

Rotor and doppler control with PstRotator and OmniRig

Configured for Yaesu FT-847 and ERC-3D rotor-controller

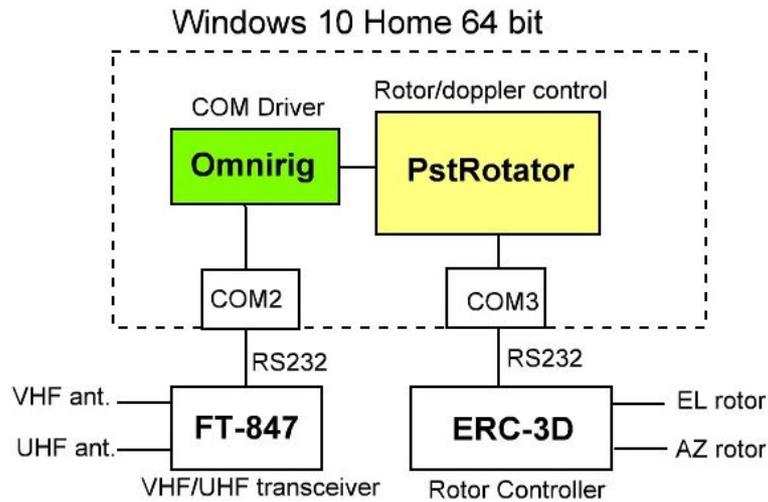


Fig. 1. Yaesu FT-847 and ERC-3D are controller by PstRotator.

PstRotator sends position data to ERC-3D for rotor control. PstRotator also controls the transceiver's uplink/downlink frequency for doppler tuning.

PstRotator installation:

PstRotator is installed as usual under Windows.

The installation folder is C:\Program Files (x86)\PstRotator.

OmniRig installation

OmniRig is installed as usual under Windows. The installation folder is

C:\Program Files (x86)\Afrete\OmniRig.

Create a shortcut on the computer desktop pointing to OmniRig.exe

OmniRig configuration

The file FT-847PST.ini is inside the zip-file C:\Program Files (x86)\OmniRig\OmniRigIni.zip.

Unzip OmniRigIni.zip and copy FT-847PST.ini into

C:\Program Files (x86)\Afrete\OmniRig\Rigs. FT-847PST.ini is used by OmniRig when connecting to PstRotator. Restart OmniRig by restarting the PC.

Set the parameters for "RIG 1" in OmniRigSettings (fig. 2). Don't forget selecting FT-847PST as Rig type.

Yaesu FT-847 configuration

Change menu 37 to "9600" (CAT baud rate).

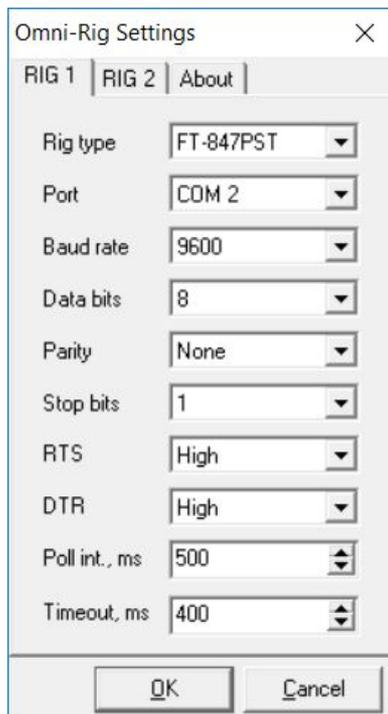


Fig. 2. Parameters for RIG 1.

Configuration of Pstrotator for rotor control

Setup > My Location. Type your locator, for example JO46GI. Press "Save settings"

Communication > Select "RS232 /TCP server"

Communication > "EL / AZ + EL COM port" > Choose the COM-port, e.g. COM3

Setup > "AZ/EL + AZ controller" > select "ERC-3D" (the rotor controller)

Setup > Start in Manual Mode

Setup > Satellites tracking (this selection will open the "Satellites Tracking" window).

