The Lear Siegler ADM 5

Bruce Nikkel, Bern University of Applied Sciences

In the early days of computing, it was common for organizations to have a large central computer system with users connecting to it using character based terminals. Early home computers like the Altair 8800 and IMSAI 8080 also used serial terminals for user interaction, before separate video graphic cards became popular. During the 1970s and early 1980s, Lear Siegler Incorporated (LSI) introduced the ADM series of RS232C serial terminals.

The ADM 5 was introduced in 1981 following the popularity of the ADM 3 and 3A. It had the same iconic curvy design (somewhat similar to the first Apple iMacs), similar features, but with a numeric keypad. The ADM5 monochrome CRT screen was 12 inches in diagonal and available in white or green phosphor. It weighed 14.5kg and had dimensions of approximately 35cm high, 40cm wide, 51cm deep.


The ADM series was prominently and jokingly marketed as a "Dumb Terminal", a term which was trademarked by Lear Siegler in 1976. The phrase became common in industry when comparing terminals to desktop computers. But the ADM 5 was also dumb in comparison to other terminals on the market. The simplicity of the internal circuitry, built using mostly 7400-series TTL logic chips, was unlike competing terminals at the time which often had a CPU and ROM containing code for setup menus, configuration settings, and other functions. The ADM 5 terminal is configured entirely through physical switches on the logic board.
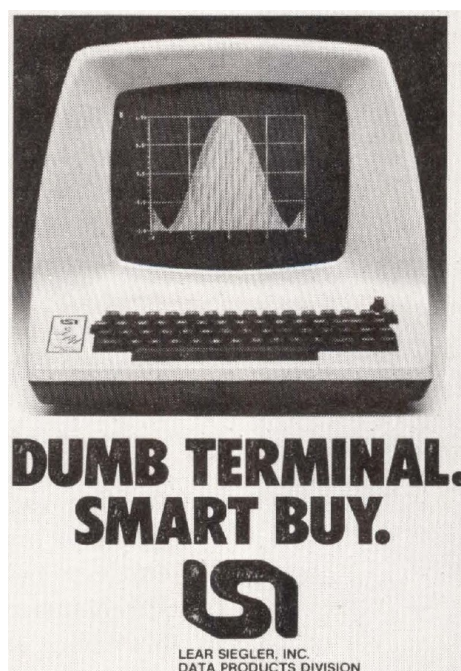
The rear of the terminal has two DB25 serial ports, one port for connecting to a host computer system, the second (extension) port for attaching a local peripheral device like a printer. The ports can be configured to use the RS232C standard or a current loop interface (used in older teletype equipment). The maximum speed of the serial ports is 19200 baud. The terminal can be connected directly to a host system, typically through a building's internal communications wiring, or remotely using a modem to dial into the host system over analog telephone lines.

The display format is 24 lines by 80 characters. A 2k ROM chip contains the bitmaps of 128 ASCII characters, which include upper and lower case, plus 32 control characters. The individual character dot matrix is 5x9 pixels, within a 7x10 character field. The contents of the video screen at any given moment are stored in four 1k x 4bit RAM chips. During a CRT refresh scan, the dot rows for each displayed character are read from the ROM character memory.
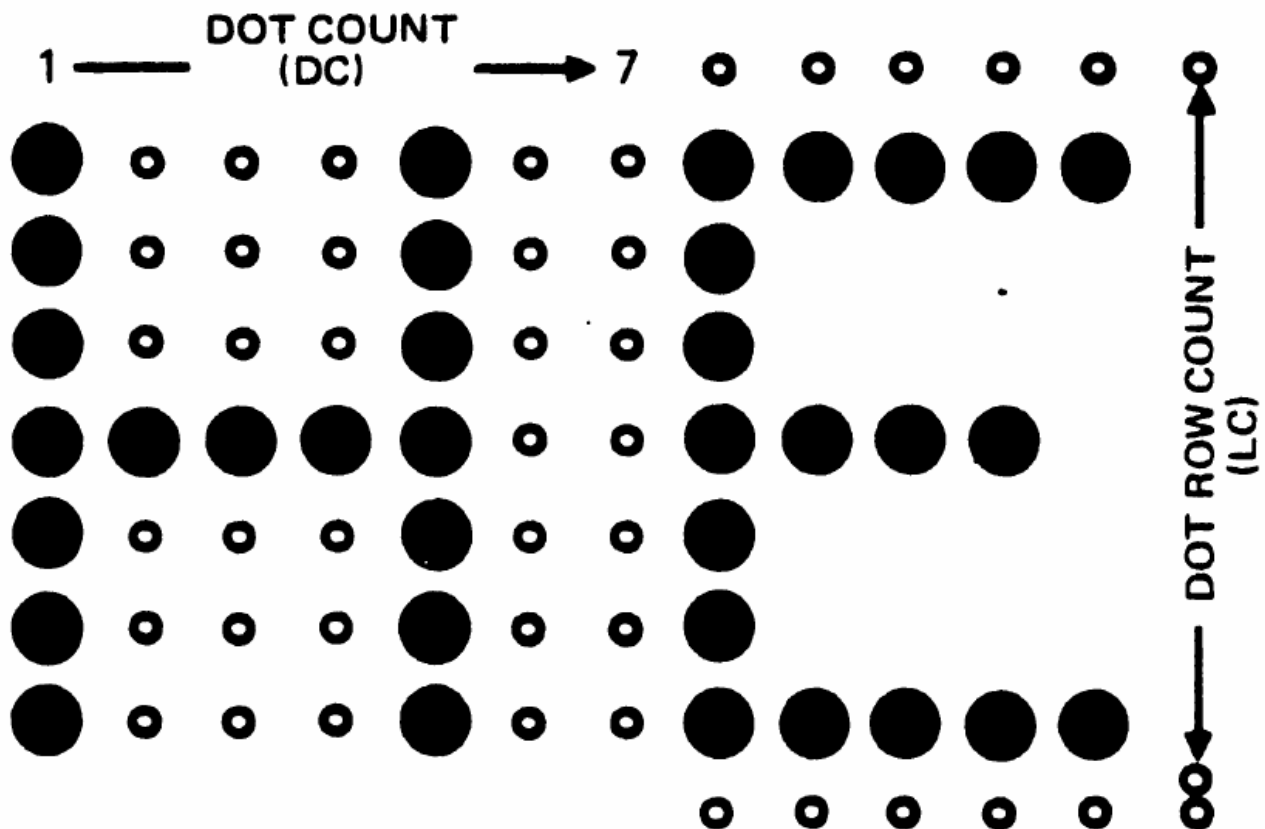
The keyboard has 83 keys which include alphanumeric and special characters, a numeric keypad, and function command keys such as cursor movement control, etc. When held down, the keys auto repeat at a rate of 22 characters per second. Above the numeric keypad is a screen brightness knob. Bill Joy used an ADM terminal to develop the vi text editor for UNIX and implemented the same HJKL keys used for cursor navigation.

