Rig Executive

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Version 2.0.9.0 Beta

Table of Contents

Introduction

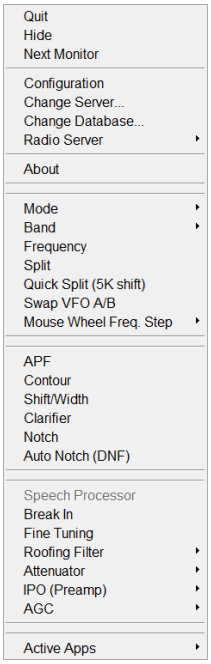
Rig Executive is designed to give maximal computer control of the Yaesu FTDX10 while using minimal screen real estate and requiring the fewest mouse operations possible. To this end, the entire interface consists of a single menubar at the top of the screen. The second major feature is the support of multiple applications all of which need access to the FTDX10 through COM port connections. To avoid conflicts only one application is selected by the user to be active. All applications can read data from the transceiver but only the active application can send commands that affect operation. Remote operation is possible with the user interface on one computer while the radio is hosted by a second machine. However, currently all support apps must also be run on the machine directly connected to the FTDX10.

This version (2.0.9) is a C++ rewrite of the original python code. The rewrite was undertaken due to the underlying use of the python toolset which was triggering multiple false positives by virus scanners. It is hoped that additional features not possible in python can be added in the future. **Note: Most screenshots in this manual were made from the python version. The C++ GUI has a slightly different appearance.**

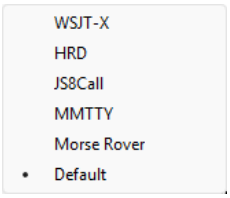
Upon opening *Rig Executive,* the user is presented with a menubar at the top of the screen as shown.

Reading from left to right, the menu displays 'Options,' 'Power,' 'DNR,' 'NB,' and 'SSB,' followed by 'User named mode,' 'ZIN,' 'TXW,' 'Tune,' 'Pwr,' and 'Rx.' It then shows the current receive frequency and 'Tx,' followed by the current transmit frequency.

The yellow indicates the radio is operating in Split mode. Clicking 'Options' opens the following submenu:

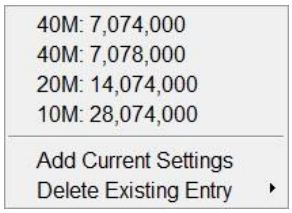


While most of these menu items are self-explanatory, a few are not. 'Hide' simply hides the menubar for 10 seconds so that the user can interact with anything that happens to be covered. 'Next Monitor' shifts the menubar to the next monitor for those who are using multiple display monitors. 'Active Apps' opens the menu shown on the right that allows the user to select and start another application, typically to run a digital mode.



Continuing across the menubar, 'DNR' and 'NB' control Digital Noise Reduction and Noise Blanking respectively. Clicking each brings up a submenu that allows the user to hear the effect of a given setting by just hovering over that value. When satisfied, a mouse click then makes it permanent. Moving the mouse pointer off the submenu without clicking simply causes the radio to revert to the previous setting.

'SSB' through 'User named mode' are user modes defined during configuration to support *Rig Executive* presets. Clicking one brings up a submenu:



Clicking on one of the frequencies immediately sets the radio. Depending on how it was defined in 'Add Current Settings', either one or both VFOs will be set along with mode(s) (such as CW-U) as well as chosen parameters such as IPO, Power, etc. as desired. In addition, if a support application is running, that can be selected, also.

To the right of the presets the 'ZIN' displays if the radio is in CW-U or CW-L mode. 'TXW' is visible if operating in split mode. To the right of this is 'Tune'. Its presence and function depend on how the antenna system is configured at setup time. In the case of an external auto-tuner, depressing 'Tune' (mouse button down) sets transmitting power to a predetermined value (also configured at setup time), temporarily switches to CW mode, then begins transmitting. Releasing the mouse button switches back to receive and restores all settings. If the callsign is entered during configuration, that callsign will be sent in Morse code in the form, DE [Callsign] when the button is released.

The next item on the menubar is 'Pwr'. While receiving the entry displays the power level set in the radio. When transmitting, the entry turns red and an **approximate** output power reading is read from the radio itself.

Next comes 'Rx (A)', a left-click button, the current receiver frequency, then a right-click button. The (A) simply indicates VFO A. Clicking either the left- or right-click button decreases or increases the receiver frequency by 5 kHz. If the radio is in split mode, the entry is highlighted in yellow. Similarly, the Tx entry accepts left and right clicks, as well. **This indicator highlights in red if the transmit frequency would be out of bounds for the given license.**

System Requirements

Currently, *Rig Executive* only runs on 64 bit Windows 10 and 11. It may run on earlier versions but that has not been tested. Minimum system requirements vary depending on intended usage. If you plan on only using *Rig Executive* and no other software will be communicating with the FTDX10 then the only requirement is installation of the drivers supplied by Yaesu. *Rig Executive* is a multithreaded, multiprocess application so a relatively modern PC with at least 8 GB of RAM is recommended.

Since most hams use logging programs that require the ability to query the radio, and those who use digital modes also need to control PTT as well, additional software is needed to interconnect the various applications. The open-source application, com0com, is free but some Windows 10 and all Windows 11 systems have additional security to block potentially malicious software drivers which can make installation difficult. Sourceforge is a good starting place. Look for com0com-3.0.0.0-and-x64-signed.zip. Many people have installed it without any problem. A Google search will bring up many methods of performing the installation.

A second option is Eterlogic Software (https://eterlogic.com/Products.VSPE.html). I haven't tried it yet but the license is only $50.

A third option is offered by HDD software (https://freevirtualserialports.com/). The freeware version creates only a limited number of ports but is sufficient for connecting a logging program. The paid version ($89 at the time of this writing) is not cheap but offers many options including connecting to COM ports via networking. Go to https://hhdsoftware.com/virtual-serial-ports. A competing version (somewhat more expensive) is offered by Eltima Software at https://www.eltima.com/purchase/vspdxp/.

Although not required, Andrew Barron's book, *The Radiotoday guide to the Yaesu FTDX10,* is highly recommended to help with troubleshooting any FTDX10 issues or connected software.

