

Serial EEPROM Lab

This lab will exercise the functionality of the Serial EEPROM device that is emulated on the PIC microcontroller. The System Management GUI will be used in manual I²C mode to write EEPROM locations. The data will then be verified using the EEPROM GUI.

Lab Setup Procedures

- [] Find JP200 labeled “Heater Enable.” Make sure that JP200 is open.
- [] Connect the +12V power supply to J100 labeled “+12VDC.”
- [] Verify that the fan is spinning and that the DS104 Power Led is on.
- [] Connect the PICKit Serial Analyzer to the PC using the provided USB cable.
- [] Ensure that the “Power” LED on the PICKit Serial Analyzer is on.
- [] Connect the PICKit Serial Analyzer to the PICDEM System Management Board connector P104 labeled “PICKit Serial.”
- [] Start the PICDEM System Management Software. (Click Start<Programs<Microchip System Management Board

Manually Write Data to EEPROM

Use the manual I²C tab to write the data 0x25 to address 0x12 of the emulated Serial EEPROM with device address 0xA8.

- [] Click on the I2C Tab in the System Management GUI.
- [] In the write area of the I2C tab, enter “A8” into the Slave Address [W] field. This field corresponds to the slave address of the I2C message. 0xA8 is the device address of the serial EEPROM with the Read bit (LSb) set to 0.
- [] Enter “12” into the Word Address field. This field is the first address that will be written. We intend to write one byte to address 0x12. Therefore, we must initialize the word address pointer to the address 0x12.
- [] In the top most Data field, enter the data that will be written to the first address location. In this exercise we intend to write the data 0x25 to address 0x12. Enter “25” into the first data field (ensure that the rest of the data fields are cleared).

- [] Click on the Execute button in the Write area of the I2C tab to send the I²C message across the bus.

The next step of this exercise is to verify that this data has been written to the EEPROM. We will manually verify that the data 0x25 has been written to word address 0x12 using the manual I2C tab.

- [] Click on the I2C tab in the System Management GUI.
- [] In the read area of the I2C tab, enter "A8" into the Slave Address[W] field. The field corresponds to the slave address of the I2C message with the address of the serial EEPROM and the Read bit (LSb) set to 1.
- [] Enter "12" into the Word Address field. This field is the first address that will be read. We intend to read address 0x12.
- [] In the Byte Count field, enter "1." We only intend to read one byte beginning at address 0x12.
- [] Click the Execute command to send the I2C message over the bus.
- [] In the status window on the left side of the I2C tab should be the message "Data returned: [25]"

Use the EEPROM tab to read and write multiple bytes

Now we will use the EEPROM interface tab to write multiple bytes of data EEPROM

- [] Click on the EEPROM tab in the System Management Board GUI.
- [] The rows of the chart are the lower nibble (four bits) of the word address location, while the columns of the chart are the upper nibble of the word address location. In other words if you wanted to write address 0xA1, you would modify the data in row "A0" column "01."
- [] Click the Read button on the bottom right of the screen. The data 0x25 should be shown in the location 0x12, which was written in the previous section.
- [] Use the EEPROM GUI to read and write data locations. Clicking Write to EE writes all 256 bytes of EEPROM. The clear display button clears only the display, not the actual EEPROM data.