The ADM 5 is fanless and silent, but like most terminals back then, it had a loud keyboard compared to what we typically use today. The keys are soldered directly onto the main logic board. The board also contains multiple DIP-switches, internally and externally, for configuring the terminal. The configuration options are limited and focus mostly on RS232C settings.
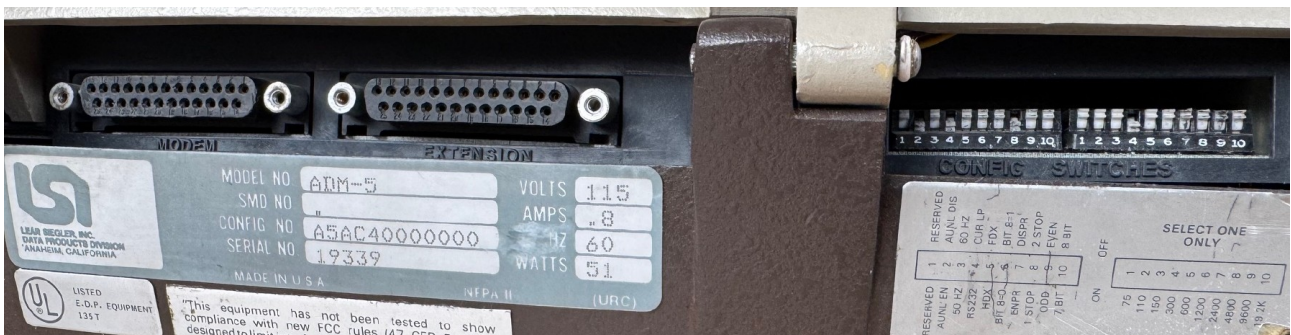
The terminal has a linear power supply and could be ordered with North American 115 VAC or European 230 VAC. The transformer is located under the main logic board which contains the rectification and regulation of power for the logic circuitry and for the CRT. The CRT has a separate circuit board for controlling cathode ray tube.

The screenshot below shows the ADM 5 connected to a Linux computer. Modern Linux systems are capable of providing logins from a real (not emulated) physical terminal using systemd. Using a USB to RS232C adapter cable to attach the terminal, a device similar to /dev/ttyUSB00 should appear. Then you can start the agetty process which manages the serial connection, accepts a username, and hands over to the the login program for authentication. The systemctl command can be used to send a login prompt to the terminal like this:

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$ sudo systemctl start serial-getty@ttyUSB0.service
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Older Unix and non-systemd Linux systems may require configuration in the /etc/inittab file.

Two excellent resources for information about the ADM 5 and other terminals are the Terminals Wiki (https://terminals-wiki.org/) and the Bitsavers Archive (https://bitsavers.org/). There you will find original handbooks and old promotional material. The ADM 5 documentation includes a 51 page Users Reference manual, and a 158 page Maintenance Manual with the technical theory of operation and complete schematics.

The original english version of this article can be found here:
https://digitalforensics.ch/enter/adm5.pdf