Limitations

The primary limitation that affects the end-user is seen when trying to support interconnection with other applications that expect to directly key the FTDX10 when transmitting CW. The same limitation is seen with FSK. The software is unable to handle high bit rates required for these two modes. However, most digital software packages have the option to internally convert the CW or RTTY to audio which is sent directly to the soundcard in the FTDX10 for transmission via SSB. Alternately, hardware such as the Microham Micro Keyer III incorporates both Winkey and Baudot to FSK keying. The advantage of this approach is that timing of the CW and FSK keying is very accurate and not affected by Windows idiosyncrasies.

A second limitation is the lack of support for 60 meter channelized band definitions. (This can be added by the user during configuration.) Hence, it is up to the operator to ensure adherence to FCC regulations.

Finally, transmit power readings displayed on the menubar are approximate only. This is due to limitations in translating the FTDX10 CAT command power reading to watts.

A more fundamental limitation exists when using the software in a client/host configuration with two machines. Currently, all COM port connections occur on the host machine (the computer that connects to the FTDX10 via COM ports). Therefore, all external apps need to run on that host machine. However, if the user

is trying to control the radio from a different client machine, it will attempt to start the external app on that machine which currently has no access to COM ports. This feature is planned for a later release if there is sufficient interest.

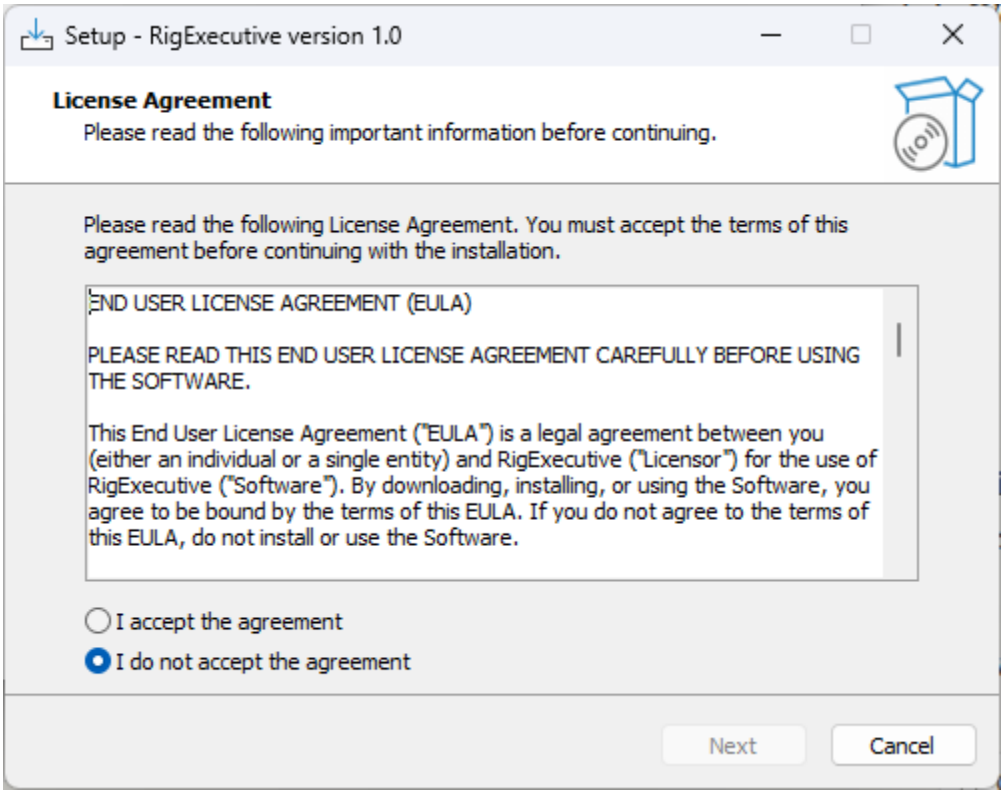
Not yet implemented is support for the macro memories in the FTDX10.

Installation

If you have not already done so, download and unzip the latest version of *Rig Executive* installer from https://rigexecutive.com/download. At the time this manual was written, none of the executables had been signed. As a result, some virus scanners may complain or simply block the install and/or execution of *Rig Executive*. If necessary, follow the instructions of your scanner provider to make an exception for this program. See suggestions at the end of this document for help. (This may be corrected in a future release if there is sufficient demand.)

After unzipping, run the installer program. In the install directory you will find two executable programs, a license file, and documentation. **RigExecutivePlus.exe** is the user interface and can be run on any Windows machine. **RigExecutive.db** and will be created if it doesn't exist. This is the database that will store your configuration and should reside on the same machine as RigExecutive.exe. **RadioServerPlus.exe** is the interface to the radio. **RigExecutive.lic** is the license file, which must reside on the same machine as RadioServerPlus.exe. **User_manual.pdf** is the user documentation. Note that this is a time-limited beta release that currently expires on 12-31-26.

Installation follows the usual standards for Windows software. The usual screen pops up.



Now, after reading the license agreement, click 'accept'. You will be asked if you wish to save icons to your desktop. That is optional since the programs can be started from a command line should you choose to do so.

Choose the location where you wish to save the programs. Nothing is written to the Windows Registry so you may move it later if desired. When satisfied, click 'Install'. If this is not the first time you have installed the program, a popup will appear asking if you wish to replace the database. If you are installing this as an update, most users will click 'No'. If you click 'Yes', all your presets and customizations will be lost. Finally, click 'Finish'.

Licensing

Currently, use of Rig *Executive* is free. At some point there may be a small charge likely in the $25 range to cover the cost of keeping the website and codesigning certificate paid for. Any such charge will be waived for those users who submit bug reports leading to improvement of the software or documentation.

