Terje G. Vold
Vold Research
17 Blake Street
New Haven, CT 06511

18 Mar 86

Abstract
submitted for 1986 Rochester Forth Conference

A Single-Board Forth Computer with Versatile Analog I/O Circuitry

A complete stand-alone computer with versatile analog and digital I/O circuitry, two serial ports, and the FORTH language in ROM has been built. These features make it uniquely valuable and easy to use as a general purpose programmable interface between any personal computer with an RS-232 serial port (such as a Macintosh, IBM/PC, Apple II, or Commodore 64) and electrical signals commonly encountered in laboratories. It has been designed to optimize performance and versatility while keeping its cost low enough to be affordable by researchers on tight budgets and by hobbiests.

The I/O hardware includes 16 differential (or 32 single-ended) high impedance analog voltage input channels with software-programmable gain and sampling rates of up to 100 KHz, 2 programmable differential analog voltage output channels with 12-bit resolution, and 16 digital TTL voltage I/O channels with flexible features including two 16-bit counters. Combined with the R65F12 microcomputer and RAM, EPROM, and EEPROM, this hardware allows the device to be used with a personal computer to mimic many common laboratory instruments such as a waveform generator, strip chart recorder, phase sensitive detector, or frequency meter, or to perform much more sophisticated tasks.