Tracker > Satellites

Loading TLE and selecting favorite satellites

Before satellite tracking can begin, PstRotator needs TLE-files and Favorites. The "Satellites Tracking" window should be open. Select "TLE" in the menu. The "TLE Update" window will open, see fig. 3 below.

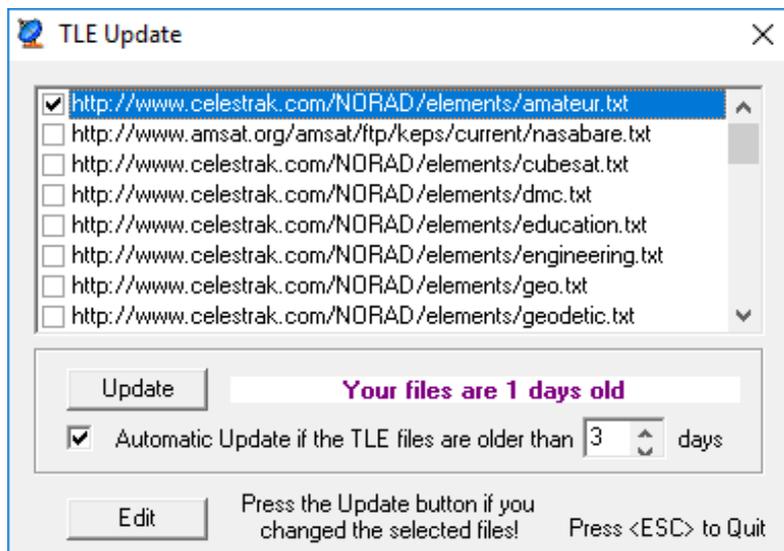


Fig. 3. TLE Update window.

Select the files you want to download and click "Update" The selected files are now downloaded into C:\Program Files (x86)\PstRotator.

Now we add one or more satellites to Favorites. In the "Satellites Tracking" window, click "Satellites" to open the "Satellites" window (fig. 4). In the "Name" box, select a satellite and click "Add/Modify". The satellite's name is now added to the Favorites pane (fig. 6), and satellite data are visible in the "Satellite Details" pane. Repeat until all your favorite sats are displayed in Favorites. Finally, go to the "Satellites Tracking" window and highlight the desired satellite in "Favorites".

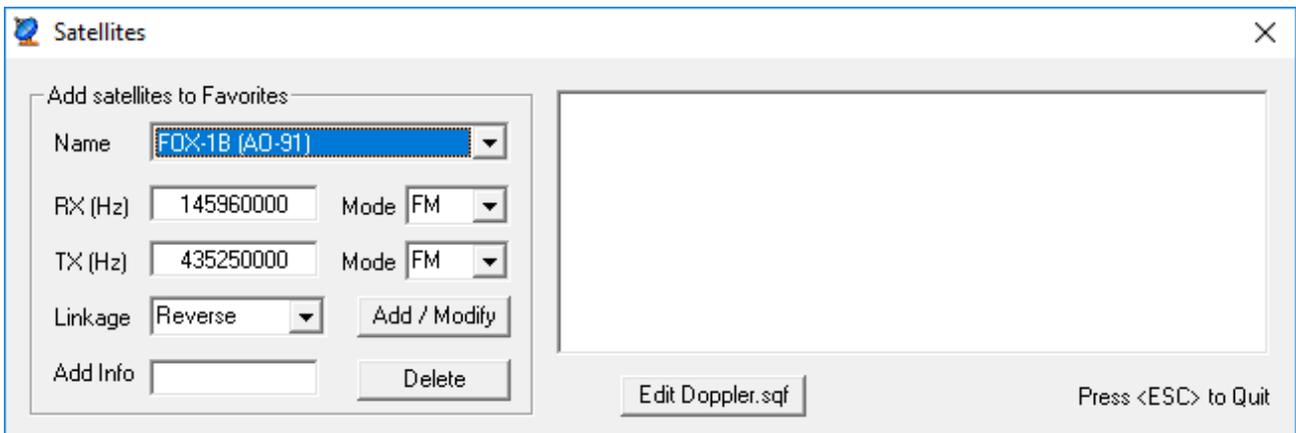


Fig. 4. Favorites are selected in this window.