Startup

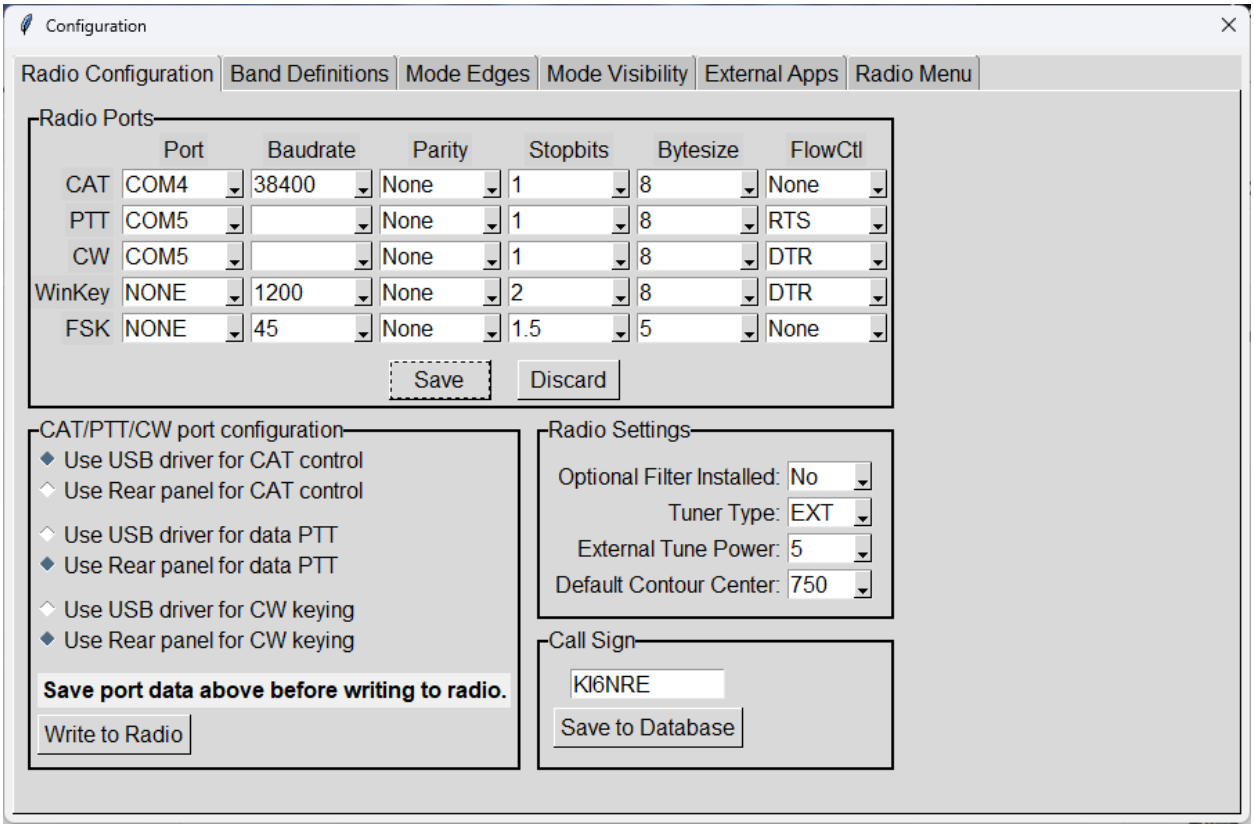
To run *Rig Executive* first copy RadioServerPlus.exe and RigExecutive.lic to the machine that hosts the FTDX10. It can be started either from a console on the command line or by clicking the icon. Next start RigExecutivePlus.exe either from a console or by clicking on the icon. This program does not have to reside on the same machine as RadioServerPlus.exe if there is internet access to both machines. However, initial setup will be easier if both are run on the machine connected to the radio. If both RigExecutivePlus and RadioServerPlus are to be run from the same machine RigExecutivePlus.exe will automatically start a local copy of RadioServerPlus.

Configuration

The first time *Rig Executive* is started (by clicking the *Rig Executive* icon) configuration is necessary.

While daunting at first, rest assured that configuration is by far more complicated than the main program. Much of that complexity allows for a cleaner interface when using *Rig Executive* while on the air. As will be seen, most of this manual is in support of configuration. The *Rig Executive* menubar requires very little explanation since it mirrors direct usage of the FTDX10. (In general, settings that require navigating through multiple 2nd level menus on the radio are directly accessible on the menubar.)

The configuration window has the general appearance shown below:



Note there are multiple tabs as follows:

1) Radio Configuration – This defines how the software will communicate with the hardware.
2) Band Definitions – Used to define band edges and allowed modes based on Country and Licensure. Only US Technician, General and Extra classes are predefined. The user is ultimately responsible for compliance with FCC regulations.
3) Mode Edges – These definitions are used to define how close to a band edge it is safe to transmit. As usual, the user is responsible for insuring compliance with FCC regulations.
4) Mode Visibility -- *Rig Executive* supports presets for various modes, both predefined by hardware and user-defined for finer control. Since each mode takes up space on the menubar (to be discussed in the Usage section), many of those modes will be marked as hidden. This screen allows the user to define additional modes and show or hide them as desired.

5) External App Configure -- *Rig Executive* supports additional programs such as logging programs and digital communication programs. These are defined in this screen.
6) Radio Menu – Most radio settings can be directly altered using this tab.

These screens will now be discussed in detail.

Radio COM Ports

Communication with the FTDX10 is either through third party hardware or a USB connection using two ports, one enhanced which handles all CAT commands both to and from the radio, and a second port which supports PTT and CW. This latter one-way port uses RTS and DTR to differentiate between the two. Initial configuration is best done while sitting in front of the radio since basic CAT communication must be established before continuing.

