



Fig.1 Block Diagram of Subsystems

System Block Diagram of Expansion Board for TMS320C31 DSP Evaluation Board

Development Engineers

Ed Bellinder

Nicki Junge

Supervising Engineer

Dr. Thomas Stewart

The main goals of this project are to interface additional program and data memory, to provide an easy way to input analog and digital signals, and provide an external interrupt pin. This will be accomplished through an expansion board which will be connected to the existing evaluation board. The main subsystems of the overall system are an analog to digital converter, additional memory, an external interrupt connection, and the TMS320C31 Digital Signal Processing chip.

A/D, D/A Converter

This device will take the analog input and convert it to a digital signal by using an analog to digital converter. The signal will then be sent to the DSP chip through the data bus. After being processed, the digital signal from the DSP chip is sent through the data bus to the digital to analog converter, which then outputs an analog signal for the user to evaluate. The A/D, D/A converters will be available in addition to the existing converter on the evaluation board, for the purpose of multiple analog I/O's. Additional logic is necessary to interface with the A/D and D/A in order to select a particular chip.

External Memory

Program and data memory will each be increased by 2 K of 32 bit words. This additional memory will allow the DSP chip to accommodate larger and more involved programs. The Cypress CY7C128A SRAM chip will be interfaced to the expansion board. It will provide 2K x 8bit of RAM so 4 of these chips will be necessary to accommodate the 32bit data bus. A decoder chip has been added to allow for three additional banks of memory if the user requires it. Only one bank of 2K memory will be initially included with the expansion board..

External Interrupt

Currently, the evaluation board does not allow any easy way to interrupt the processor. By bringing out one of the DSP chip's interrupt pins physically, the user will be able utilize an external interrupt for use in other applications.

Digital I/O

Providing a digital input and output, increases the features of the evaluation board. The digital input will run through a tri-state buffer and then feed into the DSP. The processed signal will then return through a digital latch to be evaluated by the user.