Start Rotor control

When the desired satellite is selected in Favorites (in the "Satellites Tracking" window), it is time to point the antennas at the satellite. Antenna tracking is started by going to the PstRotator's main window and select "Tracking" as Mode.

PstRotator will now begin controlling AZ and EL according to the sat position. If the sat is under the horizon, EL is 0. The screen-dump below shows the main window when a satellite is overhead.

The antenna position is the green pointer on the compass, and the current sat position is the black pointer. The green and black pointers will normally cover each other. Black digits are the sat position where the antenna should point. Red digits are the current antenna position.

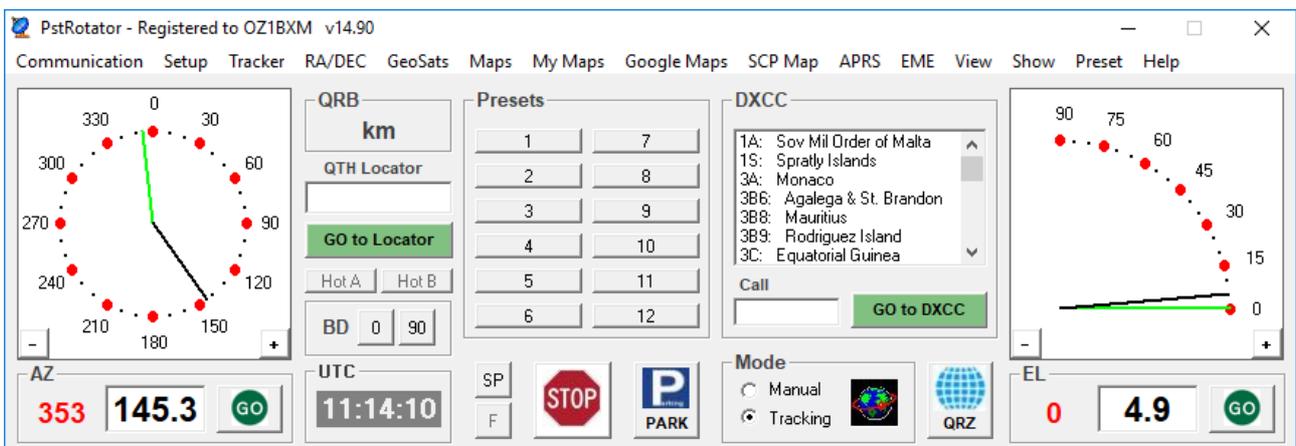


Fig. 5. PstRotator's main window.

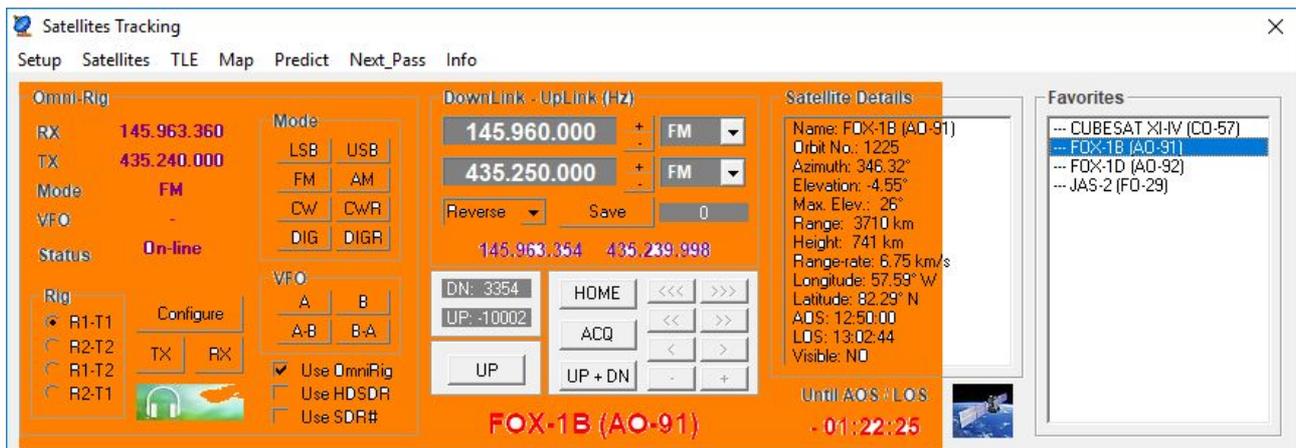


Fig. 6. AO-91 is selected in Favorites. The orange area is not relevant for rotor control.