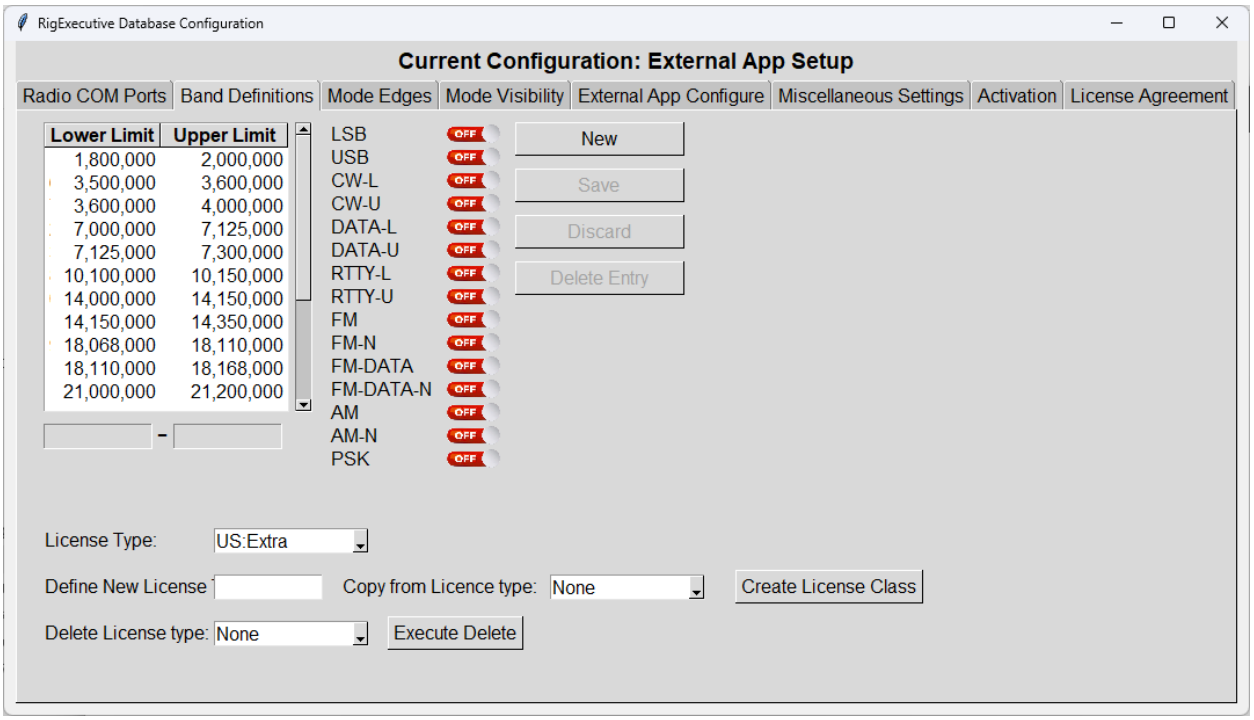
When using the Yaesu supplied USB drivers the USB enhanced port which handles CAT commands must have Flow Ctl set to None. Also, WinKey and FSK ports must be set to None since those two functions require additional hardware to function.

Continuing with configuration, look at the section labeled 'Radio Settings.' These settings need to agree with the configuration of the radio. Finally, although not required, it is suggested that the user's callsign be entered. When present that callsign will be sent via morse code at the conclusion of a 'Tune' cycle.

For those who are using a hardware interface, each interface is different so you will need to refer to your specific interface reference. However, once again note that the CAT/PTT/CW port configuration frame can assist with radio programming. In this case the rear panel is used for all connections. (In principle, the CAT connection could use the enhanced USB port from the FTDX10. The downside is that there have been reports of the FTDX10 screen saver not working when connected this way which could lead to burn-in.)

Band Definitions

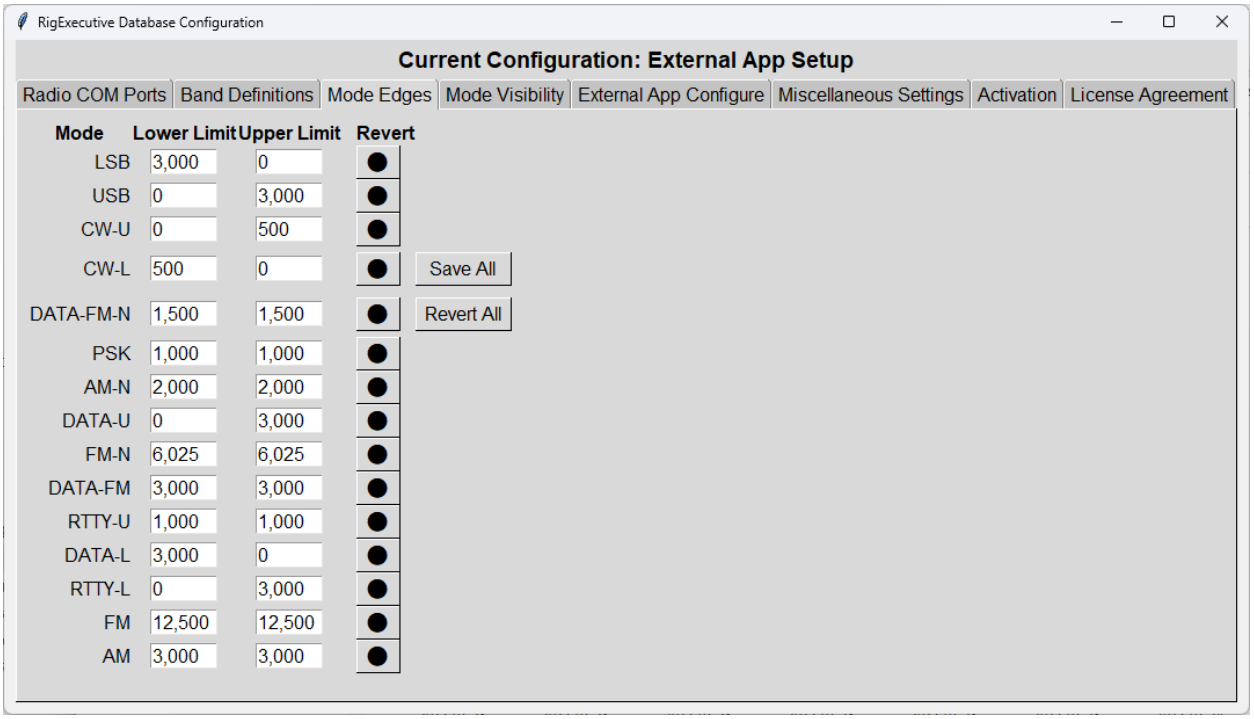
Shown below is the Band Definition tab.



These are used to warn when out-of-band transmission is attempted. Definitions are included for US amateurs, so it is only necessary to select the license type of the operator. Every attempt was made to properly define band info, but it is the user's responsibility to confirm that they are correct. (While both sidebands are enabled by default, it is suggested that turning off the unused sideband can help avoid late night slipups.

Foreign amateurs will have to create a new license type for their locale. Enter the name in the 'Define New License' entry. Optionally, you can select an existing license type and copy those values as a starting point. Once this step is done, either edit an existing entry from the table by clicking on it or create a new entry by clicking 'New'. Then edit the values as desired and select the allowed modes using the radio buttons. When satisfied, click 'Save'. If not satisfied, either continue editing or click 'Delete' to discard the current entry. You may also select a desired line and click 'Delete Entry' to remove it from the table.

