RX EQ Omni VII
Sweep
UP B+1
UP B+5
No Op
Lock
Dual Receive
STO SP
RCL SP
CW MEM1
CW MEM2
CW MEM3
CW MEM4
CW MEM5
ESC
Dump AGC
K3 User 1
K3 User 2
K3 User 3
K3 User 4
K3 User 5
K3 User 6
K3 User 7
K3 User 8
K3 User 9
K3 User 10
```

For the large left knob, large right knob, the settings text is below.

```
 * VFOA
 * PBT
   ALC       This controls the TX slider for power output
 * RIT
 * XIT
   VOL
   VOLB
   NB
 * VFOB
   SPOT
   RF Gain
   NB
   RF GainB
   Keyer Speed
 * Filter Tune
   Mic Gain
   Side Tone
```

```
      RX EQ Omni VII
      Vox Delay

   * Only the large left knob, large right knob can do
    these functions.

   Not all functions above are available on all radios.

   The selections "UP B+1" and "UP B+5" are very nice for split DX
pileups.
   "UP B+1" and "UP B+5" selections work together to give you a very nice
   UP frequency function.  By setting say "right sync" to "UP B+1" and
   "right cue" to "UP B+5" (these are the default settings), when a DX
   station annouces he is listening say "up 3", you can simply press the
"right sync"
   button 3 times and VFO B will now be VFO A plus 3 and Split will now
be on.
   Therefore, you can instantly set split operation for an exact amount
by how
   many times you rapidly click "right sync".

   The exact action for "UP B+1" is if SPLIT is off, perform an
   A equal B and then add 1 to VFO B.  If SPLIT is already on,
   then just add 1 to VFO B. And the "UP B+5" also does
   the same thing except it adds 5.


               Numark DJ2GO2 DJ Control

   Numark has a very nice DJ controller that is well suited as a ham
   radio controller.  This device has 26 controls consisting of knob and
   buttons.  To configure this pod, go to the "Remote Pod Fkeys" settings
   window and turn on the check box "Using MIDI DJ Controller".
   Assuming the device is already plugged into a USB port, that's all you
   have to do.

   Once the device is working, you can now customize the N4PY program to
your
   liking. All the control setup is done using the dj2go2.ini
configuration
   settings file.  This file is located in the folder where you installed
the
   N4PY program and is not built until you turn on the "Using MIDI"
option
   the first time. This file can be setup with the N4PY program either
running
   or not running. If changes are made to the dj2go2.ini file while the
N4PY
   program is running, you can click the button "Reload DJ Controller
Settings"
   once the changes have been saved in the file.

   One thing to watch out for on this DJ controller is the "PAD MODE"
button.
   This button can change the key codes sent in by the DJ controller.
The
   N4PY software has been programmed to only use the key codes from the
buttons
   when the "PAD MODE" button is in the "CUES" setting.  So make sure
"PAD MODE"
   is always set to "CUES".
```

You can edit this file with notepad. You can use a label maker and add labels to the controls as you like. I have provided a picture of an unmodified controller to allow you to see the original names on the controller. It is "picturehercules.jpg" and is in the folder where you installed the N4PY program.

The settings text must be exact from the list below for buttons but upper or lower case can be used freely.

Tuning Selections
Tuning Steps
Reverse Steps
Mode Selections
FAST Tuning
Split Reverse
A/B Toggle
Knob A/B Toggle
Swap A/B Assign
A = B
VFOA
PBT
TX POWER   This controls the TX slider for power output
RIT
XIT
NB
NR
VOL
VOLB
VFOB
PTT
VOX
SPOT
RF Gain
NB
RF GainB
Split Key
Amp Tune
Band Bottom
Keyer Speed
Enable Keyer A
Up Filter
Down Filter
AccInp Xmit
Mute
Band Up
Band Down
Auto Tuner
Freq Scan
Mic Gain
Side Tone
Notch
NOISE
NB
Squelch
Tune
Attn
Preamp
USB
LSB

```
CW
FM
AM
RITCLEAR
Sweep
UP B+1
UP B+5
No Op
Lock
Dual Receive
CW MEM1
CW MEM2
CW MEM3
CW MEM4
CW MEM5
ESC
Dump AGC
```

For the large left knob, large right knob, and the browse knob, the settings text is below.

