

APPENDIX B: Loading New Software into the ZM-30

This appendix overviews a way the user can load an updated software program into the ZM-30, as provided on the project's Internet web site.

BACKGROUND

Increasingly today, microcontrolled projects have an ability to be “field updated” with new capabilities and software updates made available by the designer. So instead of needing to send your instrument back for re-programming to get these new features, you can now simply download the program update from the Palstar website and send it to the ZM-30, and the instrument will automatically update its internal memory with the new program. What a great way to keep your project completely up to date with the latest features!

PC REQUIREMENTS

- Windows 95, Windows 98, Windows 2000, and Windows XP.
- Works with computers ranging from 33 MHz Intel 486 processors up to 2.4 GHz P4 processors.
- An available RS-232 serial port. (USB-to-RS232 adaptors may work for those computers having only USB-based serial ports.)
- “TeraTerm” (a terminal emulator program) must be installed. You can freely download it at <http://hp.vector.co.jp/authors/VA002416/teraterm.html>. Install the program (it's easy!) and follow the Usage steps below.

USAGE

1. Download the latest ZM-30 software from the project website located at www.palstar.com/zm30. Save the S19 file to a known location on your PC (e.g., your desktop folder.) The S19 file is the file with the “.s19” extension to its filename. This is a text representation of the binary image to be loaded onto the ZM-30.
2. Connect your ZM-30 to the PC using a standard, straight-through male-female DB9-type serial cable. Do not use a null modem cable that swaps pins 2 and 3 from end-to-end.
3. Start up the TeraTerm program on your PC. If not already set up, configure the communications as 9600 8N1, no flow control (in the **Setup** → **Serial Port** menu), and be certain to have the line delay set to at least “40ms/line”. Make sure that you have TeraTerm configured to be using the active serial port in your PC. Be certain that no other program has control of the serial port – e.g., if your Palm HotSync program is running, as evidenced by its icon in the system tray in the lower right of the screen, you must quit that program by right-clicking the icon and select “exit”.)
4. Issue the **Update Software** command on the ZM-30, located as an option under the SETUP menu. The program called “HCmon” will display its sign-on message on the PC screen.
5. Type **C** to clear out memory. See the C character echoed to the screen and the HCmon> prompt displayed again.
6. Type **L** to load new program. See message “...waiting ...”
7. Pull down the **File** → **Send File** menu.
8. Navigate to where you saved the *.s19 file
9. Once in the folder that contains **zm30v2-2.s19** file, select that file and click the Open button. (Be careful to only load S19 files! If you mistakenly select any other file extension, it is very likely that you'll mess up the bootstrap loader program.)
10. See line after line of ASCII data displayed in short one-second bursts. This will continue for about 2 minutes until the entire program has been sent to the ZM-30 and has been flashed into its memory. **DO NOT INTERRUPT THIS PROCESS!!** When it is complete, the **HCmon** > command prompt will be displayed again.
11. Type **X** to exit the HCmon program and the ZM-30 will power down. Disconnect the serial cable and power the ZM-30 on again with the On/Off pushbutton to start the newly-loaded program. You will see the new version number presented in the LCD sign-on message.

IN CASE OF SOFTWARE LOADING PROBLEMS

The normal indication of new software being successfully sent to the ZM-30 is seeing line-after-line of nicely-formatted text data being displayed to the PC terminal screen, as indicated in Step #10 above.

However if this process is interrupted for some reason (such as your computer accessing the Internet in the background, or you task switching over to another program), the PC data link to the ZM-30 can get out of sync, resulting in either a complete stopping of the scrolling data lines, or unusual and unformatted data continually being displayed to the screen. Neither of these conditions will end in a successful display of the HCmon prompt and the software memory of the ZM-30 will be left blank ... brain dead.

But all is not lost! There is an alternate way to load new software into your ZM-30.

ALTERNATE LOADING METHOD

1. Remove power from the ZM-30 by pulling the power plug (if the unit is externally powered), or by opening the battery compartment and removing one of the batteries (if the unit is battery powered).
2. Open the ZM-30 case by removing the four screws on the sides of the instrument.
3. Locate the two 2-position pinheaders in the lower left portion of the pc board – one is just above the round piezo speaker device, and the other is about 0.5” to the right of the speaker.
4. Place the two supplied shunts (small black jumpers) onto these two pinheaders, ensuring that each of the two pinheader pins is shorted by its respective shunt.
5. Connect your ZM-30 to the PC using a standard, straight-through male-female DB9-type serial cable. Do not use a null modem cable that swaps pins 2 and 3 from end-to-end.
6. If not already running, make sure the TeraTerm program is running on your PC.
7. Power-up the ZM-30 again by plugging in the external power cable, or by inserting the battery that was previously removed.
8. You should immediately see the HCmon program display its sign-on message to the PC screen.
9. Proceed as before in steps 5-11 above, copied below for easy reference ...
 - a. Type **C** to clear out memory. See the C character echoed to the screen and the HCmon> prompt displayed again.
 - b. Type **L** to load new program. See message “...waiting ...”
 - c. Pull down **the File → Send File** menu.
 - d. Navigate to where you saved the *.s19 file
 - e. Once in the folder that contains **zm30v2-2.s19** file, select that file and click the Open button. (Be careful to only load S19 files! If you mistakenly select any other file extension, it is very likely that you'll mess up the bootstrap loader program.)
 - f. See line after line of ASCII data displayed in short one-second bursts. This will continue for about 2 minutes until the entire program has been sent to the ZM-30 and has been flashed into its memory. **DO NOT INTERRUPT THIS PROCESS!!** When it is complete, the **HCmon >** command prompt will be displayed again.
 - g. Type **X** to exit the HCmon program and the ZM-30 will power down.
10. Disconnect the serial cable.
11. Remove the two jumpers.
12. Re-install the case.
13. Power the ZM-30 on again with the On/Off pushbutton to start the newly-loaded program. You will see the new version number presented in the LCD sign-on message.