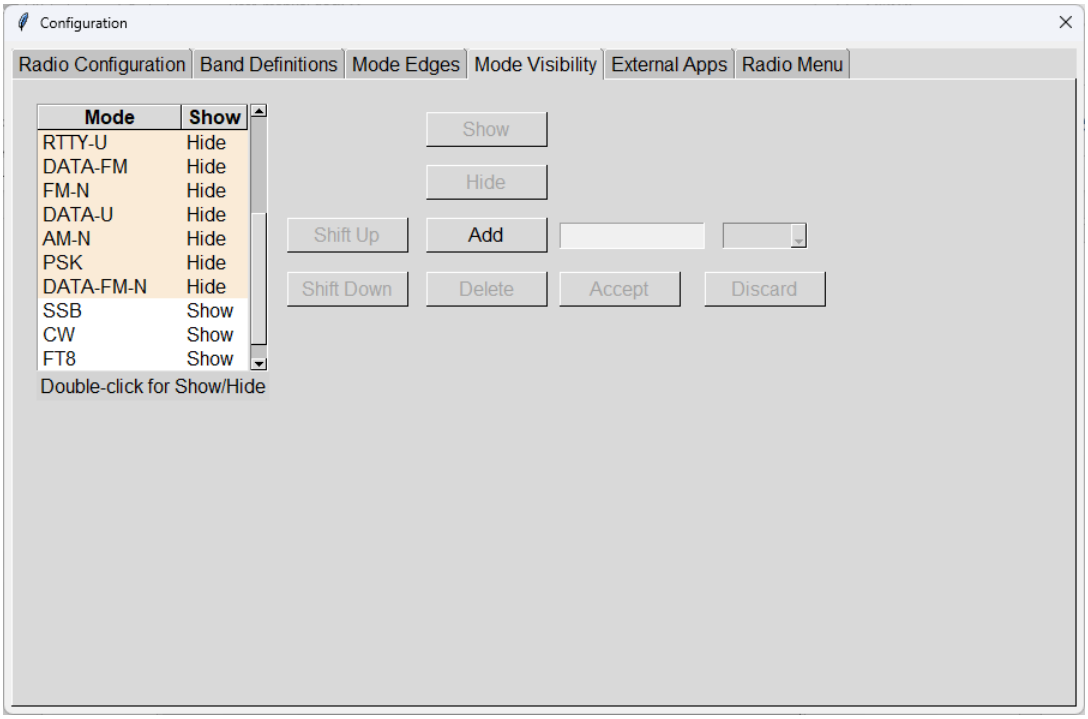
Mode Edges



As we all know, each operating mode has a typical bandwidth. This tab allows one to specify the rough spread that is to be used in calculating how close to a band edge it is safe to transmit. For example, LSB signals spread roughly 3000 Hz below the center frequency with no energy produced above it. Please assure yourself that the default entries are satisfactory. The two buttons to the right either save all changes or discard them all. The individual 'Revert' buttons will just discard a change in that row.

Mode Visibility

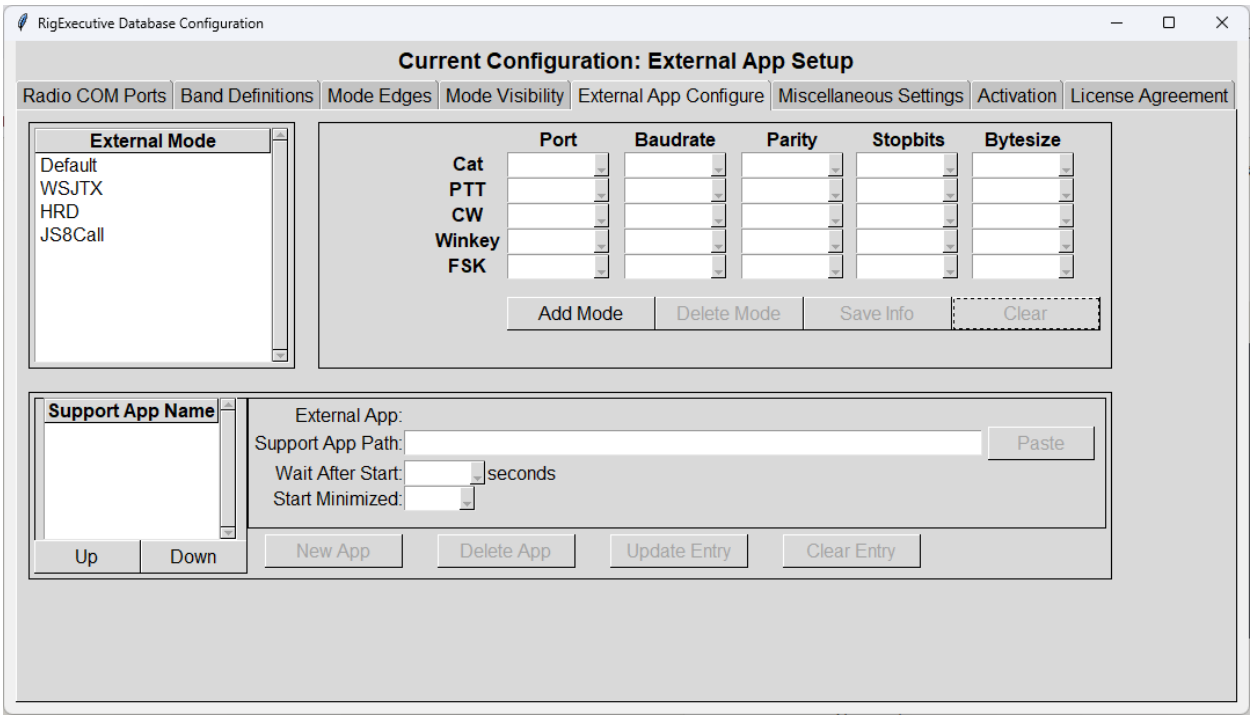
Rig Executive modes refer to 'presets' that allow the user to quickly select a frequency (or split frequencies if desired), FTDX10 mode setting (LSB, CW, Data, etc.), associated applications (such as WSJT-X), IPO, Attenuator, output power, and speech processing levels as desired. Within this tab modes refer to category names that are visible to the user at run time. In the screenshot below first refer to the table on the left.



