

**Name**

FIRMWARE UPGRADE - upgrading digitiser firmware using the ZOC terminal emulator

**Description**

ZOC is a simple third party terminal emulator program used by Nanometrics for upgrading the digitiser firmware. Any other terminal emulator program can be used for this purpose if it is configured correctly. The description of ZOC configuration for firmware upload provides enough information for configuring a different terminal emulator program. ZOC is supported on DOS, OS/2, and Win32 platforms.

**Usage and Options****Install ZOC on PC**

1. Insert the appropriate ZOC installation diskette (**ZOC for OS/2** or **ZOC for Windows**) into the floppy drive of the PC.
2. Open a command prompt window.
3. Change the working directory to the floppy drive by typing **a:** at the command prompt and pressing **Enter**. (assuming A: is the floppy drive)
4. At the command prompt type **install** (if OS/2) or **setup** (if Windows) and press **Enter**.
5. If the "Destination path" box is empty, type **c:\zoc** (or a suitable alternative) in the box.
6. Press the ZOC **Install** button to start the installation.
7. When notified "All files processed - installation complete", press the **OK** button.
8. When asked "Do you want to read ZOC's DOC files now?", press the **No** button.
9. To close the command prompt window, type **exit** and press **Enter**.
10. Remove the ZOC installation diskette from the floppy drive of the PC and save it in a safe place.

**Configure ZOC**

1. Start **ZOC** by double clicking on the icon created on the OS/2 desktop or from the entry in the Windows Start button menu.
2. If notified "No CTS signal from COM1", press the **Abort** button.
3. If a "License Agreement" window is displayed, press the **Agree** button.
4. If notified "New month -- do you want a phone cost report?", press the **No** button.
5. If a "Getting Started" help window is displayed, double click on the button at the top left of the help window to close it.
6. Select the **Options** item from the menu bar.
7. Select the **Settings...** item from the Options drop down menu.
8. Check that the I/O Device is set to **Serial/Modem**.
9. Check that the **Com-Port** is set to the PC com port to which the Digitiser configuration port is connected.
10. Check that the Com-Port baud is set to **9600**. (The Orion's are shipped with the configuration port set to 9600 baud. However, it may have been changed since then.)
11. Check that the Com-Port is set to **8N1**. (8 bits data, no parity, 1 stop bit is the only option for the configuration port.)

12. Deselect the Com-Port **Valid CD signal** handshaking option. The other handshaking options should already be deselected. (The Digitiser configuration port does not have any of the modem control signals used for handshaking.)
13. Press the **Transfer** tab at the right (if OS/2) or at the top (if Windows) of the "Options Settings".
14. Select the **Compuserve-B+** Protocol.
15. Select both the **Disable ENQ** and the **Disable ENQ message** Compuserve-B+ options. This will prevent ZOC from hanging on binary data.
16. Select the **Zmodem** Protocol.
17. If OS/2, press the right arrow button at the bottom right to go to **[Page 2 of 2]** of the transfer options, otherwise if Windows, press the **Transfer-2** tab.
18. Change the ASCII-/Clipboard Sending option **Char delay** to **0**. This will make ASCII uploads MUCH faster.
19. Press the **Safety** tab.
20. Deselect the **... ending program Confirm ...** option.
21. Deselect the **Warning for high speed without RTS/CTS** Miscellaneous option.
22. If a "Getting Started" help window was displayed on startup press the Window tab and deselect the **Initial help window** Screen Elements option.
23. Press the **Save** button at the top of the "Options Settings" window.
24. Close **ZOC** by double clicking on the button at the top left of the ZOC window.

#### Copy DIGITISER firmware to PC's hard drive

*Note: the new Digitiser firmware must be copied to the PC's hard drive since uploading firmware from a floppy drive is not reliable. (A network drive is possible but a local drive is preferable.)*

1. Insert the Digitiser Release diskette into the floppy drive of the PC.
2. The Digitiser Release diskette contains 7 files.
3. The file DSPDIAGS.HEX contains a diagnostics program which the DSP runs on startup to do basic hardware checks.
4. The file DSPLOAD.HEX contains a utility program used to transfer the main DSP program into the DSP memory.
5. The file FIRS.HEX contains the FIR filter coefficients used by the DSP.
6. The file DSPxx.HEX contains the main DSP firmware (xx indicates the version number) for the digitiser.
7. The file TCPyyy.HEX contains the main TCP firmware (yyy indicates the version number) for the digitiser.
8. The file HRDzz.HEX contains the previous 5 files released in one file (zz indicates the release number) for uploading into HRDs.
9. The file HRDzz.BIN contains the binary image of the file HRDzz.HEX used for burning into flashes.
10. Open a command prompt window.
11. Change the working directory to **c:\zoc\upload** (assuming ZOC was installed in c:\zoc), at the command prompt type **cd \zoc\upload** and press

- Enter.** This directory is chosen to make the ASCII uploads easier, however any directory may be chosen.
12. Copy the new Digitiser firmware release from the floppy, at the command prompt type **copy a:\digitiser\*.hex** and press **Enter**.
  13. Close the command prompt window.
  14. Remove the Digitiser Release diskette from the floppy drive of the PC and save it in a safe place.