```
  * VFOA
  * PBT
    ALC      This controls the TX slider for power output
  * RIT
  * XIT
    VOL
    VOLB
    NOISE
    NB
  * VFOB
    SPOT
    RF Gain
    RF GainB
    Keyer Speed
  * Filter Tune
    Mic Gain
    Side Tone
    Vox Delay
```

   * Only the large left knob, large right knob, and the browse knob can do
     these functions.

   The browse knob is actually used as a multi function knob. If you define
   a button with a knob function setting, this button function will
   change to that function. The browse button current function is shown
   as small text in the upper right hand corner of the black frequency area.

   The 3 sliders and the knobs that have limits on how far they can turn cannot do all the
   above functions. They cannot do the ones labelled with as asterick above.

   Not all functions above are available on all radios.

   The selections "UP B+1" and "UP B+5" are very nice for split DX pileups.
   "UP B+1" and "UP B+5" selections work together to give you a very nice

UP frequency function. By setting say pitch bend minus to "UP B+1" and
pitch bend plus" to "UP B+5" (these are the default settings), when a DX
station annouces he is listening say "up 3", you can simply press the "-"
button 3 times and VFO B will now be VFO A plus 3 and Split will now be on.
Therefore, you can instantly set split operation for an exact amount by how
many times you rapidly click "-".

The exact action for "UP B+1" is if SPLIT is off, perform an
A equal B and then add 1 to VFO B. If SPLIT is already on,
then just add 1 to VFO B. And the "UP B+5" also does
the same thing except it adds 5.

Program Support for the Griffin Technology PowerMate And
also the Contour ShuttlePro Multifunction Controller

The Griffin Technology PowerMate and also the Contour ShuttlePro
Multifunction Controller can be used for tuning the radio. However,
I have found that a mouse with a spinning scroll wheel such as the
Logitech MS 620 works better than either of these keyboard simulator
controllers.
Either keyboard contrller should be configured as follows:

   RotateRight - SendKey with key value of Alt-G
   RotateLeft - SendKey with key value of Alt-B
   Click - SendKey with key value of Alt-I
   LongClick - SendKey with key value of Alt-Y

Also, set the PowerMate sensitivity all the way to "Fast".
The active application when the Orion control program is running
is Orion.EXE.

The numeric keypad on the keyboard becomes the keys that go
along with the PowerMate. If the keys are not reacting properly,
you may have to click on the program radio panel to get the keyboard
focus to the radio panel. Once the PowerMate is properly setup,
you can now configure "Remote Pod 0-3" and "Remote Pod 4-9" to operate
from the numeric keypad of the computer keyboard. Pressing the
PowerMate knob down quickly will produce a click that the program
will interpret as "F1" and follow the setting for "F1". Likewise,
pressing the PowerMate knob for a long click will cause an "F2"
operation to be performed. There is no operation for the F3 key.

Once properly setup, you can use the PowerMate to change frequency,
filters, RIT, PBT and many other things. You can still use the
numeric keypad for direct frequency entry by pressing the "ENTER"
key first.

You can purchase the PowerMate by going to www.griffintechnology.com.

WaveNode Watt Meter

The WaveNode watt meter is now supported. If you have a WaveNode
watt meter, you can define this for use by opening the orion.ini
configurtaion settings file. Find the line

```
WAVENODE=0

and change it to

WAVENODE=1

Then save the change.

Before starting the N4PY program, you must first start the wavenode
program WN2.EXE, supplied by WaveNode.  This is necessary since the
wavenode program will send power and SWR messages to N4PY.

In the N4PY program, you can press Alt-Z to get the wavenode window.
This window shows the SWR, average power, and peak power from the
wavenode sensors.  It also allows you to select which sensor will
be shown in the S meter window during transmit.  And it has a
selection
for "Use Peak Power".  With this box checked, peak power will be shown
in the S meter window during transmit.  With this box not checked,
average power will be shown.
```

Diagnostic Tracing

```
There is a check box in the "Preferences" window labelled
"Diagnostic Tracing".  This is used to gather trace information
for Carl to debug a problem.  When changing this setting, you have
to exit and restart the program for the new setting to take effect.
Turning this on causes tracing information to be written to the 3
trace files "comms.txt", "comms2.txt", and "comms3.txt".  Only turn
this on when you have been asked to by Carl.
```

Hot Keys on the keyboard

```
<Up-Arrow>              Increase step size
<Down-Arrow>            Decrease step size
<Left-Arrow>            Tune Down
<Right-Arrow>           Tune Up
<Shft-Left-Arrow>       Fast Tune Down
<Shft-Right-Arrow>      Fast Tune Up
<Ctl-Left-Arrow>        Decrease Speaker Volume
<Ctl-Right-Arrow>       Increase Speaker Volume
<Ctl-Up-Arrow>          PBT Up
<Ctl-Down-Arrow>        PBT Down
<->                     Decrease Speaker Volume
<+>                     Increase Speaker Volume
<Alt =>                 A=B
<Alt />                 A/B
<Alt-A>                 AM Mode
<Alt-C>                 CW Mode
<Alt-E>                 Speech Proc
<Alt-F>                 FM Mode
<Alt-H>                 Show Message Box with this Menu
<Alt-J>                 Amp Window
<Alt-K>                 CW Keyboard Keyer
<Alt-L>                 LSB Mode
<Alt-M>                 Mute Audio
<Alt-P>                 TxLoop
<Alt-P>                 PTT Toggle
```

```
<Alt-R>               RTTY Mode
<Alt-S>               Split
<Alt-T>               ATTN
<Alt-U>               USB Mode
<Alt-W>               Calibrate
<Alt-X>               Quit
<Alt-Z>               Wave Node
<Alt-space>           Accessory Input Toggle
0 - 9                 Begin Entering Frequency
F1                    CW Keyboard Keyer Memory 1
F2                    CW Keyboard Keyer Memory 2
F3                    CW Keyboard Keyer Memory 3
F4                    CW Keyboard Keyer Memory 4
F5                    CW Keyboard Keyer Memory 5
<Shift F1> to <Shift F9> SSB Band Buttons
<Ctrl F1> to <Ctrl F9> CW Band Buttons
```

For comments and suggestions email to
n4py@arrl.net

Carl Moreschi N4PY
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Louisburg, NC 27549

Please do not email or call Ten-Tec regarding this software.