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Using Exercise 8 on the M68HC16Z1EVB

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Introduction

The M68HC16Z1EVB is shipped with eight exercise programs which are intended to show examples of working programs which can be run on the board.

One of the exercises involves the Burr-Brown PCM56P digital-to-analog converter. Motorola has provided the socket and support circuitry needed to use this D/A converter, once it is acquired by the user.

Exercise 8 sets up banks of RAM at $30000 by using chip selects to access sockets U1 and U3. After initializing the RAM, exercise 8 uses the QSPI to send data to the DAC. The output can be seen on connector P7 on the pin labelled DAC1OUT. If all went well, a sawtooth wave would appear on the DAC1OUT pin.

Problem in the Code

The code for these exercises was developed and tested using an assembler called IASM16 from P&E Microsystems. However, the disk shipped with the board only contains source code (exerc_8.asm) for exercise 8. In addition, MASM16 was shipped as the assembler to use for code development. These two assemblers use different syntaxes for the MOVW command.

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As shipped, there is a line of code which will not assemble correctly under the MASM16 software as a result of the syntax differences. In the 3Initialize RAM table2 section of the code, the ninth line of code currently reads:

```
MOVW            $FFFE,X(2)
```

To assemble correctly in MASM16, change that line to read:

```
MOVW            $FFFE,2,X
```

Once this change is made and saved:

- Re-assemble the code, ensuring that new exerc_8.s19 and exerc_8.map files are created.

- Re-enter the EVB16 software.

- Download the new S-record file to the M68HC16Z1 EVB.

- Make sure the instruction pointer points to $200 by typing 3ip 200". You should be able to execute the code by typing 3g 200".

Conclusion

The exercises shipped with this board were developed and tested using the IASM16 assembler. With this one-line code correction, proper operation can be achieved using the MASM16 assembler. New packages of the EVB should have this change reflected on the new master disk. Before running the exercise 8 program, check to ensure this correction has been made. This quick check will prevent frustration while trying to learn from the furnished exercises.

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