

Transferring Files with the Zmodem Protocol

Technologic Systems
Application Note AP-101
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Introduction

This document explains the use of the Zmodem file transmission protocol as a replacement for Manufacturing Mode in transferring files between a host computer and Technologic Systems Embedded PCs.

Background Information

All Technologic Systems Embedded PCs (EPCs) are able to send and receive files using a feature of the BIOS called Manufacturing Mode (MM). In conjunction with a serial and a device driver on a host computer, MM allows a disk drive on the EPC to appear as a 'remote' drive on the host. Files can then simply be copied from one drive to another, or even edited in place on the EPC with an editor running on the host. However, there are some drawbacks to MM, including:

- Only works with hosts running DOS.
- EPC must be rebooted to enter MM.
- Slow.

To avoid these and other problems, we have put together a small batch file called DL.BAT which calls the classic Zmodem transfer program DSZ, by Omen Software. DL.BAT allows files to be transferred to the EPC using any terminal emulation program that supports the Zmodem protocol. The Windows95 Hyperterminal accessory is a perfect example.

Installation & Usage

If you purchased your EPC after the date of this App Note, then the necessary files are already located on the unit and you can skip the next paragraph.

First, obtain the DL archive DL.ZIP from the Technologic Systems web site (listed below). DL.ZIP contains a simple batch file, DL.BAT, the CONSOLE utility (see **AP-100**), and an archive of the DSZ program. Using MM one last time, copy

DL.BAT, CONSOLE.EXE, and DSZ.COM to the directory A:\UTIL\ on the EPC.

To send a file to the EPC, simply execute DL.BAT on the command line of the EPC using the terminal program, then start your Zmodem transmission. Zmodem automatically sends the filename to the EPC and the file is stored in the location where DL.BAT was executed.

To send a file from the EPC to the host, use **UL. BAT filename**. You can also specify wildcards, for example:

```
UL. BAT *. EXE
```

Going Faster

Unlike MM, DL.BAT uses the baud rate currently in use on the console by default -- 9600 baud. There are several ways to change this. The simple method would be to put a line calling CONSOLE.EXE in the AUTOEXEC.BAT on the EPC that changes the console speed to 19200 or 38400. See **AP-100** for further information. If you are using baud rates higher than 9600, the solid state disk will have problems keeping up. In this case, perform the download to the RAM disk (drive C: by default on our EPCs) then copy the file to its final destination.

Other Notes

Please note that **DSZ is shareware -- it is not free**. If you continue to use it, you are obligated to pay Omen Technologies. Currently the cost is \$20. Further info is available in the DSZ zip file.

Occasionally there may be errors in transmission due to background solid state disk operations. This is not a problem -- Zmodem uses very accurate CRC checks to detect errors and simply resends bad data. Once the file transfer is complete the file is completely error free.



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