

Project Number eZ2916
S-72 Bus System

Back in the 1970s the microprocessor was born. Engineers and technicians designed the first of the tabletop computers as a hobby machine. The Intel 8008 had given way to the 8080 that were placed on the S-100 bus. The Zilog Z80 soon followed this on the same bus, a 100-pin connector on a simple backplane. Raw DC was supplied to the endpins of the sockets and each board had its own power regulators, whose voltages were set depending on the circuits needs on that card. With the flow of time computers became the mass produced systems we have today, no more back plane with exchangeable cards, but dedicated motherboards. Though today computers are thousands of times faster and have millions of times the storage, something was lost which should not have been lost, from a hobbyist point of view.

This project is in the likeness of the old S-100 bus system with each major logic function on a card, that is to say a platform that gives them a place to build circuit elements and firmware elements without having to keep replacing most of the computer every time they add new functions. The project is called the Z72, Z for Zilog and 72 for the number of pins on the connector; the case is painted blue as a salute to IBM. Every thing is scaled down in size, to denote the progress that has come with the flow of time. In the prototype system the cards still have dual inline components, but future boards will be surface mount, which hobbyists can now do. The Zilog eZ80 module plugs into the backplane via two dual row square pin connectors. The signals from the module are supplied to the backplane formed of six 72-pin SIMMs. The main board also has a matrix of 16 push button switches to enter hex or to be used as hot keys (in memory of the toggle switches of the S-100 bus). A reset button is located on the main board. There is a resistor summing network driven by a parallel port and SPI used to provide low resolution NTSC video to a monitor built for this project.

Cards include: EEPROM I2C bus card which holds 8 256K byte EEPROMS; PIC18F242 used as dual serial ports and dual A to D plus general IO; AVR62 card uses 16 lines of IO with interrupts on each line. Cards that were in design, but are not ready for this contest, are: video card using the XBOX video chip; dual 3GB compact flash cards as the systems hard disk replacement. The firmware contains code to

- NYSC video interface (20 char x 16 lines, sized as such for small LCD TVs)
- 16 user accessible push buttons
- Full set of functions to place or retrieve text and graphic from the display
- Seconds counter
- Milliseconds counter, accurate to 10 ms
- Full set of functions for UART usage
- Functions to save and read I2C devices.
- Signal lines on the X72 bus provide for user hardware expansion

Keyboard and mouse interface soon will be added as well.







