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Macintosh: Serial Port Data Transmission Rate Limit

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TOPIC -----

The SerReset function only lets me set the serial port speed to 57,600 baud. How can I set the serial port to support 203.4Kb?

DISCUSSION -----

The maximum nominal data transmission rate that you can select through the Macintosh Toolbox is 57,600 baud. This is the maximum rate that the Macintosh II computer can maintain for transmission of serial data, when the SCC port is operating in an asynchronous, interrupt-driven fashion, timed by the 3.672-MHz clock.

AppleTalk operates at a nominal data transmission rate of 230.4Kb. This higher rate is possible because AppleTalk communications are not interrupt-driven. During AppleTalk communications, the AppleTalk Driver has complete control of the computer. Although AppleTalk uses a synchronous communication protocol, the AppleTalk Driver runs the SCC chip in asynchronous mode, timed by the 3.672-MHz clock.

The maximum possible transmission rate for serial data ranges from approximately 500 Kbaud on the earlier Macintosh computers and the Macintosh Classic to 900 Kbaud on the modular Macintosh II family. To achieve such data transmission rates, the SCC would have to be operated in synchronous mode timed by an external clock, and the serial driver would have to have complete, uninterrupted control of the computer.

The transmit-data and receive-data lines of the Macintosh II serial interface conform to the EIA standard RS-422, which differs from the more commonly used RS-232-C standard in that, whereas an RS-232-C transmitter modulates a signal with respect to a common ground, an RS-422 transmitter modulates the signal against an inverted copy of the same signal (to generate a differential signal).

The RS-232-C receiver senses whether the received signal is sufficiently negative with respect to ground to be a logical 1. The RS-422 receiver, on the other hand, senses which line is more negative than the other. An

RS-422 signal is, therefore, more immune to noise and interference and degrades less over a distance than an RS-232-C signal.

If you ground the positive side of each RS-422 receiver and leave the positive side of each transmitter unconnected, you've converted to EIA standard RS-423. You can use this to communicate with most RS-232-C devices over distances up to approximately 50 feet.

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