



PRO-96 DSP APP U1.2 Upgrade Utility January 30, 2004

Radio Shack is pleased to offer this free upgrade to enhance the functionality and performance of your PRO-96 Digital Trunking Handheld Scanner. Please take a moment to review these instructions before proceeding with the upgrade.

New in this version

DSP APP Firmware Version U1.2 provides the following enhancements to your PRO-96 Digital Trunking scanner:

▶ Added automatic detection, tracking and decoding of CQPSK LSM modulation

Compatible Quadrature Phase Shift Keying (CQPSK) is a type of digital modulation used in certain newer digital simulcast trunked radio systems. These newer systems operate with the 9600 bps P25 control channel and utilize Linear Simulcast Modulation (LSM). The original version of PRO-96 DSP firmware was not designed to decode LSM CQPSK modulation. This version enables automatic detection, tracking and decoding of LSM CQPSK signals. Please note that this upgrade has not been tested with APCO Project 25 Phase II 6.25 kHz CQPSK signals, and is not intended to provide APCO Project 25 Phase II 6.25 kHz CQPSK functionality.

▶ Fine tuned digital audio level

Some users reported that digital audio levels are noticeably louder than analog audio levels. The digital audio level was adjusted to better match typical analog audio levels. Note that analog audio levels will vary depending on the type of system, modulation deviation, and the way individual analog systems are adjusted and used.

▶ Improved C4FM performance in weak signal conditions

Enhancements were made to the digital decoder to provide improved digital performance in weak signal areas while maintaining automatic detection and tracking of the supported digital modulation formats (C4FM-Wide, C4FM, CQPSK-LSM).

What you will need to upgrade your PRO-96

You will need the following items to perform the DSP firmware upgrade:

- The PRO96U12.EXE upgrade application file. (To download the file, go to <http://support.radioshack.com> and click on Software Downloads, then locate Catalog #200-0526 and select the "PRO96U12.EXE" link)
- A Radio Shack PC/IF cable, part number 20-289
- A personal computer running Windows 95 or greater
- A PRO-96 in need of a DSP upgrade

Upgrading your PRO-96

Upgrading your PRO-96 is a quick, simple and safe process. There is no way you can accidentally render your PRO-96 inoperable by performing the upgrade. Your PRO-96 always retains the original factory version (F1.1) of DSP firmware. In the unlikely event that the upgrade does not succeed, the PRO-96 will automatically revert to the original permanent factory version. If for some reason you want to manually revert back to the factory version, you can do so easily. In fact, you can reload the upgrade using your personal computer as many times as you wish.

The PRO96U12.EXE upgrade utility starts a self-guided process when it is executed. Double click the PRO96U12.EXE icon to begin this process. If you are the kind of person who already knows how to transfer data to and from the PRO-96, you may want to stop here and simply follow the on-screen instructions to complete the upgrade process.

On the other hand, if you prefer to have a nice set of printed step-by-step instructions to guide you through the process, you can refer to the following procedure.

Step by step upgrade procedure

This step by step procedure assumes that you have downloaded and unzipped the upgrade package, that you have connected the Radio Shack PC/IF cable (20-289) to an available serial port on your personal computer running Windows 95 or greater, and that you know the port number of the available serial port. If this is not the case, please take a moment now to prepare for the upgrade by completing the above steps before proceeding.

1. Double click the PRO96U12.EXE icon. Read the important notice, then click “Yes” to proceed with the upgrade.
2. Follow the steps listed on the PRO96U12.EXE main screen.
 - a. Connect the PRO-96 to an available COM port on your personal computer, using the PC/IF serial cable. Turn the scanner ON.
 - b. Select the COM port number that corresponds with the serial port that the scanner is connected to.
 - c. Click the TEST button to test the communications between the personal computer and the scanner, and retrieve the DSP firmware version currently active in the scanner. The upgrade utility will display a dialog box showing the current firmware version, the upgrade firmware version, and ask you if you want to proceed with the upgrade. Click YES to continue.
 - d. Turn the scanner OFF and disconnect the programming cable.
 - e. Turn the scanner back ON. While the “Welcome” message is displayed, press 0, then PGM, then ENTER to place the scanner in DSP firmware update mode. The scanner should display “DSP LOAD, PC/IF Port, Flash Memory”. Note that the “Welcome” message is displayed for approximately three seconds after the “DSP LOADING” message that is displayed immediately after powering the scanner ON.

- f. Reconnect the programming cable to the scanner.
- g. Click the UPDATE button to upgrade the PRO-96 DSP firmware. The upgrade process takes approximately 45 seconds. The scanner will reset once the upgrade is complete.

Verifying the firmware version

You can verify the version of DSP firmware currently active in the PRO-96 by pressing the 3 key during the “Welcome” screen. The scanner will display firmware versions for three separate firmware elements. The second version, “DSP APP”, is the only element that is upgraded in this update file. After the upgrade is complete this should display DSP-App:U1.2.

Reverting to the factory DSP firmware version

If for any reason you decide that you would like to revert to the original factory DSP version (F1.1), you may do so by pressing 0, then PGM, then CLEAR, then ENTER during the “Welcome” screen. Note that this will permanently remove the upgrade from the DSP flash memory. You can reload the upgrade as many times as you like using the PRO96U12.EXE upgrade utility.

Troubleshooting

Most users should experience no trouble whatsoever upgrading their PRO-96 scanning receivers. However, if you find that the upgrade process is not working for you, here are a few things you can check:

- Ensure that the correct serial port is specified in Step 2 of the on-screen self-guided upgrade process. Typically this will be either COM1 or COM2. In some cases COM3, COM4 or greater are used. External USB RS-232 serial adapters or converters may use even higher port numbers. The PRO96U12.EXE upgrade utility should support any valid serial port that Windows can recognize.
- Ensure that no other applications are using the serial port. PDA cradle synchronization utilities are notorious for stealing serial ports so that other applications cannot use them. Disabling all other programs prior to running the upgrade utility can help minimize the chances of a conflict.
- Make sure the scanner is placed in DSP upgrade mode before proceeding with Step 7 of the upgrade process. Press 0, PGM, then ENTER in sequence while the “Welcome” screen is displayed.
- If none of the above suggestions work, try running the upgrade utility on a different computer. In some cases hidden applications can cause serial port conflicts. It is not always possible to see these hidden applications and disable them to eliminate the conflict.