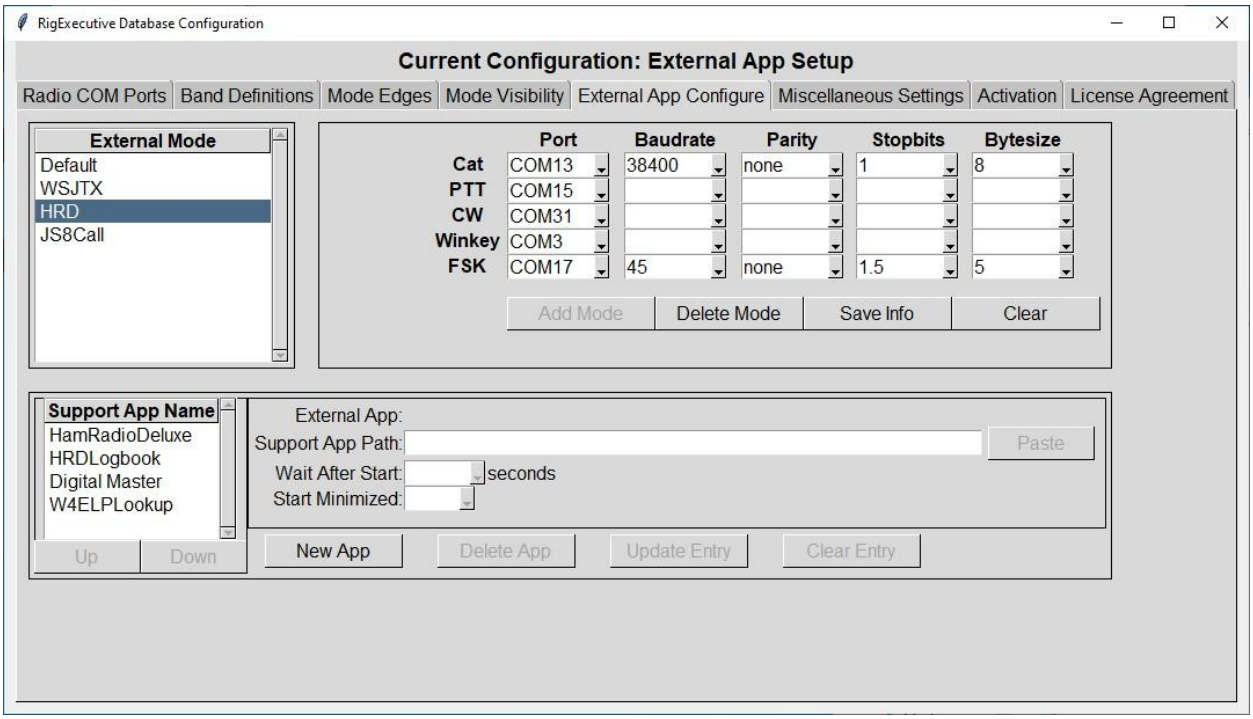
Note that some of the entries are shaded while others are white. The shaded modes are those defined within the FTDX10 and cannot be edited. Those in white are user defined. The column on the right side of the table indicates whether that particular mode will be displayed on the menubar at run time. If the user clicks on a white entry, that name and whether it is to be displayed can be edited. Note that show/hide can be changed by either double-clicking the desired entry or a single click and using the 'Show' and 'Hide' buttons.

External App Configure

This is the most complex tab in configuration.



The top half defines the application mode that is selected by 'Options->Active Apps' when running *Rig Executive*. The table on the left lists various external 'modes'. Initially, only the table and the 'Add Mode' buttons are active. Clicking 'Add Mode' allows a new 'Mode' to be added. Simply define the mode name and click 'Accept'. Then click on the new name just entered (or any other mode) to edit COM port settings associated with that operating mode. For example, clicking on 'HRD' in the table enables editing of the COM ports used to communicate with HRD as shown in the next image.



In this example HRD (Ham Radio Deluxe) dedicates the COM ports listed on the right side of the screen to that program. Note that these are the ports that are opened by *Rig Executive*, not the port numbers configured in HRD. One connects one side of a virtual null modem to each port listed in this tab while the other side of that null modem is connected to the associated port in HRD. In general, the use of a spreadsheet is strongly recommended to avoid confusion when configuring. When satisfied with the port assignments for that mode, just click 'Save Info'. 'Clear' deletes the right-side information while 'Delete Mode' removes the entire definition.

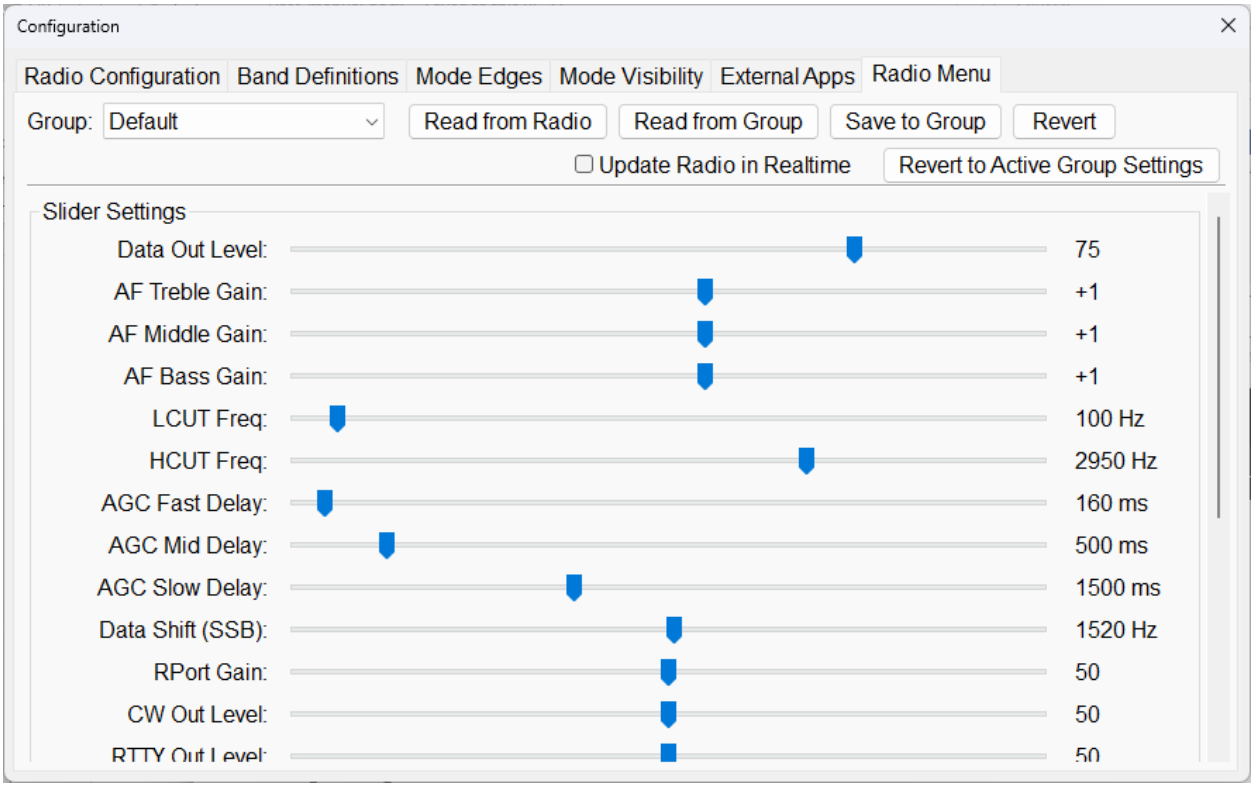
Next one defines the actual program or programs used to support HRD. First, click 'New App', locate an icon corresponding to the program you wish to add, then drag-and-drop it into the window (not shown here). Finally, click 'Accept' and the path will automatically populate the right side of the window. Note two additional fields: 'Wait After Start' and 'Start Minimized'. The former will wait the number of seconds entered before starting the next app (in case there is a dependency.) 'Start Minimized' does exactly that (but is somewhat app dependent). The remainder of the buttons on the right side do just what you expect. If a field background color is yellow, it means that you have changed a value, but it has not yet been saved in

