Getting started with DOS on X86 SBCs

Connecting serial communications and power

- An ANSI terminal or a PC running a terminal emulator is required to communicate with your Embedded PC. The serial parameters are 9600 baud, 8 data, and no parity. If you are running Linux, the minicom program works well, Windows users can run the Hyperterm application.

- Connect the DB9 ribbon cable to the COM2 header on the EPC. The 10 pin female connector should be oriented so that the red lead on the ribbon cable is toward pin 1 (pin 1 is closest to the "COM2" label and has a square pad) .

- Then connect the DB9 male connector to a null modem cable. Connect the other end of the null modem cable to a serial port on the host. Technologic Systems offers a null modem cable with both 25 pin and 9 pin connectors at each end as part number CB7-06.

- Connect a regulated 5VDC, (750mA minimum) power source using the included 2 screw terminal strip/ connector. Please note the polarity printed on the board.

Startup sequence

- Apply 5VDC power. The board mounted LED will blink twice, followed immediately by the display of the standard PC POST messages, memory test, and configuration data on your terminal. (Assumes JP2 is installed).

- After the power on self test the system boots DOS from ROM and executes the 'autoexec.bat' file.

- The ethernet packet driver is loaded.

- The 'epc-test' program runs, this is used for functional testing prior to shipment. See floppy for source.

- The autoexec runs 'command.com' and displays the 'A:\' prompt. At this point the system is still running the 'autoexec.bat' file, the call to 'command.com' is just a shell. Type "exit" to leave the command shell so the 'autoexec.bat' file will terminate. Now you may edit the autoexec file using 'ed.exe' if you wish.

TCP/IP configuration

The TCP/IP settings for the 2x00 are configured in the file 'A:\ethernet\wattcp.cfg', here is a partial listing :

```
my_ip=192.168.0.20              // Internet Protocol address of this ethernet interface.
hostname="epc.t-systems.com"    // Host name of this computer.
netmask=255.255.255.0           // Used to determine which IP's are local.
gateway=192.168.0.1             // Gateway for internet access.
nameserver=192.168.0.1          //  Name server for domain name lookups.
```

DOS utilities	All **source code** for the utilities and Ethernet programs is available on the **floppy** disk you received, or on the Technologic Systems web site (www.embeddedx86.com)
command.com	Run this from the command prompt for a more DOS like environment, type 'exit' to leave.

**A:\Util **

console.exe	Allows control of console redirection (screen and keyboard) baud rate and COM port.
dsz.exe	Z modem transfer program, see documents in util.zip on the floppy.
dl.bat	Batch file for Z modem download from host computer using COM2.
ul.bat	Batch file for Z modem upload to host computer using COM2.
ed.exe	Simple line editor, see the document A:\util\doc\ed.man for details.
epc-test.exe	Comprehensive test program, some tests require special test hardware to pass.
epclcd.exe	LCD port test program.
flashup.exe	Flash drive utility to create/restore complete flash disk images, see A:\util\flashup.txt
int.com	Software interrupt utility, see A:\util\int.doc for details.
int3.com	Calls BIOS debugger, type '?' at the debugger command prompt for help.
led_off.com	Turns off board mounted LED.
led_red.com	Turns on board mounted LED.
reset.com	Turns on the CPU's watchdog timer, which causes a hard reset of the system.

A:\Ethernet

Epktisa.com	DOS packet driver TSR, uses A:\ethernet\wattcp.cfg to configure TCP/IP settings.
Httpd.exe	Web server daemon, see A:\ethernet\www\ for examples, read a:\ethernet\docs\minweb.doc
Comd.exe	Serial port to telnet redirector, download 'wattcp.zip' for source and documents.
Htget.exe	Hypertext file download utility, download 'wattcp.zip' for source and documents.
ping.exe	Standard ping utility to debug ethernet connection, uses wattcp.cfg file for configuration.

Notes:

To free up disk space on the A: drive you can delete the entire A:\DOS directory. The DOS directory is not required to run DOS on the single board computer, ROM-DOS is loaded from a read only portion of flash and is therefore non-volatile. You should retain the 'command.com' program in the root directory if possible, as this makes the command interface much more usable. The DOS directory is available on the floppy disk as 'DOS.zip' if you need to restore any of the DOS programs. You can also delete any of the files in the A:\util or A:\ethernet directories that you don't require. Make sure to delete any references to these files from the 'autoexec.bat' file so the system doesn't hang.

Web server:

To access the web server, run 'httpd.exe' on the embedded computer. Open a web browser on your network connected host computer and enter "192.168.0.20" as the address. This should display the mini-server home page with some demo functions displayed.

Telnet redirector:

Run 'comd.exe' on the embedded computer. Open a telnet client on your network connected host computer and connect to "192.168.0.20". Connect a serial terminal to COM1 on the embedded computer. Any characters received into the COM port are redirected to the telnet client, any characters typed in the telnet client are sent out the COM port.