Mosaic Industries

QED 2 <-> Okaya Graphics Display

APPLICATION NOTE MI-AN-013

Summary

The following explains the hardware and software requirements needed for the QED-2 Board to conrol the Okaya graphics display.

Description

The QED-2 Board can control an Okaya 240 x 128 graphics display module in the following manner.

Hardware Requirements

The necessary hardware signal interface is as follows:

Pin#	1	2	3	4	5	6	7	8
Okaya	Vss	Vdd	Vo	RS	R/W	E	D0	D1
QED	Gnd	+5V	NC	A1	R/W	**DE**	D0	D1

Pin#	9	10	11	12	13	14	15	16
Okaya	D2	D3	D4	D5	D6	D7	/CS	/RST
QED	D2	D3	D4	D5	D6	D7	Gnd	+5V

These QED signals are all accessible via the QED Board's address/data bus connector. The only unique QED signal is DE.

Signal DE must be asserted HIGH at addresses C001 and C003. Address C000 through C07F are available to the user for memory mapped I/O. As long as only the display is mapped into this region of the QED-Boards address space, we can decode the DE signal as:

DE = A15 & A14 & !A13 & !A12 & !A11 & !A10 & !A9 & !A8 & !A7 & A0

This equation asserts DE HIGH for all odd addresses in the range C000 through C07F.

Implementation of this equation in hardware is accomplished using a PAL. The QED Proto-Board, which comes with the QED-PDK Product Design Kit, has an on board PAL. Provided the inputs to this PAL are modified, the component can be programmed to implement the equation above. Furthermore, an appropriate graphics display header can be completely implemented on the QED Proto-Board.

Implementation of this hardware interface using the QED-2 Board is compatible with the interface built into our soon to be released QED-3 Board. Using this interface scheme will permit upgrading to the QED-3 Board without any problems, and the upgrade will eliminate your need for the rewired interface and PAL.

Software Requirements

The QED-2 Board's operating system currently does not support the Okaya graphics display. Nevertheless, we are writing drivers to fully support it. These drivers will reside on the QED-3 Board. To ensure that your application code can easily port from the QED-2 to the QED-3 Board, we can make recommendations on how you implement your code. For example, the DE addresses (C001 and C003) will change to 80A1 and 80A3 on the QED-3 Board; thus, they should be implemented as named constants. We have already written code which provides a rudimentary interface to the display, and we are happy to share this with you. As our driver nears completion we will make this code available as well.

Please contact Melody Liu at 510/790-1255 if you have any questions.

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