which case clicking ‘Update Entry’ will save it. ‘Clear’ simply erases those entries without affecting the underlying database.

The ’Up’ and ‘Down’ buttons on the table change the order in which programs are started. (The new order is automatically saved.)

Radio Menu

This tab allows the user to customize radio settings based on the external app selected.

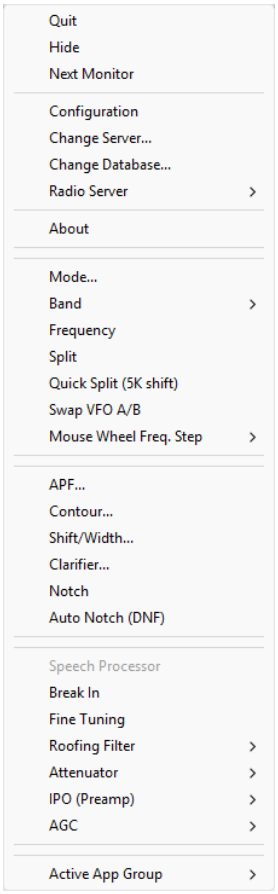


Select the desired group (External app defined previously). Next, if you wish to modify previously defined settings, click ‘Read From Group’ which loads those settings to the sliders. Adjust the sliders to your satisfaction then click ‘Save to Group.’ Before leaving this tab it is best to click ‘Revert to Active Group Settings’ to insure that the active group and radio are in agreement.

Usage

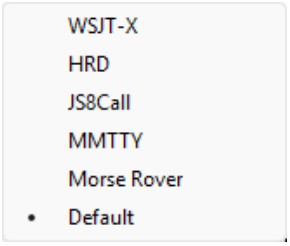
Rig Executive is much easier to use than it was to configure. Click on its icon to start up. The start-up is slow due to the complexity of the user interface.

If everything was configured correctly you should see something similar to the



menubar (seen above) at the top of your screen:

'Options' presents the menu as shown to the left. Most of the entries have direct correlations to controls on the FTDX10 with the exception of 'Hide', 'Next Monitor', and 'Active Apps'. 'Hide' simply hides the menubar for 10 seconds when it is covering something that you need to read or access. 'Next Monitor' moves the menubar to the next monitor in the event more than one monitor is connected to the PC. 'Active Apps' (to the right) allows the user to start whatever support app is needed. Those support programs were set up at configuration time.

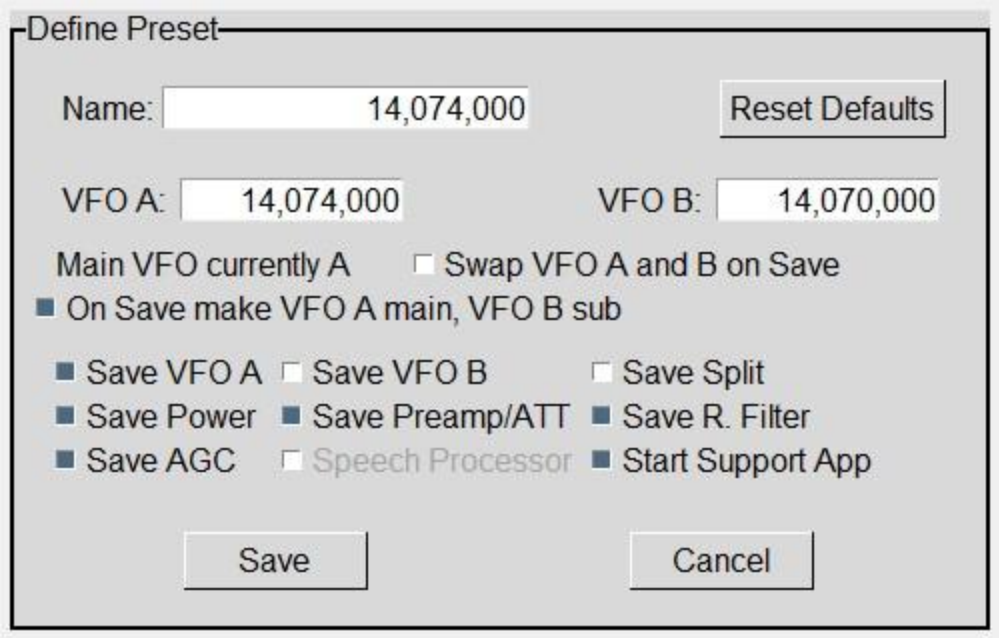


'Active App Group' allows the user to select the program(s) that can interact with the FTDX10. These groups are configured in the External Apps tab in the configuration screen. This function supports multiple external programs to both read to the FTDX10 COM ports. However, only the current group selected by the Active App Group can write to the radio COM ports. Remember, individual radio settings for each group can be defined in the Radio Menu tab of the configuration screen.

'Power', 'DNR', and 'NB', refer to setting the transmit power, Digital Noise Reduction and Noise blanking, respectively. 'DNR' and 'NB' are a bit unusual in that it is necessary to immediately move the mouse pointer into the dropdown menu or it will withdraw. As the pointer is moved through the choices, the associated settings

are immediately sent to the radio. When satisfied, just click on that setting to make it permanent. If the pointer is moved off the dropdown menu without clicking a selection, the radio will revert to the previous setting.