Configuration of PstRotator for doppler control

Here follows an example on how to configure doppler correction for AO-91. Go to the "Satellites Tracking" window and select AO-91 in Favorites. The "Satellite Details" pane will show AO-91 orbital data. Some of the numbers (Range, Azimuth, Elevation, Longitude, Latitude) will change according to the satellite's movement.

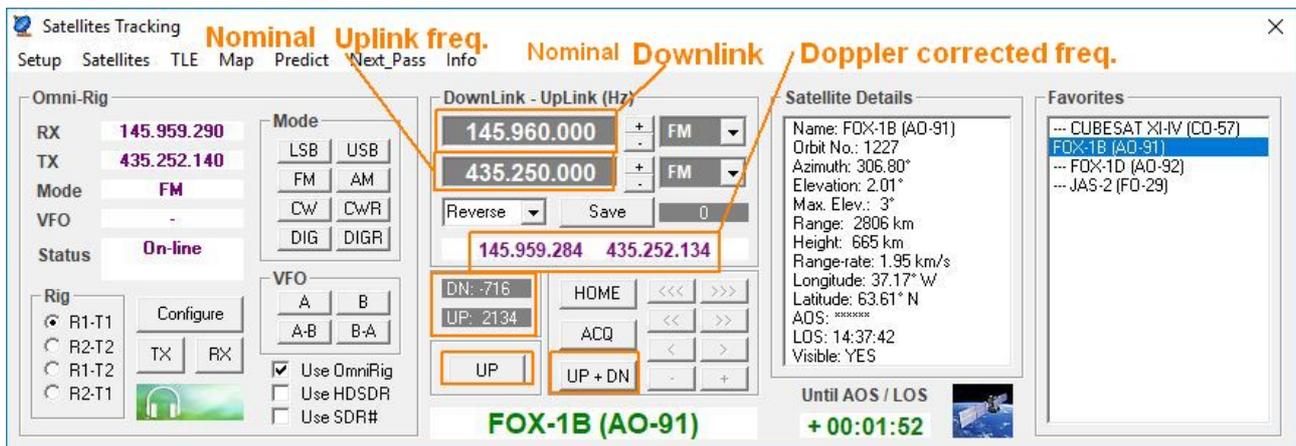


Fig. 7. Important fields in "Satellites Tracking".

Fig. 7 above: Nominal uplink frequency & Nominal downlink frequency: These two frequencies are typed according to the satellite's official data for uplink/downlink. In the case of AO-91, uplink is 435.250 MHz and downlink is 145.960 MHz. Important: nominal frequencies must be typed in Hz, not MHz. Mode (FM, USB etc) is also selected. Once the nominal frequencies and modes are typed, they should not be changed.

DK3WN runs a page containing satellite info including uplink/downlink frequencies:
http://www.dk3wn.info/p/?page_id=44504.

Select Not Linked, Normal, or Reverse. Normal is for non-inverting transponders, and Reverse is for inverting transponders (often selected).

When done, press "Save" to save the settings and associate them with the satellite. The saved values will be recalled next time that satellite is selected.

Click the button "UP + DN". This means that both uplink and downlink are doppler corrected. The doppler corrected frequencies are now displayed in purple. If the satellite is near you, the numbers

will change fast. If the satellite is far away, the doppler corrected frequencies will change slowly. Doppler tuning takes place all the time, also when the satellite is far away.

The "UP" button means that only the uplink frequency is doppler corrected.

Start doppler control

The last thing to do in the "Satellites Tracking" window is to connect PstRotator to Omni-Rig. Select "Use OmniRig". The status field should change to On-line. If not, check the OmniRig settings and the cable between PC and transceiver. Check that the right COM-port is used. Restarting the PC may also help.

Thank you goes to:

KE9AJ Joe who helped with the OmniRig configuration.

Author and date

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