#### Accessing the Digitiser setup menu

1. Start **ZOC**.
2. Power on the Digitiser.
3. The Digitiser will start up with lines similar to the following:  
**TCP Version 5.12, released Mar 17 1997 16:36:40**  
**Press 'M' key within 5 seconds or during memory test**
4. Immediately press the **M** key to access the Digitiser menu. (There will be at least a 5 second window to press the M key, longer if there is a lot of memory to test.)
5. After a power on the memory test will end with the following lines. (the number of memory banks depends on the Digitiser)  
**Writing 5555 to 8 banks.....**  
**Checking for 5555, writing aaaa to 8 banks.....**  
**Checking for aaaa, writing 0000 to 8 banks.....**
6. If the Digitiser has proceeded past the memory test, the menu will still be displayed and the configuration may be changed however it is **UNSAFE** to do a firmware upload. The Digitiser firmware may be severely corrupted (possibly unrecoverable).
7. If intending to upload new firmware, and the Digitiser has proceeded past the memory test or unsure if it has, power it off and start again.

#### Upload new firmware

1. Access the Digitiser setup menu as outlined above.
2. Double check that the Digitiser did not proceed past the memory test.
3. Press the **U** key to select the "Upload new firmware" option. (On older firmware, press the **D** key to select the "Download New Firmware" option.)
4. The Digitiser will respond with "Ready to Upload..."
5. Select the **Transfer** item from the menu bar.
6. Select the **ASCII-Send...** item from the Transfer drop down menu.
7. Use the **Select ASCII Upload File** dialog box to select the file containing the new Digitiser firmware release. Change the Drive and Directory as necessary if the firmware was not copied to the c:\zoc\upload directory.
8. Press the **OK** button to start the upload.
9. Do not touch the Digitiser or the PC while the upload is in progress, this will take almost 8 minutes.
10. When it has finished the Digitiser will automatically program the new firmware and reboot.
11. The Digitiser will start up with a line indicating the new version number and release date.

**Uploading at faster than 9600 baud**

*Note:* 9600 baud is the fastest baud rate that is reliable on all machines. However PCs with buffered com ports (have a 16550 compatible UART) or fast 486's and pentiums should upload reliably at 38400.

Uploading at 19200 reduces the upload time from 8 to 4 minutes, while uploading at 38400 reduces it to 2 minutes.

1. Access the Digitiser setup menu as outlined above.
2. Press the **C** key to select the "Configuration menu" option.
3. Press the **H** key to select the "Edit hardware setup parameters" option. (On older firmware press the **G** key to select the "Edit data communications parameters" option.)
4. Press the **B** key to change the "Configuration baud rate" setting.
5. Type the desired new baud rate and press **Enter**.
6. Check that the baud rate has been changed.
7. Press the **Esc** key twice to return to the main Digitiser setup menu.
8. Press the **P** key to select the "Program user settings" option.
9. Power off the Digitiser.
10. Press the button labeled 9600-8N1 at the bottom left corner of ZOC.
11. Change the Com-Port baud to the new baud rate set in the Digitiser.
12. Press the **Save** button.

**Creating a button for uploading firmware**

*Note:* this feature is only available on ZOC for OS/2.

This feature is of most use when the file to upload is not in the c:\zoc\upload directory and requires a lot of drive and directory changing to find it using the **Select ASCII Upload File** dialog box.

1. Start **ZOC**.
2. Open the **Options Settings** window.
3. Press the **Buttons** tab.
4. Find the first line with nothing under the "Value" heading.
5. Under the "Value" heading type `^XFER=type c:\zoc\upload\hrdzz.hex 1>&%ZOCHFC% -r`. The file indicated should contain the new Digitiser firmware release.
6. Under the "Button Text" heading type **HRDzz** (replace zz with the appropriate release number).
7. Press the **Save** button.
8. A button should have been created with the label HRDzz at the top of the ZOC window.
9. Pressing this button is equivalent to selecting the same file using the **Select ASCII Upload File** dialog box (except no **Bytes sent** status).
10. With the Digitiser **off**, test the button created by pressing it.
11. A window labeled "ZOC Shell Window" should pop up with the name of the file being uploaded.
12. Double click on the button at the top left of this window to close it. Otherwise it will automatically close several minutes later when the entire file has been uploaded.
13. Close **ZOC**.

**This document information**

G:\Manuals & graphics\Manuals\ReferenceManual\PCSoftware\DigitiserSW\

Firmwareupgrade.lwp

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