Following the 'NB' menu item are the preset categories enabled during configuration. Once defined, just click on the desired preset. To add a new preset, the radio is first configured as desired and any support app selected. Then click 'Add Current Settings' which gives the following screen:



The options are self-explanatory apart from 'Start Support App'. Assuming you started the support program with 'Options->Active Apps', the program (or programs) associated with that app will start whenever this preset is selected. (Only those programs not already running will be started so there will be no duplicates.)

The right side of the menubar reveals 'ZIN' if the radio mode is CW-U or CW-L, 'TXW' if operating in split mode, 'Tune' (if configured for an external tuner), 'Pwr', receive frequency and transmit frequency. Both frequency indicators have left and right arrows to decrease or increase the frequency in 5 kHz steps. These last 3 indicators are also color coded. When receiving, 'Pwr' shows the power setting programmed in the radio. When transmitting, it turns red and displays a rough indication of power output. The receive frequency turns yellow when operating in split mode.

Finally, the transmit frequency turns red if the transmitted frequency/mode is not allowed for your license class per FCC regulation. This could be due to being out-of-band for license type or the wrong mode, e.g. SSB transmission in a CW/Data only region of the band.

As can be seen, operating *Rig Executive* is much simpler than configuration. As a reminder, back up your database whenever significant changes to configuration are made. (An easy way to do that is by placing the database in a Dropbox or Google Drive folder that has enabled history)

Thank you for trying my software. This program is the result of three years development and multiple iterations to simplify use of the FTDX10. Feel free to send comments to me at support@rigexecutive.com.

Anti-virus workarounds

RigExecutivePlus software may be flagged by antivirus software as suspicious due to the way software packages gain 'trust' by AV scanners. This C++ version of the host and client software has been run through VirusTotal (an industry standard site for evaluating software.) and was cleared by all major AV manufacturers. If your antivirus quarantines or blocks either program, add an exclusion using the instructions for your product below. (These instructions were generated by AI – they may be incorrect.)

The default installation folder is %LocalAppData%\RigExecutivePlus (typically C:\Users*YourName*\AppData\Local\RigExecutive).

Windows Defender (Windows Security)

1. Open **Windows Security** from the Start menu or system tray.
2. Select **Virus & threat protection**.
3. Under *Virus & threat protection settings*, click **Manage settings**.
4. Scroll down to **Exclusions** and click **Add or remove exclusions**.
5. Click **Add an exclusion → File** and browse to RigExecutivePlus or RadioServer in your RigExecutive installation folder.

If RigexecutivePlus or RadioServerPlus has already been quarantined, go to **Virus & threat protection → Protection history**, find the detection, click it, and choose **Actions → Allow on device**.

Norton / Norton 360

1. Open the Norton application.
2. Click **Settings** (gear icon) in the main window.
3. Select **Antivirus**, then the **Scans and Risks** tab.
4. Under *Exclusions / Low Risks*, click **Configure** next to "Items to Exclude from Scans."
5. Click **Add**, browse to RigExecutivePlus or RadioServerPlus, and click **OK**.

6. To restore a quarantined file: **Security → History → Quarantine**, select the entry, and click **Restore**.

McAfee / McAfee Total Protection

1. Open McAfee and click the **gear icon** (Settings) in the upper right.
2. Select **Real-Time Scanning**, then click **Excluded Files**.
3. Click **Add file** and browse to RigExecutivePlus or RadioServerPlus.
4. Click **Save**.

To restore a quarantined file: **Settings → Quarantined items**, select RigExecutivePlus or RadioServerPlus, and click **Restore**.

Avast Antivirus

1. Open Avast and click **Menu → Settings**.
2. Select **General → Exceptions**.
3. Click **Add Exception**, type or browse to the full path of RigExecutivePlus or RadioServerPlus, and click **Add Exception**.

To restore a quarantined file: **Menu → Quarantine**, select the file, and choose **Restore**.

AVG Antivirus

1. Open AVG and click **Menu → Settings**.
2. Select **General → Exceptions**.
3. Click **Add Exception**, enter the path to RigExecutivePlus or RadioServerPlus, and click **Add Exception**.

AVG and Avast share the same engine; the steps are nearly identical. To restore from quarantine: **Menu → Quarantine → Restore**.

Bitdefender

1. Open Bitdefender and go to **Protection → Antivirus**.
2. Click **Settings** (gear icon next to Antivirus).
3. Select the **Exclusions** tab.
4. Under *List of files and folders excluded from scanning*, click **Add** and browse to RigExecutivePlus or RadioServerPlus.

To restore a quarantined file: **Notifications → View all notifications**, find the detection, and select **Restore file**.

Kaspersky (Standard / Plus / Premium)

1. Open Kaspersky and click **Settings** (gear icon).
2. Go to **Security Settings → Threats and Exclusions**.
3. Under *Exclusions*, click **Manage exclusions → Add**.
4. Browse to RigExecutivePlus or RadioServerPlus, check **All components**, and click **Add**.

To restore from quarantine: **More Tools → Quarantine**, select the file, and click **Restore**.

ESET NOD32 / ESET Internet Security

1. Open ESET and press **F5** to open Advanced Setup.
2. Navigate to **Detection engine → Exclusions**.
3. Click **Add** next to *Performance exclusions* or *Detection exclusions* and enter the path to RigExecutivePlus or RadioServerPlus.
4. Click **OK**.

To restore a quarantined file: **Tools → More tools → Quarantine**, select the entry, and click **Restore**.

Malwarebytes

Malwarebytes is typically used alongside another antivirus rather than as a standalone product. Note that Malwarebytes Premium's real-time protection can quarantine files independently of Windows Defender.

1. Open Malwarebytes and click **Settings**.
2. Select the **Allow List** tab.
3. Click **Add**, choose **Allow a file or folder**, and browse to RigExecutivePlus or RadioServerPlus.

To restore a quarantined file: **Detection History → Quarantined items**, select the file, and click **Restore**.

Trend Micro

1. Open Trend Micro and click **Settings** (gear icon).
2. Go to **Exception Lists → Approved Programs**.
3. Click **Add** and browse to RigExecutivePlus or RadioServerPlus.
4. Click **OK** to save.

To restore from quarantine: **Tools → Quarantine Manager**, select the file, and click **Restore**.