



## MacEEP User's Guide

### Introduction

This application is a Macintosh™ driver for the EEP-1 EEPROM programmer described in the November 1995 issue of Electronics Now, page 37. In addition to downloading binary files to the programmer, it has facilities to upload programs from an EEPROM to a file, and create a binary file from either an Intel Hex file or a Motorola™ S19 record. The binary can then be downloaded to an EEPROM.

### Use

Running the program is simple. After connecting the programmer your Mac's serial port, simply launch the application. The menu and graphical interface are self-explanatory. If problems arise during operation, error messages will be posted by means of Alert dialogs.

### Interface

Connection to the EEP-1 is via the Mac's serial port. In Mac models with both a printer port and a modem port, the modem port must be used. The EEP-1 interface is RS-232. A standard Mac Mini-8 connector to DB-25 modem cable should work in conjunction with a DE-9 male to DB-25 female adapter (e.g. Jameco part no. 10321). The connections are between TXD<sup>-</sup>, pin 3 on the Mini-8 connector to pin 2 on the DB-25 and RXD<sup>-</sup>, pin 5 in the Mini-8 to pin 3 on the DB-25. RXD<sup>+</sup>, pin 8 on the Mini-8 is grounded through pin 7 on the DB-25.

A word of caution concerning the RS-232 interface is in order. The serial interface on Macs use a the RS-423 standard, a balanced interface. Ordinarily, this probably would not be of concern. However, the DS1275 RS-232 transceiver used on the EEP-1 operates from a single ended supply rail by robbing the RX<sub>IN</sub> line for the TX<sub>OUT</sub> marking state, negative signal. When the Mac is transmitting to the EEP-1 and the RX<sub>IN</sub> line transitions to a space, or high, there is no marking state signal level to rob and the DS1275 circuitry pulls the TX<sub>OUT</sub> line weakly to ground. In an RS-232 system this is of no real consequence because of the relatively high thresholds in the RS-232

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standard. But, the threshold in the RS-423 standard is relatively low, and within tolerances, the transition to ground may appear to the Mac as a mark to space transition. The ideal solution is to put together a hardware interface using an RS-232 transceiver that operates from a single ended supply but generates the negative rail internally, such as the Maxim™ MAX232 or Dallas Semiconductor™ DS232, along with a pair of RS-422 interface chips like the 26LS30/26LS32. Nevertheless, the MacEEP program attempts to anticipate this problem and work around it. In doing this, it must run slower than it otherwise would.

### Messages

Error conditions are signaled by Alert dialogs. MacEEP looks for echoes sent by the EEP-1. If there is no echo when the software is expecting one or the echo is different from that which the program expected, an error message will be posted. If the EEP-1 is working properly, the most likely cause of the problem is a bad interface connection. An error of this type can also arise during the course of a download or an erase if the EEPROM has one or more bad cells. When an operation is complete, MacEEP will post a dialog telling you. During the operation, there is nothing to tell you what is happening. However, the LED on the EEP-1 is off while a download, upload or erase is taking place. If the LED is off and no error message is posted, then the programmer is functioning normally. When the task is completed, the LED will turn on. So, the LED together with the Alerts signal the status of the programmer.

### Running Time

To download the 2048 bytes of a 2816 takes slightly more than one minute.. Obviously downloading fewer bytes takes less time. Uploading and erasing necessarily loop through the entire EEPROM so they also take just over a minute. Larger EEPROMs would take a proportionately longer time.

### Legal Stuff

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